

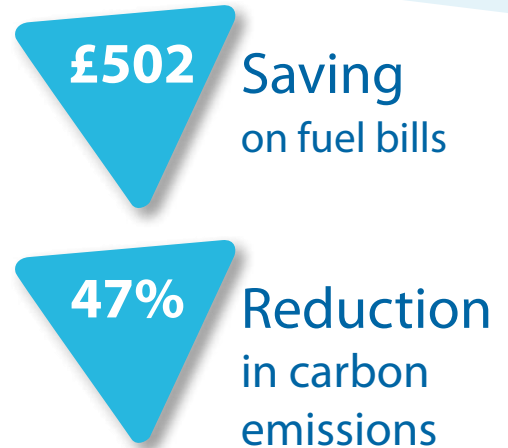
1920s end-terrace house Stroud

This and many other case studies are also available online at www.linktoenergy.org.uk



connecting with local tradespeople

Case study 10



| Measures installed | Total cost | Annual CO ₂ saving (tonnes) | Annual fuel bill saving |
|--|----------------|--|-------------------------|
| Internal solid wall insulation | £8,621 | 2.30 | £325 |
| Loft insulation top-up | £159 | 0.20 | £24 |
| Replacement double glazing | £7,073 | 0.40 | £47 |
| Solar PV (1.5 kWp) | £8,368 | 0.49 | £106 |
| Total package | £24,221 | 3.39 | £502 |
| Plus income from PV Feed-In Tariff (FIT) | | | £683 |

The home

This 1920s end-of terrace house has two storeys at the front and a third lower storey at the rear which is built into the north facing hillside and is consequently very cold.

The walls are constructed of hollow bricks, which could not be insulated using conventional cavity filling techniques. There are sloping ceilings, and at the time of the survey, the windows were single glazed, with secondary glazing added only to some windows in the main living areas.

The main area of heat loss was the walls, so the first measure installed was internal solid wall insulation, which was also carried over onto the small areas of sloping ceiling present under the dropped eaves.

The second step was to top up the loft insulation, which she was able to install herself.

She then had some double glazing installed, and finally was able to install solar photovoltaic panels with an interest-free loan through the Stroud Pay As You Save scheme.

“I really enjoyed the meetings with other Target 2050 households and I’ve also taken part in two Open Homes events where it’s been great to talk to visitors about what we’ve done.”

What they did

When the owner applied to take part in Target 2050 she had lived in this row of cottages for almost a year. Living on a budget, she was looking for cost-effective ways to make the home warmer and more comfortable for her and her family.



asiantaeth ynni
SevernWye
energy agency



Solid wall insulation

The owners of all four homes in the terrace had expressed an interest in Target 2050 and initially a quote was sought to externally insulate the whole terrace together. This was abandoned due to the high cost, partly due to the difficulty of accessing the three storeys at the rear from the steep slope below. This aspect had to be included to achieve full benefits as it is north facing.

The owner of this end-terrace home went on to internally insulate the front, side and rear walls of the house on the ground and first floors, except for the bathroom. Most of the fitted kitchen units are located on an internal wall which meant the kitchen/diner could be fully insulated but the difficulty and expense of removing and replacing the bathroom suite ruled this room out.

As the radiators had to be removed to install the insulation, the householder took the opportunity to have thermostatic radiator valves fitted.

Alongside the wall insulation, small areas of sloping ceiling were insulated in each of the upstairs rooms, except the bathroom, and the benefit of this was so noticeable the householder decided to have the bathroom done as well. The open stairwell to the lower ground floor was boxed in to reduce the loss of heat from the kitchen/diner.

Double glazing

Hardwood framed double glazing was chosen in preference to uPVC for its lower environmental impact and because the material is in keeping with the age of the property. The relatively high cost of wood over uPVC limited the replacement to key rooms: the living and bedrooms.

DIY loft insulation

The householder installed her own loft insulation using a loft board product so that she could still use the loft for storage. There was already 75mm of glass fibre insulation between the joists; adding two 50mm layers of insulation board over



Sloping ceiling insulation ready for decoration

the joists achieved an insulation value similar to 270mm of glass fibre insulation. The high compressive strength of the insulation board means that a chipboard floor can be laid over the top without the need to add timber to increase the depth of the joists.

Solar electricity

The original budget did not stretch to solar panels, so the householder was pleased to be offered an interest-free loan through the Pay As You Save pilot for photovoltaic panels. Solar water heating was also considered, but the householder was happy with her existing combi boiler and there was only room on the roof for one kind of panel. A problem was encountered when the installer discovered the roof tiles contained asbestos, but with care and reference to HSE guidance the installation went ahead.

| Energy consumption | Total (kWh) | Per m ² floor area |
|----------------------------|---------------------|-------------------------------|
| Before improvement (2007) | 41,500 | 497 |
| After improvement (2010) | 21,134 | 253 |
| With all possible measures | 15,400 | 184 |
| UK average (2011) | 19,800 ¹ | 217 ⁴ |

| Running costs | Total | Per m ² floor area |
|--|---------------------|-------------------------------|
| Before improvement (2007) | £1,351 | £16.18 |
| After improvement (2010) - excl FIT income | £849 | £10.17 |
| With all possible measures | £679 | £8.13 |
| UK average (2011) | £1,032 ³ | £11.34 ⁴ |

¹Ofgem 2011

²English Housing Condition Survey 2011

| CO ₂ emissions | Total (tonnes) | Kg per m ² floor area |
|----------------------------|-------------------|----------------------------------|
| Before improvement (2007) | 8.30 | 99 |
| After improvement (2010) | 4.41 | 53 |
| With all possible measures | 3.30 | 40 |
| UK average (2011) | 6.00 ² | 66 ⁴ |

| Possible next steps | Annual CO ₂ saving (tonnes) | Annual fuel bill saving |
|-------------------------------------|--|-------------------------|
| Replacement condensing boiler | 0.80 | £102 |
| Insulation to solid concrete floors | 0.30 | £40 |
| Total | 1.10 | £142 |

³Ofgem 2011

⁴Based on 91m² from English Housing Condition Survey 2011