

# Supporting sustainability in Scotland – recent developments

Factsheet 70

09.08.07

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**Scotland has great potential for low-carbon energy and targets have been set by the Scottish Executive for generating 18 per cent of electricity from renewables by 2010 and 40 per cent by 2020.**

Ofgem is supporting this objective in several ways including:

- authorising major increases in network investment to connect more renewables;
- ensuring energy transmission is sustainable and efficient;
- speeding up the connections process for renewables;
- considering options for connecting Scottish islands to the transmission network; and
- using innovation incentives to help connect renewables.

## ► New investment in Scotland's electricity networks

Scotland currently has around 2.5 gigawatts of renewable electricity generation but a further 12 gigawatts of projects are proposed (mainly wind farms). This is twice that required to meet the Scottish Executive's target for generating 40 per cent of electricity from renewables by 2020, equivalent to 6 gigawatts of capacity. This requires significant investment to connect projects to the transmission and distribution networks, and increase the overall capacity of the networks in Scotland, so renewable generation can be transmitted safely. Also, additional renewable generation in Scotland will

only be accommodated if substantial investment is made in the downstream network in England and Wales.

Ofgem has recently addressed this through the 2007-2012 price controls which allow the two companies that run Scotland's electricity transmission networks, Scottish Hydro Electric Transmission Limited (SHETL) and Scottish Power Transmission Limited (SPTL), major increases in previous investment allowances. This investment will also help maintain secure supplies to Scottish customers by replacing ageing infrastructure.

	<b>Allowance for previous 5-year price control</b>	<b>Allowance for 2007-2012</b>	<b>Increase from previous price control</b>
SHETL	£71m	£181m	+ 155%
SPTL	£152m	£608m	+ 300%

The number of renewable projects that will go ahead over the next five years is uncertain. So Ofgem has introduced additional flexibility into the price controls so that the companies can make further investment above these

allowances, in response to additional demand for connections. Also, to protect consumers from having to pay unnecessary charges, the revenues could be reduced if certain projects do not go ahead.

## ▶ Ongoing upgrades to Scotland's networks

This major increase in investment allowances follows a series of upgrades to reinforce the high voltage networks in Scotland and northern England. SHETL and SPTL identified 10 key upgrade projects and in 2004 Ofgem took steps to approve £560 million in investment needed before the 2007-

2012 price control review to avoid delay in the upgrade work.

Key among these projects is the upgrade to the Beaully-Denny line, a key part of Scotland's transmission network, from 132,000 volt to 400,000 volt cabling. This project is subject to a planning enquiry expected to report in due course.

## ▶ Ensuring the transmission networks are sustainable and efficient

Ofgem is seeking to ensure that the transmission networks operate as efficiently and sustainably as possible. When electricity flows along transmission lines, a proportion of this energy is lost as heat. These losses increase the further electricity travels so more electricity has to be generated than is consumed.

Losses from Britain's transmission system cost around £260 million a year and the additional electricity generated to cover these losses creates 680,000 tonnes of carbon emissions each year. Losses are paid for by generators and suppliers (on behalf of customers) and currently the amount each of them pays is regardless of location.

Proposals have been made by the industry to increase charges to generators located further away from demand. But these generators would still be viable with the support they receive through the Renewables Obligation. Those located nearer to demand would pay less. The opposite would apply to suppliers' charges and those closer to centres of generation (such as Scotland) should pay less.

Ofgem must decide whether to accept one of these proposals and has announced a 'minded to' position that one proposal should be approved. This would introduce a different charge

for 14 areas on the network. These zonal charges would vary throughout the year due to changing flows on the network.

### The key benefits of zonal charges:

- reductions in energy losses over time and therefore lower costs to consumers,
- improvements in sustainability as carbon emissions are reduced with less energy being lost, and
- more cost reflective charges to consumers and generators.

Ofgem has published a final consultation on this proposal so that all interested parties have another opportunity to give views. If Ofgem decides to approve the modification it would be implemented in 2008.

The proposal would re-distribute the cost of losses between generators and suppliers and make the charges cost-reflective. The estimated initial annual savings would amount to around £15m a year in energy terms. Emissions would be reduced by 150,000 tonnes of carbon a year, (equivalent to the emissions of 183,000 average-sized cars per year travelling an annual average mileage of 9,000 miles).

