

MODELLING RESIDENTIAL ENERGY CONSUMPTION BEHAVIOUR TO INFORM BASIX SUSTAINABILITY ASSESSMENT, BUILDING DESIGN AND POLICY

How can post-occupancy behaviour be modelled to inform BASIX assessment?

The evidence based behaviour model would contribute to identifying key influential attributes on resident's energy consumption behaviour that contribute to actual dwelling energy consumption.

Findings

Example findings from preliminary analysis:

- There are two types of energy use behaviour in achieving thermal comfort i.e.
 - Usage pattern of heaters (frequency, duration, time of the day, space and activity)
 - Operation of heaters (thermostat setting, curtailment practices)
- People's concept of lifestyle and their behavioural routines such as sleeping pattern, physical activity pattern, cooking pattern, etc. are crucial to dwelling energy consumption.
- Residents perceive that heating in the dwelling is wasted due to limited control over the operational zoning system of the central air conditioning system and also due to the open plan layout of the house design.
- Common selections of heating systems and operational zone layout may have led to high energy consumption after dwelling occupation.
- Residents show lack of confidence in changing settings and usage pattern such as switching on and off in short intervals. Therefore they expect periodic involvement by professionals in making them aware of energy efficient practices.

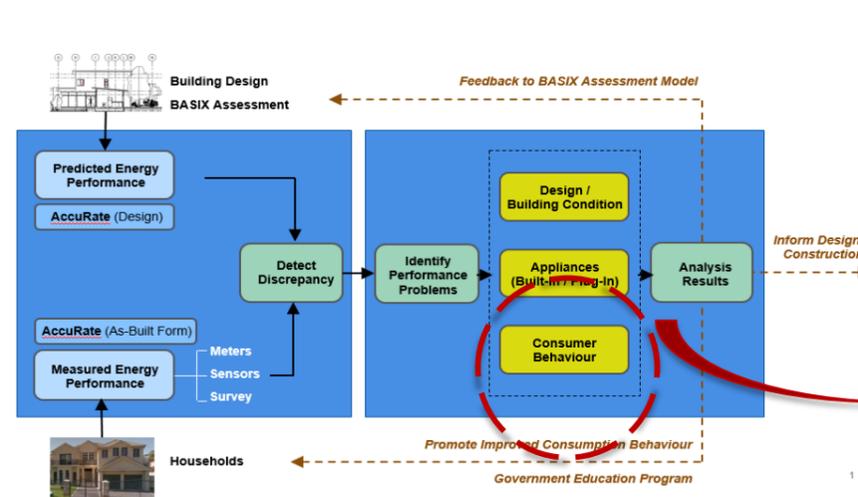


Figure 1: Overview of the larger project (RP1017 CRCLCL BASIX project interim report #1)

Anticipated impacts

The proposed behaviour model for residential energy consumption would inform the BASIX assessment tool, sustainability policy, building designs and government educational programs on sustainability.

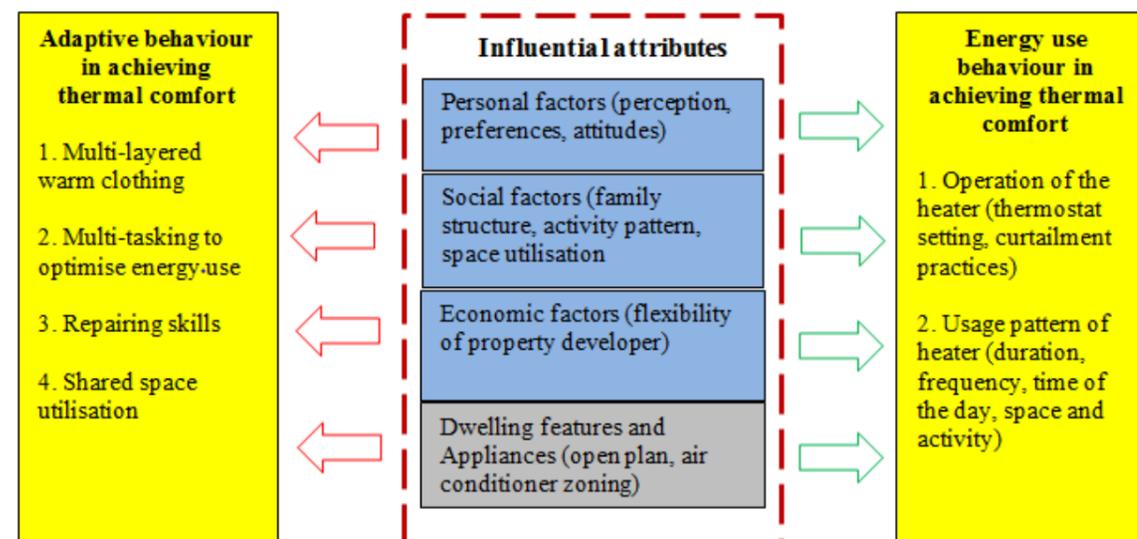


Figure 3: Example findings from preliminary analysis: Potential relationships between identified adaptive behaviour, energy use behaviour in achieving thermal comfort in dwellings and their influential attributes

