



# energy **in** education

energy management guide for schools



The Sustainable Energy Authority of Ireland (SEAI), with support from the Department of Education and Skills, has developed this resource pack as a practical tool to help schools to get to grips with their energy usage and costs. This pack is designed for use in conjunction with a range of support materials, tools and advice on achieving energy efficiency, which have been specifically developed for schools and are available at [www.energyineducation.ie](http://www.energyineducation.ie)

# Energy Management Guide for Schools

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## Section 1 Introduction

### Energy Efficiency in schools - meeting statutory obligations

Schools in Ireland need to reduce greenhouse gas emissions by 51% and improve energy efficiency to 50% by 2030 as detailed in the School Sector Climate Action Mandate. As part of this, schools are required to report annually on their energy usage through SEAI's M&R online data portal. The Energy in Education programme offers energy saving support and guidance for schools countrywide. For more information go to [www.energyineducation.ie](http://www.energyineducation.ie)

### How to use the Energy in Education Resource Pack

This pack is part of a range of supports designed to help school boards of management, principals, teachers, administrators, caretaking staff, pupils and parents to improve energy use practices and to reduce school operating costs while helping to protect the environment for future generations. The pack includes:

- An Energy Management Guide outlining a five step process to assist you with effective energy management in your school.
- An Energy Co-ordinator's Workbook to record details specific to your school and keep track of progress towards becoming more energy efficient. There is a completed sample of the workbook available at [www.energyineducation.ie/Energy\\_Management\\_Getting\\_Started](http://www.energyineducation.ie/Energy_Management_Getting_Started) to help you make your way through the process.
- Pupil Energy Logbook and Wall Chart to involve students in the process of energy management.

The Energy in Education website at [www.energyineducation.ie](http://www.energyineducation.ie) provides a wide range of additional support material and detailed advice on specific topics such as lighting, heating, IT equipment, water conservation and renewables in schools; and school energy saving case studies.

Effective energy management will involve the school principal, teachers, parents, pupils and members of the wider school community. There are clear opportunities for integrating energy management with An Taisce's Green-Schools energy theme, linking to the curriculum and involving students in practical activities.

These icons are used throughout this guide to indicate opportunities to:



Use the energy coordinator's workbook to record your progress



Involve pupils in the energy management process

## Why record and manage energy use at school?

Effective energy management can result in the following benefits for your school:

- Saving Money
- Increased knowledge of energy and environmental issues among staff, pupils and parents
- Longer lasting heating and lighting equipment
- A reduced carbon footprint
- A Green Flag for energy
- A Display Energy Certificate for the school (also a requirement when applying for some grants for schools)

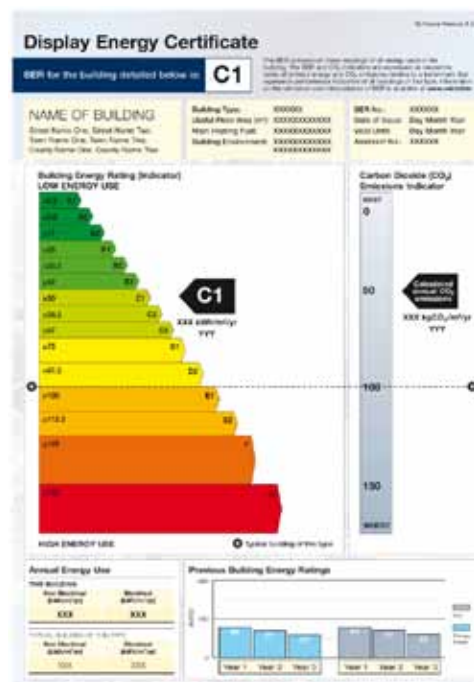
## Display Energy Certificate (DEC)

What is a DEC?

- It shows how the school compares to a benchmark for energy use in schools of the same type
- An energy label for schools and other public buildings to display on their premises
- Schools over 1000m<sup>2</sup> are required by law to display a DEC
- A DEC is a legal requirement for the Board of Management of the school

How can schools prepare a DEC?

- Visit the DEC section at [www.energyineducation.ie](http://www.energyineducation.ie) and download the help files before starting
- Calculate the gross internal floor area of the school
- Collect the energy bills for a recent 12 month period
- Collect details on the school's construction
- Input the data at [www.energyineducation.ie/Display\\_Energy\\_Certificate](http://www.energyineducation.ie/Display_Energy_Certificate)
- The website will generate a rating A-G that is based on your current energy use
- The school will also receive a report on ways to improve energy performance.

