

# Pentland tides could power half of Scotland

## Renewables: Firth has some of the fastest currents in UK

BY RYAN CRIGHTON  
BUSINESS EDITOR

Enough renewable energy to power around half of Scotland could be harnessed from the tides in a single stretch of water off the north coast.

Some 1.9 gigawatts of clean energy could be generated by turbines placed in the Pentland Firth between mainland Scotland and Orkney, according to engineers from Oxford and Edinburgh Universities.

The Pentland Firth has some of the fastest tidal currents in the British Isles, making it a prime candidate for developing marine power schemes. The engineers said their study narrowed down earlier estimates that the firth could produce anywhere between 1GW and 18GW of power.

They calculated that as much as 4.2GW could be harnessed but, because tidal turbines are not 100% efficient, the estimate of 1.9GW was a more realistic target.

Work has already started on one project – MeyGen – in the region.

When fully operational, the 86 megawatt scheme in the waters between Orkney and Caithness could generate enough electricity for

42,000 homes – around 20% of the Highlands.

However, the huge cost of installing undersea cables to transport energy produced in the northern and western isles is one of the main blocks to developing commercial renewables schemes on the islands.

To fully exploit the potential of the tidal stream in the firth, turbines would need to be located across the entire width of the channel, the researchers said. They have outlined locations where turbines should be positioned to boost the area's energy producing potential.

Sites which minimise the impacts on sea life and shipping have been identified by the UK Crown Estate, which will lease them to tidal energy firms.

Professor Alistair Borthwick, of the school of engineering at the University of Edinburgh, said: "Our research builds on earlier studies by analysing the interactions between turbines and the tides more closely.

"This is a more accurate approach than was used in the early days of tidal

stream power assessment, and should be useful in calculating how much power might realistically be recoverable from the Pentland Firth."

Professor Guy Houlby, of the Department of Engineering Science, University of Oxford, who led the study, said: "The UK enjoys potentially some of the best tidal resources worldwide, and if we exploit them wisely they could make an important contribution to our energy supply.

"These studies should move us closer towards the successful exploitation of the tides."

**"This is a more accurate approach than the early days"**





**WAVE POWER:** Clean energy generated by tidal turbines in the Pentland Firth could produce some 1.9 GW of electricity

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