POSITION STATEMENT

ISO 52000 Series Standards - Energy Performance of Buildings

Implications for NZ stakeholders and possible options post the de-jointing of AS/NZS design and application standards for energy related building services

10 March 2023

This position statement reviews the forthcoming ISO 52000 series standards for the assessment, calculation, and reporting of the energy performance of building services on a whole-of-building basis.

This statement from the New Zealand lighting industry is based on lighting sector perspectives and provides an overview of possible pathways for progress in harmony with international technical standards and the regulatory regimes of New Zealand's major trading partners.

The views and critique of other energy related building services sectors is most welcome, to spark multi-sector debate for integrated energy performance of building methods in New Zealand.

1) OVERVIEW

The European Energy Performance of Buildings (EPB) standards, developed under European Commission mandate were published as EN (European Norm) standards in 2017. This series of standards enables the assessment of the overall energy performance of a building.

EN EPB standards are gradually becoming available at the international level in the form of the emerging ISO 52000 EPB series of standards. The ISO is integrating various existing ISO standards into the 52000 series and including fresh content.

As the inputs needed for one EPB standard are provided by the outputs of another EPB standard, it is important that there is harmonisation of terms, definitions, symbols and in overall approach.

In the past, energy performance requirements have been determined at the product level via minimum efficiency levels (and regulated as MEPS). However, this siloed approach leads to sub-optimal outcomes and creates barriers for technology evolution.

The EPB standards are based on a holistic and systems approach, with the assessment of the overall energy performance of a building. All building energy uses are included (heating, cooling, lighting, ventilation, hot water etc). Outdoor and indoor climatic conditions are considered (including daylighting) and the interactions between the various aspects.

This approach accommodates a mix of technologies being used to deliver the desired overall energy performance level, at the lowest cost. By stimulating competition between different sectors and technologies, the integrated systems approach provides a key overall KPI to monitor building performance and to drive technical innovation and improved outcomes.

Each EPB standard is concise and contains only normative evaluation, calculation, and reporting procedures. Each standard is accompanied by an informative technical report (TR) with descriptive information and calculation examples, to help understanding and implementation of the EPB standard.

The evolving ISO series of EPB standards will provide internationally aligned methodologies to assess the energy performance of buildings in a harmonised and transparent manner. In parallel, individual countries can customise aspects of the standards to suit their national building code regulations, technologies, and climate. This approach combines the benefits of an internationally standardised approach with accommodation of national nuances.

The foundation ISO 52000 standard is:
'ISO 52000-1:2017 Energy performance of buildings — Overarching EPB assessment — Part 1: General framework and procedures'

If adopted as a replacement for aging, siloed and/or de-jointed AS/NZS building services design and application standards, and in conjunction with a compatible regulatory framework, the ISO 52000 standardised EPB assessment methodologies will help to drive innovation and enhanced energy performance in New Zealand buildings.

This approach appears to be entirely in accord with the goals and approaches of the MBIE Building for Climate Change (BfCC) programme.

Further ISO background information is here:
- ISO 52000 leads the way on clean energy building solutions
- Energy efficiency of buildings in ISO

2) ISO 52000 APPLICATION FOR ENERGY RELATED BUILDING SERVICES

The chart below is from the ISO TC 274 Lighting and Lighting committee and gives the proposed outline and structure of the ISO 52007 series parts and sub-parts, application and design standards for energy related building services.

Document and title		Responsible Committee(s)
ISO 52007-1	Overarching standard	Overarching TC163/205JWG with members from TC274 and TC43/SC 2
ISO 52007-2	Technical Report	
ISO 52007-3	Thermal Comfort	Thermal Comfort TC163/205JWG
ISO 52007-4	Technical Report and Guidance for part 3	
ISO 52007-5	Indoor Air Quality	Indoor Air Quality TC163/205JWG
ISO 52007-6	Technical Report and Guidance for part 5	
ISO 52007-7	Lighting	TC 274/JWG 1 (- CIE JTC6) Collaboration route recommendation expected from the ISO/TC 274/JAG
ISO 52007-8	Technical Report and Guidance for part 7	
ISO 52007-9	Acoustic	TC 43/SC 2
ISO 52007-10	Technical Report and Guidance for part 9	

The ISO 52007 series normative application and design standards will cover:
- Part 1 Overarching Standard
- Part 3 Thermal Comfort Standard
- Part 5 Indoor Air Quality Standard
- Part 7 Lighting Standard
- Part 9 Acoustic Standard

The Part 1 Overarching Standard will cover the foundation principles and generic application requirements applying to all the technology sectors. Each normative sector standard will extend the requirement with aspects specifically applicable to each sector. A sector based technical report (TR) will accompany each normative international standard (IS) to explain and justify the approach and methods of the standard concerned.

