



1 June 2021

Health and Safety Policy
Workplace Relations and Safety Policy
Ministry of Business, Innovation & Employment
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By email: EnergyStandards@mbie.govt.nz

Submission on Updating References to Standards in the Electricity and Gas Safety Regulations

1. This is Vector Limited's (Vector) submission on the Ministry of Business, Innovation and Employment's (MBIE) discussion document, *Updating the references to standards in the electricity and gas safety regulations*, dated April 2021.
2. Vector takes the issue of safety very seriously. We broadly agree with MBIE's proposed updates to referenced standards in the electricity and gas safety regulations where these are relevant to our businesses, and the principles underlying these updates.
3. Where a transition period is required, so businesses can prepare to become fully compliant with a new or up-to-date standard, we prefer that a clear transition period be provided rather than having multiple references of the standard in the regulations. This would provide greater certainty and avoid confusion for the relevant businesses and consumers.
4. We support MBIE's intention of developing a longer-term solution that would enable references to standards in the safety regulations to be updated in a more timely and responsive manner.
5. We set out our responses to the consultation questions (in *italics*) below using the template provided by MBIE for this consultation. We also propose the addition of references to particular standards in the regulations.
6. We are happy to discuss any aspects of this submission with MBIE officials. Please contact Matt Smith (Policy Advisor, Strategic Planning) at Matt.Smith@vector.co.nz or 09 978 7812 in the first instance.
7. No part of this submission is confidential, and we are happy for MBIE to publish it in its entirety.

Yours sincerely
For and on behalf of Vector Limited

A handwritten signature in black ink, appearing to read 'Neil Williams', with a horizontal line underneath.

Neil Williams
GM Market Regulation



Updating the electricity and gas safety standards - Have your say

Introduction

*** 1. Name (first and last name)**

Neil Williams

*** 2. Email**

Please contact Matt.Smith@vector.co.nz in the first instance.

*** 3. Is this an individual submission, or is it on behalf of a group or organisation?**

- Individual
 On behalf of a group or organisation

*** 4. Which group do you most identify with, or are representing?**

- | | |
|---|--|
| <input type="checkbox"/> Iwi or hapū | <input type="checkbox"/> Regulatory body |
| <input type="checkbox"/> General public | <input type="checkbox"/> Importer |
| <input type="checkbox"/> Environmental | <input type="checkbox"/> Exporter |
| <input type="checkbox"/> Local government | <input checked="" type="checkbox"/> Electricity industry stakeholder |
| <input type="checkbox"/> Research institute / academia | <input checked="" type="checkbox"/> Gas industry stakeholder |
| <input type="checkbox"/> Industry or industry advocates | <input type="checkbox"/> Manufacturer / supplier |
| <input type="checkbox"/> Central government agency | <input type="checkbox"/> Technician |
| <input type="checkbox"/> Other (please specify) | <input type="checkbox"/> Training organisation |

5. Business name or organisation (if applicable)

Vector

6. Position title (if applicable)

GM Market Regulation



*** 7. Important information about your submission (PLEASE READ)**

The information provided in submissions will be used to inform the Ministry of Business, Innovation and Employment's (MBIE's) work on the discussion document *Updating references to standards in the electricity and gas safety regulations*.

We will upload the submissions we receive and publish them on our website. If your submission contains any sensitive information that you do not want published, please indicate this in your submission.

The Privacy Act 1993 applies to submissions. Any personal information you supply to MBIE in the course of making a submission will only be known by the team working on the *Updating references to standards in the electricity and gas safety regulations*.

Submissions may be requested under the Official Information Act 1982. Submissions provided in confidence can usually be withheld. MBIE will consult with submitters when responding to requests under the Official Information Act 1982.

***8. We intend to upload submissions to our website at www.mbie.govt.nz. Can we include your submission on the website?**

- Yes
 No

*** 9. Can we include your name?**

- Yes
 No

*** 10. Can we include your organisation (if submitting on behalf of an organisation)?**

- Yes
 No
 Not applicable

11. All other personal information will not be proactively released, although it may need to be released if required under the Official Information Act.

Please indicate any other information you would like withheld.

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Updating the electricity and gas safety standards - Have your say

Areas you wish to provide feedback on

We are interested in your feedback on proposed amendments to the Electricity (Safety) Regulations 2010 and the Gas (Safety and Measurement) Regulations 2010.

We want to hear from any person or organisation that is interested in or affected by the Electricity (Safety) Regulations 2010 and the Gas (Safety and Measurement) Regulations 2010. This includes but is not limited to, regulatory bodies, importers, exporters, manufacturers, suppliers, technicians and training organisations.

