

case study

Lingwood Low Energy Housing

Measuring occupant response to low energy technology

Project Summary

Problem: Affordable houses are being built but are rarely energy efficient, low carbon emission homes.

Solution: This project provides a unique opportunity to monitor energy usage and thus potential carbon savings from this type of development during both construction and occupation. The attitudes and outcomes observed at Lingwood will help the construction industry plan and build environmentally friendly houses with technologies that suit future residents' lifestyles and needs.

Partnership

- University of East Anglia, 5** rated School of Environmental Sciences
- Broadland District Council, Norwich
- Flagship Housing Group, Norwich
- Barefoot & Gilles Architects, Chelmsford
- John Youngs Ltd., Norwich
- Oxbury & Company, Chelmsford

Inspiration

The UK's 24.7 million households are currently responsible for 27.6% of UK carbon emissions. A recent government proposal that all new homes produce zero carbon by 2016 is a demanding challenge for the building sector. This project will help identify the most efficient technologies for achieving carbon reductions particularly for affordable housing.

A 50% reduction in carbon emissions during a year's occupation would result in a saving of 6 tC (22t CO₂) each year. The carbon emission savings have been calculated using the New Build Emission Value of 0.8 tC per house. In achieving zero carbon emissions, these 15 dwellings would represent a saving of 12 tC (44t CO₂) per year.

If the results of this project are rolled out nationally the total carbon reductions could be considerable.

Innovation

This collaborative development will provide affordable, low energy dwellings for rental and shared ownership. The units will be built using innovative construction methods, have high insulation and be powered partly by renewable energy. This project is innovative as it combines:

- a lifecycle assessment of the manufacture and construction of the houses including transport and micro-generation technologies
- the measurement of energy used during the first year of occupation including energy from micro-generation and from the grid
- a survey and model to link the attitudes and behaviour of the occupants with their energy use.

Development

The results of the project will be rolled out to other local authorities to encourage them to build similar housing developments and in terms of a broader investment in UK PLC related to social and environmental issues, this project offers significant returns linked to fuel poverty and climate change.

It is expected that what is learned about occupants' attitudes in this project will help Broadland County Council plan and build more environment friendly houses that will suit future occupants.

Carbon Connections is HEIF-funded investment project utilising £3 million for carbon reduction activities. Based at the UEA, Carbon Connections supports innovative projects in carbon reduction using a partnership model. The aim is to facilitate knowledge transfer between universities and research laboratories and the business community to speed commercial development of carbon-saving projects, whether technological or behavioural in focus.