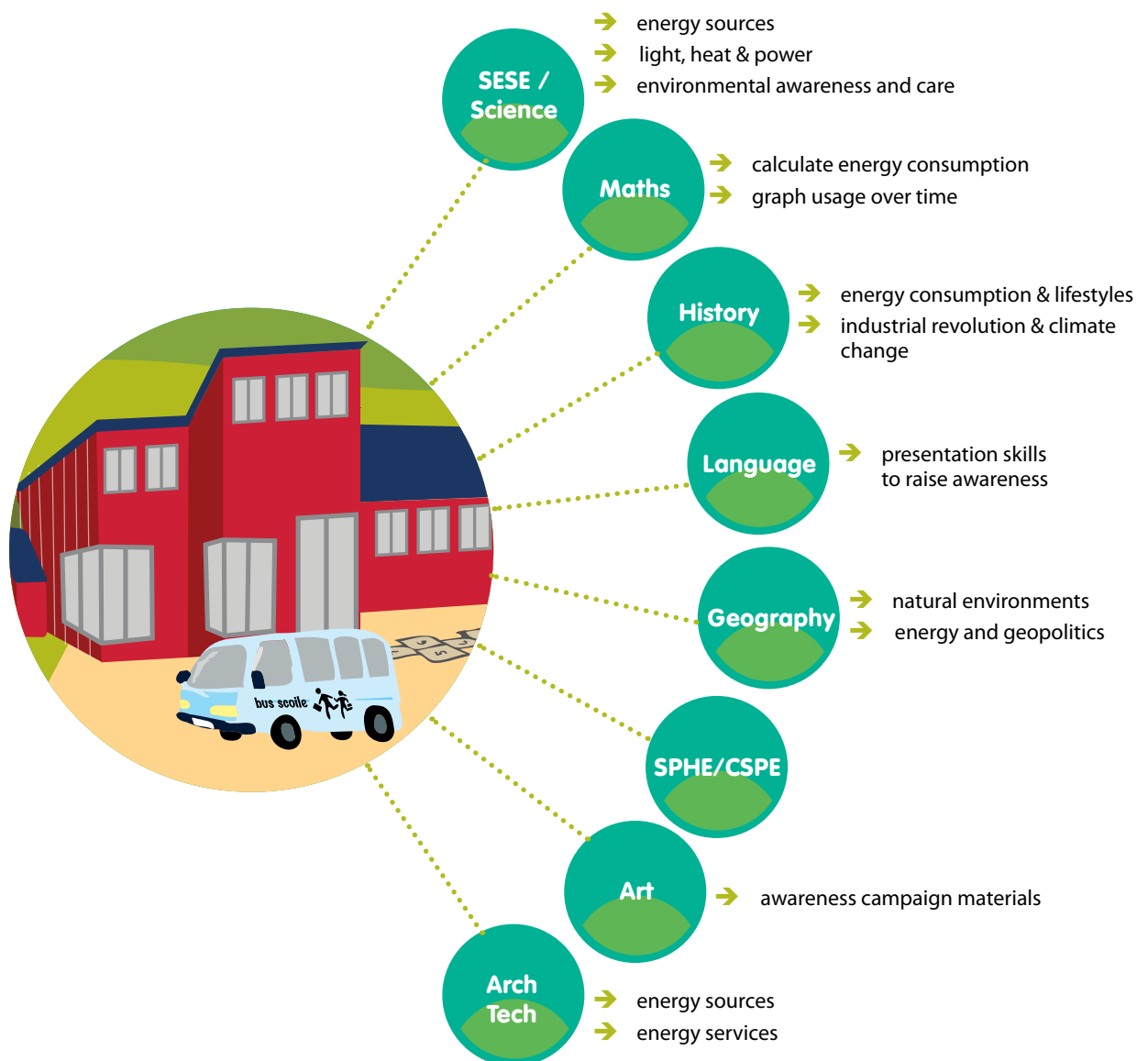


get  
pupils  
involved

To see case studies of how schools have involved pupils in preparing and applying for a DEC for the school go to [www.energyineducation.ie/Display\\_Energy\\_Certificate](http://www.energyineducation.ie/Display_Energy_Certificate)