The relevant pages of the discussion document *Updating the references to standards in the electricity and gas regulations* are provided alongside each question.

You are invited to provide feedback and respond to questions in as many, or as few of the sections as you would like, depending on your interests.

Submissions on these proposed amendments to the regulations are sought by **5pm 1 June 2021**



Updating the electricity and gas safety standards - Have your say

What are the issues? (pages 6-8)

1 What other issues should we be considering that may have an impact on the effectiveness and integrity of the electricity and gas regulatory system?

Vector believes that MBIE – for the purposes of this consultation – has broadly considered the issues that may have an impact on the effectiveness and integrity of the electricity and gas regulatory system.

We agree that references to up-to-date standards in the electricity and gas safety regulations will help increase awareness of these standards, creating certainty and removing confusion for businesses and consumers as to what the required standards are. It alerts businesses to work towards compliance with the required standards (where and when they are not) in a timely manner, avoiding or minimising any penalties for non-compliance.

We further agree that referencing up-to-date and new standards in the safety regulations will help promote the uptake of new(er), more efficient, and safer technologies. It gives suppliers and service providers certainty that they can introduce or continue to provide technologies based on new standards that enable the delivery of new and innovative services. This benefits New Zealand consumers through greater choice from a wider range of better/safer products, services, and prices.

What is our approach to amending the electricity and gas safety regulations? (pages 8-9)

2 Do you agree or disagree with the principles that are being applied for determining which referenced standards should be amended, withdrawn or added?

Vector generally agrees with the principles being applied by MBIE for determining which referenced standards should be amended, withdrawn, or added.

We suggest that the proposed new standards in Table A be added to the body of the safety regulations for proper referencing, if this was not the intention, and not just listed in Table A or any of the schedules.

3 Have we taken into account all relevant considerations in determining which references to standards should be amended or added?

We believe that MBIE has broadly taken into account the relevant considerations in determining the references to standards that should be amended in, or added to, the regulations.



What are the proposed changes to standards? (pages 9-10)

What difference will updating the standard(s) in the regulation make to you? Please provide as much information as you can about the impacts to your business or industry, positive and negative.

- Will the changes make it easier/harder to know when you are compliant?
- Will the changes make it easier/harder to source safe, compliant products?
- Will the changes increase/decrease costs? How much do you think it will change costs?
- Are the benefits greater than the costs? Please tell us why you think so.

4

The proposed updates/changes to references to standards will have minimal to negligible direct or immediate cost impact (green and blue colour codes in the appendices) on Vector businesses.

References to up-to-date standards in the safety regulations would help increase our awareness of the required standards and ensure we can work towards full compliance (where and when we are not) in a timely manner, avoiding the costs of breaching some of these standards.

Importantly, the incorporation of references to standards for new and emerging technologies such as electric vehicles and solar PVs would help enable Vector to promote the use of more efficient technologies and renewable energy and achieve its vision of 'creating a new energy future'.

What will implementation look like? (pages 10-11)

Do you agree or disagree with the proposed approach for the transition to the new and amended standards in the electricity and gas safety regulations? Please explain why.

5

Vector agrees with MBIE's proposed approach for the transition to the new and amended standards in the electricity and gas safety regulations, with options for immediate adoption or a phased transition.

We prefer a clear transition period rather multiple versions of a standard being referenced in the regulations. A transition period would provide businesses time to make the necessary preparations to become fully compliant with the new standard, avoiding the costs of disruption. It would also allow businesses to notify their customers who could be affected by the transition.

In relation to the proposed immediate transition from AS/NZS 4645:2008 to AS/NZS 4645:2018 (Gas distribution networks Parts 1, 2 and 3), we suggest that MBIE instead provide a transition period of up to 12 months. This would allow gas distribution businesses to update or re-draft their internal policies and documents to conform with the new standard, including seeking internal approvals.



Do you agree or disagree with the proposal to reference multiple versions of some standards where applicable in the Electricity (Safety) Regulations 2010?

6

We prefer that references to multiple versions of some standards be avoided. This has been one of the main causes of confusion for industry participants and has implications for safety. We prefer the latest version of a standard to be referenced, and where this is impractical or onerous for the potentially affected parties, a clear transition period should be provided, rather than referencing multiple versions of the standard.

