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Electricity Authority | Te Mana Hiko
Energy Competition Task Force

By email to taskforce@ea.govt.nz

Tēnā koutou

REQUIREMENT FOR DISTRIBUTORS TO PAY NEGATIVE CHARGES WHEN CONSUMERS SUPPLY ELECTRICITY AT PEAK TIMES: DEFINITION OF SMALL BUSINESS CONSULTATION PAPER

Unison Networks Limited (**Unison**) is an electricity distribution business operating in Hawke's Bay, Taupō, and Rotorua. Centralines Limited (**Centralines**) operates in Central Hawke's Bay. As consumer-owned electricity distribution companies, we operate in trust for the enduring benefit of our communities. Strategic planning focuses on delivering sustainable, reliable, and efficient network services, while maintaining a balance between affordability and responsible investment. These initiatives prioritise consumer interests, ensure compliance with regulatory requirements, and support New Zealand's transition to new energy solutions.

Introduction

Unison and Centralines appreciate the opportunity to comment on the Electricity Authority's consultation on refining the eligibility criteria for negative charges under Clause 12A.7 of the Code.

We support the Authority's intent to target negative charges at mass-market consumers, households and small businesses, who cannot reasonably negotiate bespoke arrangements and for whom standardised posted pricing remains the most efficient mechanism.

We also agree that the current reliance on the statutory definition of "small business consumer" (less than 40 MWh per year) is operationally impractical and creates risks of unintentionally extending eligibility to large distributed generators.

We therefore support the shift to a capacity-based framework centred on a 45 kVA connection capacity threshold and a 45 kW maximum-deliverable-generation threshold. At the same time, we recommend that the Authority consider how these thresholds relate to the technical capability of mass-market low-voltage connections, particularly the feasibility of 10 kW per-phase DG export (up to 30 kW total for three-phase consumers). Aligning load and generation thresholds with this technical envelope would support symmetry, reduce cross-subsidy risk, and ensure negative charges remain well targeted to genuine mass-market consumers.

2. Support for the Proposed 45 kVA Connection Capacity Threshold

2.1 Practical alignment with current and future mass-market configurations

Unison and Centralines support a 45 kVA limit as the boundary for price categories eligible for negative charges.
This threshold reflects the natural upper limit of residential and small business connections, especially as more residential and small business customers move toward:

- three-phase supply,
- EV charging,
- battery storage, and
- larger HVAC loads.

A three-phase 63 A connection equates to approximately **44 kVA**, meaning a 45 kVA threshold neatly aligns with the expected future standard capacity envelope for mass-market consumers.

Connection standards alignment: The 45 kVA threshold also aligns with current connection standards. The Electricity Authority's *Network Connections* project (2024) categorises connections of 69 kVA or higher as medium, with anything below considered small. This covers more than just small businesses, and a 45 kVA threshold fits within these definitions without excluding smaller operations.

2.2 Engineering justification: avoiding voltage imbalance and LV system stress

We also support the threshold for important technical reasons. Allowing mass-market customers to commonly adopt **100 A fusing**, which would occur if the threshold were materially higher than 45 kVA, creates disproportionate adverse impacts on LV feeders:

- **Voltage imbalance:** Unbalanced 100 A phase loading increases neutral shift, voltage asymmetry and flicker, degrading power quality for neighbouring consumers.
- **Thermal loading:** Service mains, joints, pillars, and distribution transformers are not designed for widespread 100 A customer loading.
- **Reduced diversity:** Larger fusing leads to more peaky, less diversified loads, increasing the risk of LV overloads.
- **Harmonics & inverter stress:** Higher currents amplify harmonic distortion and reduce inverter ride-through margins.

In contrast, **63 A per phase** is the well-established engineering benchmark for mass-market supply. The 45 kVA threshold therefore protects network stability while still enabling households and small businesses to electrify efficiently.

3. Maximum Deliverable DG Threshold

3.1 Symmetry with load threshold

Using the same threshold for maximum deliverable generation (45 kW) creates a clear and easily understood symmetry with the load limit, but it does not correspond to the hosting capability of a typical low-voltage phase or the Authority's proposed 10 kW export limit.

3.2 Engineering rationale: ensuring DG remains "small-scale"

Export systems above 45 kW:

- materially affect voltage rise and hosting capacity,
- require network studies and sometimes protection upgrades,
- increase backfeed risk, and
- fall well outside the scope of mass-market installations.

While we support the Authority's 45 kVA / 45 kW proposal, we recommend that the Authority also consider an alternative symmetrical threshold of 30 kVA / 30 kW to better align with the technical capability of 10 kW per-phase DG and existing mass-market capacity settings. Maintaining thresholds within the mass-market envelope reduces the risk of cross-subsidisation, ensuring that negative charges remain targeted to households and genuine small businesses rather than higher-capacity commercial sites capable of larger-scale DG installations.

Consistent with this, our existing residential and general (small business) pricing categories are capped at 30 kVA, which represents the typical upper boundary of mass-market supply capacity. This category encompasses over 60% of commercial connections in Napier, Hastings, and Havelock North, close to 50% in Taupō and Rotorua, and nearly 90% in Central Hawke's Bay.

