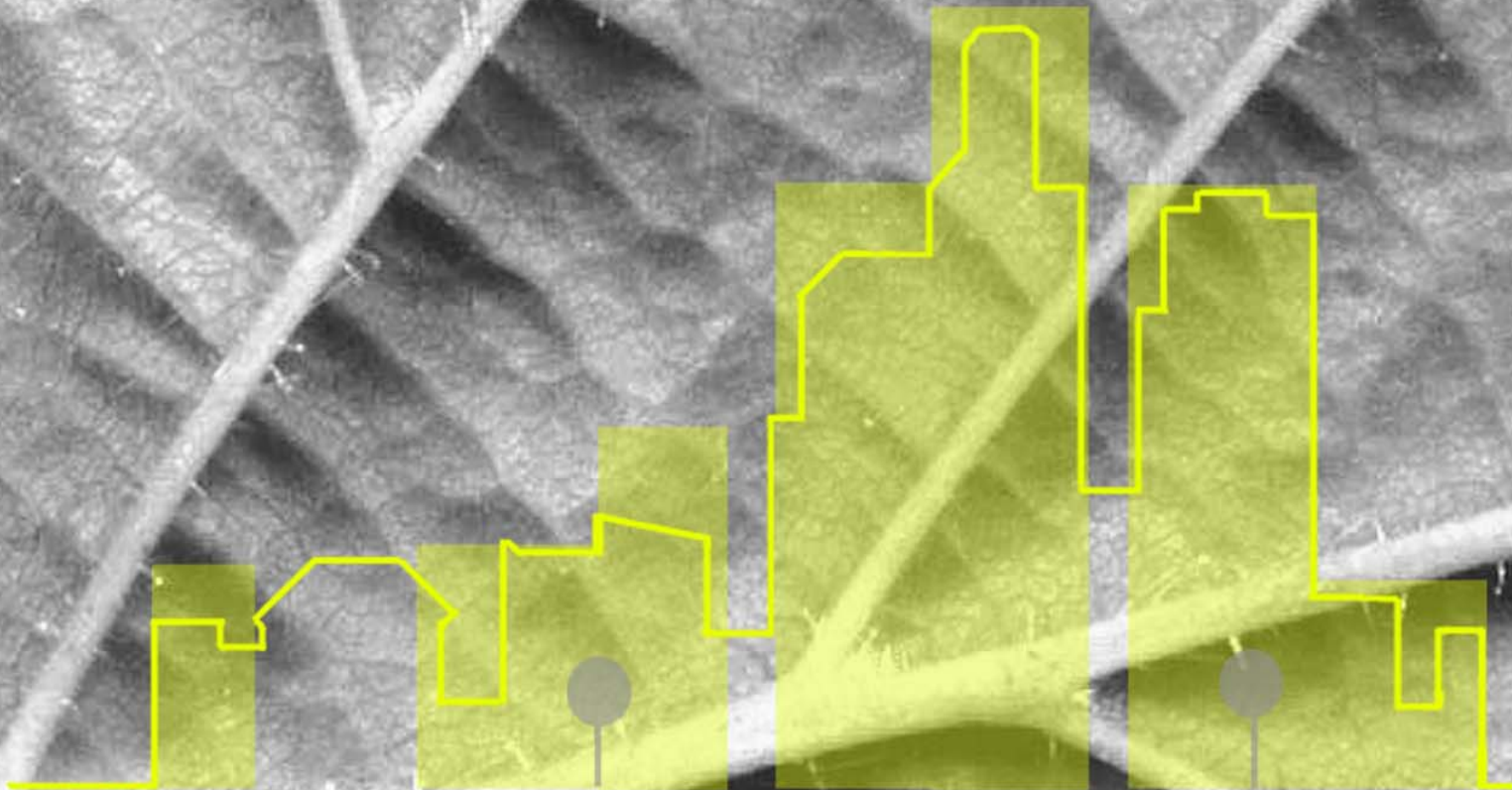


advice for applicants

improvements





What kinds of things can I do to save water and energy?

