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BERR

Distributed Energy

Summary for Non-Specialists

Distributed energy is an approach to electricity generation that offers environmental benefits by siting generators closer to where the energy is used. This document is a guide to the key concepts behind distributed energy and is aimed at non-specialists who are interested or involved in its use. The guide is not comprehensive. It is an outline to help interested parties to engage in this field.

The UK generates most of its electricity in large coal, gas or nuclear power stations which are connected to the national grid. Distributed Energy (DE), also referred to as distributed generation or decentralised energy, is another approach which brings generation closer to where it is used.

It covers many technologies which may be installed by individuals, businesses, communities, schools, commerce or industry.

DE could be anything from wind power, solar panels, combined heat and power (CHP) schemes and other renewable electricity generation connected directly into the local distribution network. CHP uses largely conventional generation technology but captures the heat usually lost through generation to use in industrial processes or heating/cooling.

Ofgem/BERR has opened a consultation with the aim of removing barriers to the wider uptake of DE.

What are the benefits of DE?

DE could contribute to the drive to curb climate change. It can do this by:

- making use of heat otherwise lost in conventional generation, for example to heat and cool buildings;
- reducing electricity losses by moving generation closer to where electricity is used;
- opening doors to growth in renewable energy; and
- encouraging greater awareness of the environmental and other impacts of energy use.

Why do we not have more DE?

We do have DE but some forms remain uneconomic. The drivers are however changing (for example, planning requirements to have onsite generation in new developments) and costs are falling. Therefore we need to look at aspects in the regulatory regime which disadvantage distributed generators, especially since the current arrangements were designed when the country's electricity came almost entirely from large conventional power stations. We have identified barriers hindering the wider uptake of DE and have proposed measures in a recent consultation document* aimed at tackling these problems.

Settings for DE

There are four settings for DE:

1. Industrial & Commercial generation for own consumption on-site
2. Industrial & Commercial generation for own consumption across multiple sites
3. Community generation of electricity (often with heat) for multiple premises and customers and
4. Independent or Merchant plant that sells output to suppliers and wholesale market.

There are already schemes in place for each of these settings operating in the UK (see boxes overleaf for examples)

* A joint Ofgem/BERR Distributed Energy (DE) Consultation Document was published on 18 December. The consultation document is available at **http://www.ofgem.gov.uk** under Live Consultations

How can we pave the way for DE?

We have put forward 16 options for consideration with the aim of creating a level playing field for DE within the current market and regulatory arrangements. These options are a mix of short-term and long-term measures. They aim to:

- support community DE in its transition to becoming a mainstream source of electricity;
- encourage innovation by opening the way for advanced technologies and new market arrangements; and
- remove barriers to entry in the current market and licensing arrangements

Support community DE: We have proposed ways to compensate for the apparent lack of support services (such as assistance with wholesale market trading) to enable community DE schemes to operate within the existing licensed framework. If and when such schemes become more established, we would expect the market to deliver the support services needed.

Encourage innovation: For example, we invite electricity companies to suggest proposals for trial projects that offer innovative technical and commercial solutions for DE.

Remove barriers: Proposals in this category include pushing distributors to develop cost-reflective charges for DE and allow for the delegation of the high-cost aspects of the Supply licence to third parties.

Case Studies

1 **Industrial & Commercial generation for own consumption on a single site often includes electricity and heat. Typical applications include oil refineries, chemical plants and food processing.**

INEOS Chlor is one of Europe's major chemical firms. Its factory in Runcorn Cheshire is the largest electricity consumer in the UK, consuming nearly 1% of national electricity output. Some of its electricity comes from an on-site 38MW gas-fired CHP unit.

2 **Industrial & Commercial generation for own consumption across multiple sites is typically seen in hospitals, universities and local government premises.**

Leicester City Council has set ambitious carbon emissions and energy consumption reduction targets. To help it to meet those targets it has invested in CHP schemes, installing small gas-fired units in its leisure centres as well as larger district heating schemes. Other organisations in the city including the health service and schools have also installed CHP and there is potential to link these together.

3 **Community generation of electricity (often with heat) for multiple premises and customers usually involves CHP generation that supplies heat to local homes and business and also sells electricity.**

Ashton Hayes is a small village in Cheshire aiming to become Britain's first carbon-neutral community. Two different schemes are currently being considered to provide power for the village. One is a wood-chip CHP unit and the other uses food waste. The chosen scheme would generate electricity to meet the needs of the village's 1,000 residents. The village is considering a proposal for a local heat network which would take in various publicly-owned buildings including the school, church and village hall.

4 **Independent or Merchant plant such as waste-burning generators or wind farms connected to the distribution network and selling electricity to suppliers and the wholesale market.**

Ice cream manufacturers Mackie's of Scotland have their own energy supply consisting of three wind turbines. The turbines have a total capacity of around 2.5MW of which only 35% is used on site. The two most recently installed turbines, "Ice" and "Cream" in 2007, export almost 100% of the time. For this export, Mackie's have a 5-year fixed contract with Good Energy. The turbines are saving the company an estimated £280k a year in electricity bills.

Questions

Responses to the consultation are due by 11th March 2008 to anna.kulhavy@ofgem.gov.uk. We would welcome any evidence or examples which demonstrate problems facing DE developers and ideas for solutions.