## ▶ Speeding up the connections process for renewables

An unprecedented amount of generation is seeking to connect in Scotland. More than 11 gigawatts of projects have already received commercial terms of connection from National Grid. However, accommodating this requires significant investment in connections and reinforcement of the network. In addition, the process for these projects to obtain planning consent could also cause delays in the development of such generation.

According to National Grid, only 17 percent of the projects with connection agreements have planning consent. Before investment is made, transmission companies need to be certain that generators can commit to paying for the costs incurred to connect them. An interim arrangement has been put in place so that generators can make a commitment to the transmission companies to obtain connections without having to pay high and volatile upfront connections costs.

In February 2006, Ofgem formed a working group to look at grid access and has played an active role in developing

solutions. The group's work has resulted in a number of important changes that are either already implemented or are being proposed. Progress has been made in a number of areas including:

- working with National Grid to identify the best way to manage connection and access contracts so viable projects can be connected more quickly;
- revisions to industry codes of practice have been suggested to introduce more flexible ways for new and existing generators to obtain and commit to using connections;
- a review of transmission system operation measures to seek opportunities to maximise use of the existing network; and
- reviewing the treatment of renewable generation when determining what transmission capacity is needed.

▶ Speeding up the connections process for renewables continued

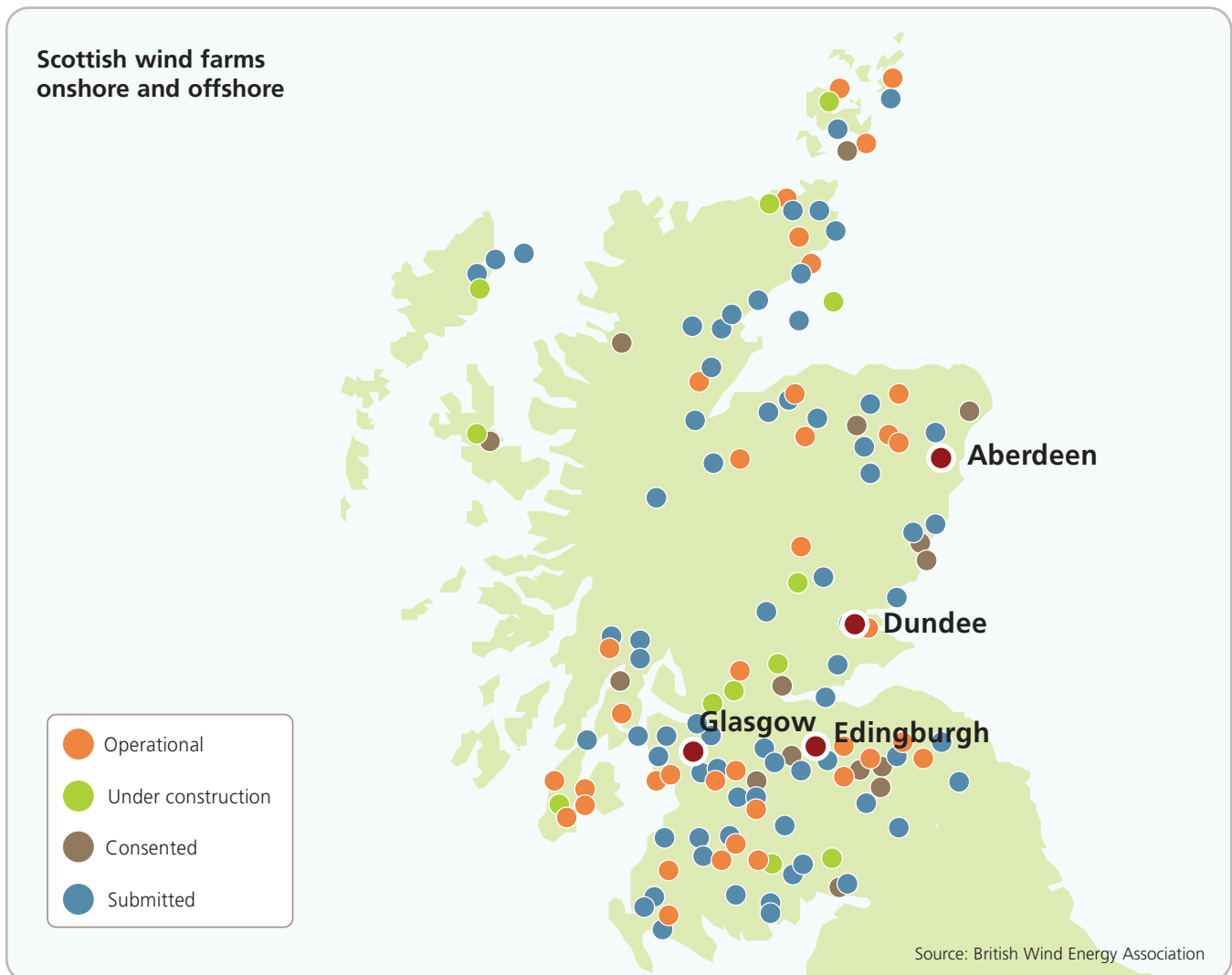
These measures are designed to help solve grid access issues in the short term and Ofgem will be reporting to the Government on progress in September 2007. At the same time, as set out in the Energy White Paper, Ofgem is initiating a joint project with the Government, to review medium to long-term network access arrangement issues. This includes examining the scope for sharing transmission capacity