There are three areas to consider:

Energy Conservation

1. **Reduce the amount of energy** that is needed in your home to support your lifestyle. This can be done by:
 - Following energy saving tips
 - Fitting low energy lighting
 - Purchasing appliances that use less energy

2. **Reduce the amount of heating or cooling** that is needed to make your home comfortable. This can be done by:
 - Reducing draughts
 - Increasing insulation levels
 - Adding double/triple glazing
 - Shading the building
 - Making use of natural ventilation

3. **Reduce the amount of materials** that you use on your project and choose *low embodied energy, durable, natural, recycled and recyclable materials.*

Water Conservation

1. **Reducing** water consumption can be achieved by:
 - Following water saving tips
 - Using water saving devices
 - Installing low flush toilets
 - Installing low water showers which draws in air to create pressure for a power shower without using electricity for a pump.
 - Using low water washing machines
 - Installing composting toilets

2. **Recycling** water
 - Collect rainwater and use it to water the garden.
 - Collect grey water (it is waste water from sinks, baths and showers) and recycle it to flush toilets.

Energy Generation

1. **Direct generation of heat**
 - Efficient boilers (80% efficiency minimum)
 - Wood burning boilers (renewable fuel)
 - Heat pumps – heat generated from the earth
 - Solar water heaters – using the sun to heat water

2. **Direct generation of electricity**
 - Combined heat and power boilers – using the steam from heat generation to make power
 - Solar panels – using the sun’s energy
 - Wind turbines – using wind’s energy

By saving energy and water you will save money and increase the value of your property.



Improvements to your home

These improvements will help make your home more comfortable, save you money, help protect the environment and could potentially improve the value of your property.

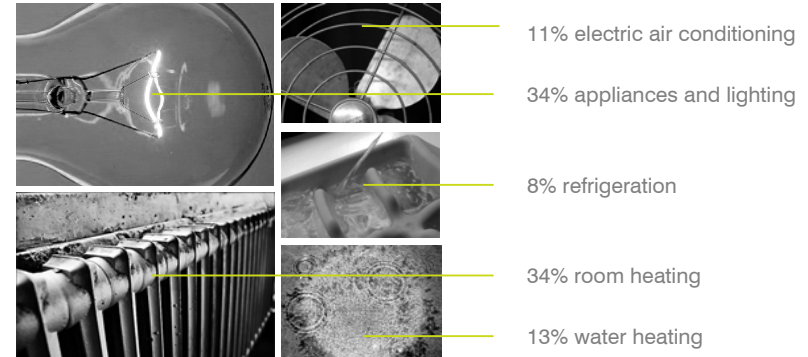
Start Saving Energy and Water Without Spending

Below are some simple things that you can do everyday that will help to improve the energy efficiency of your home, without making any alterations.

Energy saving tips

- **Switching off** everything at night.
- Turn your **thermostat down by 1°C**, could cut your heating bills by 10%.
- **Close your curtains at dusk** to stop heat escaping through the windows.
- Always **turn off the lights** when you leave a room.
- **Don't leave appliances on standby** and remember not to leave appliances on charge unnecessarily.
- Only **boil as much water as you need**.
- Wash clothes at **40°C** rather than on hotter cycles.
- **Remove lime scale**. Elements in kettles and washing machines that are coated with lime scale use more energy to raise the temperature of the water they are heating. Leave a cup full of vinegar in your kettle overnight to remove the lime scale.

How We Use Energy in Our Homes



Water saving tips

- **Fix leaking taps and toilets.**
- Take **short showers** instead of baths.
- If you're not filling up the washing machine, tumble dryer or dishwasher, **use the half-load or economy programme.**
- **Get a free save-a-flush bag** to place in your cistern (for toilets that use over 7litres). Get one for free at: <http://www.stwater.co.uk/>
- Try placing a plastic bottle in the cistern of your toilet. If the bottle holds half a litre of water, that's how much water **you'll save with each flush.**
- Collect rain water in **water butts** and use it to water the garden.



Cheapest ways to save

Start with the simplest, quickest, and cheapest alterations to make your home more efficient.

1. Insulate your hot water tanks and pipes

By insulating tanks and pipes you will retain hot water for longer and save money on heating it. Insulate as many pipes as you can, especially between the boiler and the hot water cylinder.

If your tank has less than 75mm of insulation, you can save energy if you fit another jacket over the existing one or replace it.

Insulate pipes in the loft to stop them freezing and bursting in cold weather. Note: always do this if you are insulating the roof.

	Fitting a jacket to hot water tank	Insulating hot water pipes
Cost of fitting	From £10	From £10
Annual saving	£10 - £15	Up to £5
Cost recovered	Up to 1 year	2 years

2. Install timers and controls

If you install timers, thermostats and controls for your heating system you could benefit from a saving of £60 - £120 per year depending on the efficiency of your boiler.

