
APPENDIX A: Energy Efficiency Guidance document for Redbridge Residents

Energy Efficiency and Renewable Energy Decision Flow Diagram

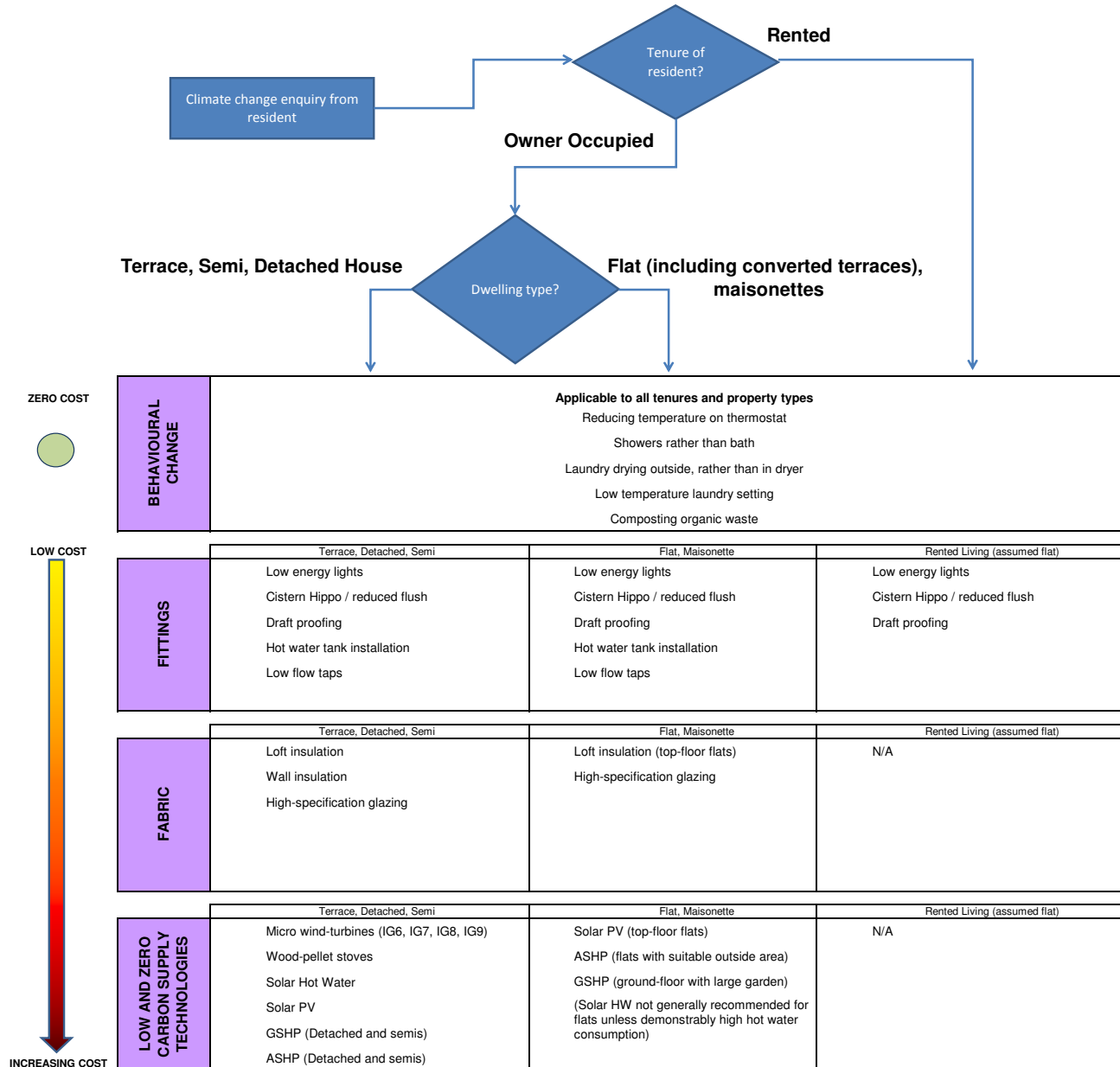


Illustration of Potential Value of Energy Efficiency and Behavioural Change

Take a shower instead of a bath

Using a low flow shower can use 1/3rd of the water used during a bath, reducing heating load, saving around 200 kgCO₂ per person per year.

