

Technical UPDATE

September 2018



Understanding your electricity bill



Background

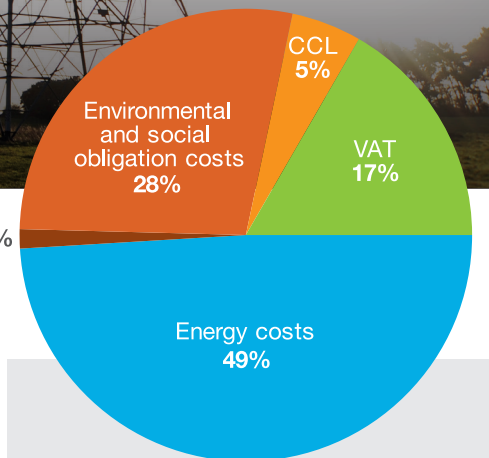
Electricity bills vary in complexity from simple to seemingly almost unintelligible. They all contain a breakdown of elements of electricity cost including fuel use, electricity transport, billing metering and energy taxation in some way. There is often a lot of jargon and technical terms, explanation of which can be found in the GrowSave glossary here:

<http://www.growsave.co.uk/glossary>.

Electricity can be a problematic commodity to bill and pay for, as the cost of generation changes in real time, hour by hour through each day, and over days and months. Unlike coal, oil or even gas, it cannot be stored in significant bulk and so its true cost is associated with the mix of generation capacity available at the moment of production.

Generally speaking, the more electricity you use, the more complex your electricity bill might look, as the supplier strives to construct the supply tariff in a way that best reflects the true cost as closely as is practical.

Other 1%



BREAKDOWN OF COSTS

What needs to be paid for?

It is useful to consider what costs are involved in supplying electricity and how these can be billed. Here are the main elements.

How electrical demand is measured

Maximum demand is measured either in kW or in kVA (kilovolt-amperes) depending how the energy supplier sees fit to charge for this. The kVA figure can be up to 20% more than the kW measurement for a typical site or piece of equipment. This is because, as well as accounting for the site power demand (kW), kVA also covers the extra current required by equipment, such as motors, or which use magnetic components and require what is called 'reactive power'.

Reactive power can be thought of as an oscillating power flow between supply and load, which, although leading to current flow, does not register as a net energy consumption, because it constantly reverses from generator to user and user to generator. Some supply companies charge a small nominal rate if reactive power levels go over a certain threshold.

Reactive power oscillations can be eliminated by the use of **power factor correction** capacitors, which have the effect of cancelling out the reactive power demand of motors or magnetic components.

Fixed costs

Some components of energy supply cost do not change with the amount of energy used and are fixed over time. Examples include metering and meter reading, bill production and maintenance of the availability of the supply. These can be charged on a time basis (£ per month) or might be linked to the 'capacity' or size of the supply – the bigger the capacity, the higher the fixed charges.

Peak use (or maximum demand)

Suppliers and distributors need to cater for the maximum power demand of a site irrespective of the accumulated energy the site uses. Because energy is supplied 'on-demand', generation and distribution capacity must be on standby to cater for the possibility of the load being switched on. For smaller customers on a simple tariff, this is recovered as part of a 'fixed charge'. For larger customers, with half-hourly meters, this is often re-charged against the measured peak demand or 'nominal capacity' of the installation. Commonly, it is expressed as £ per kW or £ per kVA per month.

So, if in a particular month a site hits peak usage of 120kVA for just 30 minutes on a busy day, this will be identified as the maximum demand and charged at the relevant rate.

Many large 'non-half-hourly' users have had their invoices and/or meters changed to half-hourly rates in the past year under the P272 regulations. Customers have to be careful to check their 'new' kVA rates, as these may be wrong or need adjusting. Penalties for overuse are quite high, but may be worth paying if additional use is only for one or two months.

If you have a CCA agreement, check that your CCL discount is being applied correctly. Note that there are some big changes coming from April 1st 2019.