Electric timers – allow you to control the operation of both hot water and heating separately.

Room thermostats/ thermostatic radiator valves – to control the temperature of each individual room.

Zone control valves – allows zones with different heating demands such as living areas and bedrooms to have separate controls.

Boiler control interlocks – turns off the boiler when no heating is required.



3. Replace your light bulbs with energy saving recommended ones

Just one energy saving bulb can reduce your lighting costs by up to £100 over its lifetime - they last up to 12 times longer than ordinary light bulbs. If every household in the country fitted energy efficient light bulbs, we would save enough energy to close down two power stations!

They are available at all DIY stores and some supermarkets, look for the Energy Efficiency Recommended Logo! Note: energy saving bulbs don't work with some electronic dimmers and timers – always check the manufacturers instructions.

	Installed cost (£)	Saving (£/yr)	Payback (yrs)
Full heating controls package	£125 - £250	£50 - £60	2- 5
Energy saving lighting (4 bulbs)	£20	£20	1

4. Purchase 'A - rated' domestic appliances

When replacement appliances are needed purchase 'A - rated' appliances. Energy efficient models use less power, cost less to run and cost around the same price as less efficient appliances.

All appliances feature an energy efficiency recommended logo, which rates them 'A' to 'G' with A being the most efficient.

<http://www.est.org.uk/sense/property> - For a online home energy check.
www.carboncalculator.com - measure your carbon dioxide emissions.
www.greenscore.org.uk - tips to make your home 'greener'!



Next Steps to a Greater Saving

The best investments to deliver larger energy savings.

Insulation

Insulate the roof, walls, floors and windows of your home to reduce heat losses. It prevents overheating during the summer and avoids cold conditions during the winter.

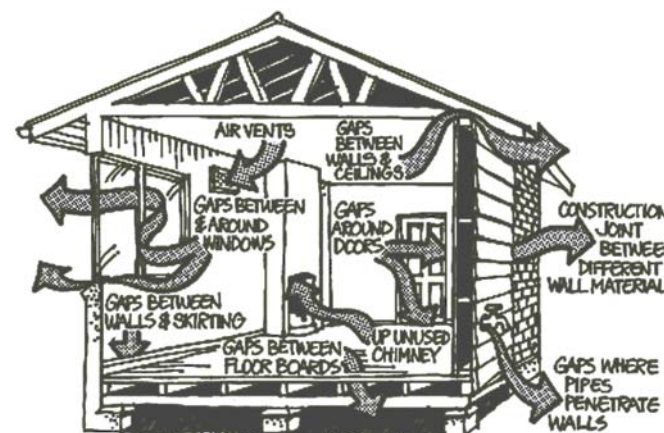
Insulate to building regulation standards or even higher to reduce heating and cooling needs.

To reduce the environmental impact choose a natural or recycled insulation material, such as sheep's wool or cellulose (recycled paper).

This will cut your energy bills up to 25%. The council may offer cavity wall and roof insulation at a reduced price. www.plan4nottingham.com

Natural ventilation

Ventilation provides a comfortable environment and is important to prevent excessive moisture build-up within a home. If electricity is available then it's possible to install an assisted ventilation system which aids natural ventilation.



Draught proofing

Draughts enter your home through gaps around doors, windows, floors and also where pipe work enters your home. This can account for up to 20% of heat losses.

Check these areas and seal any gaps. Most draught stripping excluding material is cheap and available from DIY stores. Note: Do not seal any air vents necessary for safe operation of fires or boilers.

All prices quoted in the leaflet are 2006 published

Insulation	Installation Cost (£)	Saving (£/yr)	Payback (yrs)	DIY installation (£)	DIY Payback (yrs)
Cavity Wall	£260-380	£70-100	3-5	-	-
Solid wall (external)	£45 – 65/sqm	£140-170	9-11	-	-
Solid Wall (internal)	£37/sqm	£140-170	-	£15/sqm	-
Roof (250mm where none)	£300-350	£80-100	2-3	£170	Approx 2yrs
Roof (200mm where existing)	£200-230	£20-30	7-12	£140	5-7
Floor	-	£15-25	-	£100	4-7
Draught Stripping	£85-110	£10-15	6-11	£40	3-4



Improvements to your home

Glazing

When your windows are ready for replacing the most ecological solution is to use **timber frames with double or triple glazing**. You will see most benefit if you give priority to the rooms you heat most, such as the living room.