Insulation of water tank

Insulating the hot water tank (75mm) and pipes can save around £50 a year and up to 250kg CO₂.

Loft Insulation

Loft insulation (270mm) can save around £190 a year and up to 1039 kg CO₂ per year.

Water displacement device

Treating and distributing water, collecting it as sewage and then treating it before discharging it back into the environment are all processes requiring energy, and therefore result in CO₂. Flushing accounts for at least 31kg CO₂ per year. Installing a simple water displacement device in the toilet cistern reduces water consumption and therefore CO₂ emissions.

Installation of a water butt

Rainwater collected can be used for landscaping, cleaning cars, and washing external areas, reducing CO₂ emissions from using potable water

Use an A-rated boiler

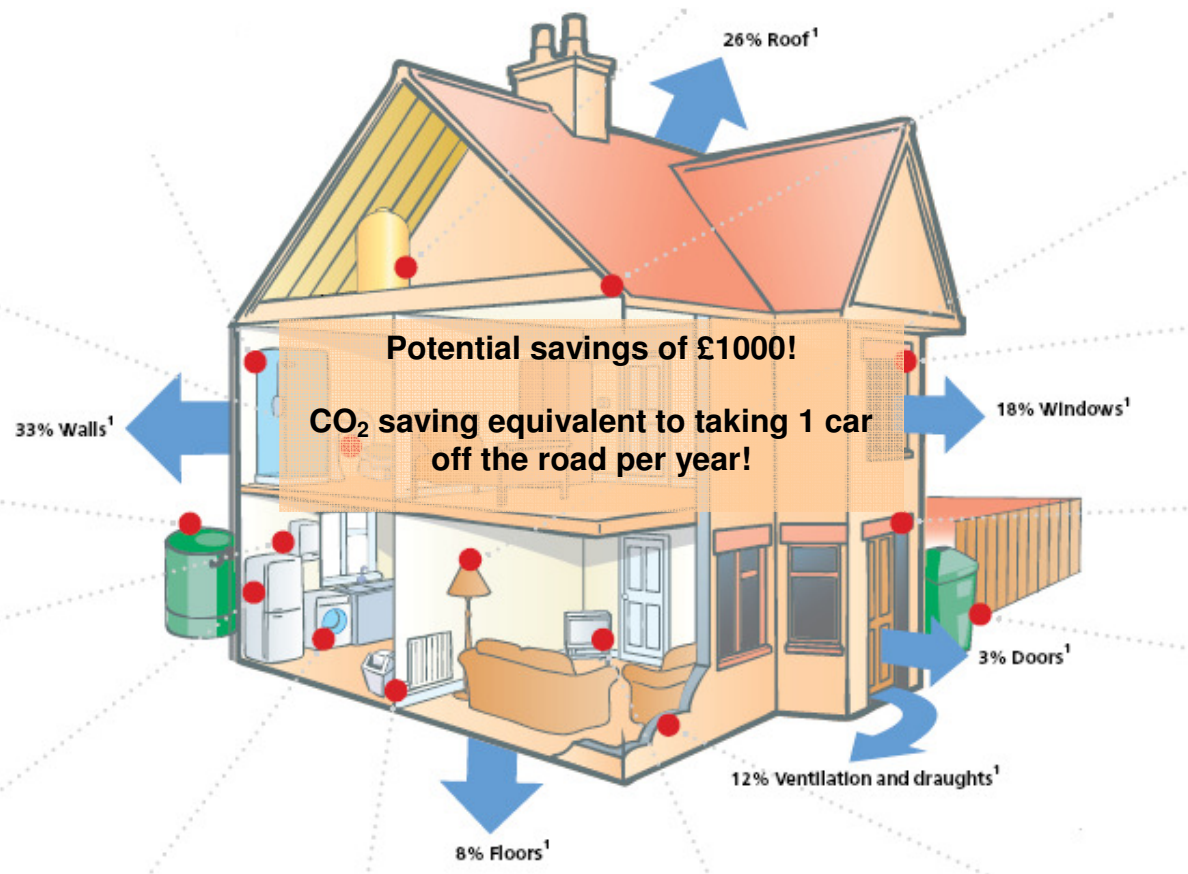
Replacing a G-rated boiler by an A-rated boiler with heating controls can save around £230 and 1,259kg CO₂ per year

Use A-rated appliances

Buying A-rated fridges, freezers, dishwashers and televisions over poorly rated appliances can save around £60 and 210kg CO₂ per year

Wash laundry at low temperatures

Washing laundry at 30 instead of 60 degrees can save around £10 and 44kg CO₂ per year



Energy saving light bulbs

Replacing inefficient bulbs with energy efficient ones saves around £40 and 135 kg CO₂ per year.