Unison and Centralines support the Authority's proposed thresholds; however, we note that the Authority's related work on distributed generation identifies 10 kW per-phase as a technically feasible export limit for most mass-market low-voltage connections. This implies that three-phase residential and small business consumers can feasibly export up to 30 kW in total.

Applying the threshold using maximum deliverable generation capacity (not simply nameplate DC rating) is also appropriate, as it reflects the actual potential export onto the network.

3.3 International Perspective

International experience supports a small-scale generation threshold in the range of 30–45 kW. In the United Kingdom, microgeneration is defined up to 50 kW under the Energy Act 2004 and is used to structure feed-in tariffs and certification schemes. In Australia, typical export limits for small commercial three-phase systems are around 15–30 kW, with larger systems requiring additional connection arrangements. In the United States, residential and small commercial systems are generally capped at 25–100 kW depending on net metering eligibility. New Zealand's proposed 45 kW limit (aligned with a 45 kVA connection capacity) sits comfortably within this international context, bridging residential and small commercial definitions and providing a clear, administratively practical boundary. This threshold sharpens the focus on intended beneficiaries, aligns with other regulatory definitions, supports efficient and fair pricing mechanisms, and ensures that distributed generation growth is managed responsibly while maintaining consistency with global practice.

4. Assessment of Alternative Options

We agree with the Authority's assessment that the alternative approaches are either:

- impractical,
- inconsistent with distributor pricing structures, or
- misaligned with the original policy intent.

In particular:

- The statutory 40 MWh definition is not workable at the ICP level.
- Distributor-set thresholds would create inconsistency and potential conflicts of interest.
- Excluding all businesses would undermine the purpose of the policy.
- Including all businesses would inappropriately extend eligibility to large-scale DG.

The proposed amendments provide the optimal balance of practicality, fairness, and engineering integrity.

5. Consumer Outcomes and Equity Considerations

The proposed 45 kVA / 45 kW or alternative recommended 30kVA/ 30kW thresholds support better consumer outcomes by:

- **Maintaining fairness** between mass-market consumers who cannot negotiate bespoke arrangements and large generators who can.
- **Avoiding the cross-subsidisation risk** where non-generating households effectively fund negative charges paid to commercial-scale DG operators.
- **Preventing mis-targeting of incentives**, ensuring that limited injection credits remain available for the households and small businesses the policy intends to support.
- **Protecting vulnerable and low-income consumers** from unnecessary network cost increases that could arise if large DG installations were eligible for mass-market export credits.

6. Responses to the Consultation Questions

We support the Authority's analysis and respond briefly as follows (expanded responses have also been provided separately):

- **Q1–Q3:** Yes. The issues are correctly identified, and both thresholds are required.
- **Q4–Q5:** The 45 kVA / 45 kW limits are appropriate and align with LV network design limits, while 30 kVA / 30 kW could be considered to align more closely with per-phase export capabilities.
- **Q6–Q7:** The objectives are sound, and the benefits clearly outweigh the costs.
- **Q8–Q10:** The alternatives are less effective, and the proposed amendment is the most consistent with the Authority's statutory objectives.

7. Conclusion

Unison Networks and Centralines support the adoption of a 45 kVA connection capacity threshold and a 45 kW maximum deliverable generation threshold, recognising that:

- These limits reflect established LV engineering and fusing practices
- They prevent voltage imbalance and thermal stress associated with widespread 100 A connections
- They ensure DG systems remain within typical mass-market parameters

- They provide clarity and consistency across distributors
- They properly target the original policy intent of rewarding households and small businesses for exporting at peak times, consistent with ENA's emphasis on preserving EA's policy intent

We also agree with ENA's operational suggestion to introduce an export category code on the registry, which would reduce ambiguity for retailers and minimise the need to reconfigure load categories. While the 45 kVA / 45 kW thresholds provide a practical and transparent framework, we encourage the Authority to consider a 30 kVA / 30 kW alternative to better reflect per-phase technical limits.

As consumer-owned distributors, Unison and Centralines strongly support regulatory settings that protect fairness, promote efficient investment, and maintain reliable and affordable service for our communities. The proposed thresholds strike the right balance between enabling DER participation and ensuring incentives remain appropriately targeted.

