



Energy Tutorial: Energy Usage

Reading meters and understanding fuel bills

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Gas and electricity meters are fitted in homes so as to be able to measure how much fuel the household has used, and therefore how much it needs to be charged. The newest meters display a large amount of information and can be read remotely, however the majority of meters still have to be read in person. This section will cover the following topics:

1. The different types of meters and how to read them
2. The information included in gas and electricity bills
3. Other ways to measure your energy use

Why is it important to read your meter?

Keeping a close eye on your meter reading can have many benefits:

1. Being aware of how much fuel is being used, to aid budgeting;
2. Check estimated fuel bills for accuracy;
3. Check the amount of fuel used when different heating or hot water use strategies are being tested.

TYPES OF METERS AND HOW TO READ THEM

Standard gas meters and standard electricity meters are the most common types of meters in homes across the UK. The most common form of standard meters is electromechanical induction meters. These count the number of revolutions on an aluminium disc, which rotates at a speed that is proportional to the power used. You can find the information in imperial or metric units (see Figure 1 below).

Figure 1: Imperial and gas meter displays



There are **three different types of electromechanical induction meters** which display the readings in different ways - they are standard, digital and dial meters¹.

¹ <http://www.moneysupermarket.com/gas-and-electricity/meters/>

1. Standard gas and standard electricity meter

Both standard gas meters and standard electricity meters use a mechanical display with numbers. When reading your electricity meter or reading your gas meter you must work from left to right recording any black numbers and ignoring any red numbers if present.

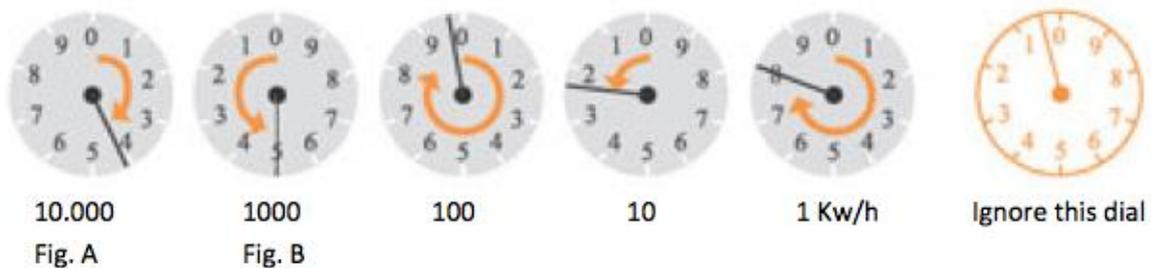
2. Digital gas and digital electricity meter

Digital meters are arguably the most straightforward. You simply read the first five figures on the digital display. The sixth number (usually in a box or coloured red) is only a tenth of a unit and should not be read. Make sure to record the five numbers even if the first one is a zero, for example - 08456.

3. Dial gas meter and dial electricity meter

Figure 2: Dial meters

Source: NEF EasySave booklet



Dial meters are a little more complicated. You should read the numbers displayed on each dial from left to right but ignore a final red dial if it is present. If the needle on the dial is positioned between two figures then it is the figure it has just past that should be noted down (in **Fig. A** in Figure 2 above you would write down the number 4). You should also adjust the reading to account for any variations - for example if the dial is directly over a figure, (in **Fig. B** you would write down the number 5), you should note that down and underline it. Then if the pointer on the next dial falls between 9 and 0, reduce the underlined figure (the reading already taken for the dial on the left) by one - for example, if you originally recorded 5, reduce this to 4.

There are also meters known as **variable rate meters**. These are also called “economy 7” meters because they are used for economy 7 tariffs that many suppliers offer. Variable rate meters operate on the same principle as standard meters, except they give two readings: one for daytime (on peak, called normal) electricity usage, and one for night-time (off peak, called low) electricity usage.



This allows the supplier to charge you a different (usually cheaper) rate for electricity used at night time under the economy 7 tariff.

INFORMATION INCLUDED IN GAS AND ELECTRICITY BILLS²

Energy consumption is defined in terms of watts and hours. If a 100 watt light bulb is used for ten hours, then the power consumed is 1000 watt hours. For ease we refer to 1000 watt hours as 1 **kilowatt hour (kWh)** and this is the standard unit that appears on our **electricity bills**.

Gas bills normally specify the number of cubic metres of gas consumed but also convert the figure into kWh. Once you move up from the domestic scale, kilowatts and kilowatt hours start to give way to megawatts (MW) and megawatt hours (MWh). The “M” makes everything 1000 times bigger – so a wind turbine rated at 2MW running at full power should produce 2000 units each hour. At the time of writing, typical prices (including standing charges) are 4p per kWh for gas and 14p per kWh for electricity.

Each year, an average three bedroom semi-detached house uses around 15,000kWh for space heating, 5000kWh for water heating and 3000kWh for lighting and appliances, costing a total of more than £ 1000. This results in around six tonnes of CO₂ emissions – or even more if you factor in the extraction, processing and delivery of the fuels to the home or power station.

Example energy bill

On the next two pages you will find an example energy bill with all the information included explained.

