

Appendix B Format for submissions

Maximising benefits from local generation

Submitter	Top Energy Network Ltd.
Submitter's organisation	<p>Top Energy is then northernmost electricity distribution business in New Zealand, and is consistently ranked in the top two EDBs for solar distributed generation percentage penetration (currently 7.1% of ICPs) with this rooftop solar ranging in size from 0.2kW to 440kW, averaging at 6.1kW. Together with the three large-scale solar generators currently connected to Top Energy's sub-transmission network, Top Energy is one of the most experienced EDBs in the country with regards to solar generation and its effects upon a distribution network.</p>

Please send your submission to connection.feedback@ea.govt.nz by **5pm, Wednesday 19 November 2025**

Questions	Comments
Q1. What are your views on the proposal to set a default 10kW export limit for Part 1A applications?	<p>It is view of Top Energy that the Electricity Authority has erred in this proposal to enforce a default 10kW export limit for Part 1A distributed generation connections without also requiring EDB-controlled flexible export limits on all new installations, as is now the case in most of Australia. We believe the EA would much better meet its statutory objectives by implementing this alternative proposal.</p> <p>We believe that in putting forth this proposal the EA has missed multiple factors, choosing to label the existing industry de facto standard export limit of 5kW as arbitrary (Point 4.10) rather than noting that this value was chosen because existing networks have been designed around residential ADMD values of in the region of 5kW, meaning that any upgrades to network infrastructure needed to allow this export capacity would be limited in nature, as import and export peaks are largely the same at this size.</p> <p>The proposal to implement a default 10kW export limit appears to have been made based on an underlying assumption that the only limitation of export capacity</p>

	<p>is voltage on the LV network, ignoring current/thermal constraints on the LV network and all constraints on the MV and HV networks. Other factors that appear to have been disregarded include ensuring equitable access to export capacity for all customers, mitigating first-mover advantage and management of constraints that could occur on the MV and HV networks.</p>
<p>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?</p>	<p>No objection, if combined with flexible export limit management, in line with Australian standard practice.</p>
<p>Q3. There are requirements for distributors in Proposal A1. Which of these do you support, or not support, and why?</p>	<p>Top Energy objects to the requirements that the EA proposes to introduce in point 5.28. The EA is severely underestimating the administrative and compliance costs for small EDBs to publish network assessment lists and/or maps, especially when most EDBs have very poor data on their LV networks, and the methods that are currently proposed rely solely on LV network data. It is noted that ongoing work led by the ENA with regards to load and export capacity maps has shown very little interest from customers for these to be introduced.</p> <p>Top Energy also questions the requirement for EDB CEOs to provide signed statements confirming how export limits have been determined, especially as they are unlikely to have been personally involved in the determination of these, as this duty falls to Network Planning teams (or equivalents). Network standards and other information are regularly published by EDBs (e.g. network congestion information) without requiring the CEO to personally sign them.</p>
<p>Q4. What are your views on the proposal for industry to develop an export limits assessment methodology?</p>	<p>Top Energy is concerned that the basis for an industry method proposed by the EA, namely the <i>EEA Guide for Connection of Small-Scale Inverter-Based Distributed Generation</i>, only takes into account the LV network when calculating solar hosting factor. This is not an accurate assumption to make when determining generation hosting capacity.</p>

Top Energy has already observed at least one 11kV feeder having zero net real power flow at high solar generation times, and is likely to have reverse power flow on this feeder in the near future due to currently planned solar connections. Modelling of predicted generation and load changes over the next ten years show that constraints will occur on both Top Energy's sub-transmission network and on Transpower's Kaikohe-Maungatapere line, requiring Top Energy and Transpower respectively to constrain off large-scale generators to maintain thermal limits, spilling generation, an outcome that this consultation document says needs to be avoided (7.5) and a regulatory effect that is contrary to the EA's statutory objectives to promote competition and to promote efficient operation. Costs to undertake upgrades of the sub-transmission and transmission networks would have to be borne by Top Energy, and therefore all its customers, whilst only benefitting a subset of them.

Any hosting capacity methodology would need to take into account these considerations, and Top Energy is concerned that any nationwide standard methodology adopted would require the making of assumptions that are not reflective of the large variations in circumstance across EDBs in New Zealand.

