18 November 2025

Network Connections Team
Electricity Authority
By email: connection.feedback@ea.govt.nz

Tēnā koe,

Default export limits that enable distributed generation connection

We welcome the opportunity to respond to the Electricity Authority (**Authority**)'s issues paper on export limits. Export limits are an important management tool for Powerco's network planning and to operate a safe and reliable network. It is timely to review export limits and assessment processes as part of the package of reforms to enable distributed generation (**DG**) connections. Our summary observations on this consultation are:

The electricity system is changing	• The electricity system is changing and distribution network operation must change in response. This has implications for multiple aspects of electricity distribution business (**EDB**) operations and customer interface. Code changes will be required for consistent and timely implementation • These proposed Code amendments for export limits must be designed and integrated with broader reforms, including the wider connections package and network visibility proposals. There are some areas where this integration is complex and not achieved in these amendment proposals.
10kW default export limit threshold is appropriate	• DG can benefit all consumers as long as it does not compromise network stability. Powerco supports technical code changes that provides a streamlined approval for a default 10kW export limit, with transparency in scenarios when the default may not be appropriate • A 10kW default will generate some network risks and costs. These should be manageable by most distributors, however the consultation paper does not provide a robust assessment of the likely benefits and costs.
Consistent assessment methodology for customer value	• Whatever the level of the default, the capacity for DG export will vary across the network. A clear process to set lower or higher limits, for either small-scale or large-scale DG, is important • This relies on network capacity assessment, which should be foundational knowledge held by the distributor and shared with customers • Developing an industry-wide bespoke export limits assessment methodology will be challenging and is unlikely to provide the value anticipated. Guidance and use of relevant network Connection and Operation Standards (COPS) would be more efficient and integrated with other network planning.

We comment on these observations and details of the proposals in our response to the Authority's questions in the attachment.

This submission does not contain any confidential information. We are always keen to meet with the Authority to discuss and develop the ideas in our submissions. In the meantime, if you have any questions or would like to talk further on the points we have raised, please contact Irene Clarke [redacted]

Nāku noa, nā,

[redacted]

Emma Wilson
Head of Policy, Regulation and Markets
POWERCO

1. Responses to the Authority's questions

Questions	Comments
Q1. What are your views on the proposal to set a default 10kW export limit for Part 1A applications?	Powerco supports a default 10kW export limit to apply as a threshold across all EDBs for Part 1A applications. Powerco already allows export of single-phase connections up to 10kW by default[1]. A higher limit requires distributors to have good knowledge and visibility of network export capacity constraints. Powerco is committed to improving network visibility and supporting customer choice in DG connections. We have identified some locations where current constraints limit export capacity[2]. As data and capabilities are further developed we expect to be able to give full visibility of both current and forecast capacity and congestion (export and input) at high granularity ultimately down to LV. We acknowledge the Authority plans to consider an increase to the upper limit for Part 1A applications in future work. This will require more careful assessment with EDBs. Powerco would be pleased to discuss opportunities and considerations further with the Authority.
Q2. What are your views on the Code clarifying that a distributor cannot limit the nameplate capacity of a Part 1A application, unless the capacity exceeds 10kW?	In general, Powerco supports export limits based on actual installation net export, however, in many cases it may be practical, particularly for Part 1A applications, to manage their net export within the allowable limit through specification of installed (nameplate) capacity and inverter settings. Guaranteeing a minimum base load (consumption) would be challenging and the cost of implementing separate control functions at the meter may exceed the advantages. For example, an inverter may be capable of supporting export-limit functionality, but effective implementation requires real-time measurements and communication through DNP3 or Modbus protocols, which adds cost and complexity. While a larger installation such as a commercial customer >10kW may be able to guarantee a minimum baseload or incorporate control systems and communication devices between the inverter and the meter, this is unlikely workable for a small residential installation. We recommend more careful assessment of the costs, benefits and risks of removing a limit on nameplate capacity, and of the expectations for export-limiting devices or control.
Q3. There are requirements for distributors in Proposal A1. Which of these do you support, or not support, and why?	Powerco supports a 10kW default export limit for applications under Part 1A. We support each EDB providing public information on the specific transformer locations where additional assessment and lower export limits may apply. Powerco supports improved network visibility in principle, and code changes necessary to