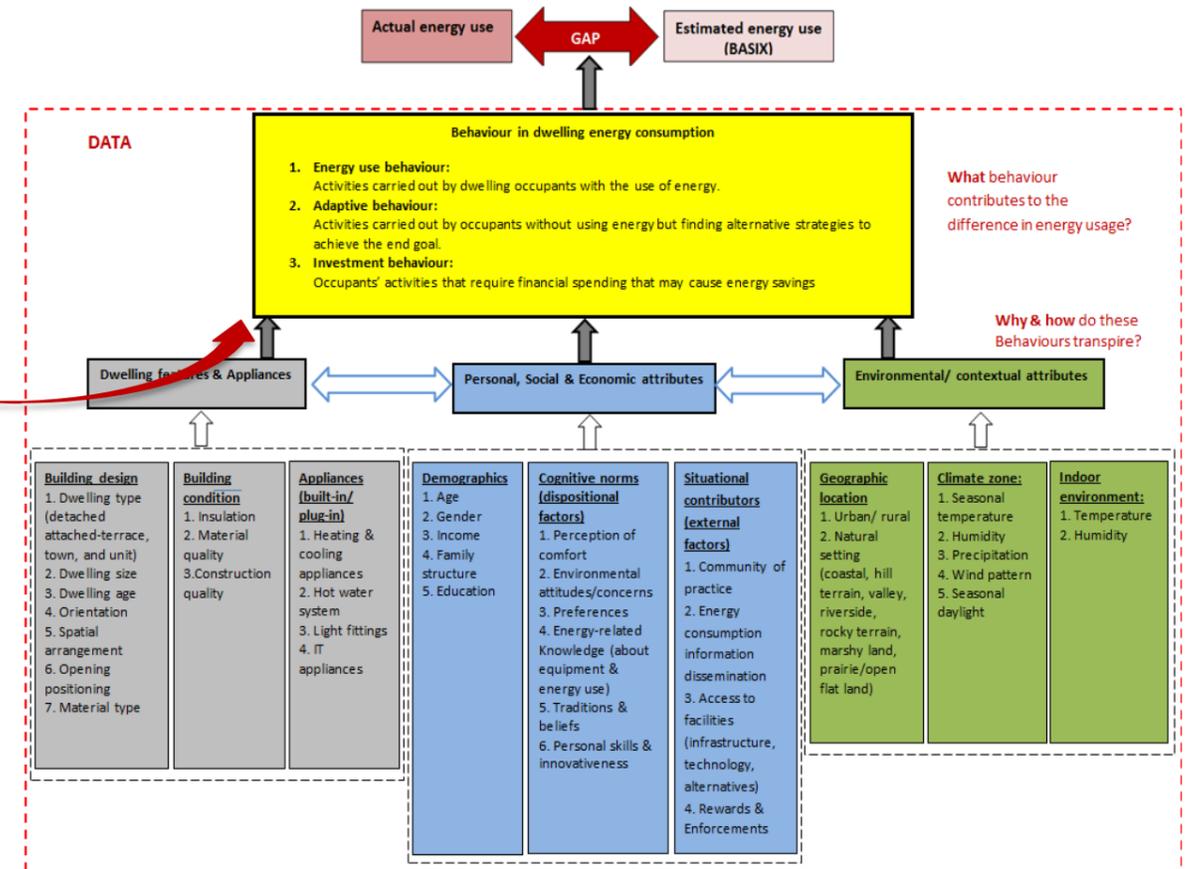


Figure 2: Proposed conceptual framework for behaviour model of residential energy consumption

Further information

<http://www.lowcarbonlivingcrc.com.au/research/program-1-integrated-building-systems/rp1017-validating-and-improving-basix-energy>

Contact: Marini Samaratunga
UNSW Built Environment
m.samaratunga@unsw.edu.au