Double glazed windows and doors

Replacing single glazing with C-rated Energy Saving Recommended double glazing saves around £130 and 712 kg CO₂ per year

Draught proofing

Saves around £30 and 152 kg CO₂ per year

Composting and recycling

1200 kg of CO₂ can be saved by recycling half of the waste your household generates per year

Drying clothes outdoors

Using a clothes line can save around £30 and 450kg CO₂ when you air dry your clothes for 6 months of the year

Improve occupant control

Install thermostat radiator valves to prevent overheating spaces. Reducing heating by 1° can save £50 and 284kg CO₂ per year

Appliances on stand-by

Shutting appliances off completely rather than leaving on stand-by can save £30 and 126kg CO₂ per year

Wall Insulation

Cavity wall insulation saves around £150 and 799 kg CO₂ per year

Assumptions:

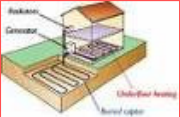
1. Heat loss based on an uninsulated home
2. Savings based on a period of one year for a 3-bed semi detached gas heated home, gas price of 3.80p/kWh
3. Savings for buying Energy Saving Recommended appliances are based on replacing an old appliance with an A+ or A++ cold appliance or AAA wet appliance
4. Boiler savings assume average levels of insulation when replacing a stock average boiler with efficiency of 72% (gas) or 80% for oil with an Energy Saving Recommended condensing boiler with an efficiency of 90%.260kg
5. These savings provide an estimate only, and generally are based on the averagely insulated home. Actual savings may be higher or lower depending on your original usage of energy and insulation levels.

References

www.energysavingtrust.org.uk , www.lga.gov.uk , www.globalwarming-facts.info, www.terrapass.com, www.epa.gov. Quantifying the energy and carbon effects of water saving (www.energysavingtrust.org.uk)

Guidance Information on Zero and Low Carbon Energy Supply Technologies

Technology	Locational Requirements/ Suitability to types of development	Savings	Cost	Further information
 Solar Hot Water	Suitable for detached, semi-detached, terraced houses and some top-floor flats, with south-facing roofs. • Ensure roof not over-shaded • Is there space for a hot water cylinder (5m²) • Is current boiler compatible with solar water heating? • Confirm structural roof strength with installer	• Approximately £50/year for a 4m² panel • 380kg CO₂ • Financial savings will depend on amount of hot water used, boiler efficiency and the type of fuel used to heat water normally.	£3,500 - £4,500 for a 4m² panel including a new hot water cylinder (150- 200l, however this depends on hot water use). Grant available under the Low Carbon Building Program.	• The system works all year round, though gas boiler is likely to be required during the winter months. • Lower energy bills. A typical house spends 20-25% of their energy bills on heating water • Reduces carbon emissions
 Wind Turbines (roof mounted)	Within Redbridge micro scale wind is likely to be most viable in postcode areas IG6, IG7, IG8 and IG9 • Are there any structural constraints, for example related to vibration? (Please check with installer) • Are there any obstacles to wind nearby (particularly from prevailing wind direction (south west)? • Is average wind speed greater than 4.5m/s?	• A well sited 2.5kW turbine can have a payback of around 9.5 years • 2.6 tonnes CO₂ per year	A 2.5kW roof mounted turbine costs between £3,000-4,000	• Lower carbon emissions • Lower electricity bills and support through 'Feed in Tariffs' • Store excess electricity in batteries for calm days, or simply export to grid
 Photovoltaics	Suitable for detached, semi-detached, terraced houses and some top-floor flats, with south-facing roofs. • Roof or wall that faces within 45 degrees of south with good access to sunlight • Ensure roof not over-shaded • Confirm structural roof strength with installer • About 7.5m² of roof space is required for each kWp of a PV system	• Up to 1 tonne of CO₂ a year • Around £200 p.a. (not including feed-in-tariff)	A 2kWp system costs around £15,000 and provides 1,700 kWh of electricity per year (half the year's electricity requirement for a 3-bed home)	• Lower carbon emissions • Lower electricity bills • Electricity generated will attract Feed in Tariffs • Batteries can store excess electricity for a cloudy day

