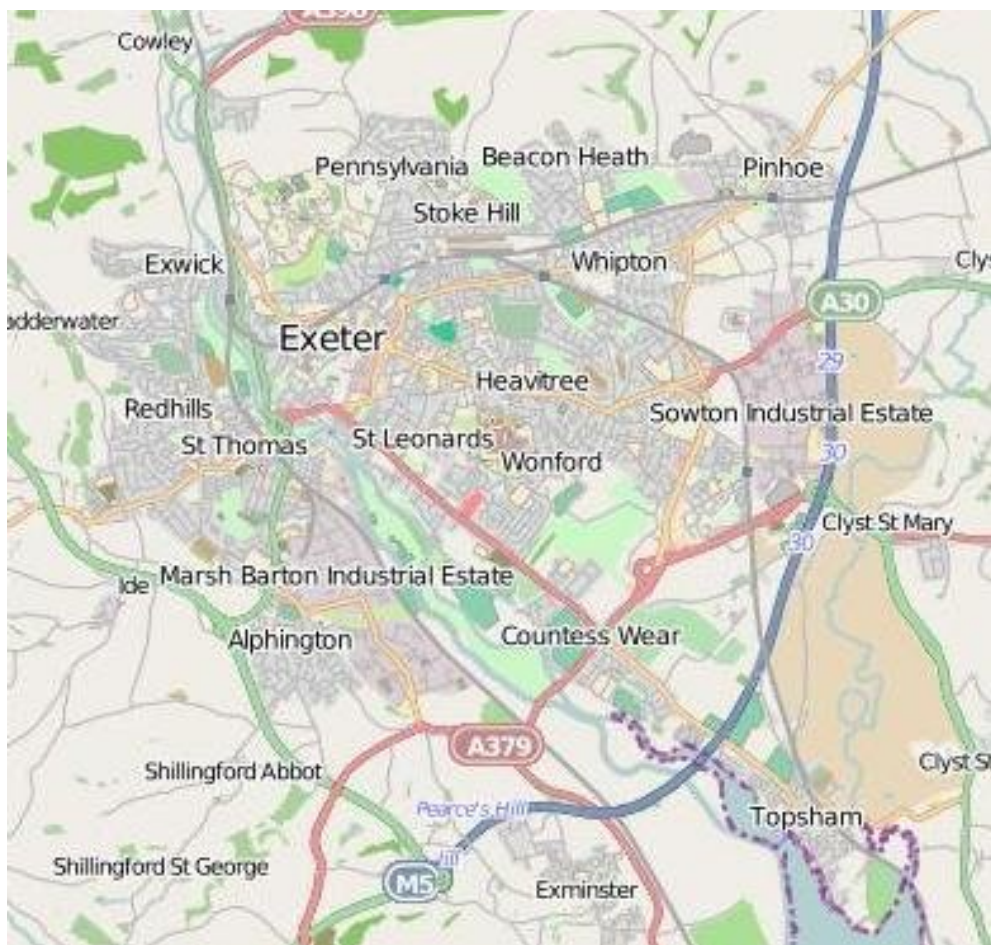




Local experiences of green home technologies



What local people said about their experiences

The aim of this document is to help householders interested in installing energy efficiency measures or renewable energy technologies. It contains replies from a number of householders in Exeter, who were asked by Transition Exeter, about their experience of installing a range of 'low carbon' technologies.

Based on the technologies used by those surveyed, the document is divided into sections, which illustrate the advantages of the various options and provide advice on their application. In the different sections, honest and objective views are presented from the experiences of people around the city who use the technologies in their own homes. Some of the costs of installing and using energy efficiency measures and renewable energy technologies are also shown.

The information includes:

General advice



Solar photovoltaics



Solar hot water



Insulation



Solid fuel systems





General Advice

Choosing the right technology for a 3-bedroom, 1930s, semi-detached house

"We decided that we wanted to install some form of renewable technology. The process of deciding has been far harder work than I would have imagined."