## Linking energy management to the curriculum

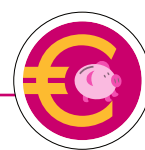
The diagram below reflects how energy management can be effectively linked to the primary and post primary curricula through a range of subject areas. Energy related projects are an opportunity to promote responsible attitudes to the environment and students can be directly involved in the process by collecting and analysing data on where and how energy is used, and raising awareness of energy issues in the school. This provides opportunities for applying knowledge and developing skills in a range of subject areas including maths, science, art and ICT. Practical projects related to energy management in the school can be the basis for action projects in CSPE or part of a Transition Year module on environment or sustainability.



## Case studies – how simple actions lead to significant improvements

Think about why your school should implement an energy management programme, what are the drivers that can lead to change? Energy management can have the following results:

- Save money
- Practical project work for pupils
- Attain a Display Energy Certificate (DEC) for the school
- Earn a Green Flag for energy
- Lead your community to become more sustainable by providing a good example
- Improve the comfort levels in the school
- Meet public sector energy targets and obligations



### Coláiste an Spioraid Naoimh, Bishopstown, Co Cork

With 680 students and 54 staff members Transition Year students in this school took the lead in an 'energy makeover'. The 2nd and 4th year students kept regular logs of different actions they took in order to reduce their energy consumption throughout the school. They made sure lights were not being left on in classrooms when they were not being used and on bright sunny days they avoided using any lights in the school. Everyone developed an understanding of how they could make energy savings while at the same time using their heating system, hot water, lighting, computers and printers more efficiently. The school achieved an 18% reduction in energy use saving the school €1,750.

### Ballyraine National School, Letterkenny, Co Donegal

Having looked at their energy use with one of SEAI's Energy Assessors this school discovered that by implementing some changes including installing controls for storage heating and external lighting, pumping the walls with cavity insulation and improving lighting maintenance they can save 15% on energy costs over a year.

### O'Faich College, Dundalk, Co Louth

2009 saw the creation of an Energy Management Bureau in O'Faich College run as a mini company by Transition year students at the school. The purpose of the Energy Management Bureau was to be a technical resource for students and staff, and to provide energy awareness information.

Four electricity display monitors were installed in the school providing access to real time information on electricity consumption. Students working in the Bureau set up a rota to check that appliances and lights were not being left on when not in use, and at the end of each day. Energy use was monitored and the total energy used during that week was 923.3 kW compared to a normal week's usage of 1069.7 kW. The difference was 146 kW, or €24.45 savings for the week.



Complete the questionnaire to see where your school is now in terms of energy management, and make a case for energy management at your school

## Section 2 Energy Management in five steps

There are five steps to implementing an energy management programme at your school. Each of the actions involved in the process is explained in the following sections. You will find a range of other resources and information to assist you in the process at [www.energyineducation.ie](http://www.energyineducation.ie).





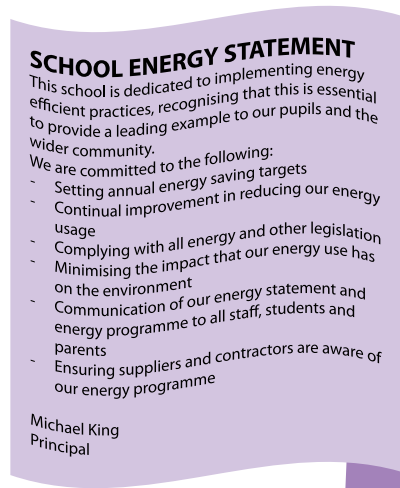
## Step 1 Energy Statement

### Key goals:

- ➔ Write an effective, easy to understand school energy statement with the Principal's commitment (see example below)
- ➔ Elect an Energy Coordinator to set up an energy team

### Energy Coordinator

The role of Energy Coordinator can be taken on by various people and will vary from school to school. The Principal, a caretaker, a parent committee member, the Green-Schools coordinator, a board of management member, the deputy principal or a teacher are all potential candidates.



