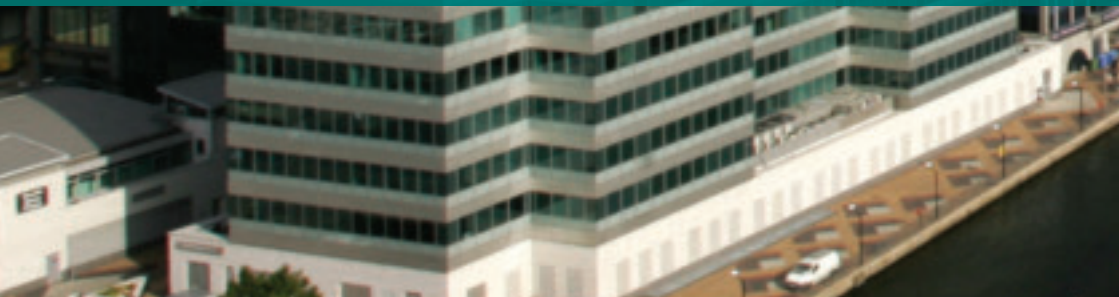
HM Government

A guide for businesses

Reducing the energy usage and carbon emissions from your heating and hot water systems



Buildings account for almost **half** of the energy consumption and carbon emissions in the UK.

The heating and hot water used in your building can amount to **half** of all your energy costs.

Most businesses have rising energy costs. If you use energy efficiently in your business, you can save money, save energy, stay competitive **and** reduce carbon emissions from your building.

This booklet gives businesses advice on heating and hot water systems and their controls. It covers:

- Boilers
- Space Heating systems
- Water heaters and hot water systems.

What can my business do?

- Consider installing an energy efficient heating and hot water system
- Get your heating and hot water system serviced and maintained regularly, to ensure that it is working as efficiently as it can
- Operate your heating and hot water system effectively and energy efficiently, ensuring controls are set to turn it off when it's not needed

If you have an energy-efficient system and you operate it efficiently, it will save you money and help combat climate change.

Energy efficient heating and hot water systems

If the capacity of your heating and hot water system is more than 20kW and it is more than 15 years old, we recommend that you get a competent heating engineer to assess it.

Newer, energy-efficient systems and controls will save you money. An assessment will identify specific areas where the energy efficiency of your current system can be improved.

An assessment will tell you:

- How well your heating and hot water system works compared to new systems. This will take into account the type and age of any boiler, water heater, any hot water storage and controls
- Whether your heating, hot water equipment and boilers are the right size for your building. Systems that are too big cost more to buy, don't work as well and cost more to run

Energy efficient improvements which may be recommended include:

- Installing an advanced metering system that takes regular readings of how much fuel you use, and can produce simple reports that show where your heating system wastes energy
- Replacing the following types of equipment (depending on the type of system you have):
  - Boilers, water heaters, pumps and other system parts
  - Air heaters, radiant heaters and controls
- Getting advice on how to manage the system so that it works as efficiently as it can
- Improved heating and hot water system controls. These may include fitting better thermostats, optimiser thermostats and zone controls (for space heating), more intelligent programmers and sequencing controls for multi-boiler or multi-water heater systems

- If you have an indirect hot water system (such as a boiler and indirect cylinder or calorifier), installing an independent, fast-recovery direct-fired water heater will mean you can switch off your main heating boiler system in the summer months
- Providing improved insulation (where this is cost effective) for:
  - boilers, water heaters, piping, valves, hot water storage tanks and fittings on hot water distribution systems
  - ductwork on hot air distribution systems
- Installing high level heat recirculating units to re-use heat that would be trapped in the roof of a high building
- Installing renewable energy supply systems to supplement fossil fuel heating and hot water systems

You should get an assessment every four years for gas fired boilers and space heaters. For oil fired or solid fuel boilers and space heaters which are greater than 100kW, assessments should be every two years.

Servicing your heating and hot water systems

Getting your heating and hot water system serviced regularly by a professional will:

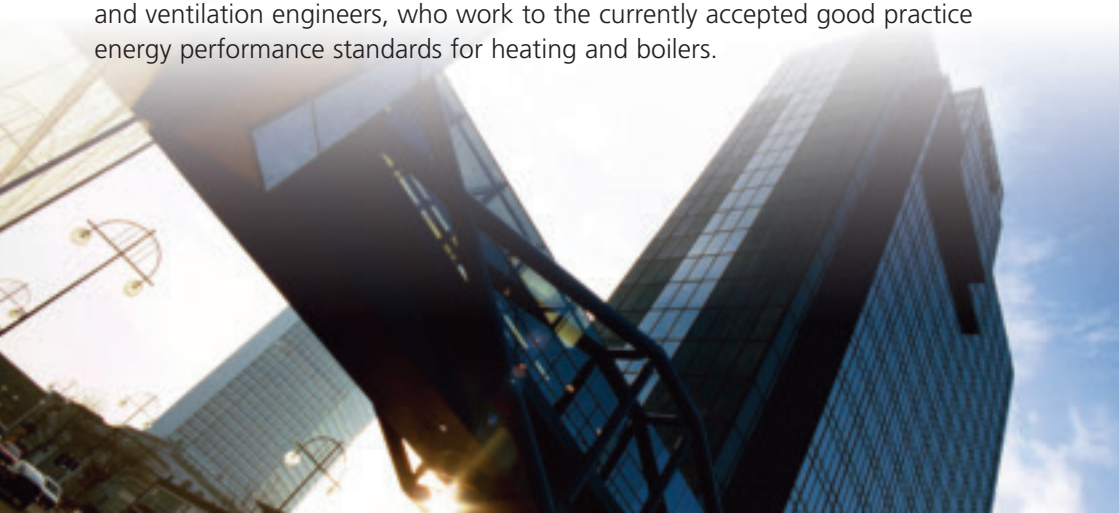
- Make sure your heating and hot water system is safe
- Enable preventative maintenance and prolong service life
- Ensure your equipment is capable of operating at its maximum energy efficiency **and** give you the heating service you need

Equipment which is not serviced properly or often enough may be using too much energy, harming the environment, costing you too much money **and** might not be safe.