From the process, the homeowner learned:

- Every home is different in terms of which technology is suitable. Merely choosing "off the shelf" is not an option. Rather, careful consideration must be given to a whole range of issues before a sensible decision can be made.
- Things to consider when deciding which technology is suitable may include:
 - Type, age and size of the building;
 - Aspect;
 - Possible locations for installations – solar or photovoltaic panels could be installed in a number of places other than just the roof of the house, for example such as on a garage;
 - Shape of the roof;
 - Nature and age of the system already installed – will the existing system will need to be replaced in the near future or was it installed only relatively recently?
 - Any other planned work;
 - Whether the building is in a conservation area;
 - Impact of the installation on the visual profile of the building and thus whether planning permission is required;
 - Building usage – is hot water and/or heating use high or low?
- "Simple" solar thermal technology includes many options, for example such as the choice between flat plate and evacuated tube panels. Different companies recommend different types, all of which have their own advantages and disadvantages.
- Every company is different. Try to find one by recommendation of a previous customer.
- If a high level of outlay is being considered or the installation is to be combined with other work on the building, it may be worth paying for independent advice on which technologies are suitable, rather than relying on companies who tend to push specific technologies.
- Planning permission may be required, even if it does not seem logical that this should be the case.



Solar Photovoltaics



Solar Hot Water



Log Fuelled Boiler

Modern, 4-bedroom bungalow in a rural setting with 12 photovoltaic panels, solar hot water and a log fuelled boiler

What motivated you to invest in alternative energy solutions?

- *I think energy prices are going to keep going up and I wanted to do something about it*
- *Something of a challenge/interest for me as I used to be an engineer*

Which technology/technologies have you installed?

- *12 PV panels, manufactured by BP, installed by Equinox Energy (based in Bristol). These are installed within an array (on a ground-mounted frame near the house, rather than on a roof). This required planning permission.*
- *Flat panel solar hot water system manufactured and installed by Solartwin. This system includes a solar powered pump, which moves the water from the solar panels to the hot water cylinder.*
- *Boiler that burns large logs and complies with clean air requirements.*
- *Good roof insulation, which can be moved around when access is required in different areas of the roof. Rock wool insulation (which is unpleasant to handle) in movable cardboard boxes, which fit exactly between the roof joists.*

Are you happy with the installation? What are its positive and negative aspects?

- *The Solartwin hot water system had a serious glitch – in cold, bright weather, the solar powered water pump worked too well, pumping cold water from the roof into the hot water cylinder. This issue was unexpected but was rectified with the installation of a temperature control valve.*
- *Broadly happy with the photovoltaics but the feed in tariff is not as good as the old deal. It is also very difficult to obtain reliable advice on the best angle for the array – it should ideally be moved once a month in order to be at the best angle for the sun. This does not apply for roof mounted photovoltaics.*

How much did it cost?

- *The photovoltaics cost £12,000 (less the government grant of £2,500, which is no longer available).*
- *The solar hot water system cost around £5,000.*

What advice would you give to others?

- *Bad salespeople give unreliable information. They exaggerate the amount of energy you will receive and the reliability of the technology. If you are considering any of these installations, visit someone who has one installed and who has the supporting figures.*
- *Do the cheaper things first, such as insulation.*



Solar Photovoltaics

Large, Edwardian, semi-detached house with 10 photovoltaic panels

What motivated you to invest in alternative energy solutions?

- *Concern about the security of energy supplies.*
- *The existence of the feed in tariff for photovoltaic electricity.*
- *The fact that a grant was available towards installation (this no longer exists).*
- *We have a large, south-facing garage, to which an electricity supply was already installed. There was therefore an easy and convenient place in which to install the photovoltaics.*

Which technology/technologies have you installed?

- *We have 10 photovoltaic panels manufactured by Sharp. These generate around 1,800 kilowatt-hours per year.*
- *Installed by Sungift Solar (based in Exeter).*

Are you happy with the installation? What are its positive and negative aspects?

- *I am totally happy with the equipment and with the company that installed it. It is exciting to see a new breed of 'green collar workers' doing this stuff.*

How much did it cost?

- *It cost £8,400 (less the government grant of £2,500, which is no longer available).*

How much money has it saved you?

- *We recover £800 per year from the feed in tariff.*
- *Whilst the panels are generating electricity, what we use is effectively free.*
- *We have made small changes to optimise the benefit from the electricity during the day. For example, we have fitted a timer to our highly insulated freezer, so it runs only during the day. We use the immersion heater rather than the gas heating for extra hot water.*
- *I believe that installation prices will fall in time.*

What advice would you give to others?

- *This is not a toy or piece of "eco-bling". It is a real solution that helps you understand and connect with the energy situation in this country.*
- *I believe that clean electricity is the future and that gas is less reliable, so I am pleased to have a secure electricity supply.*





Solar Photovoltaics



Solar Hot Water

Large, detached house with a 3.96 kilowatt peak array on a shade-free, south-facing roof at an angle of 35°, comprising 22 NU180 panels manufactured by Sharp and a Fronius IG40 inverter.

