REDUCING CARBON THROUGH AMBITIOUS IMPROVEMENTS TO THE BUILDING CODE ENERGY REQUIREMENTS

PROJECT FACTSHEET

LOW CARBON LIVING CRC

KEY POINTS

- **The operation of buildings accounts for almost a quarter of Australia's carbon emissions and over half of electricity demand**
- **Improving the minimum standards for energy efficiency in new construction is a key opportunity to reduce these emissions and reduce energy costs**
- **We are working with the Australian Sustainable Built Environment Council and ClimateWorks Australia to develop the evidence base supporting the introduction of long-term targets and a trajectory for the energy provisions of the National Construction Code**

CRC for Low Carbon Living

The CRC for Low Carbon Living (CRCLCL) is a national research and innovation hub that seeks to enable a globally competitive low carbon built environment sector and is supported by the Commonwealth Government's Cooperative Research Centres programme.

With a focus on collaborative innovation, the CRCLCL brings together property, planning, engineering and policy organisations with leading Australian researchers. It develops new social, technological and policy tools for facilitating the development of low carbon products and services to reduce greenhouse gas emissions in the built environment. For more information visit www.lowcarbonlivingcrc.com.au/

THE OPPORTUNITY / CHALLENGE

The building sector is responsible for 23 per cent of Australia's carbon emissions. Research shows that improved building energy efficiency could significantly reduce these emissions[1].

The Australian Sustainable Built Environment Council (ASBEC), the peak body for sustainability in the built environment, has identified that improving the minimum standards for energy efficiency of new buildings can assist deliver carbon emissions reductions.

The National Construction Code (Code) sets minimum standards for new building work in Australia. Although the Code is reviewed every three years, there have been no increases to energy performance since 2010.

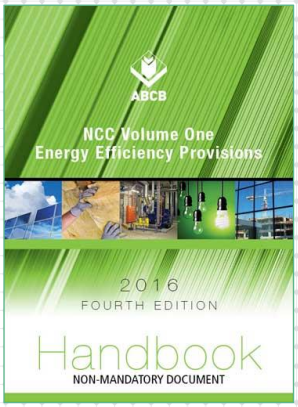
The Building Code Energy Performance Trajectory project, a partnership between ASBEC and ClimateWorks Australia, brings together researchers, key industry stakeholders and government policy makers to develop an industry-led evidence base for the adoption of ambitious long-term targets and forward trajectories for progressive increases in energy performance for new building work under the Code. We believe that his approach with clear benefits for a range of stakeholders will foster and support the necessary changes to the Code.

To develop the trajectory requires research on the feasibility and cost-effectiveness of energy efficient buildings, as well as stakeholder consultation to understand the drivers and barriers.

OUR RESEARCH

As a central component of the Trajectory project, we are investigating the feasibility of staged increases to the energy performance requirements of the Code. We will address a number of research questions:

- What long-term target or targets for increased energy performance for a range of building types should the Code aim for?
- What feasible changes can be made to the design and construction of each building type?
- What are the costs and benefits for each building type?
- What are the assumptions and inputs for the cost-benefit analyses?
- What are the differences between achieving the proposed trajectories for high energy performance buildings compared to decarbonisation of the grid and uptake of renewables?



Our research project will be carried out in three stages:

1. Develop trajectories

We will develop an energy model and undertake cost-benefit analyses with input from the model to formulate energy performance trajectories for eight building types.

The analyses will be informed by a literature review of potential stringency paths and zero and near-zero energy buildings, and data on technology projections for future efficiency of building components. Modelling will allow us to investigate the best combinations of technologies to achieve overall performance improvements. Our analyses will also address potential unintended consequences such as condensation issues resulting from air tightness.

2. Assess costs and benefits

In this stage, we will quantify the benefits of achieving the proposed targets for building owners, occupants and the public (from state, territory and national perspectives).

We will focus on any additional upfront costs, energy savings, emissions reductions and wider costs and benefits including health and energy network benefits (demand, peak demand, prices etc).

3. Understand the technological barriers

We will propose solutions for key technology and skills/capability barriers to achieving the proposed trajectories.

OUTCOMES

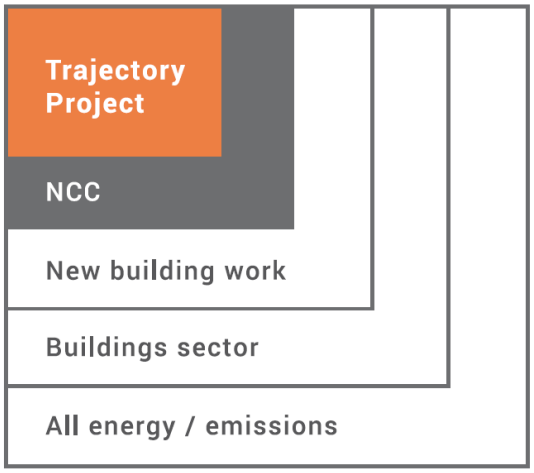
Our project will provide an evidence base to support ambitious yet attainable long-term minimum energy performance targets for new buildings within the Code.

The targets will reflect the range of benefits that energy efficiency delivers based upon a comparative analysis of similar initiatives in other countries and detailed modelling. They will be accompanied by recommendations to address the likely barriers that can impede change by industry, government and consumers.

Potential outcomes that increased energy performance standards will deliver include:

- Catalyse **market transformation** in the sector by providing a strong regulatory regime for future minimum standards, stimulating investment and innovation in low-energy building design, construction, materials and technologies
- Deliver higher **performing buildings**, resulting in:
  - Emissions reductions
  - Improved energy productivity, including more efficient use of energy infrastructure in new NCC-compliant buildings
  - Energy cost savings
  - Improved health and comfort for building occupants

Our project will form one piece of the puzzle in decarbonising the built environment. The Building Code Energy Performance Trajectory project focuses on increasing stringency, however there will need to be complementary work to improve compliance with the Code, upgrade existing buildings and leverage experience in the building sector to decarbonise Australia's broader economy. Our research is an important step in unlocking and cascading emissions reduction opportunities.



PROJECT TEAM

- University of Wollongong
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Australian Sustainable Build Environment Council (ASBEC)
- ClimateWorks Australia
- Energy Action
- Strategy Policy Research
- Donald Cant Watts Corke

FURTHER INFORMATION

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REFERENCES

Australian Sustainable Built Environment Council (ASBEC). 2016. Low Carbon, High Performance. ASBEC, Australia.