Technology	Locational Requirements/ Suitability to types of development	Savings	Cost	Further information
 Biomass fuelled stoves/boilers	Since Redbridge is an AQMA, biomass may not be suitable in all areas unless agreed by the Council. Areas around North Circular road, Chigwell Road, the M11, Eastern Avenue Road, High Road, and Gants Hill are particularly sensitive. - Fuel storage space - Do you have a route for a suitable flue? Existing chimney can possibly be fitted with a lined flue. - Compliance with Building Regulations / Control - Do you live in a Smoke Control Area? Ensure you select an exempt appliance.	- Up to 9.6 tonnes CO₂ when a wood boiler replaces a solid (coal) fired system. - If replacing electricity, £170 - £410	A 15kW automatically fed boiler costs ~£9,000 including installation and installing a suitable flue. Grant available under the Low Carbon Building Program.	- A low carbon option for providing heat as long as the wood/fuel is sourced locally - Burning wood can be a convenient way of disposing wood that might otherwise be landfilled - Potential support from 2011 via the Renewable Heat Incentive. - A list of pellet and biomass suppliers around Redbridge can be found on websites such as http://www.renewable-energy-directory.co.uk/boiler/london_north.php
 Ground Sourced Heating (GSH)	Particularly suitable for new build detached and semi-detached homes with external land areas of >100m² for semi detached and 150m² for detached homes for the installation of ground loops. Large garden /external area required for existing homes - Ground needs to be suitable for digging a trench or a borehole - Is your home well insulated? - What type of heating system is required? Underfloor heating is preferable. Consider installing PVs to power the compressor and pump	The system needs electricity to drive the compressor and pump. Generally GSHP's produce 2.5 to 4 units of heat for every unit of electricity used. The cost of electricity and the amount saved will depend on the fuel replaced. However, average saving is around £400 (if replacing gas) to £800 (if replacing electricity). This can also equate to a saving of 1-2 tonnes of CO₂ per year if replacing gas and 7 tonnes CO₂ per year if replacing electricity. The savings assume that the GSHP provides up to 50% of domestic hot water as well as 100% of space heating requirements.	A typical 8kWth system should cost between £8,000 and £12,000 to install, including the cost of burying the ground loop in your garden (usually sufficient for an average 3-bed home). Cost of heat distribution system – underfloor heating or radiators is not included. Running costs (to produce heating and 50% of domestic hot water) are likely to be around £540 per year, but will depend on a number of factors - including the size of your home and how well insulated it is. Grant available under the Low Carbon Building Program	- Reduce CO₂ emissions - Reduce fuel bills - Cut down on wasted electricity: heating with a ground source heat pump is much more efficient than using electric radiators.

Technology	Locational Requirements/ Suitability to types of development	Savings	Cost	Further information
 Air Sourced heat pumps	Outside space for the heat pump condenser unit. - You'll need a place outside your house where a unit can be fitted to a wall or placed on the ground. It will need plenty of space around it to get a good flow of air. - Is your home well insulated? - What type of heating system do you want? Air source heat pumps are much better at powering underfloor heating systems or warm air heating than radiator-based systems	Up to 5 tonnes of CO₂ and £700 per year for a system that replaces an electric heating system. The system does not produce considerable savings when replacing a gas or oil based system.	Costs for installing a typical system suitable for a detached home range from about £5,000 to £9,000 including installation. Running costs for space heating and hot water for washing are likely to be around £790 per year. Grant available under the Low Carbon Building Program	- Reduce your fuel bills - Cut down on wasted electricity: heating your home with an air source heat pump is much more efficient than using electric radiators

Assumptions:

- Some of these technologies could require planning permission, for example in listed buildings or in a Conservation Area
- Savings based on a period of one year for a 3-bed semi-detached home
- PV savings assume a grant of £2,500 and an annual electricity consumption of 3,300kwh for a typical 3 bed semi-detached home, using a polycrystalline model
- PVT savings are based on the hot water heating requirements of a 3 bed semi detached home with a 4m2 panel. 2.5p/kWh and 0.19kg CO₂/kWh are assumed.