### Role of the energy coordinator

- ➔ Set up an energy team. The core team might consist of a member of the teaching staff, a member of the caretaking staff and a pupil representative working with support from a wider group.
- ➔ Assess energy use in the school
- ➔ Identify areas where savings can be made
- ➔ Draw up a plan of action for energy savings
- ➔ Coordinate the implementation of the energy plan
- ➔ Monitor energy usage on a continuing basis
- ➔ Report on the energy management programme

### Energy statement

An energy statement details your commitment to dealing with energy issues. It should be clearly visible to staff and pupils and its effectiveness reviewed annually. It should briefly outline:

- ➔ Your overall objectives with respect to energy management
- ➔ Your targets and expectations
- ➔ How you hope to achieve them



## Step 2 Finding Savings

### Key Goals:

- ➔ Understand and record your energy bills, take meter readings
- ➔ Where is energy used? What are the main energy users?
- ➔ Identify possible energy and cost savings

### Your energy bills

Reviewing your energy bills e.g. electricity, natural gas, Liquid Petroleum Gas (LPG), heating oil, wood, is the quickest and easiest way of determining your annual energy use. It is vital to keep track of your energy bills and collect as much information as possible from them. To download a bill tracking tool go to [www.energyineducation.ie/Measure\\_Energy\\_Use](http://www.energyineducation.ie/Measure_Energy_Use).

### Things to look out for when you get your bill

- ➔ How many night units are you using, what are they for?
- ➔ Is there something unusual about a bill that cannot be explained, e.g. high gas use during summertime?
- ➔ Are you on the right tariff? See the 'Understanding your bills' and 'Changing supplier' factsheets at the end of this guide for more information. As a general rule if your MIC is 50kVA or less, you should be on a general purpose tariff.

### Viewing your bills online

Most of the main suppliers now have a system that allows you to view your usage and demand consumption patterns online. Contact your account manager/supplier for more details. Ask for an explanation of any charges you are unsure of and how to avoid any penalty charges that appear on your bill.

### Meter readings

You can also use readings from electricity or gas meters to look at usage on a daily, weekly or monthly basis. This information allows you to measure the success of the energy saving measures you are implementing. You can involve pupils in this task if the meter can be accessed safely by them.

### Display energy monitors

Electricity monitors allow you to track the electricity used by various appliances as they are switched on or off. This will assist you in identifying how to save energy and money simply by using these appliances less or turning them off.

### Action



Document energy bills and take meter readings, record in your workbook

### Action



Pupils can assist with taking meter readings from electricity/gas meters and recording details from bills (see pupil logbook)

## Identifying opportunities

Try to identify:

- Main energy-using equipment (you don't need to look at every single piece of energy using equipment, concentrate on the main ones)
- What factors influence energy use, e.g. weather, number of pupils, number of classes
- The key people who influence energy use in the school and how you will involve them in making savings
- If you are using excessive energy at night or over weekends, is there unexpected energy use over the summer?

## Typical energy usage areas to consider

- Lighting
- Space and water heating, boiler units
- IT equipment e.g. PCs, printers, faxes
- Teaching aids e.g. projectors, interactive whiteboards
- Canteen/kitchen equipment
- Ventilation systems
- Vending machines

Detailed advice on the main areas of energy use and ways to make savings are available at [www.energyneducation.ie/Find\\_Savings](http://www.energyneducation.ie/Find_Savings)

### Action



Fill out the Energy Users and Influences table in your workbook. You can view a completed sample at [www.energyneducation.ie/Energy\\_Management\\_Getting\\_Started](http://www.energyneducation.ie/Energy_Management_Getting_Started)

### Action



Pupils can assist with counting and recording energy using equipment (see pupil logbook)

Typical opportunities for savings are outlined on the following page. For building refurbishment and upgrades ensure compliance with Department of Education and Skills guidelines also available at [www.energyneducation.ie/Information\\_For\\_Designers](http://www.energyneducation.ie/Information_For_Designers)

