



Addressing cooling seasonal performance calculation issues for air conditioners: what we heard

Introduction

In September 2025 the Department of Climate Change, Energy, the Environment and Water (DCCEEW) in Australia, and the Energy Efficiency and Conservation Authority (EECA) in New Zealand released a technical options paper seeking stakeholders' views on addressing cooling seasonal performance calculation issues for air conditioners¹ in the *Greenhouse and Energy Minimum Standards (GEMS) (Air Conditioners up to 65kW) Determination 2019* (the Determination) in Australia and the *Energy Efficiency (Energy Using Products) Regulations 2002* (EUP) in New Zealand.

These calculation issues relate to the inputs for calculating cooling seasonal energy performance for air conditioners and can result in star ratings that overstate the energy efficiency of the equipment.

The purpose of this paper is to provide stakeholders with a summary of the feedback received from consultation and update on the proposed approach to resolving these cooling seasonal energy performance calculation issues.

Australia and New Zealand have different processes for approving policy proposals and updating legislation. The timeline and approach below relate to the Australian process for developing the Determination (with consultation likely late 2026).

New Zealand will follow a different process and timeline but will endeavour to align the outcomes (where possible) with Australia under the Equipment Energy Efficiency (E3) Program, the Trans-Tasman Mutual Recognition agreement, and shared air conditioner market.²

Consultation update

Stakeholders' views were sought on two technical issues for air conditioners:

- the minimum temperature at which cooling is assumed to be used in performance calculation for air conditioners in commercial settings
- how rated values for capacity and input power are treated in the Determination and EUP regulations.

Seven submissions were received during the consultation period and are available on the DCCEEW website³. These submissions were considered in the development of the proposals set out in this summary paper. The submissions did not identify any obvious consistency of views, or one preferred option for handling, but rather proposed a range of views for different changes that could be made, including:

¹ [Options to address cooling seasonal energy efficiency performance calculation issues for air conditioners - Department of Climate Change, Energy, Environment and Water](#)

² Updates on the New Zealand process: [Air conditioners - seasonal energy efficiency performance calculations | EECA](#)

³ [Upload a submission - Options to address cooling seasonal energy efficiency performance calculation issues for air conditioners - Department of Climate Change, Energy, Environment and Water](#)

- for the minimum temperature at which cooling is assumed to be used in performance calculations, some submitters sought to retain current arrangements and others suggested new temperatures.
- for determining valid rated values, one submitter suggested only applying the Standards (AS/NZS 3823.4.1:2014 Amd 2:2025) test, while other submitters suggested different levels of additional tolerance could also be used.
- for transitional periods where changes to labels will be required, submitters suggested various timeframes for both existing and new registrations, ranging from as quickly as practicable through to the end of current registration periods.

Process update

Proposed amendments to the Determination

DCCEEW considers that updates to the Determination are needed to ensure accurate information on air conditioner performance and efficiency is provided to consumers. Improvements to the requirements for calculating cooling seasonal energy performance of air conditioners will provide for star ratings (and annual energy consumption) that accurately reflect the energy efficiency of the equipment.

The details of proposed updates will be set out in an exposure draft of updates to the *Greenhouse and Energy Minimum Standards (GEMS) (Air Conditioners up to 65kW) Determination 2019*, expected to be released for public consultation in late 2026 to inform any adjustments on approach ahead of finalisation.

The proposed specifications listed below have been identified to address cooling seasonal performance calculation issues for air conditioners:

- the minimum temperature at which cooling is assumed to be used in performance calculations (T_0) to remain unchanged for both commercial and residential use case calculations.
- the validity test in the revised standard AS/NZS 3823.4.1:2014⁴ that is applied to tested values to be applied to rated values used in seasonal cooling performance calculations.
- an additional validity test to be introduced based on a 'zero slope' test (the slope of the line between the line drawn from tested power input values and the line drawn based on rated power input values⁵) where the slope derived from the rated power input values cannot be more than the slope derived from tested power input values:
 - for each capacity line (Full Capacity, Half Capacity and Minimum Capacity).
 - at the conditions of T1 (35°C) and Low Temperature Cooling (29°C).

