

'Green' Electricity Tariffs

According to the DTI 28% of energy consumption in the industrial sector is from electricity. According to the Association of Electrical Producers industry accounts for 35% of UK electricity use and the commercial sector 22%.

According to the Environment Agency - renewable energy sources generated 4.22% of the UK's electricity in 2005. The Government has a target to produce 10% of all UK electricity from renewable sources by 2010. Renewable electricity produces virtually no CO2 emissions.

This information sheet looks at the subject of green tariffs which is far from straightforward. All the information provided below has come from: The National Consumer Council report – "reality or rhetoric? Green tariffs for domestic customers": <http://www.vision21.org.uk/userfiles/green-tariffs.pdf>

The findings would appear to apply equally to the commercial sector and we strongly advise that when purchasing 'green' electricity you interrogate the suppliers so that the market is made as transparent as possible.

The Climate Change Levy - is a tax on non-domestic electricity consumers, requiring them to pay 0.43 pence for every kilowatt (kWh) of electricity they consume. If they can prove that they have bought green electricity then they are exempted from the tax. The way they can prove this is by buying Levy Exemption Certificates from eligible generators, usually with the associated electricity.

Additionality - suppliers who claim that a green tariff is providing an environmental benefit must be able to prove that their offer goes beyond what is already required by law.

Transparency - suppliers' claims for renewable electricity should be accompanied by a clear definition of its sources and an explanation of how any premium customers are paying.

Types of Tariff

Green electricity supply tariff - where the supplier guarantees that the electricity it sells to customers is covered by the electricity it buys from renewable sources, backed by the necessary contractual evidence.

Green energy fund tariff - where the supplier invests the premium consumers' pay into new renewable energy, or other environmental projects. In some cases the company matches the customers' contributions.

Carbon offset tariff - where suppliers offer to offset the carbon dioxide (CO2) emitted by the consumers' electricity and/or gas supply – by planting trees or by investing in other CO2-reducing projects in the UK or in developing countries. These are becoming more common.

Premium

There is a cost to suppliers for providing consumers with 'additional' environmental benefits. To reflect this, suppliers will usually charge a premium for their green tariffs over the standard credit tariff. (This should help indicate real CO2 benefits when selecting a tariff.)

Additional Environmental Benefits

One of the key requirements of a green tariff is that it should offer consumers additional environmental benefits. If any claimed environmental benefits would have occurred anyway, consumers are being misled. By environmental benefit, we usually mean a reduction in CO2 emissions. For the purposes of this assessment, a green supply tariff will not be considered additional purely on the basis of Levy Exemption Certificates being retired and Renewable Energy Guarantees of Origins being held.

British Gas - Climate Aware tariff - it is not clear exactly what customers get. British Gas should specify how much of consumers' household energy use is being offset. The Green Electricity tariff does not offer additional environmental benefits according to the definition set out in this report.

EBICo - Offers two standard tariffs, Equipower and Equigas, through its partnership with Scottish and Southern Energy. These are not green tariffs, but EBICo offers its customers a carbon offsetting option.

Ecotricity - The Old Energy Tariff provides 100% renewable electricity. The New Energy Tariff provides 25% of electricity from renewable sources. The supply aspect of the tariff does not offer any additional environmental benefits according to the report. Ecotricity's commitment to invest any profits back into its wind farm business and other research could offer some additional environmental benefits.

EDF - Overall, EDF Energy does not go beyond its legal obligation. The Green Fund Tariff invests in community-based renewables projects.

Good Energy - Good Energy is making a serious attempt to provide additional environmental benefits. Good Energy is the only supplier to receive three unqualified ticks for its green supply tariff. These additional environmental benefits are tangible and account for the premium Good Energy charges.

Green Energy - Green Energy is making a serious attempt at a green tariff with its UK 100. However, while one of the better tariffs in the survey, UK 100 is not offering its customers significant additional environmental benefits according to the definition set out in this report.

Npower - Do not exceed its legal obligations and does not offer any additional environmental benefits.

Powegen - Do not go beyond its legal obligations. The supply aspect of GreenPlan does not offer additional environmental benefits. The GreenPlan Trust Fund invests in new renewable capacity at the community level. The extent of this is hard to quantify objectively.

Scottish and Southern Energy - Their RSPB tariff comes from 90% 'pale green' hydro and contributes to the RSPB's renewable energy and environmental activities. Scottish and Southern Energy's Power2 tariff does not offer consumers additional environmental benefits, other than its commitment to plant trees.

Scottish Power - Green Energy Fund could be said to offer additional environmental benefits since the contributions are used to invest in new renewable capacity at the community level. Benefits are hard to quantify. Their H2O tariff does not offer additional benefits.

The National Consumer Council report warns that even the best suppliers will only save 6% of annual CO2 emissions.

Centralised Energy Supplies

Unlike electricity supply, unfortunately, there are no real 'green' choices when it comes to oil and gas. Admittedly oil and gas progressively produce fewer carbon emissions than coal, which is still a very significant fuel for generating our electricity. Biomass (plant material) is currently becoming a 'renewable' choice for electricity generation, but on the centralised scale being planned this is not a sustainable option and can produce a

great deal of greenhouse gas emissions due to production and land use changes. Drax, one of the UK's largest emitters of CO₂, is planning to produce 10% of their electricity (400 MW) from biomass. E.ON is planning to build a 150 MW biomass power station at Bristol. Presently there are no large-scale alternative fuels to power conventional boilers for generating electricity or hot water.