What motivated you to invest in alternative energy solutions?

- *Primarily a desire to lower our carbon footprint, as responsible world citizens.*
- *Secondly, a desire to reduce our dependence upon Russian oil.*

Which technology/technologies have you installed?

- *Solar hot water from Solarsense (based in Bristol).*
- *Photovoltaics from Sungift Solar (based in Exeter).*

Are you happy with the installation? What are its positive and negative aspects?

- *The power generated by the photovoltaic panels is greater than the amount we predicted. We are very happy to have reduced our carbon footprint and believe that, over 12 months, we will generate the equivalent of our annual electricity use.*

How much did it cost?

- *The solar hot water cost around £4,500 and the photovoltaics £14,000 (plus the government grant, which is no longer available).*

How much money has it saved you?

- *It is a little early to say, as the photovoltaics were installed only in November 2009. Our blog provides more information: <http://solarphotovoltaicsinexeter.blogspot.com>.*

What advice would you give to others?

- *Do the easier and cheaper things first, such as installing energy efficient light bulbs, insulation etc.*





Solar Photovoltaics

Large, detached house with 20 photovoltaic panels installed in November 2009.

What motivated you to invest in alternative energy solutions?

- *Principally, the fact that they are green and it is the right thing to do. We want to protect the planet.*

Which technology/technologies have you installed?

- *20 "Sharp 180" monocrystalline photovoltaic panels installed by Beco Ltd. The panels occupy the entire south-facing area of the house roof.*
- *We installed twice as many panels as necessary for our house, because they will be good value for money when we come to sell the house and will provide a great incentive for a purchaser.*

Are you happy with the installation? What are its positive and negative aspects?

- *Delighted. The energy generation has exceeded our expectations but there have been some issues.*
- *It is difficult to monitor whether the panels are operating efficiently. Beco provided no estimate of average generation. Due to a faulty installation, the panels operated at half performance for 6 months before I suspected a problem, which was then quickly resolved by the installer.*
- *The installation has made very little change inside the house. There was no need to chase cables into walls.*

How much did it cost?

- *The installation cost £17,706 (less the government grant of £2,500, which is no longer available).*
- *The cost included scaffolding at £750.*

How much money has it saved you?

- *Previously, we were paying £35/month for electricity. We now expect to pay nothing and we receive £130 per month for the electricity generated.*
- *The panels generated around 350 kilowatt-hours in July.*
- *We expect the installation to pay for itself in around 10 years.*

What advice would you give to others?

- *It gives you a relatively carbon-free footprint.*
- *If you have the money, use it to invest in renewable energy technologies, as this will probably give a better return than leaving your money in the bank.*





Solar Hot Water

1930s, semi-detached house with 1 solar thermal panel installed in 2003.

What motivated you to invest in alternative energy solutions?

- *To help the environment.*
- *We try to be self-sufficient, which includes growing lots of our own vegetables.*
- *We are concerned about energy security and gas price increases.*
- *To save money.*

Which technology/technologies have you installed?

- *One solar thermal (hot water heating) panel installed by Spectrum Energy, Dorset. This took two days to install and included a new hot water tank in the roof.*
- *We have also replaced our electric shower with a thermostatic shower, which means we can now shower for free.*
- *In addition, we have fully insulated the loft and walls as well as installing double-glazed windows.*

Are you happy with the installation? What are its positive and negative aspects?

- *We are happy with it but it is an old-fashioned system and there are now improved technologies available.*
- *Initially, the thermostat was set to allow the hot water to cut in at 60°C. This was too high and we have now set it to come on at 40°C.*
- *The installation seems to become more efficient every year.*
- *The panels leaked both outside and inside the roof when they were first installed. The company quickly corrected this.*

How much did it cost?

- *£5,673.*

How much money has it saved you?

- *£75 – £80 a year. We expect to achieve greater savings now we have installed a thermostatic shower.*
- *An annual survey of the installation would cost £300 but we have decided to wait until it is 10 years old.*

What advice would you give to others?

- *In general, remember: pay nothing until the work is finished.*





Wood Pellet Stove

Late Victorian, 2-bedroom, terraced house with a wood pellet stove installed 2008.

What motivated you to invest in alternative energy solutions?