Some of the proposed changes are not straightforward (pages 11-14)

AS/NZS 3000 – Electrical Installations (Wiring Rules)

Do you agree or disagree with the proposal to reference both AS/NZS 3000:2007, with modifications, and AS/NZS 3000:2018? Please explain why. Any information you can provide on potential impacts, costs and benefits of adoption would be helpful.

Vector disagrees with referencing both standards; only AS/NZS 3000:2018 should be used. The confusion and grey areas caused by referencing two different versions of the most widely used AS/NZS 3000 standard will create a lot of ambiguity and confusion for electrical workers and consultants.

For example, it is nearly impossible and time consuming for electrical workers to issue a Certificate of Compliance (CoC) for works performed on a site/project which complies with AS/NZS 3000:2018 and AS/NZS 3000:2007. The issues caused by referencing the 'wrong version' of the standard in the CoC can be significant for a small business/trader both in terms of legal proceeding costs and associated costs.

Additional feedback related to electric vehicle charging standards

7

1. Health and safety hazards identified with the proposed amendment

Electric vehicles and charging technologies are evolving rapidly. The latest version of the electricity safety regulations should address the key safety issues associated with electric vehicle charging system for residential as well as for commercial charging stations. Associated voltage levels for charging stations and electric vehicles can be very high (up to 650V DC) and accidental contact with live parts can be fatal.

Earthing of the charging stations is a key tool which mitigates any health hazards associated with electrical faults. The proposed electricity safety regulation amendment creates confusion and conflicts around the earthing of the charging stations as it references both AS/NZS 3000:2018 and AS/NZS 3000:2007 in full. The current version of the standard introduces TT earthing system whereas the 2007 version recommends MEN earthing system in general. This will lead to health and safety hazards while working with electric vehicle chargers.

Several health and safety issues have been identified with both MEN and TT earthing system for electric vehicle chargers. British Standard BS7671:2018 and its amendment



A:2020 have addressed these issues and provide guidance. A similar approach should be taken for the New Zealand electricity safety regulations.

2. Issues with Existing MEN earthing system and the proposed TT earthing system as per the AS/NZS 3000 standard

The MEN earthing system which is currently adopted across New Zealand as per the current electricity safety regulations is a cost effective and safe option. But during open PEN condition (incoming neutral is broken), the voltage level on the neutral increases significantly. The chassis of the electric vehicle is metallic and poses significant health hazard during such condition. Several ways of mitigating this risk have been adopted in the UK such as having an isolation transformer, installing equipment that detects open circuit voltage, and electrical separation.

One of the other ways is to implement TT earthing system which also has several issues such as:

- simultaneous contact between exposed-conductive-parts, such as the vehicle on charge (connected to the TT earthing system) and exposed metalwork connected to the PME earthing system;
- risk of striking buried services when installing earth electrodes;
- separation below ground between the TT earth electrode and buried metalwork connected to the PME earthing system; and
- return of touch potential.

3. Recommended inclusion in the updated electricity safety regulations

The issues discussed above have been investigated in detail by IET UK and the British Standards Institution. MBIE's ongoing update of New Zealand's electricity safety regulations should take these factors into account and provide guidance for charging station owners to design the earthing system appropriately.

These issues are discussed in detail by IET UK (<https://electrical.theiet.org/wiring-matters/years/2020/80-may-2020/the-iet-code-of-practice-for-electric-vehicle-charging-equipment-installation-4th-edition/>) in the IET Code of Practice for Electric Vehicle Charging Equipment Installation, 4th Edition.

AS/NZS 1677.2 – Refrigerating Systems

8

Do you agree or disagree with the proposals regarding refrigerants? Specifically do you agree or disagree with the proposals to add an additional requirement under Regulation 59(3)? If so, why? Any information on potential impacts, costs and benefits of adoption to your business/industry would be helpful.

Not applicable.

AS/NZS 3003 Electrical Installations (Patient Areas)

9

Do you agree or disagree with the proposed change to AS/NZS 3003, and the proposed immediate transition? Please explain why. Any information you can provide on potential impacts, costs and benefits of adoption would be helpful.



Not applicable.

IEC 62841 series - Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery

10

Do you agree or disagree with any of the proposed IEC 62841 series updates to standards or any of the proposed transition times to recognise the relevant updated standards? Please identify which of these standards is of interest and tell us why you disagree. Please also indicate any suggestions or changes that should be made.

The last time changes to IEC 62841 were published was in 2017; as such, a 36-month transition period/DOW has already lapsed. The aspects not covered in IEC 62841 (which should not be too many) should be addressed in the regulation itself. However, if IEC 60745 needs to be referenced, then specific clauses should be highlighted. Users should not have the option to use either IEC 62841 or IEC 60745 for the topics covered in both standards.

