

People Exploring Low Energy Homes

Bishop's Rd, CB2 9NH

David and Claire – David says:

We have been aware for a long time of the dangers posed by climate change, and do our best to avoid adding to them: **travelling by bicycle and train** whenever possible, eating **locally-sourced organic food**, and learning **permaculture**.

But what spurred us into making changes to our house was coming to understand that the age of cheap energy is coming to an end and that rising prices and supply disruptions are inevitable.

We realised we needed to do what we could to reduce our need to import energy into our home, both by **improving its energy efficiency** and by **generating our own** where we could.



Overview

Age, Type: **1946, Bungalow**

Wall type, Floor area: **Solid single brick, 130 sq m**

Project timescale: **1 year**

Cost of measures: **£38,000**

Energy usage

After: **29 kWh** per sq m pa electricity
104 kWh per sq m pa gas
1 load pa logs for woodburner

Before: **32 kWh** per sq m pa electricity
162 kWh per sq m pa gas

Key features

- + external insulation: exterior walls all round
- + internal insulation: floors, loft, roof
- + windows and doors: double glazed throughout
- + underfloor heating
- + condensing boiler
- + woodburner
- + solar photovoltaic (PV) cells
- + energy monitoring
- + careful timing of whole house heating controls
- + low energy lights
- + garden studio: extra space, connection with garden
- + water butts: garden
- + grow own fruit and vegetables
- + travel: bicycles, trains

Low Energy Measures

We first replaced our conservatory; this was forced on us by the old one starting to fall apart, but we chose a more durable one with **insulating glass** which also lets ultra-violet light through but blocks infra-red, creating a greenhouse effect which **provides noticeable warmth**, despite facing north.

We have **underfloor heating** in the conservatory, consisting of plastic pipes with a thick layer of concrete below, and controlled separately from the main central heating system.

We then installed **solar photovoltaic (PV) cells** and a **wood burning stove**

And because our walls have no cavities, **external wall insulation all round**.

As a result of these measures, and replacing our **front door and some windows** a little before, the house feels much warmer, and we have noticed a significant drop in our gas bills. Part of this is due to the extra control offered by the stove: when we want to, we can just heat one room with it, though it's powerful enough that after a while we usually open the doors to the rest of the house. We feel we have done most of what we can to provide resilience against future energy crises.

A garden studio which we had installed a few years earlier gives **extra space and flexibility**.

We bought it ready-assembled: it was delivered by lorry and then craned over the house, which made quite a show for the neighbours.

We only heat it when we use it, which since the birth of our son has not been as often as we would like!

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Future Plans

Claire has completed a Permaculture Design Course and we are hoping to develop at least part of our garden as a **forest garden along permaculture principles**.

We do our best to encourage our five-year-old son to **enjoy spending time outdoors** and to **learn the practical skills** we believe he is likely to need in the 21st century.

Products and Costs

All prices are what we paid, inc. VAT at 20%

External wall insulation: 60mm phenolic board and acrylic finish. Supply and install by Kershaw Contracting, www.kershawcontracting.co.uk 01954 250155, £6,716

Wood burner: Clearview Pioneer 400.

www.clearviewstoves.com

Supply by Grange Farm, www.grangefarmstoves.com 01767 209236, £937

Install by DP Fire and Flue Services, 01223 425928, £635

Solar PV system: Moser Baer PV Max, 2820W peak, about 2000 kWh/year. Supply and install by Midsummer Energy www.midsummerenergy.co.uk 01223 658414, £11,445.

Garden studio: 4m x 4m, supply and install by www.garden-studios.com, 01949 860482

Cost £13,000 with discount for accepting one made for another customer who pulled out. Full price today would be more like £20,500

Conservatory: uPVC with Celsius Clear glass (U-value 1.2). Supply and install by Cambridge Conservatory Centre www.cambridgeconservatorycentre.co.uk 01223 846700, £19,500