[1] Powerco's DG Connections webpage clearly states that we allow export of single-phase connections up to 10kW. We are in the process of updating our DG connection standard to reflect this and in the interim an engineering instruction will be issued to provide technical guidance. Solar power for home and business

[2] Powerco's DG connections webpage lists transformers where connections may be limited in export capacity. Solar power for home and business

	consistently improve network visibility[3]. Our current list of transformers with constraints does not provide the customer accessibility to information that a map view would provide. We are working on this as part of improvements to our network visibility and encourage congestion mapping across all EDBs to enable customers to navigate to an area of interest and determine areas where there may be constraints in exporting 10kW. Powerco recognises the need for more standardisation and evidenced based limits, but it is important that the export limits assessment methodology (ELAM) does not restrict distributors in their core responsibility of optimising network architecture, strategy, design, management or investment for the long-term benefit of their local customers. The ELAM will need to have some flexibility given the varying EDB maturity of network visibility capabilities and data. We do not support the proposed amendment to require CEO endorsement, as this is a very technical assessment, it is not the type of assessment that regulation should require. To do so would be inconsistent with Code requirements where CEO endorsement is required. This should instead require the EDB to publish evidence of the completed assessment linked to a lower export limit.
Q4. What are your views on the proposal for industry to develop an export limits assessment methodology?	Powerco supports an industry led approach to develop an agreed methodology for export limits assessment to guide application assessment under Part 1A. Electrical Engineers Association (**EEA**) is the appropriate industry organisation to lead this work, building on previous work relevant for small scale DG, and supported by technical input from EEA members. The ELAM will be a blanket standardised approach with many assumptions, to set a safe threshold for fast track process. It will not be capable of addressing aspects of network architecture, strategy and management of capacity and congestion that need to reflect local conditions and customer needs (eg how the +10% voltage limits are applied to network design split over HV or LV circuits etc).
Q5. What would you do differently in Proposal A1, if anything?	See above
Q6. What concerns, if any, do you have about requiring the 2024, rather than 2016, version of the inverter installation standard for Part 1A applications?	Powerco supports this technical update to reference the latest version of this standard.
Q7. Do you support amending the New Zealand volt-watt and voltvar settings to match the Australian values for Part 1A applications - why or why not – what do you think are the implications?	Volt-Watt and Volt-VAR controls in inverters are a critical function to help maintain system stability. Powerco references compliance with the New Zealand based settings of AS/NZS 4777.2:2020 in our connection standard. We acknowledge that these current settings are based on 230V ±6%, not the new 230V ±10%. An amendment to reference the Australian settings will align with the new 230V ±10%. The Powerco

[3] Refer Powerco's submission on the network visibility consultation October 2025, electricity-authority---network-visibility.pdf