Area	Potential Energy-Saving Opportunities	Cost
Lighting	• Ensure people know where the light switches are	No cost
	• Label light switches	No cost
	• If daylight is good, turn off the lights	No cost
	• Ensure lights are turned off in stores/staff rooms when no one is there	No cost
	• Clean dirty light diffusers/shades	No cost
	• Match the lighting level to the task e.g. less light needed in corridors than classrooms	Low cost
	• Paint block walls with bright colours to give better light reflection	Medium cost
Building Envelope	• Ensure doors and windows are not left open (check high-level windows)	No cost
	• Draughtstrip building exit doors	Low cost
	• Repair broken windows or rooflights	Low cost
	• Replace single-glazing with double- or triple-glazing	High cost investment opportunity
	• Replace poor or damaged insulation and add to areas not previously insulated (walls, attics, roof)	Investment opportunity
Teaching Aids and Office Equipment	• Ensure PC monitors are switched to 'Power Saving Mode'	No cost
	• Ensure PC monitors/data projectors are not left on overnight	No cost
	• Ensure photocopiers/printers/plotters are not left on overnight	No cost
	• Ensure all appliances in staffrooms are turned off overnight	No cost
Water conservation  (By conserving water schools can save money and reduce the amount of energy used in treating and supplying water to the school)	• Reduce unnecessary water usage in your school with a water management plan	No cost
	• Establish average water usage patterns by taking and recording water meter readings regularly, where easily and safely accessible	No cost
	• Ensure water pressures and flow rates are set at minimum required settings	No cost
	• Inform the cleaning and caretaking staff of the school's water conservation ethos and use mop buckets rather than running taps excessively	No cost
	• Encourage pupils and staff to save water by correctly using taps and turning off taps when not required	No cost
	• Try and minimise water consumption through the use of water saving devices, urinal controls and push-button type taps.	Medium cost investment opportunity

Ventilation (If installed)	• Use natural ventilation instead of mechanical ventilation when possible	No cost
	• Clean filters regularly	No cost
	• Avoid leaving windows open in air-conditioned spaces	No cost
	• Ensure proper timing of on /off switches, i.e. do not leave ventilation on in an unoccupied building	No cost
<b>Area</b>	<b>Potential Energy-Saving Opportunities</b>	<b>Cost</b>
Space Heating and Boiler	• Avoid unnecessary heating outside of teaching hours	No cost
	• Avoid excessive temperatures	No cost
	• Switch radiators off when not needed or if they are in draught lobbies	No cost
	• Avoid leaving windows and doors open when heating is on	No cost
	• Avoid sources of waste heat, e.g. heating unoccupied rooms	No cost
	• Replace or install insulation on boilers and pipework	Low cost
	• Get boilers serviced at the start of the heating season	Low cost
	• Ensure temperature sensors and thermostats are located in the appropriate locations	Low cost
• Install weather compensation sensor to control space heating relative to weather conditions (or if installed ensure that it is working properly)	Low cost investment opportunity	
Hot Water Demand	• Avoid excessive temperatures at hot water taps	No cost
	• Avoid unnecessary use of hot water	No cost
	• Ensure hot water pipework is insulated as well as hot water cylinders	Low cost
	• Replace or install insulation on hot water storage vessels	Low cost
Kitchen / Canteen Areas	• Avoid running dishwashers on part-load	No cost
	• Avoid placement of fridges and freezers next to heat sources	No cost
	• Have a label that states the warm-up time for larger pieces of equipment	No cost
IT Equipment	• Ensure IT equipment is not left on 'stand by' for long periods of time or overnight (switch it off).	No cost
	• Avoid leaving windows open if there is cooling equipment in IT room.	No cost

## Action



Record those energy saving ideas that are appropriate to your school in your List of Opportunities. You can view a completed sample at [www.energyineducation.ie/Energy\\_Management\\_Getting\\_Started](http://www.energyineducation.ie/Energy_Management_Getting_Started)

## 3. MAKE A PLAN

### Step 3 Make a Plan

#### Key goals:

##### What is an Energy Action Plan and why make one?

An Energy Action Plan sets out targets to be achieved, which can ultimately be used as benchmarks of success.

##### What to put in your Energy Action Plan

Ideally you should have the following elements included in your Energy Action Plan:

- Targets and objectives. For tips on setting energy saving targets for your school see the Energy Coordinator's Workbook
- Cost / budget
- Person responsible for each objective
- Target dates

##### Prioritising projects

From Step 2, *Find Savings* you will have found opportunities that you will wish to explore and develop. However, it will not be feasible to put all of these in place in the first year of your programme. Therefore, you need to decide on realistic targets to achieve over the coming year and identify projects that are priorities.

Priority can be based on some of the following factors:

- Areas currently wasting significant amounts of energy
- The potential energy (cost) saving
- Projects that will yield quick wins or clear results
- Visible projects that raise awareness of energy management

#### Action



Complete your Energy Action Plan in the workbook. You can view a completed sample at [www.energyineducation.ie/Energy\\_Management\\_Getting\\_Started](http://www.energyineducation.ie/Energy_Management_Getting_Started)

## Step 4 Take Action

### Key goals:

- Raise energy awareness
- Motivate and encourage staff and pupils
- Implement your energy action plan

### Take action on your opportunities

The following are ways to take action on the opportunities you have identified to date.

