Background Briefing
Solar electric power

April 2000

Vast untapped potential

Solar electric (photovoltaic or 'PV') panels produce electricity directly from sunlight, the Earth's primary source of energy. Despite its rainy climate the UK would get 2/3 of its electricity from solar if all suitable roofs were equipped with solar panels[i]. Even on overcast days there is enough diffuse daylight for solar electric panels to generate some electricity.

If it were possible to harness all the sunlight that hits the UK in one average day it would be enough to fulfil the whole of the UK's electricity needs for 2 whole years[ii].

Solar power is a vital technology to replace fossil fuels, the major cause of climate change. A one kilowatt array of solar electric panels covering 10 square metres will save nearly one tonne of carbon dioxide emissions every year.[iii]

Of all the forms of renewable energy, solar electric is the only one that most homeowners can produce themselves. Houses fitted with solar electric panels can export their surplus solar electricity to the grid and become miniature power stations generating pollution-free electricity in our towns and cities. The handful of buildings in the UK currently using solar electricity could, with Government and industry support, become millions.

'Daylight Robbery'

However, up until now, householders who wished to take environmentally responsible action and install solar electric panels have been ripped off. Typically, a solar householder has been charged 6-7p per unit of electricity imported whilst being offered only 2.5- 4p for each unit of electricity they export. This seems particularly unfair when they are producing clean electricity and the vast majority of what they import is generated by burning fossil fuels, with concomitant emissions of CO2 which damage the climate. This disincentive flies in the face of the Government's climate change strategy and its target to get 10% of UK electricity from renewable energy by 2010.

Breakthrough deal for solar

This solar scandal has now been broken thanks to a deal brokered by Greenpeace with power company TXU-Europe (Eastern Energy). For the first time in the UK, householders with solar panels will now be offered

'net metering' under the brand name SolarNet. This means that their exported solar electricity will get the same price per unit (kWh) as the electricity they import from the grid. This net metering contract will be available to solar electric householders wherever they are in the UK.

Net metering is particularly important to domestic solar electric users because their solar electricity output peaks during daytime whilst their home is likely to be using comparatively little electricity. So it is important to be able to use the grid like a battery, exporting to the grid during daytime in order that the solar electricity is not wasted, and taking electricity off the grid when it is dark. On the other hand, many businesses tend to use most electricity during office hours, so the electricity exported by solar homes usefully coincides with their electricity requirements.

The Greenpeace campaign for solar power achieved a landmark in 1997 with the first application of solar electric panels on social housing in Britain. Greenpeace equipped the roofs of three Peabody Trust terraced homes at Silvertown in East London with solar electric arrays. Each of the solar homes generates around a third of its annual electricity needs directly from the sun. Eastern Energy's SolarNet deal will be available to the Silvertown residents who will now be able to save over £60 per year on their electricity bills.

Because of the disincentives in the UK against domestic photovoltaic panels there are only about ten grid-connected solar electric houses in the UK. This net metering deal offered by TXU is a very significant step towards achieving a dramatic increase in solar electric homes.

Missed opportunity for the UK

Although net metering is new to the UK it is already happening in other countries. In the USA, net metering applies in many States including California. The USA produced 1/3 of the world's photovoltaic panels last year. Net metering is also allowed in Holland, whilst Germany and Spain have laws to ensure that solar electricity producers get not just net metering but a premium price on top. The UK Government refuses to recognise that net metering is valuable both for the environment and to nurture a major new solar industry. Energy Minister Helen Liddell recently said of net metering that "I do not believe that it is necessarily the right method … It would require suppliers to pay more for electricity … than it was worth to them"[iv].

As well as its environmental benefits, solar power is an opportunity for the UK to capture a share of the jobs and money in the expanding global photovoltaic (PV) industry, which grew 32% last year. A strong drive for PV in the UK would reap large commercial rewards. In Japan, where the Government has a set a target of 70,000 grid-connected solar roofs by 2010, PV production increased 63% in 1999 to meet the demand[v]. The top producers are Kyocera, Sharp, Sanyo, with Canon also in the list, a

roll-call of firms that have become UK household names with high-tech products and who see big market potential for PV. The story in the UK is in stark contrast. Although the world's biggest solar PV company is British – BP Solarex – it does not manufacture PV in the UK, and recently moved the HQ of its solar business to the USA. This is an indictment of UK industrial policy which has failed to set a constructive framework for the PV industry in the UK and has no solar electric targets similar to those of Japan, USA or Germany.

For more information: Ian Taylor, Greenpeace UK, 020 7865 8247, ian.taylor@uk.greenpeace.org

---

[i] *The Potential Generating Capacity of PV Clad Buildings in the UK,* ETSU 1992,
[ii] data from *Building Homes with Solar Power, A Greenpeace report based on original research by HGa Consulting Engineers,* Greenpeace, 1996, 32pp
[iii] *A Realisable Renewable Energy Future*, John A. Turner, Science, 1999, v.285, p.687. Also data in ref. II above.
[iv] Hansard, 19th April 2000, Utilities Bill debate
[v] Figures from Photovoltaic News, Feb 2000, v.19, no.2