PVC-u or Timber?

PVC-u – a lot of energy is used in its production and its hard to dispose of at the end of its 20-25 year lifetime. The frames degrade and discolour over time and are difficult to repair.

Timber – it is a natural material and can be obtained from a sustainable source. A well maintained timber frame can last longer than PVC-u. Overall it has a better appearance and offers greater value over the lifetime of the window.

To further improve the insulating properties of your windows:

- Use glass with **low emissivity (low E)** coating on the inner side of the pane, which reflects the heat back into the room.
- **Argon or krypton filled** double glazing which adds a layer of insulation between the panes.
- Add **secondary glazing** to windows.

New boiler

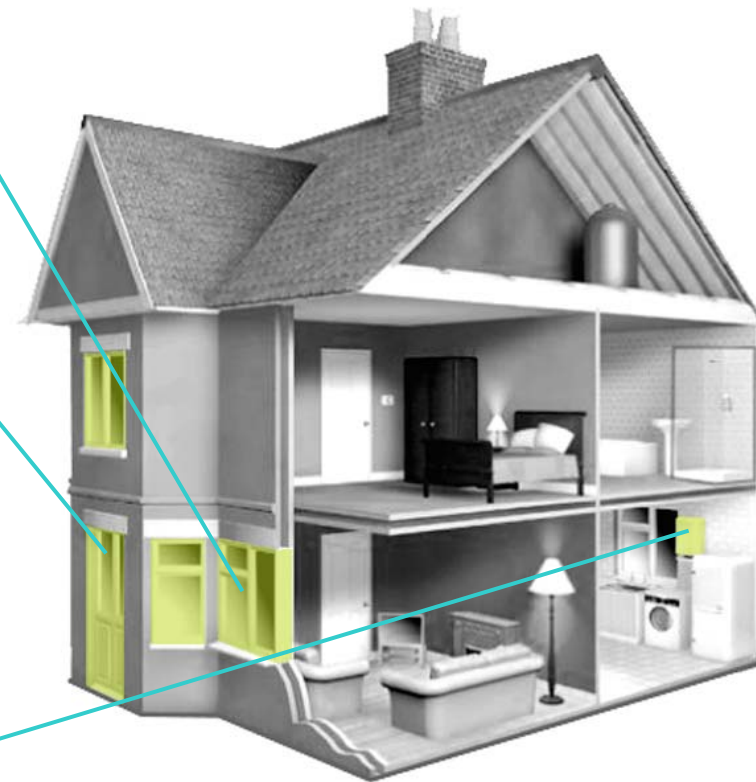
Consider a combined heat and power boiler (CHP) if your home is not in a smoke-free zone.

CHP use the steam produced in the heating process to move a turbine that generates free electricity.

- Cuts energy costs by as much as 40%
- Simple paybacks on investment as little as 2 to 3 years

Wood burning systems – These burn renewable bio-fuels, such as wood pellets, to supply central heating and hot water systems. The cost of renewable fuels will remain stable and are cheaper than gas and oil.

Almost a quarter of heat lost from a home can be through poorly insulated window frames and single glazing.

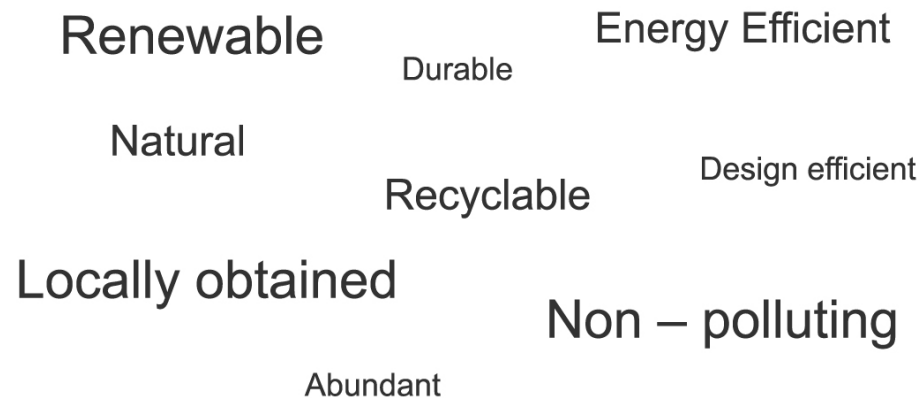


Boilers that are over 12 years old are likely to be losing 35p of every £1 spent on fuel.