Given the issues outlined above, implementing a default limit prior to the development of an industry standard poses significant problems. Development of said industry standard in a way that accurately reflects the varied conditions throughout New Zealand that takes into account the effects on the MV and HV networks, not just LV as currently discussed in the EEA guide is going to take substantially longer than the 4-month period proposed by the EA, and may not be feasible. For these reasons, this proposed change should be deferred for more in-depth consideration and consultation, with a date for the introduction of the ELAM of at least 12 months from now and default limits not introduced until this is available.

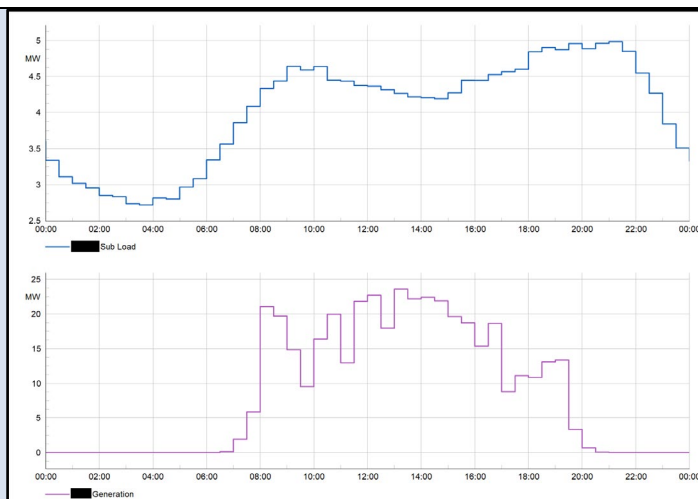
As in other points, these issues could be avoided by introducing EDB-controlled flexible export limits as a requirement on all new installations.

Q5. What would you do differently in Proposal A1, if anything?	To support increased solar distributed generation on the New Zealand, it would be much wiser to avoid the issues that have been encountered in Australia with installation of large capacities of uncontrolled distributed generation in the distribution networks, and instead move straight to flexible export limits that can be controlled by EDBs and System Operator so as to allow efficient and equitable connection and management of distributed energy resources.
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?	No concerns noted.
Q7. Do you support amending the New Zealand volt-watt and volt-var settings to match the Australian values for Part 1A applications - why or why not – what do you think are the implications?	No objection, although Top Energy does question why these settings need to be included in the Code, rather than left to the EEA.
Q8. What would you do differently in Proposal A2, if anything?	The EA appear to have mis-characterised dynamic export limits in their discussion of Proposal A2. When referencing Australian Distribution Network Service Providers, all of these use the term dynamic or flexible export limits to refer to export where the DNSP has control of export limits similar to those described in <i>section 3.2 of 4777.2:2020 (Inverter Demand Response Modes)</i> and other alternative standards, not the inverter power quality response modes described in <i>section 3.3 of 4777.2:2020</i> . Top Energy does not object to the proposed implementation of Volt-Watt and Volt-VAR response modes, but these should not be incorrectly characterised as dynamic export limitation.
Q9. Do you have any concerns about the Authority citing the Australian disconnection settings for inverters when high voltage is sustained?	No.

