

Cambridge

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GREEN HOUSES

Want to make your home greener and lower your bills, but not sure where to start? Local homeowners and projects can point the way, says Emily Brooks

THE UK has some of the oldest and most inefficient housing stock in Europe: from un-lagged lofts to creaky old boilers, we're leaders of the pack when it comes to wasting energy – and we end up paying for it out of our own pockets via fuel bills.

Many people are interested in making their homes greener – and correspondingly saving money – but lack of knowledge about what's involved holds them back. There's also perhaps some scepticism about whether the figures will add up, especially since the financial outlay for some technologies, such as solar energy, can run into tens of thousands. What better way to find out what it's really like than to talk to a local person who's already been there?

Last May, more than 25 local eco houses opened up their doors to the public for Open Eco Homes, a scheme run by Cambridge Carbon Footprint (www.cambridgecarbonfootprint.org). It's back this year, on 15 and 23 June, so put it in your diary now: check the Open Eco Homes website (www.openecohomes.org) for updates. Cambridge Carbon Footprint trustee Ian Collins, whose architect-designed home is a regular on the open houses roster, says "there's nothing like seeing something that's already been done, and talking to the person who's paid for it, you'll get the whole story of how it works." He adds that much of the available information on greener homes is "what manufacturers and installers will tell you – which is fair enough, but what people really need to know is, what's it like to live with?" >

Designed by local practice Mole Architects, Ian's Madingley Road home has won numerous awards for its design, and has many features that are seen as central tenets in sustainable building. The single-storey house faces south to maximise solar gain; it is very generously insulated on its walls, floors and roof; its double-glazed windows are high performance to regulate temperature; and a rainwater tank uses rainwater for garden irrigation, the loos and the washing machine. There is complex technology at work here, from the solar tubes that heat the hot water to the heat-recovery system that keeps the airtight house ventilated whilst recycling heat from the bathroom and kitchen.

Ian's ground-source heat pump, which harnesses heat from the ground to warm his home, is unusual for Cambridge: because of its cost (£15,000, including boreholes for the underground pipes), it is usually a technology only recommended for homes without mains gas. It highlights the motivations of the eco homeowner that can come into conflict: reduce your carbon footprint or burn as few fossils fuels as possible, or just save energy to save money? "I think with most people I've met, the financial motivation is there, but that's not the primary one," says Ian. "They feel responsibility in terms of consuming resources. That recognition is core to Cambridge Carbon Footprint."

Visitors to Madingley Road are generally very knowledgeable about building more sustainably, he adds, and come armed with plenty of technical questions about how things work. "Cambridge has a population who are really well informed about these things, and motivated to do something about it. People are encouraged by seeing how other people have done things, so it's self-reinforcing."

Swedish construction company Skanska are in agreement that Cambridge's residents are more eco-savvy when it comes to their housing. The firm has been building homes in the Nordic countries for decades, but chose a site in Trumpington for its first foray into housebuilding here. Its Seven Acres development will conform to Level 4 of the Code for Sustainable Homes, the government's national standard for the energy efficiency of housing – currently new builds must meet Level 3 compliance, one rung below, and it is rare to find a housebuilder willing to stake the extra funding needed for more sustainable building. "The debate that I hear in the [housebuilding] industry is that there is a premium to green, and that customers aren't willing to pay for it, so you can't do it," says Magnus Andersson, president of Skanska International UK, "but we're coming at it from a completely different angle, where it's about life-cycle costs – you're making an investment in a greener home so you're going to save on your



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energy bills, and on many other aspects over the lifetime on your home."

His customers seem to be listening, with about 80% of the first phase of the development sold and the first homeowners arriving in March. "We're taking a 'fabric first' approach" says Magnus of the houses' green credentials, "with highly insulated walls, triple-glazed windows, a ventilation system with heat recovery, underfloor heating, solar PV panels in the roof, and more efficient water handling." Simple and unapologetically modern in form, and light and bright within, their sustainability is complemented by an equally important wider sense of a pleasant place to live, with plenty of shared green space.

New homes form one part of this story, but over the years many of us have traded single for double glazing, or installed loft insulation,

but there are still far too many draughty, uninsulated houses, with inefficient boilers and no thermostats. According to the Energy Saving Trust, 29% of our CO₂ emissions come from our homes. The government's Green Deal (www.gov.uk/greendeal), launched at the end of January, aims to level the playing field when it comes to the affordability of energy-saving measures. Homeowners get an assessment by an accredited adviser, and instead of paying up front for insulation, a new boiler or solar technology, the money will be loaned to you, and paid back via your energy bills; the Green Deal's 'golden rule' calculations guarantee that you're always saving more than you would have paid out on your old bills. The system has its detractors – asking homeowners to saddle themselves with a loan for up to 20 years could put them off, even with the projected overall >



ABOVE & LEFT: Skanska's Seven Acres development in Trumpington conforms to Level 4 of the Code for Sustainable Homes, and includes triple-glazed windows and solar PV panels on the roof

