

Cut carbon emissions and save cash

Energy assessor **Andrew Cooper** answers questions on how GP practices can reduce their carbon footprint

GREEN GP

What with swine flu, the recession and worrying about new healthcare hoops the practice might have to jump through to stay profitable, it is only too easy for GPs to let environmental issues slip down the agenda.

But while measures to lower carbon emissions might mean some capital outlay, the practice will save significantly on future energy costs as it will stop burning money needlessly.

Q We seem to spend an awful lot of money on heating the surgery each year. How can we reduce our energy bills and increase energy efficiency?

The most energy efficient gas boilers are condensing boilers. For smaller surgeries with domestic size heating requirements, boiler efficiencies can be compared at www.sedbuk.com. For larger heating requirements, multiple boilers can be used with a combined heat and power (CHP) unit, which, if run for long periods of time, can generate both heat and power at extremely efficient rates.

Air source pumps are very effective. Modern heat pumps can achieve over 3kW of heating for every 1kW used, while reverse cycle heat pumps also provide cooling.

Consider how the surgery's heating is controlled: where possible, use optimisers and compensators and thermostat-controlled valves on radiators.

Q We suffer badly whenever temperatures rise in summer, but the practice is reluctant to install air conditioning. Are there any other options?

It may seem obvious, but good natural ventilation, such as opening windows, can help reduce the heat load of a building.

Research has shown that window shape, size and design drastically affect ventilation performance.

Review how efficient your windows are, bearing in mind safety and privacy considerations such as intruder prevention and avoiding consultations being overheard.

You might only be able to open windows to a limited extent, for



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example—or they may simply be out of reach.

Is it worth replacing them? Modern windows can offer good control, built-in solar protection and noise reduction, and will reduce heat loss in the winter months.

Security concerns permitting, keep windows or the ventilation system open at night.

Doing this is an excellent way to remove heat stored in a building's structure during the day. Using blinds and reflective window film will also prevent excessive heat build-up during the day.

Q Are there options for increasing natural ventilation other than by opening windows?

Natural ventilation can also incorporate more sophisticated systems. An example is stack ventilation, which works on the basis that heat rises and needs somewhere to escape such as through rooflights (skylights), atriums or solar chimneys.

Displacement ventilation works on a similar theory. By using mechanical or natural means, fresh air is pumped through the floor allowing rising heat and smells to escape through vents and ducts at ceiling level. It is also centrally controlled.

Where natural ventilation is not sufficient to provide a

building's cooling and ventilation needs, consider employing a mixed mode strategy instead of a full air-conditioning system.

This involves the use of natural ventilation options, supported by some form of mechanical ventilation and/or cooling.

For example, displacement ventilation can easily be combined with chilled beams and ceilings as an energy-efficient way of cooling the air.

Q At our surgery, air conditioning is the only way to keep the temperature at a bearable level during heat waves. How can we keep the cost down?

Any mechanical ventilation or air-conditioning system used should be powered using variable speed drives (VSDs), also called inverters.

This is because the way they are usually sized is based on anticipated peak loads, whereas in fact they often operate at much lesser loads.

Motors, fans and pumps have a cubic relationship with the energy they consume.

This means they can use as much electricity as the entire lighting system in a building.

VSDs allow the system to react to demand and reduce the speed of the motors powering fans and pumps accordingly.

Q Our PCT is urging practices to install energy-efficient light bulbs. But will they emit enough light, especially in consultation rooms?

Because of the way energy efficient light bulbs—known as compact fluorescents (CFLs)—are made, the glass used in them is translucent as opposed to the transparent glass used in incandescent lighting.

Therefore, the light produced has a softer tone. Most people's experience of these lights is restricted to the low wattage versions obtained for domestic use.

However, CFLs can produce sufficient quantities of light for most needs, including examining patients.

CFLs produce over 60 lumens per watt compared with around 13 lumens per watt from an ordinary light bulb. Therefore one watt from a CFL produces more than 4.5 times the light of one watt from a domestic light

bulb. Work out how much light is needed for the room's purpose. Then look for the actual wattage of a CFL lamp (not the equivalent wattage) and multiply it by the specified efficacy (lumens per watt).

Q We want to overhaul our lighting, heating and cooling to reduce our carbon output but the large initial cost is deterring us. Is there any help available?

It is possible to write off some or all of this type of expenditure against the practice's taxable profits for the year in which the equipment is installed by claiming enhanced capital allowances (ECAs)—talk to your accountant about this. The equipment you install must be on the government's Energy Technology List (www.eca.gov.uk/etl) to qualify for ECAs.

The Carbon Trust (www.carbontrust.co.uk) is able to advise on any other grants that might be available as well as providing information to help businesses reduce their carbon emissions.

Q I've heard that commercial buildings must have an energy performance certificate. Does my surgery need one?

Probably not. Under EU directive (Energy Performance of Buildings) all public buildings over 1,000m² (such as hospitals) must have on show an annual display energy certificate. Commercial premises being sold or leased must have an energy performance certificate (EPC). Although most surgeries may never need an EPC, the process of getting one can be a useful and cost-effective method of pinpointing key problem areas.

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RESOURCES

- www.bre.co.uk
Building Research Establishment
- www.sedbuk.com
Boiler efficiency database
- www.cibse.org
Chartered Institution of Building Services Engineers
- www.carbontrust.co.uk
Interest-free loans for energy efficient technologies
- www.eca.gov.uk/etl
Enhanced capital allowances
- www.communities.gov.uk
Information about planning and building regulations and the environment