between different forms of generation, delivering and operating network infrastructure efficiently and ensuring the right incentives are in place for efficient use of transmission capacity. This project will deliver an interim report in December 2007 and a final report in May 2008.

▶ Renewable generation in Scotland

The extent to which renewable generation is likely to grow in Scotland is demonstrated in this map. The map shows windfarms that are operational as well as those already under construction, those with planning consent and others seeking

planning consent. As well as wind power, the Scottish Executive is supporting less established forms of renewable technology such as wave and tidal energy.



## Total Wind capacity for Scotland

Operational capacity (megawatts)	Under construction capacity (megawatts)	Consented capacity (megawatts)	Submitted capacity (megawatts)
1077	823	910	5643

Source: British Wind Energy Association

### ► Connecting the Scottish islands

Orkney, Shetland and the Western Isles have great potential for renewable energy and a number of proposals have been tabled for wind farms and other renewable generation on these islands.

These projects require connections to the Great Britain high voltage transmission network. Each link would require major new investment, and costs must be kept at the most efficient level. The costs of building these links are uncertain and therefore could not be included in the 2007-2012 price controls.

Ofgem has identified several ways of connecting the islands. This includes opening up the ownership, financing, and

building of those links to competitive tender. This may reduce overall costs resulting in lower transmission charges for generators which could increase the number of projects able to connect and reduce the risk of the connections not being fully used. Other options include allowing the monopoly transmission company, SHETL, to construct the links and allowing renewable developers to build and own the links. Ofgem is seeking views on these options from the industry and other stakeholders.

The Government has already decided that connections for offshore renewables should be opened up to competition. Ofgem is working with Government to establish the regulatory regime for this.

### ► Using innovation incentives to connect more renewables

Through the electricity distribution price controls for 2005-2010, Ofgem has given the electricity distribution companies (which transport electricity at lower voltages to homes) an incentive to develop registered power zones (RPZs). This will allow them to investigate and develop engineering solutions for connecting more generation quickly and efficiently.

An RPZ has been established on Orkney where some renewable capacity exists and there are plans for further schemes.

The ability of Orkney's electricity network to connect these new generators is currently restricted by the capacity of the two undersea cables to the mainland. Scottish and Southern Energy has devised a network management scheme which will make better use of the existing infrastructure, allowing new generators to control their electricity output to match the available capacity of the network in real time. This innovation is particularly helpful to wind and wave generators and will enable more of them to be connected to the network.

#### For further information please contact:

<b>Mark Wiltsher, Head of Media Relations</b>	020 7901 7006	email mark.wiltsher@ofgem.gov.uk
<b>Chris Lock, Communications Officer</b>	020 7901 7225	email chris.lock@ofgem.gov.uk
<b>Julia Collings, Communications Officer</b>	020 7901 7217	email julia.collings@ofgem.gov.uk