	standard already references the Clean Energy Council list of approved inverters which relates to the Australian settings. We agree that there is not a case to develop new settings for New Zealand. Rather, the Australian settings (Region A) in the existing joint standard can be adopted. The AS/NZS Standard should be updated at the next revision opportunity. We endorse these new settings as a default, with a clear option for Powerco to require alternative settings where this is justified at a particular network location. For example, more remote locations may require alternative settings.
Q8. What would you do differently in Proposal A2, if anything?	We would recommend continued monitoring of the impact of widespread VAR use, especially given the Volt-VAR mode activates before the Volt- Watt. Our large scale DG standard limits VAR deployment up to ± 33% of active power output rating whereas AS/NZS4777 defaults allow up to 60%. Excessive reactive power (VAR) flow on networks erodes capacity, increases losses and ultimately requires a source or sink "supplier". There are potential stability issues for synchronous generators at low power factor and also compliance issues at GXPs. Most New Zealand urban networks are underground and hence have low X/R ratio, meaning Volt-VAR functions have limited effect.
Q9. Do you have any concerns about the Authority citing the Australian disconnection settings for inverters when high voltage is sustained?	Adopting the Australian sustained high-voltage inverter settings is an appropriate and well-founded step. This approach ensures alignment within the joint AS/NZS framework and supports consistency across jurisdictions. The Australian settings have been in operation for several years without issue and provide a tested foundation for New Zealand's transition to the wider 230 V ± 10 % voltage range. These settings can be reviewed and refined over time if local network performance data indicates that further adjustments are necessary. In the meantime, this direction provides a pragmatic and evidence-based path forward.
Q10. Do you have any concerns about the Authority requiring the latest version of the inverter performance standard for Part 1A applications?	We agree that the inverter performance standard should continue to be in the Code. Powerco references compliance with AS/NZS 4777.2:2020 in our connection standard. We agree that this latest version should be used for Part 1A applications.
Q11. What are your views on the proposal that where distributors set bespoke export limits for Part 2 applications, they must do so using the industry developed assessment methodology?	Powerco has developed a *Utility scale distributed generation standard*[4] and a *Utility scale distributed generation process guide*[5] to provide clear information to large scale DG applicants about the approach for large scale DG applications. We endorse transparency and documentation of process so customers are fully aware of an EDB's approach. Our standards and guides are specific to Powerco's strategy and network. There is purpose and value in a nationally standardised ELAM, as a generalised and simplified network wide analysis that can be applied with any level of network visibility or modelling maturity, and which serves to determine a threshold (export limit) for fast track application processes for smaller and lower risk DG. By contrast, the bespoke export limits assessment methodology (BELAM) for a specific

[4] utility-scale-distributed-generation-standard-2024.pdf
[5] utility-scale-document_final.pdf

	application appears to be a substitute for a suite of network Connection and Operation Standards (COPS) and the detailed power flow analysis to assess specific capacity options and commercial terms of an actual large scale DG applicant. This does not seem appropriate or necessary. The published COPS should already provide transparency of the key network requirements (e.g. voltage coordination, asset ratings, network loads, security requirements etc) used to evaluate local network hosting capacity and the methodology for determining a large scale DG export limit is primarily power flow analysis, which does not need a new methodology as it is based on fundamental engineering principles and mathematical algorithms. The scope of a BELAM is therefore unclear. The inputs and assumptions to the analysis of network capacity are more important than a standard methodology. These inputs and assumptions are not unique to consideration of export capacity or DG - they address much wider strategic, architecture, modelling, data, network and risk management aspects, which are not typically standard across all networks because they reflect local network and customer needs. For example: • Load assumptions (eg load profiles) • Incomplete or incorrect network models (eg missing conductor data) • Managing uncertainty where network visibility is poor (loading, network state, configuration or voltage) • Congestion policy and maturity in future DSO capabilities (eg ADMS systems, automated time variant and dynamic operating envelopes) • Asset ratings and the trade-off of expected life / performance when assets are operated at very high utilisation (eg N capacity solar summer output) • Coordination and optimisation of voltage and reactive power • Policy and commercial terms which allocate network hosting capacity to multiple DG connections. The individual application assessment will lead to contractually binding limits, commercial conditions, costs and risks. These factors are all negotiable, and any risk that the network accepts in accommodating more DG export, will ultimately fall to all network customers. Part 2 DG installations benefit from bespoke and dynamic limits, and transparent or open access congestion management (capacity allocation) policies, not static or blanket limits based on limited data or generalised methodologies. Developing an industry wide BELAM that is adaptable to many different network strategies and operational practices, and yet is sufficiently standardised to provide nationwide consistency, is expected to be challenging, with a likely outcome that it would be very high level to be relevant across all EDBs. We recommend the approach to BELAM is reconsidered and instead, guidance be used to provide direction on relevant COPS and inputs. This may require an update to the definition of 'COPS' in the Code.
Q12. What are your views on the several requirements that must be adhered to regarding the distributors'	We support the Code requiring a distributor to provide their application analysis, options and costs to the applicant under Part 2. Applications to Powerco for large (utility scale) generation would typically go through a number of stages and iterations backwards and forwards between Powerco and the applicant. It is