A service for energy efficiency of your system should include the following (where relevant):

- Combustion efficiency checks
- Running maintenance of the parts and replacement where appropriate
- A check to see if your water heaters and hot water cylinders have limescale (especially in hard water areas) as this can substantially reduce the efficiency of the system. In such cases water treatment or periodic de-scaling should be considered
- Advice and suggestions to improve the energy efficiency of your systems

All servicing and assessments should be carried out by properly qualified heating and ventilation engineers, who work to the currently accepted good practice energy performance standards for heating and boilers.



Operating your heating and hot water systems in an energy efficient way

Don't overheat	Turning down your heating by just **1°C** could reduce your annual heating costs by up to 8%.
Check your time controls	Set your heating and hot water 'on' only at times when the building is occupied. Make sure you set your systems to 'frost protection' or 'off' over holiday periods.
Check for heat loss	Make sure your building is as air tight as possible to reduce heat loss, but ensure there is enough ventilation to meet health and safety standards. For example, loading doors which are left open let heat escape quickly, and mean that you use more fuel. You could fit fast-opening or strip curtains to a loading bay to help reduce heat loss.
Watch out for water	You should heat water for catering and washing to 60°C to 65°C to protect against legionella (the bacterium which causes legionnaires disease) unless you use another method of protection. If not, check to see if your water temperature is higher than this, as you may be wasting energy. Beware of scalding yourself. If hot water comes from the main heating boiler or boilers, it may save you money to use an independent water heater. This will mean you can switch off the main heating boiler in the summer months and save energy.
Check your plant	Pre-empt potential problems, saving energy, the climate and money.
Check for leaks	Check the boiler, water heater, pipes, valves and flanges. Leaks can be indicated by the fact that your feed tanks, expansion tanks or pressurisation sets are filling up on a regular basis.
Simple maintenance	For warm-air systems, check that outlet louvres are correctly set and for radiant heaters, make sure that reflectors are clean.
Keep air vents clear	Clear air vents are important for optimum operation and safe combustion of boiler fuel products.
Check your bills	The Carbon Trust provides assistance to all organisations, helping them identify energy saving opportunities and offering practical advice on how to achieve these. This includes free surveys (subject to terms and conditions) to organisations with annual energy bills of over £50,000.

Think about setting up a system to monitor and maintain the performance of gas flues using a competent personto measure:

- Efficiency
- Temperature
- Chimney conditions

Buying new equipment

Investing in new equipment is a big decision for most businesses. Tax relief may be available in the form of Enhanced Capital Allowances. You also need to think about whether these improvements will mean that you will need to make more improvements afterwards in order to meet Building Regulations.

The Consequential Improvement requirement applies to proposed work in buildings over 1000m^2 which include:

- An extension
- The initial provision of any fixed building services such as heating, ventilation or air handling
- An increase to the installed capacity of any such fixed building service

If these apply, then you will have to carry out further improvements as long as they are technically, functionally and economically feasible. For more information see Approved Document L2B at www.planningportal.gov.uk.

The Enhanced Capital Allowance (ECA) scheme encourages businesses to invest in energy-saving plant or machinery. The ECA scheme provides certain businesses with 100% first year tax relief on their qualifying capital expenditure. To qualify the equipment must be specified on the Energy Technology List (ETL) which is managed by the Carbon Trust on behalf of Government. The scheme allows businesses to write off the whole cost of the equipment against taxable profits in the year of purchase. For further information visit: **www.eca.gov.uk/etl**

Interest free Energy-Efficiency Loans

Energy-efficiency Loans of between £5,000 and £100,000 are available to qualifying small and medium sized enterprises (SMEs) in England* and Scotland* and any sized business in Wales,* looking to invest capital in energy saving projects. All businesses based in Northern Ireland* may now be eligible to apply for an interest free loan of up to £400,000. The loans are repaid over a period of up to 4 years and businesses must have been trading for at least 12 months.

To find out more please call 0800 085 2005 or visit www.carbontrust.co.uk/loans

For further information about heating and hot water systems, please see the following websites.

Communities and Local Government
CLG is a central government department which is leading the introduction of a number of energy and cost savings measures to make all buildings more efficient.
Website: www.communities.gov.uk/epbd

ICOM Energy Association
This organisation works on behalf of heating companies supplying the commercial sector
Website:
www.icomenergyassociation.org.uk

Heating and Ventilating Contractors Association
This organisation works on behalf of firms involved in the design, installation, and maintenance of heating and ventilating products and equipment.
Website: www.hvca.org.uk

Chartered Institution of Building Services Engineers (CIBSE)
The professional body for building services including heating, ventilation and air conditioning.
Website: www.cibse.org

British Property Federation (BPF)
This is an organisation that represents the interests of all those involved in commercial property ownership and investment.
Website: www.bpf.org.uk

British Institute of Facilities Management (BIFM)
This is a UK Institution for facilities managers and people who work in organisations that supply Facilities Management related goods or services.
Website: www.bifm.org.uk

The Carbon Trust
This trust helps businesses and public-sector organisations to cut their energy costs and combat climate change.
Advice Line: 0800 085 2005
Website: www.carbontrust.co.uk/energy

*Subject to terms and conditions and eligibility

A welsh translation is available on request by calling 0870 1226 236.

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