The proposed transitional arrangements for implementing any updated requirements are included below (see also Attachment 1):

- the replacement GEMS Determination to commence 6 months after being published.
- existing registrations that meet the requirements of the replacement GEMS Determination would be automatically taken to be registered against the replacement GEMS Determination and able to continue to be supplied until that registration expires.
- any registration that does not meet the requirements of the replacement GEMS Determination will be superseded when the replacement GEMS Determination commences.
- there will be a one-year grandfathering period (from commencement of the replacement GEMS Determination) for existing stock (in Australia before commencement of the replacement GEMS Determination) that does not meet the requirements of the replacement GEMS Determination to be supplied.

⁴ AS/NZS 3823.4.1:2014 Amd 2:2025 Performance of electrical appliances - Air conditioners and heat pumps, Part 4.1: Air-cooled air conditioners and air-to-air heat pumps - Testing and calculating methods for seasonal performance factors - Cooling seasonal performance factor (ISO 16358-1:2013 (MOD))

⁵ See the 2025 technical consultation paper for more detail on this method.

- Any model with a superseded registration:
 - can no longer be imported or manufactured in Australia, and
 - any existing stock must be sold/supplied before the end of the one-year grandfathering period.

Requirements for calculating the seasonal performance factors and sound power for models prior to being registered under the replacement GEMS Determination

Section 41 of the *Greenhouse and Energy Minimum Standards (Air Conditioners up to 65kW) Determination 2019* requires that seasonal performance factors and noise (sound power) be determined prior to registering a model up to 65kW. These requirements do not fully reflect the policy intent set out in the related regulation impact statements and the coverage of standards to determine those values.

DCCEEW will consider further updates in the replacement GEMS Determination to better reflect the approach set out in the regulation impact statements for the Determination. This includes removing requirements to determine:

- seasonal performance factors for single duct portable air conditioners and water-to-air air conditioners (there is no standard currently available),
- heating seasonal performance factors for air conditioners over 30kW capacity, or that used simulation testing as part of meeting their registration requirements, or that are not reverse-cycle air conditioners, and
- noise (sound power) levels for over 30kW capacity air conditioners and water-to-air air conditioners.

Timeline

2021	Cooling seasonal performance calculations issue brought to the attention of Australia/New Zealand Standards Committee
2021-2025	Australia, New Zealand and international standards committees develop and agree options to address seasonal calculations performance issue
September 2025	Release of technical options paper for public consultation
November 2025	Standards Australia publish: AS/NZS 3823.4.1:2014 Amd 2:2025 Performance of electrical appliances - Air conditioners and heat pumps, Part 4.1: Air-cooled air conditioners and air-to-air heat pumps - Testing and calculating methods for seasonal performance factors - Cooling seasonal performance factor (ISO 16358-1:2013 (MOD)).
August 2026	Release of summary paper to update on proposed approach to addressing cooling seasonal performance calculation issues for air conditioners (this paper)
late 2026	Exposure draft GEMS Determination released for public consultation Suppliers may request preliminary list of affected models (those needing registration changes) from DCCEEW ⁶

⁶ Noting that the full list of affected models cannot be confirmed until the GEMS Determination is finalised.

Affected registrations

Based on current registrations, it is estimated that the new specifications proposed in this summary paper would result in approximately 26% of registrations being affected and approximately 35% of labelled models being affected and consequently needing to be changed. See table of estimated numbers below.

Option	Registrations affected (%)	Labels affected (%)	Optimisation permitted of Total Cooling Seasonal Performance Factor (TCSPF) (%) for variable speed models					
			Residential use Hot/Average/Cold			Commercial use Hot/Average/Cold		
Current arrangements	0	0	30	20	17	79	117	314
Changes required to register under the replacement GEMS Determination	26	35	10	10	13	13	13	14

The Technical Options Paper from 2025 identified that calling up the revised standard for air conditioners alone could lead to 17% of registrations becoming invalid. The suite of updated specifications considered in this summary paper would affect some additional registrations but would better achieve the intended outcome of leading to more accurate calculations and information on energy efficiency of air conditioners.

To clarify, the proposed 'zero slope' test would not require models to be re-tested to comply. As such, a grandfathering period of one year is proposed to be set in the replacement GEMS Determination.

Acknowledgement of Country

We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.

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Attachment 1 – Determination Implementation flowchart