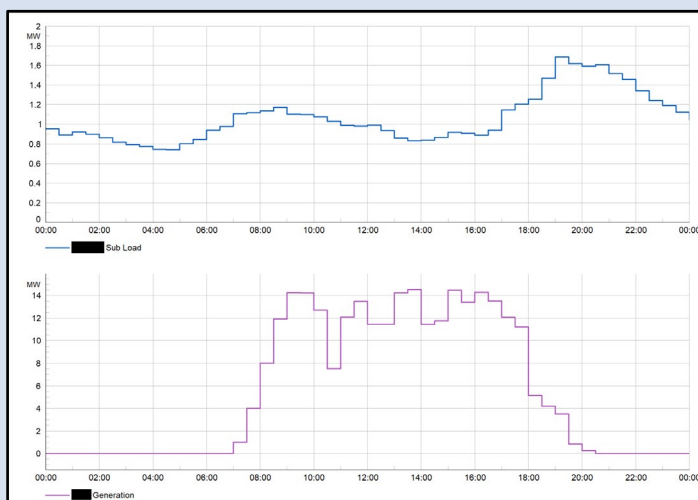
<p>Q10. Do you have any concerns about the Authority requiring the latest version of the inverter performance standard for Part 1A applications?</p>	<p>No.</p>
<p>Q11. What are your views on the proposal that where distributors set bespoke export limits for Part 2 applications, they must do so using the industry developed assessment methodology?</p>	<p>Top Energy is concerned that any assessment methodology developed at a nationwide level would require the making of assumptions that are not reflective of the large variations in circumstance across EDBs in New Zealand, with small, radial, rural networks like Top Energy having much higher sensitivity to the connection of distributed generation compared to large, highly urbanised networks, and given that a proposed BELAM does not currently exist and the documents that the EA have referred to contain either no detail on capacity assessment (<i>EEA Guide for the Connection of Generating Plant</i>) or only a very high-level explanation of this assessment (<i>PowerCo Utility Scale Distributed Generation Standard</i>), it is not certain that differentiation will occur between assessment of different sizes of proposed connection. For these reasons any implementation should be deferred for more in-depth consideration and consultation.</p>
<p>Q12. What are your views on the several requirements that must be adhered to regarding the distributors' documentation (see paragraph 5.96) relating to setting export limits under Part 2?</p>	<p>The proposed documentation requirements are not unreasonable, however no differentiation has been made for applications of different size, many of whom at the lower end may not feel that such level of documentation is necessary. Therefore Top Energy would propose that EDBs be required to provide this information on the request of the applicant, rather than automatically with every application above 10kW.</p>
<p>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?</p>	<p>Top Energy finds it concerning that the results of engineering assessments related to the maintenance of network reliability and safety standards for which EDBs are responsible under <i>sections 60 and 61 of the Electricity Act 1992</i> are proposed to be disputable, especially with no shift in liability to the party disputing the network assessment.</p> <p>This is not a fair and appropriate measure in its current form. An amended proposal with strict</p>

	grounds (e.g. planned network upgrades or step loads that were not taken into account) on which an applicant may dispute an export limit may have merit, but any such implementation should be deferred for more in-depth consideration and consultation.
Q14. What would you do differently in Proposal B, if anything?	Whilst point 5.96 states that the cost of network studies for the connection of distributed generation will be met by the applicant, there is limited provision in the Code for recovery of costs prior to a connection agreement being made, as application fees are at a fixed rate. An amendment to make these costs recoverable at each stage of application would ensure that costs are not borne by EDBs if an applicant withdraws an application, when these costs should be borne by the applicant.
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?	No objection, except that it does not go far enough as to require EDB-controlled flexible export limits.
Q16. Do you consider the transitional arrangements workable regarding requirements and timeframes? If not, what arrangements would you prefer?	Top Energy is of the opinion that the timeframes that have been set for the implementation of these changes are so ambitious as to be infeasible. Development of the ELAM & BELAM to properly take into account the wide variation in circumstances across New Zealand is going to take significantly longer than 4 months and all changes with regard to limits should not take effect until after they have been created, as to implement them before this point would be detrimental to the EA's objectives: Promoting competition would be detrimentally affected by providing a very strong first-mover advantage for applications made during this transitional period, reliable supply would be affected by EDBs being unable to provide reasonable limitations on connection of distributed generation and efficient operation would be affected by the potential degradation of reliability and security due to unconstrained connection during this time.

<p>Q17. What are your views on the objective of the proposed amendments?</p>	<p>Top Energy is supportive of the stated objectives but does not believe that the proposed changes will meet them.</p>
<p>Q18. Do you agree the benefits of the proposed amendments outweigh their costs? If not, why not?</p>	<p>Top Energy does not agree that the stated benefits will outweigh the costs, as the benefits the New Zealand electricity network might be overestimated whilst underestimating the costs.</p> <p>Addressing the benefits outlined in point 7.4:</p> <p>Point 7.4(a) asserts that increasing default export limits will improve returns to DG investors. Whilst this may be true for solar installers, the negative effects on large-scale, sub-transmission connected distributed generation due to constraints on the MV & HV networks outweigh this. Top Energy has modelled that at current growth rates, with connections sized at 10kW rather than 5kW, rooftop solar generation (currently 19MW) could grow to 50-60MW by 2034. At times of low summertime midday load (usually co-incident with times of high solar generation), such generation could see net export from the Kaikohe GXP of 160MW (when taking into account all currently connected and committed large-scale distributed generation), well above the Kaikohe-Maungatapere line's n-security capacity of 120MVA. Per the Special Protection Scheme that is being installed on this line, 40MW of the 64MW of large-scale solar being constrained off. At 38% of their generation capacity, the returns that these generators would be making are unlikely to be profitable.</p> <p>Point 7.4(b) asserts that DG will allow EDBs to manage load peaks and congestion, however this is not reflective of actual generation and consumption patterns, as shown in the below graph of a weekday in January comparing the generation curve of a Kaitaia-area solar farm with load curves at a major Kaitaia substation.</p>



As can be seen, load peaks after sunset, when solar generation has ceased. This is even more clear in the graph below comparing loads at a specific Top Energy substation with generation at a nearby solar farm on a weekend in January.



