

People Exploring Low Energy Homes

Oxford Road, CB4 3PH

Margaret and Peter

Margaret is an architect specialising in low-carbon design, and Peter is a Cambridge University professor. Margaret says:

'We've worked on improving insulation since we moved here in 1983. After attending CCF's Cambridge Carbon Footprint's 'Carbon Conversations' meetings in 2009-10 we made lifestyle changes to save energy. Now our green concerns and desire for greater comfort – I now work from home – as we approach retirement has prompted the current works. We aimed both to create a larger house and carry out an 'eco-retrofit' to improve on improvements already made.'



Overview

Property age: Built 1897

Type: Semi-detached

Wall type: Original walls solid brick

Floor area: 171m²

Cost of retrofit: tbc

Occupants: 2 adults

Key features

Insulation

- Cavity wall insulation of extensions
- Floor insulation of extensions
- Roof insulation of loft conversion
- External wall insulation – in progress

Glazing

- Most windows low energy

Lighting/appliances

- Mostly CFL and LED lighting
- A+ rated smaller fridge (spare used when needed)

Heating/energy

- Solar PV 3kWp

Water management

- Water butt
- Bathtub siphoning

Sustainable materials

- Timber windows (with aluminium cladding)

Low Energy Measures

When we had extensions built in 1989 and 2004 we added energy-saving works to the contracts. We found the information we needed by attending Carbon Conversations, Open Eco Homes and through my professional studies. We made a list of what we wanted, researched each item, did drawings and weighed up the benefit for the money spent.

Heating, energy and appliances

We installed a condensing boiler in 2004, and a 3kWp solar PV system in 2011. We've adjusted our lifestyle to minimise energy use. We now use a smaller A+ fridge, switching on a second fridge only when needed. We keep the heating level low and are careful to switch appliances off overnight.

It's possible that we've save more energy through lifestyle changes and installing solar PV than we will have when all costly renovations are complete.



Performance

Most improvements have been worthwhile; after each building campaign, we have solved problems such as:

- kitchen mysteriously cold; we discovered the radiator was only half-working;
- air gap left around new windows;
- air conditioning was not needed in the loft conversion - it's always warm enough there to dry laundry.

Future Plans

We are planning the following further measures:

- External wall insulation (in progress)
- Floor insulation
- Underfloor heating (ceramic floor tiles on cement hardboard, heating coils set in sand)
- Woodburning stove
- Zoned heating and WiFi control
- Remaining halogen lights replaced by LEDs
- Extractor fans replaced with heat recovery vents
- Remaining windows replaced with low-energy windows
- Solar immersion diverter
- Insulating curtains
- Airtightness testing before and after these measures
- Water-saving toilets
- Electric car with battery powered by solar PV

Professional Contacts

Architects:

[M Reynolds RIBA](#)

[Bland Brown & Cole](#)

Archimage Architects Ltd, Wilburton Ely 01353 741711

Green Deal Assessment: [The 80% Hub](#)

Structural engineers: [Andrew Firebrace Partnership](#)

Building contractors:

[Green Hat Construction](#)

[Salmons Brothers](#)

External wall insulation: [Climate Energy](#)

Solar PV installation: [Midsummer Energy](#)

Lighting: [TES Total Electrical Solutions](#) (Dan Grace)



Advice from:

[Cernunnos](#)

[Transition Cambridge Energy Group](#)

[Association for Environment Conscious Building](#)
[PassivHaus Trust](#)

Products and Costs

We found our suppliers through recommendations made at EcoBuild seminars and through our architects, builders, Cambridge Carbon Footprint and Transition Cambridge Energy Group
External wall insulation: £10.5k (including £6k Cambridgeshire [Action on Energy](#) grant)

Windows: [Rational](#) £12k + VAT for whole house

Solar PV system: [Enecsys](#) 3kWp £11.5k

Ventilation: [Vent Axia](#) £200

Woodburning stove: [Carl Cox Fireplace Installations](#) (01353 648233) – flue £3k, stove £720

Underfloor heating: Bird Heating (Shane Bird)

What would you have done differently?

Installed underfloor heating in the kitchen extension in 2004 and not been put off by the cost.

What is your top energy-saving tip for householders?

Go to a Cambridge Carbon Footprint Carbon Conversations group and put your lifestyle under scrutiny. Go to meetings held by green groups to find out more – and don't rush!