

# MAINSTREAMING LOW CARBON RETROFITS IN SOCIAL HOUSING

## PROJECT FACTSHEET



LOW CARBON LIVING  
CRC



## KEY POINTS

- **The retrofitting of the social housing stock in Australia presents a significant opportunity for reducing energy and carbon emissions, and to help address energy poverty.**
- **To explore this opportunity, we:**
  - **monitored energy usage, internal temperature and humidity in 42 social housing dwellings across NSW.**
  - **evaluated a range of energy efficiency upgrades, including wall insulation, double glazing, ceiling fans, draught proofing, reverse cycle air-conditioning, hot water heat pumps, and solar photovoltaic systems.**
  - **conducted ethnographic interviews with a subset of participants to explore how social housing tenants balance energy bills, comfort and health on a tight budget.**

## THE OPPORTUNITY/CHALLENGE

This project aims to assist Social Housing Providers to cost-effectively upgrade their housing stock to improve energy efficiency and thermal comfort. The social housing sector represents a significant opportunity for the development of a major, aggregated approach to implement low carbon retrofits in large portfolios of residential building stock.

Social housing properties are generally managed, maintained and upgraded through relatively centralised processes (as compared to owner-occupied building stock). The management of these properties involves significant investment in maintenance and

### 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/](http://www.lowcarbonlivingcrc.com.au/)

regular upgrades to maintain dwelling quality in accordance with relevant regulation and maintenance standards. It therefore may be possible to realise substantial energy efficiency improvements on many such residential buildings with relatively minor changes to existing practices.

Low income households spend a high proportion of their income on fuel costs, and social housing tenants in particular are likely to experience energy hardship.

Social housing tenants are also very vulnerable to energy price rises and extreme weather conditions, and face specific barriers to accessing energy efficient dwellings and improvements. In addition, low income occupants often use relatively little energy and rely on compensatory measures to keep energy bills low, such as minimising the use of heating and cooling. This means that traditional benefit-cost assessments, considering only the benefit of utility bill reductions, are often unfavourable for low income dwellings. However, low income tenants are also the most likely

to receive non-energy benefits, or co-benefits, from energy efficiency upgrades.

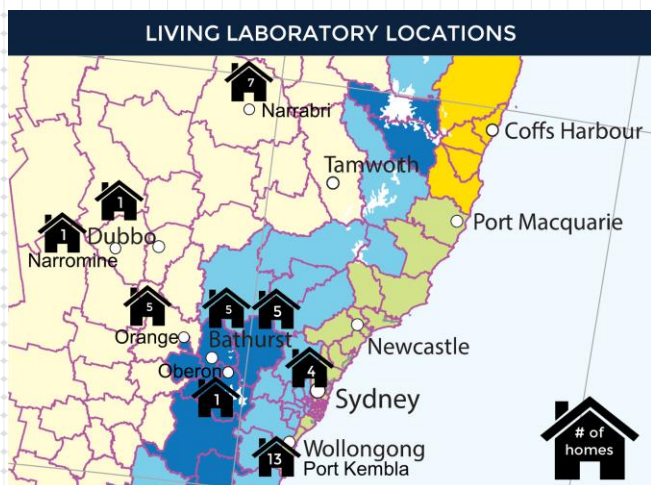
## OUR RESEARCH

In late 2016, our Node at the University of Wollongong's Sustainable Buildings Research Centre (SBRC) commenced work to assist Social Housing Providers to embed low carbon retrofits into their existing property maintenance and upgrading processes. The project has three main activities:

- i) Assembly of a comprehensive evidence base regarding direct benefits, co-benefits and risks of relevant upgrade options. This activity will identify additional benefits for social housing tenants and allow a more complete benefit cost analysis to be done for energy efficiency upgrades in this sector.
- ii) Living laboratory monitoring and evaluation of a range of energy efficiency upgrades implemented in social housing properties across NSW.
- iii) Collaborative activities with stakeholders to assemble the resulting evidence into user-friendly formats. This has involved understanding in detail how social housing properties are currently maintained and upgraded, and thereby identifying the best ways to present new and relevant information.

## OUTCOMES

Forty-two (42) social housing properties were recruited to participate in the living laboratories of the current study, in a variety of locations around NSW. Five different housing providers have facilitated the inclusion of their properties in this study.



The properties each received an energy efficiency upgrade of some form from the relevant housing provider. Each property has had one or more of the following upgrades implemented:

- Wall insulation;
- Double Glazing;
- Hot Water Heat Pumps;
- Reverse Cycle Air Conditioning;
- Solar Photovoltaics;
- Roof replacement;
- Ceiling fans;
- Draught proofing; and/or
- Internal shading.

Home energy audits were completed on the 42 social housing properties, and the energy consumption, internal temperature and humidity have been monitored over 12 months in most properties. In-depth ethnographic interviews have also been conducted with a subset of the participants to explore how social housing tenants balance energy bills, comfort and health on a tight income.

## PROJECT TEAM

- Professor Paul Cooper - Project Leader (Sustainable Buildings Research Centre, SBRC)
- Prof Gordon Waitt (Australian Centre for Culture, Environment, Society and Space, ACCESS)
- Dr Daniel Daly (SBRC)
- Dr Georgios Kokogiannakis (SBRC)
- Michael Tibbs (SBRC)
- Dr Theresa Harada (ACCESS)

## FURTHER INFORMATION

Interim project outputs can be viewed at <https://bit.ly/2LWJSfv>

**For more information about this project, please contact:**

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