3) NZ ACTIVITY IN ISO TC 274 LIGHT AND LIGHTING COMMITTEE

New Zealand is a full "P" (Participating) Member of the ISO TC 274 Light and Lighting committee. The five-member ISO TC 274 New Zealand National Committee is the mirror committee of ISO TC 274. The members are:

- Chris Byrne – LCNZ and Zumtobel Group NZ - Auckland (Head of Delegation)
- Susan Mander – Massey University - Auckland
- Michael Warwick – MAW Design Ltd - Wellington
- Bart Milne - EECA - Wellington
- Bryan King – LCNZ and Strategic Lighting Partners Ltd - Auckland

The NZ National Committee is active in monitoring, reviewing, and voting on ISO draft standards, providing technical comment and suggested changes in line with NZ interests, and voting on strategic matters at annual plenary meetings. NZ NC members Chris Byrne and Bryan King will be participating face-to-face at the ISO TC 274 Plenary Meetings in Tokyo on July 3-5 2023 to influence debate and to promote NZ interests regarding NZ desired aspects in the draft ISO/CIE 8995-1:202X lighting of interior workplaces standard. See item 4) b) below.

4) NZ PATHWAYS FOR PROGRESS FOR LIGHTING AND ENERGY

There has already been considerable NZ activity relating to ISO lighting standards and how they could be used in NZ to facilitate best practice energy performance outcomes. The work to date includes:

a) Indoor Lighting Energy Performance

The international energy performance for lighting standard *'ISO/CIE 20086:2019 Light and lighting — Energy performance of lighting in buildings,'* is now adopted in NZ as *'NZS 20086:2022 Light and lighting – Energy performance of lighting in buildings'* (supplementing NZS 4243.2:2007 as a phase-in measure). This was published as a NZ Standard in 2022, with a ten-member NZ stakeholder expert committee chaired by Bryan King undertaking the technical analysis work. The commissioning fee for adoption as a NZS was funded by EECA.

b) Indoor Lighting Application and Design

The international lighting application and design standard '*ISO 8995-1:2002 Lighting of work places - Part 1: Indoor'* is currently under revision. This is now at the committee draft (CD) stage. When released this will be published as 'ISO/CIE 8995-1:202X Lighting of work places - Part 1: Indoor'. This standard is intended to be adopted in NZ as *'NZS 8995-1:202X Lighting of work places - Part 1: Indoor'.* The commissioning fee for adoption as a NZS has been pre-approved by EECA.

This ISO standard is of particular importance to the lighting sector considering the current Standards Australia LG-001 Lighting Committee review of *'AS/NZS 1680-1:2006 Interior and workplace lighting - Part 1: General principles and recommendations'*. This lighting application and design standard is much used in NZ and the decision to de-joint this has been made following the desire of many NZ stakeholders to follow ISO alignment, and because of the substantial fee request by Standards Australia for this to remain jointed. It is probable that replacement will be with ISO/CIE 8995-1:202X (update work currently in process), adopted as NZS 8995-1:202X (and presumably AS 8995-1:202X in Australia). NZ stakeholder experts on LG-001 Chris Byrne (representing LCNZ) and Ewen Café (representing IESANZ) have successfully influenced their Australian committee colleagues that ISO international alignment is the only practical option.

The ISO standards listed above in a) and b) are intended to be merged into the planned ISO 52007 series of standard(s) in due course.

5) ACTION POINTS

The following collaborative action points are required to bring cohesiveness and international alignment to standards and regulation for all energy related building services sectors in NZ:

1. **<u>Develop</u> a strategy and action plan to bring together building related government policymakers and the various sectoral groups involved in energy related building services**

2. **<u>Initiate</u> a multi-sector forum for debate on how best to implement holistic and integrated building energy performance methods in New Zealand**

3. **<u>Identify</u> options for standards and regulation post the de-jointing of AS/NZS design and application standards for energy related building services, and prior to BfCC programme implementation requirements**

4. **<u>Implement</u> ISO 52000 series standards and related regulation in New Zealand for the energy performance of building services on a whole-of-building basis**

Lighting Council New Zealand is most keen to participate in a suitable government and industry forum to contribute to the development of strategies and concrete plans for standards and regulation for integrated energy performance of buildings outcomes in New Zealand.

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