- **Energy Action Plan** - Implement your plan and schedule regular checks
- **Carry out regular maintenance and housekeeping checks** - ensure equipment is in good working order, (particularly large energy users)
- **Procurement** - When buying new equipment, consider energy consumption. SEAI publishes lists of energy efficient equipment that meet minimum energy efficiency criteria. Lists of qualifying equipment are available at [www.seai.ie/aca](http://www.seai.ie/aca). Consider switching to a supplier of green electricity. See the National Procurement Service website for more information: <http://www.opw.ie/en/OurBusinessUnits/NationalProcurementService/ProcurementServices/Energy/>
- **Raising Awareness**
  - explain to staff and pupils why they need to change energy wasteful behaviour
  - show staff and pupils how to change
  - encourage their efforts

You can kick off your Action Plan with an Energy Awareness Day and maintain the momentum by using posters, leaflets, memos, a notice-board display for teachers and pupils, web notices and newsletter articles.

### Training

Consider if the caretaker or other relevant staff members are trained sufficiently to operate all relevant equipment with energy saving in mind.

#### Action



When you have implemented your Energy Action Plan, make a maintenance checklist so the changes you have made will be sustained. You can view a completed sample at [www.energyineducation.ie/Energy\\_Management\\_Getting\\_Started](http://www.energyineducation.ie/Energy_Management_Getting_Started)

#### Action



You can involve pupils by having them assist with energy efficiency checks and awareness raising activities. Go to [www.seai.ie/onegoodidea](http://www.seai.ie/onegoodidea) for more on involving post primary pupils in energy awareness campaigns

## Step 5 Check Progress

### Key goal:

- Review targets and progress

A review of progress will help you to discover which actions have been most successful at making your school more energy efficient.

### Monitoring bills

Compare your energy costs from before you started your energy saving campaign. It is worthwhile doing this every two months.

### Compare your performance

Perhaps the most relevant approach within a small school is to look at past performance and compare against your current trends.

### Common comparisons

- Energy use per person — kWh/student
- Energy use per unit area — kWh/m<sup>2</sup>
- Energy use over time — kWh/period (day/week/month)
- Energy cost per person — €/student/year
- Energy cost per class delivered per period — €/class/period (day/week/month)

### Action



Review your performance and complete the review checklist and future recommendations

### Conclusions

Once you have completed this process, you are well on your way to getting to grips with energy waste within your school. It should be an annual process for each school year to ensure that you are continually improving the way in which you manage your energy and related costs.



## Factsheet - Changing Electricity Supplier

### Introduction

On 19th February 2005 the electricity market was fully opened to competition. This means that new suppliers can enter the market and compete for customers' business.

### Please Note:

You do NOT have to change your meter, your wiring or any aspect of your electricity supply to receive electricity from a different supplier.

### Changing supplier

There is **no charge** associated with switching supplier

**Step 1** Know what you are looking for! Check your electricity bills and see how many units you use over a year. Knowing your consumption will assist you in choosing a tariff. You will need your meter point registration number (MPRN Number).

**Step 2** Make price comparisons using your actual data where possible.

**Step 3** Make sure you are comparing like with like, as some tariffs may apply to different usage rates or different customer profiles.

**Step 4** Choose your new supplier. A link to a list of electricity suppliers is shown below.

**[www.energycustomers.ie/links/index.aspx#1](http://www.energycustomers.ie/links/index.aspx#1)**

**Step 5** Check that services on offer suit you.

**Step 6** Once you decide, contact the supplier directly to arrange the change over. Your new supplier will take care of all necessary arrangements.

**Step 7** Read and understand the terms and conditions of your contract.

When you change supplier you may receive a letter from ESB Networks setting out information on connecting to the electricity network and information on the connection at your school. This letter is for information only and you do not need to follow up in relation to nominating your new supplier. This is a standard letter that is sent automatically when you switch supplier.

### Procuring Energy competitively

Schools should contact the Schools Procurement Unit where they can sign up to an Office of Government Procurement (OGP) Energy Contract which competitively procures energy (Electricity, Natural Gas and LPG) for schools.