documentation (see paragraph 5.96) relating to setting export limits under Part 2?	Powerco's practice to provide an initial high-level review of an application including assessment of export limits, options and costs, and provide this to the applicant.
Q13. Do you agree it is fair and appropriate that where distributors set export limits for Part 2 applications, applicants can dispute the limit? If so, what sort of process should that entail?	Applicants can raise a dispute with Powerco about their application or outcome. Powerco takes all complaints, through a formal process, with a principle of seeking to resolve the dispute in good faith. Many applicants are not industry participants therefore Code provisions could only set obligations on the distributor, rather than all parties involved in a dispute. We support an expectation that all distributors have a clear and fair process available for applicant disputes, including relating to export limits. We do not consider that the Code needs to enable an option of an applicant raising a dispute or set out a prescriptive approach for dealing with the dispute. The addition of Schedule 6.1 clause 1G is inappropriate and should be removed.
Q14. What would you do differently in Proposal B, if anything?	Guidance which provides direction on relevant COPS and inputs for a network's assessment is an appropriate alternative to a high-level standardised BELAM.
Q15. What are your thoughts on requiring the inverter performance standard (AS/NZS 4777.2:2020 incorporating Amendments 1 and 2) for low voltage DG applications in New Zealand?	Powerco references compliance with AS/NZS 4777.2:2020 in our connection standard, where applicable. We agree that this version should be referenced in the Code as mandatory for all low voltage DG applications. We would support retaining an ability to set alternative volt response settings should this be relevant for a particular application, within the allowed range in the standard. This is particularly relevant for PQ modes (e.g. volt-watt and volt-VAR).
Q16. Do you consider the transitional arrangements workable regarding requirements and timeframes? If not, what arrangements would you prefer?	As these proposals to change export limits are proposed to come in ahead of other connections changes due in 2026, we agree that earlier implementation is also needed of a requirement for a Part 6 application when the maximum export power of an existing DG installation is increased or the voltage settings in an existing inverter are changed. <u>Proposal A1</u> We agree that the default 10kW export limit can have a short transition and 28 days after gazettal is appropriate. Powerco has recently changed to a 10kW default with little process change required. We have not set any non-default export limits, but do identify 9 transformer locations where a DG system may be limited (by its own inverter) in the amount of electricity the system can feed back into the network. Implementing a new default export limit should have minimal operational implications with small scale DG and AS/NZS4777.2:2020 compliant inverters. If a distributor does set non-default export limits, we agree that information should be made available about the reasoning for this. <u>Proposal A2</u> We also support a 28 day transition period to apply the latest inverter installation standard and performance standards. As for A1, we do not see any significant process or costs to implement this change. A longer transition may be required for some distributors to determine whether alternative voltage response settings are needed for parts of their network. We expect that all distributors should have adequate network capacity knowledge to identify network locations where different inverter settings are required. Four months would be ample to implement this.

