

ENERGY MANAGEMENT ADVICE FOR SCHOOLS



Business Support Services - Property Division
Energy Management Team

SAVE MONEY, SAVE THE PLANET ... SAVE ENERGY!

INTRODUCTION

Sound energy management is good for your school's budget and good for the environment.

The no- or low-cost measures suggested in this manual could slash 10% off your annual energy bill – and with energy costs continuing to rise, the potential for savings is high.

This manual has been produced by the council's Energy Management Team to help building occupiers to understand an individual sites energy consumption and identify ways to reduce it. Here you will find a brief overview of a typical heating system, along with some suggestions and checklists for 'good housekeeping'.

Good housekeeping doesn't require a lot of effort, but it does require consistency to produce results, so the Energy Management Team would like to recruit voluntary Energy Champions to apply the measures and monitor the results 'at the coal face'. Please contact us if you would like to get involved.

Did You Know?

Wigan's schools emit 17,457 tonnes of carbon dioxide each year for the energy they use. Unless energy habits change, the Energy Saving Trust predicts that by 2010 we will be wasting £11billion of energy and emitting 43million tonnes of carbon dioxide unnecessarily, every year.

Energy is one of the largest single controllable non-operational costs in council buildings.

In 2001, the Government introduced the Climate Change Levy which is now paid by all non-domestic energy users (including councils). In 2010 the Carbon Reduction Commitment will begin to impact all council properties, with carbon allowances having to be purchased – at a not insignificant cost.

The law stipulates that no public building may be heated above 19°C except for medical reasons.

THE ENERGY MANAGEMENT TEAM

The aim of the new Energy Management Team (EMT) is to help occupiers take control of their utilities consumption, by offering a single point of contact from where they can obtain expert energy and carbon management advice and guidance. By contacting us through the Energy Management Helpdesk, the EMT can offer over the phone advice or onsite support – so whatever your carbon or energy management question, why not get in touch?

1. CENTRAL HEATING SYSTEMS

A typical 'wet' central heating system, as installed in the majority of buildings, incorporates:

- One or more boilers.
- A pumped pipework system (which can incorporate more than one pumped circuit).
- Heat emitters, either radiators or convectors (which may be fan assisted).
- Time/temperature controls.
- Hot water storage vessel(s), either off the boiler or direct gas-fired.

1.1 Boilers

The majority of boilers in use throughout council buildings are either gas or oil fired. These boilers are usually fully automatic and require little or no involvement from the site as regards regular maintenance. The boiler service contract (administered by the Legal and Property Services Department) ensures they undergo the required annual cleaning, safety and efficiency checks.

You should however be aware that boiler houses **should not** be used as storerooms, because of:

- Potential fire risk;
- Possible damage to boiler plant; and
- Effects on boiler safety and operation.

1.2 Heat Emitters

The most common types of heat emitter used on a wet system are radiators or convectors.

- Radiators – these are normally steel panel or cast iron, controlled through manual valve or thermostatic radiator valve (TRV).
- Convectors – there are natural or fan assisted, controlled through an internal or wall-mounted thermostat.

In general all heat emitters should be kept free of obstructions, thus allowing them to work at their full capacity. Furniture should not be placed directly in front of the heater and pictures/posters should not cover the air grilles of convectors. These may seem like obvious errors, but instances like these occur on all premises.

1.3 Heating Controls

All heating systems are fitted with some form of control. These usually govern temperature and hours of occupation.

Council-owned premises are fitted with optimiser/compensators, which are basically a time switch and thermostat rolled into one. The main advantage of this type of heating controls is that they automatically adjust the heating start times to achieve the desired temperature at the start of occupation. The lower the outside temperature, the earlier the heating comes on.

These controls will also automatically adjust the temperature of the heating pipework in the building, throughout the day, according to the outside conditions. Therefore as the temperature outside gets cooler, the system (pipes, radiators etc.) gets warmer and, as the temperature outside rises, the system gets cooler.

You may notice that during the day the radiators can go off, this does not mean the heating is not working, only that the controls are responding correctly to the prevailing temperature conditions. They will, if the temperatures fall, come back on again.

The controls will have been set up for the desired temperatures and time periods and should not require any further adjustment. However, in order to allow your building to operate outside the usual hours, there are additional features fitted to all the controls. These consist of a run back heating timer, which allows you to set the amount of extra hours of heating you

Some schools appoint lighting monitors from amongst the children, to ensure unwanted lights are switched off.

If the switching layout allows it, try to switch off half your lighting in individual classrooms, particularly if there is sufficient natural lighting available.

There may be areas in your school that will benefit from the use of presence detecting lighting controls. These switch the lights on automatically if anyone enters the area and off again when they leave. Contact the Energy Management Team and they will arrange a survey.

4. OFFICE EQUIPMENT

Try to purchase electrical equipment that is as energy efficient as possible, and always setup and use power saving and hibernation modes.

If leaving your computer for more than 10 minutes, turn off the monitor, as this is the biggest drain on electricity.

Please note - screen savers **do not** save energy. The screen can account for over half of a computers consumption, so even if you don't logoff, switching off the screen for even short periods of time will save energy.

5. WATER

Most of the borough's schools are fitted with water saving devices such as timed push-taps, automatic flushing controls and timed shower units. If your school does not have any water saving devices, please contact the Energy Management Team to arrange a free survey and recommendations.