All schools are welcome to join. For information on joining the OGP Education contract, please contact [support@ogp.gov.ie](mailto:support@ogp.gov.ie)

## Factsheet - Understanding your bills

In addition to your billing and supply addresses and customer account number, your bill contains the following information:

<b>Online Registration Number</b>	If you currently use the online tool.
<b>MIC — Maximum Import Capacity (Electricity only)</b>	The level of electrical capacity, which represents the maximum load you are contracted to import from the electricity network for use in your premises*.
<b>MPRN — Meter Point Reference Number (Electricity only)</b>	This identifies and is unique to your meter connection point.
<b>GPRN — Gas Point Registration Number (Gas only)</b>	This is a seven-digit reference number to identify your gas meter connection.
<b>DG Code (Electricity only)</b>	An industry code representing your distribution use of system group.
<b>MC Code (Electricity only)</b>	An industry code representing your meter configuration code.
<b>Profile Code (Electricity only)</b>	An industry code representing your load profile classification.
<b>Tariff</b>	The specific tariff your school is on, and associated rates.
<b>Units</b>	The number of units you have consumed in the billing period.
<b>Standing Charge</b>	All electricity customers must pay this levy, which goes towards maintaining the country's electricity infrastructure.
<b>Multiplier (Electricity only)</b>	For customers who use a large amount of electricity and require large supply cables. A predetermined percentage of usage is passed through the meter and the remainder of the usage is calculated from that.
<b>Wattless Units (Electricity only)</b>	Some items occasionally require an amount of wattless energy for their operation, which is measured separately and can give rise to a separate charge. When the amount of wattless units used exceeds an amount higher than one-third of the total general units, a charge is incurred for the excess units consumed.
<b>AC Band — Annual Consumption Band (Gas only)</b>	Your estimated annual usage of natural gas fits within the band range notified. There are five bands: A, B, C, Y, Z.

**Energy Bill**

Account Details:  
 Account Number: 000000000000X Date of Issue: 00/00/00  
 Invoice Number: 000000000000X Other details: 000x000x00

Name of Bill Payer  
 Address here  
 This Road  
 This county

your MPRN number  
 12 345 678  
 DG MC PROFILE  
 GD12 MCC12 5

METER READINGS PRESENT PREVIOUS	QTY & PRICE	DESCRIPTION OF CHARGES	AMOUNT
TARIFF : GENERAL PURPOSE			
54634	54463 10260	MULTIPLIER OF 60 APPLIES	
	7598 X	EO.1610 GENERAL UNITS	1223.27
	2662 X	EO.1450 GENERAL UNITS	385.99
70964	70823 8460	MULTIPLIER OF 60 APPLIES	
	3420 X	EO.0000 WATFLESS	00.00
	5040 X	EO.00780 EXCESS W/LESS	39.31
58 DAYS @ E0.4100 / DAY STANDING CHARGE			23.78
44 EVA FOR 2 MONTHS @ E0.00 KWA/MONTH			0.00
VAT @ 13.5% 1672.35			225.76

Billing Period: dd Payment due: 00/00/00

Net cost: xxxxxx  
 VAT@xx: xxxxxx  
 Total cost: xxxxxx

### Are You on the Correct Tariff?

If your Maximum Import Capacity (MIC) < 50kVA, you should probably be on a General Purpose Business Tariff. If your MIC > 50kVA, you should probably be on a Maximum Demand Business Tariff.

### Should you be on a Night Saver Tariff?

If you think that >15% of your consumption is at night (11pm - 8am) and if you are on a General Purpose Business Tariff, you should consider switching to the GP Nightsaver Tariff. If your night consumption represents a waste of energy (equipment & lighting left on unnecessarily etc.), you should seek to reduce your night consumption before considering a tariff change.

### Check your Day v/s Night Consumption (if you are charged separately for Day / Night units)

Calculate your Night Load. Night Load = Night Units per billing period / Total Units per billing period. If your Night Load < 37.5% of total units, then your daytime electrical load is greater than your night-time load and vice versa. If your energy management practices are good and if you intentionally shift usage to the night, then a high Night Load is good. In practice, very often a high Night Load is a sign of substantial waste of energy at night. Do you expect to consume a lot of power at night?

**Please Note:** You need to know your **MPRN Number** if you want to switch electricity suppliers



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