References: www.energysavingtrust.org.uk, www.bwea.com, www.south-facing.co.uk, www.cse.org.uk, www.alternenergy.co.uk, www.inkarenewableenergy.com, DECC Householders project case study on solar thermal hot water, www.stroud.gov.uk, www.downwithco2.co.uk, www.groundtherm.co.uk, <http://www.centralheating.co.uk/checklists/buying-a-new-system/renewable-heating/installing-a-heat-pump/how-heat-pumps-work>,

Low Cost Technologies
Medium cost Technologies
High Cost Technologies



Grants and Schemes to Promote Energy Efficiency and Carbon Reduction

National Grants

1. *Low Carbon Buildings Programme*

Grants are available for solar thermal hot water, ground source heat pumps, air source heat pumps, wood fuelled heating (biomass); renewable CHP, micro CHP and fuel cells may also qualify for funding once certified installers and products become available. Funding is limited up to a maximum of £2,500 per household depending on technologies involved and to one grant per technology type. The grant runs until June 2010.

2. *Carbon Emissions Reduction Target (CERT)*

The Carbon Emissions Reduction Target (CERT) (2008 – 2011) obligates all domestic energy suppliers with a customer base in excess of 50,000 customers to make savings in the amount of CO₂ emitted by householders. Residents can contact their local utilities provider to avail of grants towards improving energy efficiency.

3. *Landlord's Energy Saving Allowance (LESA)*

LESA is a tax allowance (not a cash payment) that allows landlords to claim up to £1,500 against tax every year. This allowance can be claimed for properties rented out in the UK and abroad. LESA can be claimed for the costs of buying and installing certain energy saving products for properties rented out, but only for what is actually spent. LESA can be claimed for expenses on cavity wall and loft insulation; solid wall insulation; draught proofing and hot water system insulation; floor insulation. LESA can be claimed up to 1 April 2015, when the availability of this allowance will end.

Regional Grants

1. *London Warm Zone Grant*

Free loft and cavity wall insulation is available to those over 70 or on income or disability benefits. Large discounts on insulation are offered to all other homeowners or private tenants and those on certain benefits can also get heating grants. The grant ends 31/3/2011

2. *Home Repair and Improvement Grant*

Help towards installing energy efficiency measures is generally available through local authority grants for home repairs and improvements. Eligibility criteria and details vary among Councils. The scheme ends 31/3/2011

3. *Mayor of London's DIY insulation offer*

Provided by British Gas, the grant offers DIY loft insulation (100mm depth) for £99, with a £50 cash back offer once delivered and payment has been received. The grant is available to London residents only.

Redbridge-specific Local Grants

1. *Redbridge Energy Services*

A dedicated phone line for Redbridge residents to provide free, impartial and independent energy efficiency advice on energy saving measures to reduce residential fuel bills. Ph:02084781318

2. *Repair Grants*

Grants are available for houses which are cold and damp and do not have space heating or insulation, for occupier of 60 years and over or private tenants on income support or equivalent.

3. *New Block Insulation*

Redbridge Homes have secured a £1.575 million grant from the Homes and Communities Agency (HCA) to insulate medium and high-rise blocks for Council tenants

4. *Grants provided by local energy suppliers*

EDF's offer for loft and cavity wall insulation is an example of energy efficiency schemes offered by utility companies in the UK.

- EDF offers loft and cavity wall insulation at £199 per installation.
- Npower offers a similar scheme for £149.
- British Gas offers loft insulation for various-sized home for £198 in partnership with DIY retailer B&Q.