If you spot any leaking taps arrange to have them repaired or replaced immediately.

A tap dripping at one drip per second wastes five litres of water a day, or 1,825 litres per year.

Check the reading(s) on the bills with the actual reading(s) on the meter. If you find a difference either contact the Energy Management Team, or alternatively contact United Utilities (the number is on the back of your bill), and give them the actual reading along with your account number and address details. The bill will then be automatically corrected.

Checking meter readings also allows you to spot potential leaks quickly. If you suspect you have a leak, contact the Energy Management Team and they will arrange tests and any remedial work that may be required.

6. HOT WATER SYSTEMS

Hot water boilers and immersion heaters should be controlled in relation to the expected needs, i.e. turned off when there is sufficient stored water to meet the day's requirements.

Water heaters should be switched off at weekends and holidays, if there are no means to do this contact the Energy Management Team and they will arrange to investigate.

Reducing the storage temperature of hot water can save energy. **However, the system must be protected against Legionnaire's Disease**, and you should consult the Property Division about how best to achieve this.

Insulation on pipes and cylinders should be regularly checked to ensure it is in good repair.

7. SITE MANAGER'S ASSISTANCE

The Site Manager or Caretaker is often the school's first line of defence in saving energy. By performing some simple maintenance procedures, they can have a considerable bearing on energy efficiency.

Contractors may carry out some of the following, but you should ensure that:

- Windows are cleaned regularly to maximise daylight;
- Fan convector grilles are kept clear (where practical) and thermostats are set correctly;
- Light diffusers and tubes are cleaned – dirt reduces light output;
- Door closers and hinges are lubricated so doors close properly;
- Worn pipe insulation and draught stripping is reported to the Legal and Property Department's maintenance section for replacement;
- Get into the habit of switching off unwanted lights as you do your rounds. Often lights are left on long after the users have left;
- Report any leaking taps or over flows as soon as possible to minimise water wastage.

It is a good idea to note how to make use of the summer/winter switch provided on the heating controls and use it to ensure the heating is off during holiday periods, and also to switch off the heating in the afternoons once the weather gets warmer.

Under heating can also be a very expensive problem if portable electrical heaters are used to supplement the main heating. Note any use of portable electrical heaters and report them to the Energy Management Team who can investigate causes.

8. RUNNING A CAMPAIGN

Posters and stickers are very effective in promoting energy conservation. The Energy Management Team can supply you with posters and leaflets to help. To maximise effect, posters should be rotated every so often to prevent them becoming 'invisible'.

Involve the school children, they very often come up with excellent ideas. Have a competition between the classes to see who can save the most energy. Get them to monitor temperatures and report any overheating.

Effective energy management results in a better working environment. Good energy management and maintenance are closely linked as saving energy reduces maintenance costs and extends the life of the plant.

Nominate an Energy Champion for the site who can liaise with the Energy Management Team and maintain responsibility for promoting energy efficiency awareness and who can also carry out simple tasks that may deliver significant efficiency savings.

9. ENERGY CHAMPION'S CHECKLIST

The following highlights some of the points that the Energy Champion should be aware of. They could reduce your schools energy bill by 10% or more.

9.1 Heating:

- Check that all windows and doors are closed at the end of the day – both for security and to keep heat in during the warm-up period the next morning.
- Check for open windows when the heating is on. They may indicate overheating and/or inefficient heating controls.

- Report broken or badly fitting windows and doors for repair or replace as appropriate.
- Check for the use of supplementary heaters. It may indicate under heating by the main heating system.
- Check that entrance and exit doors are not propped open and that self-closing mechanisms are working correctly – this may indicate over heating problems.
- Ensure all fan-assisted heaters switch off at the end of the day.
- Check that thermostat settings are correct and have not been tampered with. They should be set to a maximum of 19°C. Remember – a 1°C reduction in room temperatures will lower heating costs by 6 to 10%.
- Report defective operation of plant or equipment.

9.2 Lighting:

- Check that lights are switched off at the end of the day and over weekends and holidays.
- Ensure light fittings and tubes are kept clean to maximise light output.
- Report any faulty automatic lighting controls as you find them.

9.3 Water:

- Turn off running taps as you find them.
- Report overflows running and taps dripping. Remember – a tap dripping once a second wastes five litres of water a day.
- Check meter readings on the bills against the actual meter readings to prevent overcharging.
- Report any suspected leaks to the Energy Management Team immediately.

9.4 General:

- Overheating is unhealthy and unpleasant.
- Under heating is unhealthy and uncomfortable.
- Improved lighting creates a better environment.
- Modern equipment, (e.g. computers), properly controlled emit less heat, provide a cooler atmosphere in summer and reduce the need for air conditioning.
- Correct heating of a building helps to minimise maintenance costs.
- Good control of hot water temperature avoids scalding and the risk of Legionella.

10. RECORDING ENERGY USE

The Energy Management Team already monitors your energy bills, but the Energy Champion should read the various meters on site to plot the effectiveness of their campaigns and to spot any mistakes on the bills. Advice and instruction on reading utilities meters is available from the Energy Management Team.

CONTACT US:

The Energy Management Team is here to help, so why not get in touch.

**Energy Management Team
Wigan Council
Property Division
Investment Centre
Waterside Drive
Wigan
WN3 5BA**

Tel: 01942 705380

Fax: 01942 705593

Email: energymanagement@wigan.gov.uk