ABOVE: Designed by Ely's Mole Architects (01353 667068; www.molearchitects.co.uk) and owned by Cambridge Carbon Footprint trustee Ian Collins, this contemporary eco home will be opening up its doors as part of the Cambridge Open Eco Houses scheme (www.openecohomes.org)

RIGHT: This ecoPANEL makes for useful secondary heating at a lower cost than a regular electric radiator; it uses convection rather than a fan to push the heat around the room. £89.99 (www.ecopanelheater.co.uk)

BELOW RIGHT: An air-source heat pump, like this one from Stiebel Eltron (0151 346 2300; www.stiebel-eltron.co.uk) extracts heat from the outside air, which is then turned into a fluid and passed through a compressor to heat it further, before being transferred to radiators or underfloor heating. They are a good option for homes not already on mains gas, which are already well insulated and airtight

FAR RIGHT: Gavin Langford Architects' Low Impact House in Cambridge (01223 847200; www.gavinlangford.com) uses highly triple-glazed Ecoplus3 windows, from £300 per m² for a fixed window and £540 per m² for opening windows (01484 461705; www.ecoplus.co.uk)





Bill Powell installed underfloor heating in his 1950s Stapleford home, part of a wider programme of sustainable measures that has turned it into a 'superhome'

ABOVE: This 4kW solar PV system was installed by Bowller (01223 873640; www.bowller.com) in Ashwellthorpe, Norfolk, and generates around 3,400kWh of electricity per year; the feed-in tariff (FIT) pays 15.44p per kWh

BELOW: Solar thermal panels (which heat up your water) like this one from Worcester will soon be covered by the Renewable Heat Incentive (RHI); just like the feed-in tariff (FIT) now pays you for generating electricity, the RHI will pay for generating heat

savings – but the scheme is offering a cashback incentive for early adopters, so if you're thinking about a new boiler it could pay to act quickly.

There are plenty of newly built eco homes locally and existing homes that have been given a green makeover by their owners. Bill Powell's Stapleford 1950s semi combines an exhaust air heat pump, underfloor heating, fan-convactor radiators and a flueless gas fire to make his home more efficient: another past participant in the Open Eco Homes scheme, he's also a member of the SuperHomes initiative (www.superhomes.org.uk), a nationwide network of

eco-home owners that open their homes to the public and are happy to dispense advice.

Over in Longstanton, a dozen homeowners have recently benefitted from a pilot project that saw their homes receive various sustainable upgrades, from new boilers to draught proofing, in exchange for the local council monitoring their changing energy use. Analysis of this data is still ongoing, but South Cambridgeshire Council's community technical manager John King says that "it's showing quite substantial savings", adding that the 'fabric first' approach – concentrating on the relatively easy things such as insulation, rather than costly renewable technology such as solar – will hopefully show homeowners that being greener does not necessarily require huge cost or upheaval.

Homeowner Andy Batey had an insulating layer of polystyrene (with a render on top) wrapped round his 1960s semi, combined with innovative 'positive input' ventilation, a type of heat-recovery system. He says, "I reckon we're saving between 30 and 40% on fuel bills. We have thermostatic radiator valves, and if the radiators are on, they're just warm enough to let you know that they're working. Whereas before, they probably would have often been on full."

With all the talk of 'fabric first' – lowering the energy your building consumes in the first place, rather than making your own – and a reduction last year of the feed-in tariff (FIT) that the government will pay you for generating your own electricity, is it still worth installing solar technology? Yes, says Tom Roberts,

project manager at Bowller Solar Energy (01223 873640; www.bowller.com). "The reduction of the FIT has also seen a reduction in panel prices, so payback times are roughly the same as they were when the FIT was introduced, and the capital outlay is much less," he says. "The up-front cost has reduced by more than 70% in many cases." Owen Morgan, managing director of Cambridge Solar (01223 863885; www.cambridge-solar.co.uk) agrees: "The tariff is still there, and it's still a good deal. Before, you might be investing £14,000-16,000 in a solar PV system, now it's more like £6,000 or £7,000 – it's still going to pay for itself in ten years, or sooner. Compare that with money sitting in the bank and you're getting a much better return on investment, plus reducing electricity bills, and lowering your home's carbon footprint."

In addition, the Renewable Heat Incentive (RHI), which will offer a similar sort of incentive for anyone generating their own heat (such as solar hot water systems) launches this summer. "It is difficult to know about the returns on the solar hot water systems until we know what form the RHI takes and what level the tariffs are set at," continues Tom, "but we do know a well-designed system will provide you with between 50 and 70% of your hot water annually and prolong the life of your boiler. Any savings made are increasing all the time by the escalating energy prices." He also stresses the need to use a Microgeneration Certification Scheme (MCT) accredited installer, "otherwise you won't be eligible for the FIT or RHI".

In the end, though, there's no point generating your own electricity only to waste it through draughty doors or a badly insulated roof. If you're after impartial advice but not ready to commit to getting a Green Deal assessment, Cambridge Carbon Footprint's Climate Friendly Homes initiative offers a free assessment of your home, with tailored information about where to go next. ✕

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