Tax invoice date
1 January 2018

Tax invoice number
00000000

Any questions?

Call us on
024 7669 6512
We're open
Monday to Friday
9.00am until 5.00pm

Account number
000000000000

**YOUR
ELECTRICITY
SUPPLIER**

The Energy Centre
Stoneleigh Park
Kenilworth
CV8 2LS

Electricity invoice

For

New charges - 1 December 2017 to 31 December 2017

Half Hourly Bespoke Product plan
Meter

Charges	kWh used	Pence per kWh	Total charge
All Days	190,477.90	6.384	£12,160.11
All Nights	70,872.60	3.335	£2,363.60
Site Charge £48.48			
Agreed Supply Capacity Charge 580.0 at £0.618 per kVA			£358.70
Other charges			
Monthly Capacity Market Charge	261,350.50	1.864	£4,871.57
Renewables Obligation Charge	261,350.50	0.457	£1,194.37
Feed in Tariff Charge	261,350.50	0.421	£1,100.29
EMR CfD Payments			£23,193.48
Total excluding Climate change levy			£24,677.95
Climate change levy 261,350.50kWh at 0.568p			£4,935.59
Total excluding VAT			£29,613.54
Total VAT at 20.0% on £24,677.95			£4,935.59
Total including VAT			£29,613.54

Total new charges due by 15 January 2018

About this site

Address:
FEC Energy, 10th Street,
Stoneleigh Park,
Kenilworth, CV8 2LS

Site reference:
0000000000

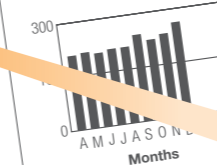
Supply number

S

Contract

Half Hourly Bespoke
Product plan
Agreed Supply Period
end date
30 September 2018

Consumption tracker (MWh)



Total consumption
1 Apr 2017 to
31 Dec 2017
1,981.72 MWh

How electricity energy is measured

Electrical energy is measured and most commonly billed in **kWh (kilowatt-hours)** and is derived from a meter which constantly multiplies the power absorbed by an installation (kW) by the duration the power flows in hours (h). Note: this is "kW times hours", not "kW per hour". To calculate the energy used by a particular piece of equipment, take its power rating in kW and multiply it by the number of hours used. For example, a 5kW motor used for 10 hours will use $5 \times 10 = 50\text{kWh}$ of electricity.

For some larger users, energy use might be referred to in MWh (Megawatt-hours). 1MWh is 1,000kWh.

Energy

This is normally the majority of the cost and can be regarded as the 'fuel' component of the bill. It pays for the gas, coal, or the amortised operating costs of a renewable system which is used in generation; these costs are passed on to the end-user and are measured in kilowatt-hours (kWh). In some cases and increasingly, the non-kWh charges are becoming more significant and can represent more than half the bill.

Use of System charges

These charges are levied by the transmission and distribution companies for use and maintenance of their assets – cables, lines and transformers – and are passed through to end users. They only apply as a separate item on a bill for users who have more complex tariff structures; simpler tariffs have them 'built-in' to the kWh rate.

The rates are set by agreed statute and are the same for any particular customer, irrespective of who the energy supplier might be. Examples are: Transmission Use of System (TUoS) charges and Distribution Use of System (DUoS) charges. These charges change with time of day and day of the week. For larger supplies, National Grid has a 'Triad' charge, which is calculated from customer maximum demand at three half-hour electricity system peak times per year. The Triad charge is a 'one-off' reconciliation payment in the spring of each year.

Electrical taxes and levies

A number of taxes and levies are charged on the amount of energy (kWh) used in a period. They are either integrated with the p/kWh rate for the energy used and not shown explicitly on the bill, or itemised as separate components. These include Climate Change Levy, Feed-in Tariff Levy, Contracts for differences and Renewable Obligation.

VAT is charged at 20% for business customers and 5% for domestic customers. Where domestic dwellings exist on site, users can apply to have split VAT for business and domestic use.

If electricity use falls below a certain figure in a particular month the normal 20% rate falls to 5%.