These curves demonstrate that contrary to the EA's supposition that load peaks will reduce as distributed solar generation penetration increases, load peaks will remain the same whilst introducing a generation peak in the middle of the day.

On point 7.4(c), issues of resilience and security of supply most often occur in radially-served rural areas, and are caused by issues occurring on the distribution network. Without behind-the-meter grid-forming capability, usually provided by a BESS, there would be no improvement in this area, as rooftop solar generation is required to disconnect from the grid to prevent back-feeding into faulted lines, a fundamental

	<p>safety measure. Any such behind-the-meter islanding would have no effect on SAIDI figures for EDBs, as these are measured up to the meter.</p> <p>No commentary on points 7.4(d) & (e) at this stage.</p>
Q19. What are your views on the Authority's estimate of costs of lost benefits from a 5kW export limit?	No further commentary on the estimated lost benefits however, does note that most financial benefit from rooftop solar is seen from load shifting, either with or without BESS involvement, not from export.
Q20. Are there costs or benefits to any parties (eg, distributors, DG owners, consumers, other industry stakeholders) not identified that need to be considered?	It appears that there might have been an underestimation of the costs that will be faced by EDBs and potentially Transpower to upgrade the MV & HV networks to manage the increased solar generation without the ability to curtail it, especially as the proposal does not currently include the ability to apply non-default export limits due to MV & HV network constraints.
Q21. Do you agree the proposed Code amendments are preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's main statutory objective in section 15 of the Electricity Industry Act 2010	<p>As discussed above, Top Energy believes the EA has not fully considered the effects of the proposed regulatory changes, and in doing so will act contrary to its main statutory objective, as represented in the <i>Interpretation of the Authority's statutory objective</i>.</p> <p>By establishing a 10kW static export limit rather than enabling EDB-controlled flexible export limits, the EA is preferencing small connections over large ones, thus reducing effective competition as large distributed generators will be unable to compete in an equitable manner, leading to a potential reduction in available generation and therefore increased electricity cost. Whilst this would benefit customers who can afford to install rooftop solar, the costs imposed on consumers who cannot afford to do so would not be in their long-term benefit, and would be greater than the savings seen by those who can afford to install solar.</p> <p>By failing to consider the effects on the MV & HV networks, is acting contrary to its objective of ensuring reliable supply, as the lack of flexible control over generation could lead to the voltage stability issues seen in Australia since the late 2010's, as well as thermal limitations on the network due to localised oversupply. The only remedy that EDBs would have</p>

	<p>in this case is to conduct wide-area disconnections, which would have significant SAIDI impacts.</p> <p>By mandating a nationwide approach without allowing for full consideration of the different circumstances and MV & HV networks of EDBs, the regulations proposed are contrary to the objective of promoting efficient operation.</p> <p>Leaving the determination of export limits to EDBs so that they can fully take into account the circumstances of their networks, , as well as empowering EDBs to establish EDB-controlled flexible export limits on distributed generation as is done in much of Australia, would remedy many of the failings outlined above, and would be more consistent with the EA's statutory main objective.</p>
Q22. Do you agree the Authority's proposed amendments comply with section 32(1) of the Act?	<p>Top Energy acknowledges that the regulations proposed are within the EA's statutory powers outlined under section 32(1). We further note that the EA could require flexible export limits through these powers, as personal distributed generators are included as a regulatable class under section 7(1)(g) of the Act.</p>
Q23. Do you have any comments on the drafting of the proposed amendment?	<p>Top Energy has no comment on the specific drafting of the proposed amendment beyond the content issues already discussed above.</p>

In conclusion, Top Energy believes that the EA has underestimated the costs involved for multiple participants in the electricity industry, and therefore is acting contrary to its statutory main objective with the proposed changes. For these reasons, Top Energy calls on the EA to learn from the issues that have been faced with rooftop solar generation in Australia and proceed directly to requiring EDB-managed flexible export limits on all distributed generation. This would allow more efficient usage of network assets for distributed generation and much better fulfil the EA's main statutory objective.