Nā māua noa, nā

Tarryn Butcher / Tomas Kocar
REGULATORY MANAGER / PRINCIPAL REGULATORY ADVISOR
[redacted]

Appendix – Consultation questions

Questions	Comments
Q1. Do you agree with the issues that we have identified in meeting the policy intent to target small business consumers? Why or why not?	**Yes.** We agree that a consumption-based definition (<40 MWh/year) is impractical for distributors because pricing structures, operational thresholds, and ICP-level data are based on connection capacity (kVA) rather than annual consumption. We also agree that large distributed generation (DG) installations with low on-site load could meet the statutory definition of "small business" and unintentionally become eligible for negative charges, which is inconsistent with the policy intent. The issues identified are accurate and well-defined.
Q2. Do you agree that applying the negative charge to business consumers below a given connection capacity, and limiting eligibility to distributed generation below that same level, will best achieve the original policy intent? Why or why not?	**Yes.** Connection capacity is the most practical and effective proxy for identifying mass-market consumers. Limiting eligibility to both: • Business consumers with ≤45 kVA connection capacity, and • DG installations with ≤45 kW maximum deliverable capacity ensures the policy is targeted at households and small businesses who cannot reasonably negotiate bespoke arrangements. While we support the 45 kVA / 45 kW thresholds, consideration of a **30 kVA / 30 kW alternative** would more closely align with the Authority's proposed 10 kW per-phase export limit and the technical capability of typical three-phase mass-market connections, ensuring eligibility remains well-targeted without inadvertently including larger DG installations.
Q3. Are both limits required, or could the policy intent be achieved through just one of the proposed limits? Please explain your reasoning.	**Both limits are required.** A capacity-based threshold alone may still capture DG installations significantly larger than typical mass-market systems.

	Conversely, a DG-only threshold would not prevent large non-residential consumers with high network impact from falling under mass-market price categories. Using both the 45 kVA and 45 kW thresholds provides clarity, prevents unintended eligibility, and protects the integrity of the negative charge mechanism. The 30 kVA / 30 kW alternative could also achieve this objective while better reflecting mass-market technical constraints.
Q4. Do you agree with our assessment of the proposed threshold for connection capacity? Why or why not? Would you prefer an alternative threshold? Why?	**Yes – we support the 45 kVA threshold.** The 45 kVA limit: • Aligns naturally with **three-phase 63 A fusing**, which is the likely future standard for advanced residential and small business consumers (EV charging, HVAC, battery inverters). • Corresponds with a practical engineering boundary for LV networks. • Captures the mass market without extending eligibility to connections that require engineering review or bespoke pricing. We would not support a higher threshold (e.g., 69 kVA or 100 kVA) due to the adverse technical impacts of widespread 100 A fusing. However, a 30 kVA threshold could be considered as it reflects the typical upper limit of standard mass-market supply and ensures closer alignment with per-phase DG export limits.
Q5. Do you agree with our assessment of the proposed threshold for DG, and that this should apply based on the maximum deliverable generation capacity? Why or why not?	**Yes, with a technical observation.** The proposed 45 kW threshold is appropriate as it aligns with the 45 kVA connection capacity threshold and provides a clear, symmetrical framework for eligibility. It also prevents large-scale DG from receiving mass-market incentives and ensures that negative charges target households and small businesses rather

	than large generators. Systems above 45 kW materially affect LV hosting capacity, voltage rise, and protection settings, requiring bespoke connection arrangements. From an engineering perspective, applying the threshold based on **maximum deliverable generation** is correct, as it reflects the true export potential onto the network rather than nameplate DC rating. However, the Authority's proposed export limit of 10 kW implies that most three-phase mass-market connections could feasibly export up to 30 kW in total. This suggests that a 30 kW maximum deliverable generation threshold could be considered as a technically aligned alternative to better reflect typical mass-market capability while still protecting network stability. Maintaining this alignment helps ensure negative charges remain targeted, avoids cross-subsidisation, and keeps incentives within the practical bounds of low-voltage network engineering.
Q6. Do you agree with the objective of the proposed amendment? If not, why not?	**Yes.** The objective, to clarify and accurately define eligibility so that negative charges apply only to mass-market consumers, is appropriate and fully aligned with efficient pricing, consumer benefit, and the Authority's statutory objectives.
Q7. Do you agree the benefits of the proposed amendment outweigh the costs?	**Yes.** The amendment simplifies administration, improves consistency, reduces misapplication risk, and ensures negative charges remain targeted. These benefits clearly outweigh the modest additional cost of verifying DG system size. Considering a 30 kVA / 30 kW alternative could provide the same benefits while more closely reflecting technical feasibility.
Q8. Do you agree with our assessment of the alternatives? Please explain your reasoning.	**Yes.** The alternatives either:

	• fail to address the practical implementation issues, • create inconsistent outcomes across distributors, or • diverge from the original policy intent. The Authority's assessment is sound, and none of the alternative options provide a better balance of practicality, clarity, and alignment with mass-market consumers.
Q9. Are there other options or thresholds we should consider to better align the Code with the original policy intent?	A **30 kVA / 30 kW** threshold could be considered as a symmetrical alternative to 45 kVA / 45 kW, aligning more closely with per-phase technical limits for DG while maintaining coverage of mass-market households and small businesses. No other thresholds are required.
Q10. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objectives in section 15 of the Electricity Industry Act 2010.	**Yes.** The proposed amendment is clearly preferable. It: • provides a practical and enforceable eligibility framework, • aligns with distributor operational and engineering practice, • ensures negative charges target the intended mass-market consumers, • mitigates unintended consequences for large DG, and • supports competition, reliability, and efficient operation of the electricity industry.