- *I moved into a house with no heating system and therefore had a blank canvas to investigate all potential heating options. I was interested in wood stoves because I expect gas & electricity prices to continue to rise in the long-term, so reducing exposure to these costs seems to be sensible.*

Which technology/technologies have you installed?

- *An Ecoteck Veronica pellet stove with a ducted hot air system for the upstairs rooms. This was installed by Flamefix (www.flamefix.co.uk).*

Are you happy with the installation? What are its positive and negative aspects?

- *Positive: The stove works like a conventional boiler (i.e. it starts and stops automatically), it looks good in the room, is effective at heating the house and has no water involved so there is no risk of leaks.*
- *Negative: An adequate space is required for storing the wood pellets. The stove can be a little noisy and needs regular maintenance such as cleaning and filling with fuel. Retrofitting in an old house may be difficult and initial problems included balancing the draught to the pellet burn rate.*
- *Once the initial problems had been resolved, the stove was very effective last winter, when used 950 kg of fuel (during a cold winter). I suspect that the stove would struggle to be an effective primary heating system in larger house.*
- *Seeing the quantity of solid fuel consumed increases awareness of energy use and encourages greater efficiency.*

How much did it cost?

- *Around £3000 (including installation). This is little more than a complete, conventional gas heating system.*
- *The total cost of the wood pellets we used last winter was around £260.*

What advice would you give to others?

- *Do your research and be patient. Ensure that you have somewhere that is both large enough and dry enough to store between ½ and 1 tonne of pellets can be accessed for delivery.*





Insulation



Solar Hot Water



Wood Burning Stove

Old, terraced house with solar hot water and extensive insulation.

What motivated you to invest in alternative energy solutions?

- *They are good for the environment, will save money long-term, and generate a better return on investment than anything the bank could offer.*

Which technology/technologies have you installed?

- *Vaillant solar thermal panel and controller plus upgraded, Worcester Bosch GreenStar system boiler.*
- *StrikoTherm external wall insulation (100mm polystyrene slabs with special render).*
- *Homemade rainwater harvesting comprising water butts and a caravan water pump.*
- *Knauf internal wall insulation.*
- *Thermofleece sheep's wool insulation in the loft and under the living room floor.*
- *Multi-foil insulation in attic rooms.*
- *High-power LED replacements for halogen downlighters*
- *Eco shower head.*
- *Chimney balloon.*
- *Scan Anderson 4-2, upgraded wood burning stove.*
- *Wattson energy monitor.*
- *Linseed oil based paint on external windows.*



Are you happy with the installation? What are its positive and negative aspects?

- *The economic case may not be convincing but these technologies have made a qualitative difference to our home. Feeling cosier at home is definitely worth it.*
- *The house often used to be colder inside than the temperature outside, there were always draughts and any heat soon escaped. It is now comfortable all year round, warming up quickly when the heating is turned on and not overheating upstairs in hot weather.*
- *Having builders about stops being fun quite quickly and it is difficult to get the dust and grit out of the house.*

How much did it cost?

- *The solar thermal installation cost £3,500, changing the boiler cost £4,000 and the external insulation (excluding complex scaffolding) cost £9000.*

How much money has it saved you?

- *Replacing the electric shower has saved us 1 kilowatt-hour per day, representing a 25% saving on electricity.*
- *Flushing the toilet with rainwater saves us around 2.5p per flush.*



Insulation



Solar Hot Water



Wood Burner

Small, modern, detached eco-house in timber construction with solar hot water, wood burner, numerous insulation features and underfloor heating.

What motivated you to invest in alternative energy solutions?

- *Primarily a desire to lower our carbon footprint, as responsible world citizens.*
- *Secondly, a desire to reduce our dependence upon Russian oil.*

Which technology/technologies have you installed?

- *Solar hot water.*
- *Timber, double-glazed doors and windows.*
- *A wood burner, which supplements the underfloor heating and uses timber and wood shavings from a sustainable, local source.*
- *A sedum roof and Wally pockets made from recycled plastic bottles.*

Are you happy with the installation? What are its positive and negative aspects?

- *We believe that, over 12 months, we will generate the equivalent of our annual electricity use.*
- *We are very happy so far and are looking forward to having photovoltaic panels installed.*

How much did it cost?

- *The solar hot water was already installed before we moved into the house.*
- *We are looking to spend between £6,600 and £12,000 on a solar photovoltaic installation.*

What advice would you give to others?

- *Do the easier and cheaper things first, such as installing energy efficient light bulbs, insulation etc.*

