

Article Information

Author: Margot King

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Trajectory for low energy buildings update: NCC 2025, new NABERS tools and more

The Commonwealth Government Department of Industry, Science, Energy and Resources recently convened a virtual meeting of the Stakeholder Reference Group to update the Group on workstreams underway for the [‘Trajectory for Low Energy Buildings’ \(February 2019\) \(Trajectory\)](#) and the [Addendum \(November 2019\) \(Addendum\)](#).

The Trajectory and the Addendum were developed by the Commonwealth and the States through the Council of Australian Governments to provide a framework for improving energy efficiency in new and existing buildings. Buildings account for about 50% of electricity use in Australian and almost a quarter of our emissions.

There are fourteen workstreams underway and work on commercial and non-residential buildings includes progress towards an updated [National Construction Code \(NCC\) for 2025](#) and expansion of the ratings tool NABERS. Work on residential buildings includes changes to the ratings tool NatHERS and development of a disclosure framework to allow consumers to make more informed choices.

Thanks to the Department of Industry, Science, Energy and Resources for their presentation and powerpoint materials in preparing this overview.

Commercial and Non-Residential Buildings

New Buildings - NCC 2025

Work streams are currently underway for NCC 2025 as part of the three year reviews required by the Trajectory and the Addendum. There are four key areas of research for NCC 2025.

- *Glazing* - The final [Glazing for non-residential buildings under NCC2019](#) report was released in August 2021. This report identifies current specifications, performance levels and industry data for glazing in non-residential buildings under NCC 2019. Results will be used for modelling and analysis for NCC 2025, drawing particularly on results for fixed frame windows.
- *Energy Performance Gap* - This refers to the gap between predicted or expected energy consumption levels in buildings and the actual measured energy consumption in buildings. The Green Building Council of Australia (GBCA) has prepared a report that finds that 75% of certified offices achieve or over achieve the designed objectives and that 93% of office buildings with NABERS Commitment Agreements have reached or exceeded their projected NABERS Star Rating. The report will soon be published on the GBCA website. However, there is a concern that this covers only premium, office buildings.
- *Thermal Bridging* - Thermal bridging is the unintended path of heat flow, using a path of least resistance through a building envelope between the outside and inside, for example, where there is an interruption in insulation or where materials of high conductivity are used. The existing standards for thermal bridging are not always appropriate as they were developed for colder climates. Research to quantify the effects of thermal bridges is completed and a final report will be presented in October 2021.
- *Climate files for building simulation* - CSIRO Energy has released new [predictive weather data files](#) for building energy consumption modelling. The dataset consists of 996 text files containing hourly weather data for 83 Australian locations under three future climate scenarios and for four future years (2030, 2050, 2070 and 2090).

Feedback from participants in the Stakeholder Reference Group about the files was extremely positive.

Existing Buildings

- *Expansion of NABERS* – The NABERS energy and water ratings system will be expanded to new categories of buildings. NABERS has recently launched its ratings tool for residential aged care and retirement living. Further, as part of the ‘NABERS Accelerate’ program, general warehouse and cold stores and schools have been identified as priority areas. Development of ratings tools for these building categories is in progress and further expansion into other sectors is earmarked for 2022 and beyond.
- *Resilient Buildings and Cool Roofs* – Cool roofs is a key research area as significant energy savings and urban heat mitigation can be achieved with roofs with high solar reflectance and thermal emittance. The Department of Industry, Science, Energy and Resources encourages anyone in the industry or in planning or representing local councils with an interest in this topic to reach out to engage in this project.
- *Increasing Efficiency Uptake* – The work in this work stream includes:
 - researching heating, ventilation and air conditioning decision making processes and barriers to optimisation;
 - working with the University of Wollongong on a [survey](#) into management and maintenance of mid-tier commercial office buildings; and
 - developing resources for cost effective building upgrades.
- *Commercial buildings baseline study* – A baseline study on the current building stock is underway and due for completion at the end of 2021, with an aim to publish de-identified data in 2022. This baseline study will be more granular than previous studies, looking at buildings at the local level according to building type and energy use.

Emerging Work

Increasingly, the importance of embodied carbon is recognised in achieving a low energy building. Research from the [Low Carbon Living CRC](#) has shown that in high-performance new buildings, embodied carbon represents approximately 45% of whole-life carbon emissions. In August, the Green Building Council of Australia released the report [Embodied Carbon & Embodied Energy in Australia's Buildings](#). Work in this work stream includes developing a market for low emissions construction materials through ongoing support for the Materials Embodied Carbon Leadership Alliance (MECLA).

Residential Buildings

The Stakeholder Reference Group update also included an overview of the work streams underway for new and existing residential buildings, including:

- developing practical guidance for consumers interested in building more sustainable homes;
- developing supply chain capacity by building knowledge and skills for ‘Net Zero Energy-Ready’ homes;
- delivering the ‘National Scorecard Initiative’ as fully accredited and phased into the Nationwide House Energy Rating Scheme (NatHERS) in 2022;
- identifying new markets that can benefit from energy efficiency ratings and tools including in the finance and social housing sector;
- finalising strengthening of NCC requirements for new builds and renovations proposed for NCC 2022;
- developing a residential energy efficiency National Disclosure Framework;
- developing minimum energy efficiency standards for rented homes;
- supporting vulnerable households to ensure equitable transition to low energy buildings;
- considering opportunities for strata-titled buildings;
- progressing continual improvements in appliance efficiency through the Greenhouse and Energy Minimum Standards (GEMS); and
- streamlining of data collection and analysis, including an updated residential baseline study which is expected to be released end of 2021.

The work streams being undertaken by the Department of Industry, Science, Energy and Resources in conjunction with States and university partners are vital measures to improving the energy efficiency of our buildings and reducing Australia's carbon emissions.

Careful implementation with industry will be vital to ensure that measures are practical, achievable and cost-effective.

The Department of Industry, Science, Energy and Resources has been facilitating workshops and consultations with key stakeholders and welcomes feedback on any particular considerations or timings that need to be taken into account as they progress the work streams.