² <http://www.uswitch.com/gas-electricity/how-to-read-your-energy-bill/>

energysupplier

Mrs J Jones,
109 Clear Street,
London,
SW1 1AB



1 Need help?
Call 0845 000 123

Mon - Fri - 7am - 8pm
Saturday - 8pm - 6pm
Sunday - 10pm - 4pm

Please have your customer reference number when you call us.

2 Customer Reference Number 1234 5678 1234

3 Bill date: 31st March

Your Gas & Electricity Bill

Please pay £283.68 by July 31st

Billing Summary

4 Bill period: 01 January to 31st March

Your last bill £193.32

5 Payment received on 29th December £193.32 credit

Balance before this bill £0.00

6 Energy you've used (estimated reading) £270.17

7 VAT at 5% £13.51

8 Please pay £283.68

We must receive your payment by 31st July

9 Additional information

Any information your supplier wants to show you will be placed here, including details of special offers or online account management.

10 Electricity Supply Number

S	01	123	456
	12	2345	6789 456

1. Any contact details you need to get in touch with your energy supplier will be provided.
2. You'll usually find your customer reference number or account number on the front of your bill. This is your unique identifier should you need to contact your supplier.
3. This is the date your bill was issued.
4. The bill period shows you the dates your energy bill relates to.
5. This is the date and amount of the last payment you made to your energy supplier.
6. This is the total cost of the energy you've used in this period before VAT is added.
7. VAT at a standard level of 5% will be added to your bill here.
8. This is the final total of your bill and is the amount you need to pay your energy supplier.
9. Any additional information that your supplier wishes to show you will often appear on the front of the bill.
10. Your electricity supply number will appear in this box format - however it will often appear very small so you might need to look for it carefully.

Your usage - in detail

 Meter readings for meter number **7123156781** **11**

 Your current tariff is **Standard** **12**

Previous reading	Recent reading	Units used	Units as kWh	Pence per kWh	Charges for energy used
80120 (ELECTRICITY)	80925	N/A	805 over 90 days	First 222 kWh at 17.312 p Next 583 kWh at 8.635 p	38.43 50.34
8561 (GAS)	8761	200	6286 over 90 days	First 1430 kWh at 4.152 p Next 4856 kWh at 2.513p	59.37 122.03
14 January (reading)					
		14 April (estimate)			

Total charges: £270.17

Estimated meter readings

Estimated readings are based on your previous usage to date. If we don't hold details of your previous usage, we base the readings on average consumption levels.

To make sure you receive accurate bills, please contact us directly to submit your meter readings.

How we calculate your gas charges

We convert gas units to kilowatt hours as follows: units used x 2.83 (metric conversion factor) x 1.02264 (volume conversion factor) x 39.1 (calorific value) divided by 3.6 (kilowatt hour conversion factor).

Services for customers with specific needs **14**

If you have any special needs, please contact us to let us know. We can send you your bills in large print or in braille, or on audio tape if required.

To find out what we can do to help you, please call us on 0845 123 4567.

Energy payment slip 15		Bank Giro Credit	
Reference (customer account number)	Credit account number	Amount due	By transfer from bank account number
110 300		£	
Cashier's stamp and initials	Barcode 1234 4567 8912 3456 7890 123		Total cash
Your signature	Date		Cheques
	/ /	10-00-00	£

Please do not write or mark below this line or fold this counterfoil

- This is your meter point reference number, which you will need if you choose to switch your gas plan. This is sometimes referred to as an MPRN;
- Your current plan name will often be shown on your bill but if it isn't displayed you may need to contact your supplier to find out what it is;
- A detailed breakdown of your energy usage is provided, including the kilowatt hours (kWh) used, the cost per kilowatt hour and your latest meter readings. You can also find out here if your meter readings are estimated or actual and the dates they were taken or estimated;
- You'll be given a contact number to call if you have any specific requirements such as large print or braille bills;
- A payment slip is provided if you wish to pay your bill at the bank or by post.

OTHER WAYS TO MEASURE YOUR ENERGY USE

A good place to start when trying to save energy is to find out how much you are currently using. In addition to directly reading your electricity and gas meters, there are a number of other ways to measure your energy use. Firstly, you can use an energy monitor. This tells you how much electricity you are using at any one point. It works by clamps on the wires going into your electricity meter. Most of them work wirelessly, so you can walk round the property with them and see the impact of turning your various appliances on and off.



For more detailed monitoring you can get a plug-in meter that measures the amount of energy used by each appliance. Plug it into a socket, and plug the appliance into the meter for a period of time, and you can calculate how many kWh of electricity it uses per day, per wash or per boil.

Some electricity companies are giving out free energy monitors to customers. You might check with yours.

It is government policy that everyone in the UK will have a smart meter installed by 2020. This should give the same benefits as an energy monitor, and will also be a live connection with your energy supplier, so they know what energy you are using, and won't have to visit to read your meter (or estimate bills).

FURTHER RESOURCES AND INFORMATION

- Find out more about how to read energy bills here: <http://www.uswitch.com/gas-electricity/how-to-read-your-energy-bill/>
- More information about smart meters can be found here: <https://www.ofgem.gov.uk/gas/retail-market/metering/transition-smart-meters>