Energy Safety advice
Independent review findings

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WORKSAFE
Mahi Haumaru Aotearoa

Energy Safety

Today's agenda

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Context

What changed

The Electricity (Safety) Amendment Regulations 2025 deleted Clauses 2.3.2.1.2 (b) and (c) from AS/NZS 3000:2018 - the electrical wiring rules.

These clauses previously restricted the switching of neutral, earthing, and PEN conductors.

The change was made to enable:

- Island mode operation (homes running independently from the grid)
- Renewable energy and battery storage systems
- Open-PEN detection devices for EV charging safety

Sector concerns

Stakeholders raised concerns with WorkSafe about the regulatory change made by MBIE.

Concerns centered on the hazards of switching earthing and PEN conductors - specifically the risks of electric shock.

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WorkSafe commissioned an independent review to:

- Test the soundness of the advice given to MBIE
- Identify residual risks
- Respond credibly and transparently to the sector

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The reviewer

Independent international expert

Graham Kenyon

UK-based
Chartered Electrical Engineer

- 30+ years in electrical engineering, infrastructure, installations, safety and product assurance
- Chartered Engineer and Registered European Engineer (Engineers Europe)
- Chair, UK joint IET/BSI Committee JPEL/64 — responsible for BS 7671 (IET Wiring Regulations, 18th Edition) and IEC 60364 series
- Chair, UK technical committee GEL/600 — responsible for BS 7430 Code of Practice for Earthing
- Member of the Institution of Engineering and Technology and Technical Member, Institute of Occupational Safety and Health

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Key findings

The advice was technically sound and justified

"The decision to delete the clauses is technically justifiable."

Advice was justified

The independent reviewer found Energy Safety's advice on removing the restrictions from AS/NZS 3000 was sound and technically defensible overall.

Change was necessary

Retaining the clauses would have blocked the adoption of modern technologies - renewable generation, battery storage, EV charging protections, and island mode operation.

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Residual risks

Real, known, and manageable

Switching PEN conductors

Remains technically permissible. Guidance needed to prevent this - risk to MEN network workers exists.

High priority

Island mode operation

PEN conductors should not be used in energised parts of installations operating in island mode.

Guidance in development

Switching neutral conductors

Product standards (IEC 60947, IEC 60669) already require neutrals to make/break with live conductors. Further guidance needed.

Partially mitigated

Switching earthing conductors

New standards or guidance needed — similar to UK provisions in BS 7671 — to permit switching only alongside live conductors.

Action required

Open-PEN detection devices (OPDDs)

No NZ-mandated standard yet. IET 01:2024 exists in the UK. Standards work required for EV charging safety.

Action required

Diverted neutral currents

If the MEN neutral is not disconnected during islanding, network workers may be exposed to hazardous currents via parallel earth paths.

Addressed in guidance

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Why the risks are manageable

Existing controls already reduce exposure

Licensed workers only

Installing switching of this type requires licensed electrical workers and inspectors under Regulations 13 and 14 of the NZ Electricity (Safety) Regulations.

Existing standards apply

AS/NZS 4509.1 for stand-alone systems and WorkSafe's Technical Bulletin for temporary generator connection already address some island mode scenarios.

Product standards provide controls

IEC 60947 and IEC 60669 series already include requirements that replicate many of the deleted clause provisions for relevant switching products.

Internationally well-understood

These risks are not unique to NZ.

The UK has established solutions addressing comparable scenarios for OPDDs that can be adapted for the NZ context.

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Energy Safety's approach

Evidence-led

Drew on the best available evidence, including international standards, industry guidance, and analysis of specific risks in the NZ context.

Balanced

Carefully balanced innovation, emerging risk, energy resilience, and safety.

Stakeholder-responsive

Stakeholder concerns raised were considered. The review found those concerns were addressed within the risk analysis.

Risk-aware

Residual risks were identified and weighed as part of the decision. The independent review confirms this risk analysis was sound.

Transparent

WorkSafe proactively commissioned this independent review and is releasing the full findings today.

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Acknowledging sector concerns

What was raised

Stakeholders formally wrote to WorkSafe raising concerns about the regulatory change.

Concerns centered on the hazards of switching earthing and PEN conductors - specifically the risks of electric shock.

WorkSafe takes those concerns seriously. They reflect real risks in this space, and they deserved a rigorous, independent response.

How the review addressed this

Critically, Graham Kenyon reviewed sector concerns ***after*** forming his own independent opinion - not before.

This ensured his technical conclusions were not shaped or influenced by the concerns raised.

His assessment: the hazards described are real. They are documented in the review. And they are addressed within the residual risk analysis.

The reviewer concluded sector concerns were already captured - and that guidance and standards work will close the remaining gaps.

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Next steps

What Energy Safety will do now

1. **Guidance**

   Develop and publish guidance on switching arrangements, covering the conditions for switching a PEN conductor and clearly defining where switching of PEN conductors may not be used.

2. **Switching arrangements**

   Clarify requirements for switching neutral and protective earthing conductors

3. **Product standards**

   Work with standards bodies and sector partners to develop solutions for emerging technologies, including open-PEN detection devices (OPDDs). Work on an update to the EV guide is underway.

4. **Interim advice**

   Electricians are advised to avoid installing switching or similar devices in earthing or PEN conductors until further guidance is published.

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A link to the independent review report will be emailed to you later this afternoon

The risks are real.
They are known.
They are manageable.

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