Heating – Space, Hot Water and Process

Most commerce will use gas or oil for heating, hot water and process. Oil doubled in price in 2007, which most sector analysts did not predict and many now feel that prices in excess of a \$100 a barrel will remain for the foreseeable future. In mid-2008, oil topped \$150 a barrel. Crude oil increased in price by 400% between 2003 and 2008. Gas prices have been traditionally tied to oil prices, and these are also at a record high in 2008. There is also the issue of energy security as many oil fields are sited in volatile areas of the planet which lack political stability. With the Buncefield terminal disaster, the UK experienced how vulnerable we are to external factors, as so much of our energy is now imported. We are only too well aware that a proportion of our gas now comes from a pipeline controlled by Russia and we are at the end of the line! In 2007 27% of UK gas was imported. In 2008, this figure is forecast to rise to 40%.

The only real way to reduce the environmental impact for your organisation's heating is either to generate your own from renewable sources which we look at below or reduce your energy use. Please see Vision 21 business information sheets: '*Carbon Footprint Auditing*' and '*Energy Management in Business*'.

Decentralised Energy Supplies

The UK's centralised electricity system is extremely inefficient. More than two-thirds of energy available from the (predominantly) fossil fuels is wasted. A staggering 61.5% of the energy is lost through inefficient generation and heat wastage at the source. A great deal of this is lost as heat in the massive cooling towers that are emblematic of our power stations. A further 3.5% is lost through the transmission lines that hum above our countryside and through distribution to our places of work. Typically 13% is wasted through inefficient end use. This is a sobering 78% of carbon emissions which is added to our atmosphere, creating global warming, because of inefficiencies! To reiterate 64% of available energy is lost between the power station and your business. (Or put another way the system has an efficiency of 36%.) And a great deal of this is heat – which heats the air and not your organisation.

Combined Heat and Power

This brings us on to Combined Heat and Power (CHP), which is the simultaneous generation of heat and power (i.e. electricity) in a single process. CHP is a highly efficient way to use fossil and renewable fuels, which reduces greenhouse gas emissions and provides greater energy security. CHP is a form of decentralised energy generation. CHP plants are installed onsite or close to the point of use, supplying customers with heat and power. The heat that is a by-product of generating electricity can be piped directly to your premises, saving on your gas or oil bills as you will also be purchasing electricity from the same plant. Transmission losses associated with conveying electricity over hundreds of miles from the power station, to sub-stations, to your premises are virtually eliminated. In this way CHP can achieve overall efficiencies of 70%.

Obviously there is a not insubstantial financial outlay to commission a CHP plant and once again this might seem like the preserve of large multi-national companies who will be able to buffet themselves from spiraling gas price increases. A report commissioned

by Centrica forecasts that gas process could rise by as much as 70% in 2008. However many SMEs operate from trading estates, which are ideal for a CHP plant, that could serve the various units.

There is growing interest in the UK to use palm oil (and other plant oils) to replace conventional fossil fuel oil and this practice is well established in Germany. Unfortunately palm oil is far worse for the climate than fossil fuels if it is grown on, for example, the peat lands of Indonesia where carbon emissions can be over 30 times that of fossil fuels. Most palm oil is grown in Indonesia. Biomass to replace fossil fuel use in CHP can only be used on a very small scale and feedstocks would have to be used locally to be sustainable.

Micro-CHP systems are available that can replace domestic-sized boilers (which many SME offices, will employ) which generate both heat and electricity in much the same way as the larger industrial-sized systems described above do. www.whispergen.com/

Micro-Generation

Every business with a roof or surrounding ground has the infra-structure required to capture the free heat of the sun and generate hot water, which once you have paid back the initial outlay, will be free. These are associated with domestic properties, which many SMEs equate to in size. Alternatively the technology could be scaled up for larger properties. In the commercial sector, 64% of energy use is for space heating and hot water. For offices it would not be unfair to assume that most of this will be for space heating, as workers will not be taking many baths at work! In the industrial sector the divisions of energy use are listed slightly differently, with 55% being accounted for by process, which will include hot water, and only 10% for space heating, which seems slightly harsh on those who work on the shop floor. But having said that, plenty are more than hot enough due to heat given off from machinery.

Solar Hot Water

These panels use tubes to transfer the sun's rays to heat your hot water. Greenshop Solar (<http://www.greenshop-solar.co.uk/>) says that solar hot water panels that work alongside conventional water heaters should be able to supply two-thirds of domestic hot water needs for a typical coverage of 2-3 square metres. However this may need to be less as hot water needs in an office can be minimal. This sort of system would not be suitable for supplying hot water for process in industry.

Solar Space Heating

This would require a greater amount of solar panels and a larger-capacity thermal store, which would require a greater amount of storage space within your premises. It is important that these systems are carefully designed, to account for excess heat generated in summer. Solar space heating is more involved, but in the commercial sector most of the energy use is for space heating so a company can greatly reduce its CO2 emissions by installing such a system.

Heat Pumps

The same can therefore be said of heat pumps, which transfer heat from the ground, air or water to provide heating. Ground source heat pumps are perhaps the most efficient, which can save between 2 to 7.5 tonnes of domestic annual CO2, which could be greater for commercial properties:

www.energysavingtrust.org.uk/generate_your_own_energy/types_of_renewables/