11

Have we missed, or incorrectly identified, the latest version of any standards? Which ones did we miss, and why should they be included?

No comment.

12

If you disagree with our assessment of whether or not a standard will have a minimal impact to adopt, please advise which standard and why its adoption is not straightforward.

No comment.

13

What are the costs and benefits to your business/sector from adopting the latest versions of standards referenced in the electricity and gas safety regulations?

Adopting the latest versions of standards referenced in the electricity safety regulations will help us improve safety and align our Network Standards to the new standards.

What new standards in the electricity safety regulations are proposed? (pages 14-16)

14

Do you agree or disagree with including any of the proposed new standards in Schedule 4 of the Electricity (Safety) Regulations 2010? Please identify which standard(s) and explain why you agree or disagree and what alternative standard(s) you would propose (if any).

For electric vehicle charging, the discussion document recommends multiple possible standards: ISO, North American Underwriter Laboratories (UL) Standards as well as IEC



(European). As ISO is a quality standard, it should not cause any conflicts, but UL and IEC are specification standards and will potentially introduce challenges. Is the intention for these standards to be applied across manufacturers of vehicles or can they be mixed and matched at convenience? In our view, until we develop our own standard, New Zealand may be better off selecting either the European or North American standard.

15 What is the potential impact (for example, additional costs, risks and benefits) of adopting these new standards? Any information you can provide on costs and benefits of adoption to your business/industry would be helpful.

We do not foresee any major impacts from adopting the above standards. However, it should be noted that these standards, particularly AS4777.1:2016, may have an impact on tenders already submitted by businesses/providers. As such, providing for an extension or exception for such tenders should be considered.

What changes to references to certifications regimes and conformance assessment bodies in the gas regulations are proposed (pages 16-18)

Recognising Europe's new certification regime for gas products

16 Do you agree or disagree with amending the gas safety regulations to recognise the Gas Appliance Regulations? If you disagree, please outline why.

Vector has no issue with MBIE's proposal to amend the gas safety regulations to recognise the Gas Appliance Regulations.

17 What impact would this amendment have for you on importing and supplying gas appliances from the European Union, and why?

No comment.

18 What, if any, transitional provisions are necessary from Government to support these changes?

No comment.

Recognising the new body certifying gas products in Australia

19 Do you agree or disagree with recognising BSI Group (AS/NZ) as a conformance body for gas appliances and specified fittings certified under the Australian regime?



Vector has no issue with MBIE's proposal to recognise the BSI Group (AS/NZ) as a conformance body for gas appliances and specified fittings certified under the Australian regime.

20

Do you think phased or immediate transition would be more effective to reduce total costs to your industry and/or sector, and why?

No comment.

21

How would this change affect your ability to import gas appliances and fittings from Australia?

Not applicable.

22

Would this change be likely to result in any additional costs or savings in your industry?

No comment.

We propose making some minor changes to the structure of Schedule 4 of the electricity safety regulations (page 19-20)

23

Do you agree or disagree with moving the beauty therapy appliances into a separate category in Schedule 4?

Not applicable.

24

Do you agree or disagree with moving the general medical equipment standards to their own section at the start of the clause for electrical medical devices?

No comment.

25

Will the proposed changes to referenced IEC Standards in Schedule 4 make it easier for people in your business/industry to understand the regulations? Please explain why or why not.

Vector suggests that IEC 62619 and IEC 62660 be considered or referenced as a requirement for batteries or equipment with batteries imported into New Zealand.

Any other comments? (page 20)



Do you have any other comments you would like to make regarding these proposals?

Vector supports MBIE's intention of developing a longer-term solution that would enable references to standards in the electricity and gas safety regulations (and any related regulations for that matter) to be updated in a more timely and responsive manner.

In the case of AS/NZS 4777.1:2016, we suggest an effectivity date that would not affect tenders or project offers that have already been submitted.

26

We propose adding a reference to UL 9540:2020 Standard for Safety: Energy Storage Systems and Equipment in the regulations.

We further propose compliance with IEC 62619 and IEC 62660 as a requirement for batteries or equipment with batteries imported into New Zealand and referencing these in the safety regulations. With more and more lithium-ion batteries being integrated into power systems – be it a small equipment, imported phone, a large battery, or electric vehicle – safety (risk to life and property) is a prime concern with many lithium-ion batteries.

We are happy to discuss any aspects of our submission with MBIE officials, particularly around standards for new technologies.