CASE STUDY

Upper Whatcombe – 2 Bed
1980's Terrace



This case study can be found online here

- Low-cost improvements
- 'Big' insulation works
- Glazing
- Lighting systems & electricals appliances
- Renewables: heat
- Renewables: electricity
- Water management
- Lifestyle change

Henry has lived in his home for 9½ years. The property had cavity walls, double glazing throughout and a three-year-old condensing boiler. When he moved in, the cavity walls were uninsulated and the loft had only 10mm of insulation. Although the house was comfortable, Henry felt that it was expensive to run.

Henry's main motivation for improving the home is to reduce its environmental impact, with around 70% of his motivation being climate-related, 15% comfort and 15% reducing costs. He enjoys the challenge of finding inventive ways to improve thermal efficiency and has always been interested in making homes more environmentally friendly.

He already had a good knowledge of energy efficiency and retrofit, but has continued to research ideas, seek advice and look for further improvements. He has also introduced some less conventional measures as part of his ongoing approach to making the home more energy efficient.

Energy Efficiency Measures

Draught proofing / insulation: A box over the letterbox to stop the draught. An inner front door which is basically a lightweight wooden frame with 50mm insulation board that fits very snuggly into a wooden frame.

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Insulation: Cavity walls filled with 'carbon bead'. (Little lightweight balls around 6-8 mm across) Under a covered area at the back I have clad the walls around the patio doors with insulation board.

Heating: Wall hung gas fired condensing combination boiler. Worcester Greenstar junior. 24 kW. now 12 years old.
Air source heat pump blows warm air into the living room (there is only one large reception room) which then spread mostly up the stairs where I have a curtain to stop it all going up there. Fujitsu AOYG12KPCA. 3.8kW out for 1.14 kW in. Installed in 2021 by Ian Hobbs Technical Services in Midsomer Norton who mainly do air conditioning. This was before any grant schemes. Installed in one day, almost no disruption. £1400.

Glazing: All windows have secondary glazing (tertiary if you count the original double glazing) using a DIY product called 'Trackglaze' where you buy plastic channels and acrylic sheets. You stick the track around the windows and the acrylic sheets run in them. (in a nutshell) I have found these work really well. A few issues with glue failing, it's all glued. Very easy and cheap. Under £100 per window.

Patio doors, 2m x 2m. I have made a wooden frame on the inside divided into four vertically with acrylic sheets in the middle ones, 50mm insulation board on the right and an insulated door on the left.

Smart Controls: Smart meter. Standard heating controls.

Solar panels: Solar panels installed by IDDEA as part of the Frome Town Council solar streets scheme in 2021. Five 360W panels on my south facing sloping roof.

Battery: GivEnergy 5.2kWh LiFePO4 Battery

Water conservation: Two water butts. Used bath water on garden during drought!

Lifestyle/behavior changes: I have thick curtains with thermal lings over the patio doors. They are long enough to just touch the floor and attached to the wall either side. Upstairs curtains above radiator have been cut short enough so the bottoms can be pushed onto the window sill so heat doesn't escape behind them. I have insulated the backs of my kitchen cupboards where it does not show.

Energy Consumption: When I moved in my gas consumption was around 3300kWhr a year, now it is just over 1000kWhr. So, reduced by 2/3.

Electricity: 2024, total consumption 1200kWhr, so that would have been about the same if I had no solar panels.
Total generated -1680 kWhr
Generated and used by me - 840 kWhr
Imported from grid - 360 kWhr
Exported - 840 kWhr