What materials to use

Studies have shown that the internal environment can be up to 10 times more polluted than the external environment, yet we spend 80% of our lives inside. One of the simplest ways of reducing your impact on the environment is to use sustainable products when making improvements or decorating your home. Things to think about when choosing materials:



Links to materials resources:

www.constructionresources.com

-Britain's ecological builders' merchant, and a centre for ecological building advice and information.

www.greenbuildingstore.co.uk

-Specialises in environmentally sensitive building products

www.greenspec.co.uk

-An Internet-based resource for people involved in 'Sustainable Construction'.

www.recycledproducts.org.uk

-Database of consumer products made from recycled materials.

General tips

- **Reduce** the amount of materials that you use as much as possible and carefully calculate the quantities required, so there is little waste.
- Choose **durable materials**, with long life expectancy.
- Look for Product **Quality marks** (BSI Kitemark, BBA, etc).
- **Use recycled and recyclable materials.**
- **Use natural and renewable materials** (wool, timber, natural paints, etc).
- If you are using **timber products** make sure its from a well managed forest, look for the Forest Stewardship Council's Trademark (FSC) or PEFC council logo.
- Avoid materials that have to be transported long distances, make use of **local suppliers and products.**





Further steps

Further improvements can be made to your property to save energy and water. Answer the questions and find out which technologies are suited to your project. Further advice and information is available on each of the topics, in the 'glossary and technical details document', available as part of this package.

All prices quoted in the leaflet are 2006 published

	Cost (Domestic scale)	Payback Incl. grant	Lifetime	Grant available % of cost
Solar PV panels	£6000 - £16000	10-20yrs	30+ yrs	50%
Solar water heating	£2000 - £5000	10-20yrs	30+ yrs	30%
Wind turbines	£2500 - £10000	3-5yrs	20+ yrs	25%
Low flush toilet	£ 250	3-5yrs	n/a	n/a
Rain water recycling	£ 2,000+	n/a	n/a	n/a
Grey water recycling	£ 1,000+	n/a	n/a	n/a

1

Does your house face towards the south?

Yes (see information below)
No (go to next question)

The sun travels from east to west in a southerly path, so a south facing home will obtain plenty of sunlight throughout the day.

To prevent rooms from overheating it is a good idea to shade windows from direct sunlight in the summer months.

External blinds (louvres) are more effective at this than internal blinds as they prevent the sun's heat entering the room.

If the site is not heavily shaded, consider installing solar electric (PV) panels and/or solar water heating.

- You can use solar systems for a building with a roof or wall that faces south, as long as no other buildings or large trees overshadow it.
- The minimum surface area required for a solar water system is 3sqm and 10sqm for a solar electric system.
- Solar electric (PV) panels require access to mains electricity, so that excess electricity can be sold back to the grid.
- Solar electric (PV) systems can increase your property value by 10%.

Refer to glossary on:

glossary & technical details :providing information on technologies, materials and further sources of help and information. www.plan4nottingham.com

Solar shading

Solar PV panels

Solar water heating

2

Is your house in a windy location?

Yes (see information below)
No (go to next question)

Consider a micro/small wind turbine for you home.

- You need a site which is clear to the prevailing wind.
- Your local wind speed needs to be at least 10miles per hour (a gentle breeze) to make installation worthwhile.
- Requires access to mains electricity so excess can be sold back to the grid.

Refer to glossary on:

Wind turbines

3

Is a new bathroom or kitchen involved in your project?

Yes (see information below)
No (go to next question)

If a new bathroom or kitchen is involved in your development, consider low flush toilets, low water showers, aerated/spray taps and other water saving devices.

Refer to glossary on:

Water saving devices

Low flush toilets

4

Have you considered recycling water on your project?

Yes (see information below)

Rainwater collection or grey water recycling systems help to minimise your water consumption.

Rain water collection systems can be as simple as collecting rainwater in a butt. The water can be used to water the garden or wash the car, more advanced systems use recycled water to flush toilets and can be extended with UV treatment to supply showers. Grey water recycling is the reuse of already used washing water, this can be recycled for use in the garden and to flush toilets.

Refer to glossary on:

Rain water recycling

Grey water recycling