

Submission form

Promoting reliable electricity supply: Options to address a harmonics issue

Submitter	Counties Energy
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Questions	Comments
Q1. Do you agree the Authority should be short listing Option 1 for further consideration? If you disagree, please explain why.	Agree. Option 1 provides a structured transition away from NZECP 36 towards internationally recognised standards such as AS/NZS 61000. This is consistent with approaches adopted in other jurisdictions (e.g. Europe and Australia).
Q2. Do you agree the Code should not mandate harmonics management requirements, other than harmonics planning levels? If you disagree, please explain why.	Agree, with caution. Harmonics planning levels should be defined in the Code, while detailed management requirements are better addressed through standards and guidelines. However, sufficient guidance is required to ensure consistent application across the industry.
Q3. What regulatory instrument (ie, the Code or the Electricity (Safety) Regulations) do you consider should be used to regulate installation standards for harmonics?	Installation standards for harmonics should primarily be governed under the Electricity (Safety) Regulations, supported by recognised standards such as AS/NZS 61000. The Code should focus on system-level planning and coordination.
Q4. Which, if any, aspects of AS/NZS 61000 do you consider need substituting or adapting in order to accommodate New Zealand conditions?	Some adaptation may be required to: • Reflect New Zealand's network characteristics (e.g. long rural feeders) • Align with existing distributor practices • Ensure compatibility with present monitoring and compliance practices.
Q5. Do you consider the establishment, monitoring and enforcement of harmonics requirements should be a contractual matter between electricity network owners and their customers, or a Code-enforceable matter? Please give reasons with your answer.	A hybrid approach is preferred. Harmonic limits should be Code-enforceable at a system level, while detailed requirements and compliance obligations should be managed contractually between network owners and customers.
Q6. Do you consider distributors should have a mandated responsibility to investigate and resolve security of supply or reliability issues caused by non-compliance with the harmonic levels specified for distribution networks?	Agree, with caution. Distributors should have responsibility to investigate and respond to demonstrable reliability or security of supply issues caused by harmonics non-compliance, as they are best placed to manage network impacts. However the framework must be effects focused, requiring investigation where there is a demonstrated impact on affected parties and where those parties have first met a minimum standard for investigation of issues on their own assets. Investigation should not be mandated for compliance for compliance sakes where no customer impact exists, or where customer installations are unduly sensitive.
Q7. What guidance for industry participants do you consider would be necessary under Option 1?	Key guidance required includes: • Clear methodologies for harmonic allocation across network levels

	• Defined roles and responsibilities (Transpower vs distributors vs customers) • Practical compliance and verification methods • Guidance for DG and large industrial connections • Consideration of simplified allocation approaches (e.g. methodologies used in the UK such as Engineering Recommendation G5)
Q8. What do you consider to be the main benefits and costs associated with Option 1?	Benefits: • Improved consistency with international standards • Alignment with modern network technologies • Potential for more transparent and structured harmonic management Costs: • Implementation effort for distribution businesses • Additional requirement for studies, monitoring, and process updates • Increased regulatory/management overhead, particularly if additional sub-options (e.g. Option 1a) require active coordination and ongoing management
Q9. Do you agree the Authority should be short listing Option 2 for further consideration? If you disagree, please explain why.	Disagree Option 2 provides flexibility through guidance-based approaches, which may reduce regulatory burden but risks inconsistent application across networks. Also leads to conflicts of harmonic allocation among customers.
Q10. What do you consider to be the main benefits and costs associated with Option 2?	Benefits: • Greater flexibility for network operators in managing harmonic allocation • Reduced compliance and administrative burden for customers Costs: • Increased risk of inconsistent application across distribution businesses • Reduced transparency and certainty for connection studies and developers • Potential conflicts in harmonic allocation among customers • Greater regulatory and dispute resolution burden if conflicts escalate
Q11. Do you agree the Authority should be short listing Option 3 for further consideration? If you disagree, please explain why.	Disagree Option 3 provides continuity but may not be sufficient to address evolving challenges associated with inverter-based technologies and increasing harmonic sources.
Q12. What do you consider to be the main benefits and costs associated with Option 3?	Benefits: • Retains familiar framework • Lower immediate transition effort Costs: • May not fully address modern harmonics challenges

	• Risk of continued limitations in the existing standard • Less technically rigorous than IEC/AS/NZS 61000
Q13. What do you consider to be the benefits and costs of the current arrangements for obtaining harmonics data from distributors and from Transpower, as a transmission network owner?	Benefits of current arrangements: • Established processes are already in place Costs: • Limited visibility of harmonics data across the network • Inconsistent data capture and sharing arising from the absence of clear guidance on PQ meter installation and placement • Challenges in obtaining data for planning and assessments • Absence of clearly defined harmonic allocation, responsibility, and cost-sharing mechanisms, leading to uncertainty and inefficiencies in managing complex connections.
Q14. What do you consider to be the benefits and costs of a database of harmonics measurements?	Harmonic outcomes will depend on grid configuration, and so raw harmonics data is of very little value without that operational context. Benefits: • Improved visibility of harmonics across networks • Better-informed planning and allocation decisions • Potential to reduce duplication of studies across the industry Costs: • Setup and maintenance effort • Data governance, ownership, and quality control requirements • Loss of context and curation that is currently provided by Transpower, based on an in-depth knowledge of the operation of the grid at the time of measurement.
Q15. Would access to raw harmonics measurement data be useful for your organisation? If so, why?	Yes. Access to raw harmonics data would improve: • Network planning studies • Connection assessments • Understanding of real network performance It would also support more accurate and efficient decision-making.
Q16. Who do you consider should host a database of harmonics measurement data? Please give reasons	The database should ideally be hosted by a central industry body (e.g. Transpower or an Authority-led platform), to ensure: • Neutrality • Consistency in data management • Efficient access for all participants