5. *Greener Homes for Redbridge*

The scheme, funded by the HCA, LBR and the NHBC Foundation, is being run by East Thames Group in partnership with Redbridge Council, housing contractor Wates Living Space, BRE and construction consultancy Pellings. The project is addressing water and energy efficiency via 20 street properties in Redbridge, which will act as case studies to showcase a variety of energy and water efficiency and renewable energy technologies

Resident's Step by Step Guide to Implementing Energy Savings Measures

Implementing energy efficiency measures

Step One: Easy wins

Implement the following before deciding on which of the more costly options are suitable:

1. Preferably set thermostat at 21 deg C or lower. Water cylinder thermostat should be set at 60 deg C
2. Close curtains at dusk and draught proof windows and doors
3. Always turn off the lights when you leave the room
4. Don't leave appliances on standby
5. If possible, completely fill up the washing machine, tumble dryer or dishwasher before activating cycle
6. Only boil as much water as you need
7. Fix leaking taps
8. Use energy saving light bulbs
9. If possible, compost organic waste

Step Two: Free advice

For free, independent and local energy saving advice call the Energy Saving Trust on 0800 512 012

Step Three: Energy Audit

Carry out an online energy audit on the Energy Saving Trust Website* which will generate an approximate estimation of your energy use and potential for reduction through various energy efficiency measures. A professional auditor may be employed for more accurate results.

*<http://www.energysavingtrust.org.uk/proxy/view/full/165/homeenergycheck>

Step Four: Budgeting

Decide on your budget for retrofitting keeping in mind the resulting energy savings and the various grants you may be eligible for

Step Five: Grants

Determine your eligibility for various grants and schemes offered by local authorities and central government through the section above, supplemented by online research.

Check online for latest deals from your energy supplier. Contact your energy supplier and local authority for latest grants available.

Step Six: Obtain a free quote

Obtain a free quote on various energy efficiency measures including glazing, loft and cavity wall insulation and solar energy through websites such as www.quotatis.co.uk, http://www.uk-energy-saving.com/double_glazing.html

Find local insulation installers in your area on the energy saving trust website* and compare quotes for various retrofitting measures

*<http://www.energysavingtrust.org.uk/Home-improvements-and-products/Home-insulation-glazing>

Step Seven: Higher cost energy efficiency measures

Carry out the following, ranked in order of giving the biggest cuts in household bills and carbon emissions for the lowest cost

1. Replacement of old boiler with A rated boiler with heating controls saves around £230 per year and 1,259kg CO₂ per year depending on usage
2. External and cavity wall insulation (33% heat loss takes place through walls based on an uninsulated home; insulation can save around £150 and 799kg CO₂ per year)
3. Loft insulation (270mm) (26% heat loss takes place through walls based on an uninsulated home; insulation can save around £190 and 1039kg CO₂ per year)
4. floor insulation (8% heat loss takes place through walls based on an uninsulated home)
5. Double glazing (replacing all single glazing with C-rated energy saving recommended double glazing; 18% heat loss takes place through windows in an uninsulated home; insulation can save around £130 and 712kg CO₂ per year)
6. Hot water Tank insulation (75mm) can save £50 per year and upto 250kg CO₂
7. Pipe insulation can save around £10 per year

Consideration of Renewable energy technologies following implementation of energy efficiency measures

Step Eight: Check your energy efficiency measures

Ensure energy efficiency has been optimised in your house, before deciding on whether renewable energy technologies are required. The reduction in heating demand from implementing energy efficiency measures will reduce the requirement for renewable energy generation

Step Nine: Gathering information

Talk to appropriate organisations to determine the availability of grants and support schemes for your situation, including schemes such as 'pay as you save' and 'feed in tariffs'. From 1 April householders who install low carbon electricity technology such as PV panels and wind turbines will be paid for the electricity they generate, even if they use it themselves. The level of payment depends on the technology and is linked to inflation.

Further information can be found on www.decc.gov.uk

Step Ten : Identify An appropriate technology

This may involve talking to suppliers, the local authority, and your own research and knowledge of local conditions to determine the most appropriate energy saving technology for you.

Step Eleven: Check legislative requirements

Determine whether the extent of your planned works require a planning application by contacting the Council's Building Control or Planning Teams. Up-to-date contact details can be found on www.redbridge.gov.uk

Step Twelve: Budgeting

Determine your budget keeping in mind potential payback period for technology and incentives such as 'feed in tariffs'.

Step Thirteen: Obtain quotes and select a supplier for installation

Research local suppliers and installers online and give them a call to obtain quotes. Check that suppliers are certified - either with the Micro generation Certification Scheme (for all UK micro generation products and installers) or the Solar Keymark (Solar thermal products and installers across Europe).