

Heating Fuels

Between 50-70% of the energy use in older schools is for space heating. Space heating is usually from a central boiler house. There are ways to save money by careful choice of heating fuel. The main choices are natural gas, LPG (liquefied petroleum gas) and oil (usually "gasoil").

The Department of Education currently specifies high efficiency gas boilers for new schools. Under the Office of Government Procurement ([OGP frameworks](#)) for natural gas and bulk LPG, schools can avail of gas at cheaper rates than standard oil and gas rates, with approximately 31-39% lower carbon emissions.

For information on joining the OGP LPG and Natural Gas for Education frameworks, please contact: nqcontracts@ogp.gov.ie. To assist OGP in with your query, include a copy of your most recent fuel bills (front and back) to allow them to determine the rate applicable for your site. Note: for information on joining the OGP Electricity for Education contract, please contact support@ogp.gov.ie

When the capital cost of bringing natural gas to your school is taken into account versus the capital cost of converting to LPG, LPG may be a more attractive option. If the school uses natural gas or LPG already, then no change is necessary. A change is only viable if the school is using oil.

From the point of view of carbon dioxide emissions, natural gas and Bulk LPG are the cleanest fuels with oil being approximately 17 to 38% more carbon intensive. For cost saving, energy efficiency, and CO₂ reduction, switching from oil to gas as a heating fuel is recommended.

Alternative Fuels

Renewable Heat

There is a lot of discussion about reducing fossil fuel usage by using 'renewable heat'. Renewable space heating can be achieved in a number of ways; biomass boilers and heat pumps are common alternatives to fossil fuel heating. For more information on these, and their potential and limitations in schools, see the Renewable Space Heating factsheet on the energy in education website www.energyineducation.ie

Low carbon LPG

Some LPG supply companies offer LPG which is derived from non-fossil fuel sources. These have a lower carbon footprint than LPG derived from fossil fuels. Let's call this "low carbon LPG". Typically non-fossil fuel LPG may be derived from wastes, residues and vegetable oils. You can ask LPG providers about availability and cost which is at a premium over conventional LPG. Conventional LPG is a fossil fuel.

Non-fossil fuel LPG is chemically similar to conventional LPG and therefore the two fuels can be blended. There is no difference in use or performance and LPG appliances do not need to be modified in any way to run on non-fossil fuel LPG. To ensure a sustainable supply chain, the non-fossil fuel LPG is added to the conventional LPG at the central depot and this mixed LPG is delivered to customers irrespective of whether or not they contract to buy the non-fossil fuel LPG. The LPG company apply principals of "mass balance" to only sell and issue certificates equal to the amount of non-fossil fuel LPG they have available. The non-fossil fuel LPG's origins are traceable back to the producers using systems certified by International Sustainability and Carbon Certification Scheme. The school who have contracted to receive the non-fossil fuel product receives a certificate to this effect.

How much fuel are you using?

Changing fuel should reduce costs, facilitate installation of more efficient equipment, and reduce carbon dioxide and other emissions. But before you start, you need to know how much fuel you are presently using.

As part of your energy management plan you should:

- Take recordings of fuel used.
- Track your fuel use on a spreadsheet available from www.energyineducation.ie. Electricity can also be tracked.

Separate factsheets on reading meters for your fuel type are available to download on the energy in education website. Once you know how much fuel you are using, you can investigate whether it is worth switching fuels.

How much will fuel cost?

A good way to compare costs for fuels is to ask the Office of Government Procurement what cost rates are available for natural gas, LPG and oil for a school of your size. Use these to calculate annual savings for switching from oil to natural gas or LPG. Don't forget that a Gas Networks Ireland meter attracts a monthly rental/ standing charges cost, and LPG tanks may attract a small rental cost but no monthly standing charges.

How old are your boilers?

The ease with which fuel can be changed depends on a number of factors; one is the age of your boilers. If the boilers are nearing the end of their serviceable life, and new boilers are likely to be required in the near future, then there is more reason to consider switching fuels and upgrading the boilers at the same time.

Find out the age of the existing boilers. There may be an equipment tag on the side or back of the boiler which shows the year of manufacturer, as shown below. This boiler was manufactured in 2011.



Tag demonstrating the year of boiler manufacture

The boiler on the right is an older oil fired boiler and has since been replaced with more efficient burners using lower cost LPG.



Old boiler (red) and burner (orange)

Switching from oil

Having determined that you wish to switch fuel from oil to either natural gas or LPG, you should seek professional

advice. The advice should be given by a competent building services engineering (mechanical & electrical) consultancy practice with a Chartered Engineer director qualified in building services engineering. Follow the [Guidance on Procuring Consultants for Small Works 4th Edition 2021](#).

The consultant will visit the school and inspect the boiler house and its equipment, the chimney or boiler flues, the oil tanks and oil tank support method, the surroundings, and the site generally. The consultant may also wish to inspect the heating system within the school. The consultant should prepare a report for the school in a suitable format which ensures that the design intent is compliant with the Department of Education Technical Guidance Documents:

<https://www.gov.ie/en/publication/7e515-technical-guidance-documents/>

The report should address the following:

- The potential for decarbonisation of heating e.g. the use of heat pumps
- Do the boilers need replacement anyway?
- Can boilers be retained and just change the burners?
- How efficient will the system be?
- What size (in kW) does the new boiler need to be?
Has the school upgraded its attic, roof, wall insulation in recent years? Has it got new double-glazing? If so, it is likely that you will need significantly smaller new

boilers than the existing boilers, thus you will have lower capital and running costs

- What savings will accrue?
- Is natural gas available nearby and what is the estimated cost of bringing a supply to the school, including all civil engineering works costs?
- What will happen to the old oil, the old oil tank, and the oil tank compound? Are any remediation works required to remove ground polluted by oil?
- Is it more economic to install bulk LPG tanks than bring natural gas to the site?
- Where will LPG tanks be located, and what is the estimated cost of civil engineering works?
- What will be the pipe route from the tanks to the boiler house? Can the delivery lorry reach the tanks?
- Does the chimney need lining to take the new boiler flues, or will it no longer be used? If no longer be used, how will it be treated to maintain the integrity of the building and chimney to avoid damp penetration etc.?
- Will old metal flues be removed?
- Are there roof flue penetrations which will need "making good" after the works are complete? How?
- Where will new flues terminate? Is there anything in the way?
- A new gas detection system will be required in the boiler house. Is it costed? Does it need to be linked to the fire alarm system?
- Is an asbestos survey necessary? Even though you may have an asbestos survey, a more detailed survey within the boiler house may be necessary, especially in older schools.
- Does the cost estimate make an allowance for safe removal of any known asbestos?
- Does the rest of the boiler house and its controls need updating? What is recommended, and at what estimated cost, including any associated work by an electrician and builder.
- Can the works be carried out without loss of heat to the school? Will the works be carried out in summer?
- How will the works be funded?
- What is the estimated cost of design fees?