	Proposal B (and A1 in part) A 4-month period for industry to finalise a new export limit assessment methodology (ELAM) may be difficult but could be achievable. Developing an industry wide BELAM that is adaptable to many different network strategies and operational practices, and yet is sufficiently standardised to provide nationwide consistency, is expected to be challenging, particularly in the short timeframe (4 months) proposed. We comment further on the purpose and complexity of a standardised BELAM in question 11 above. We recommend considering different transition periods for the ELAM (shorter) and the BELAM (or its alternative). In addition to the time required to develop a standard methodology, there will also be a period after that for distributors to implement that new methodology with changes to processes, publications etc. Distributors will also need an alternative methodology during the transition, where Powerco can use our existing published standard and guide (as for A1). Proposal C A 4-month transition period to mandate the use of the latest inverter performance standard for all low voltage DG applications is appropriate. Implementation prior to other Part 6 connections project changes The default export limit changes and default inverter requirements will come into force ahead of other upcoming changes to Part 6 in late 2026. We support an earlier implementation of these. While we support an earlier commencement of a standardised assessment methodology, achieving this will be a challenge and likely require a longer transition, as set out in our comments on proposal B transition above.
Q17. What are your views on the objective of the proposed amendments?	Powerco supports the objective to enable more efficient export limits to provide the most benefit possible to DG investors, networks, and all consumers, while continuing to ensure safe and effective networks where power quality to all users is maintained.
Q18. Do you agree the benefits of the proposed amendments outweigh their costs? If not, why not? Q19. What are your views on the Authority's estimate of costs of lost benefits from a 5kW export limit? Q20. Are there costs or benefits to any parties (eg, distributors, DG owners, consumers, other industry stakeholders) not identified that need to be considered?	While we support a default export limit of 10kW for Part 1A applications, we have concerns that the benefits of the Code amendment proposals may have been over-stated and potential costs not adequately modelled. For example, it is not clear that the following has been considered: • The large MW of utility and grid scale solar in the application pipelines may mean the future economic value of "spilled" export is much lower than current buy-back (hedged average) rates would imply • Higher reliance on inverter controls (Volt-VAR modes) as voltage limits are reached may add to backhaul congestion (thermal) and losses • The emissions costs are already encapsulated in the market price of firm (peak demand) generation, which solar PV (without battery) does not displace • With more default approvals and limited network visibility, networks and their consumers could be exposed to risks (eg thermal overloads, reliability) potentially triggering need for investment in interventions • The maximum export power has been typically used as a per consumer capacity allocation and threshold for Part 1A process. It does not necessarily limit DG uptake or what capacity will ultimately be approved through Part 1 or 2 processes

	• In principle, if network export congestion exists, there is more economic value in large scale DG being located elsewhere, and/or value in batteries to address the congestion. While "direct costs of the proposals would mainly be to distributors"[6], this really means that the costs fall to all consumers. A robust cost/benefit analysis is therefore important.
Q21. Do you agree the proposed Code amendments are preferable to the other options?	We agree that a Code amendment to drive consistency in default export limits is an efficient option.
Q22. Do you agree the Authority's proposed amendments comply with section 32(1) of the Act?	The dispute resolution clause in Schedule 6.1 clause 1G is inappropriate, not clearly justified, and not necessary to promote the matters in section 32(1). Refer to question 13 for our comments on this.
Q23. Do you have any comments on the drafting of the proposed amendment?	There are a number of Code amendment proposals that are not appropriate or consistent with the Code amendment principles. Our comments above require alternatives to be developed for the following Code proposals: • Clause 6.3A(8) requiring a Chief Executive certification (refer question 3) • Schedule 6.1 Clause 1G prescribing dispute resolution (refer question 13) • Clause 6.3A(1) preventing a limit on nameplate capacity (refer question 2) • A number of clauses mandating use of a BELAM (refer question 11). The code amendment proposals do not anticipate or are not clear about some situations such as: • Treatment of an application when a lower limit than that published is required • The network assessment expected when an EDB sets a default Part 1A export limit higher than 10kW • Scenarios where lower export power threshold or different inverter settings are required to address thermal (rather than voltage) – see Clause 6.3A(3)(a) and (5)(a) • A network study based on forecast hosting capacity, rather than just existing connected or applying DG – see Clause 6.3A(3)(b).

[6] Maximising benefits from local electricity generation consultation paper, page 50.