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Subject: **Powerful connections:
How nuclear energy finds its way into the Irish electricity grid.**

Summary

Electricity is traded between the Republic of Ireland, Northern Ireland, the United Kingdom mainland, and Europe through the Moyle interconnector which links Scotland and Northern Ireland and a network of further interconnector cables. This network allows electricity generated at nuclear power stations to enter the supply networks in Northern Ireland and the Republic. However, the interconnector network also provides the potential to allow renewable energy generated in Ireland to be exported to the United Kingdom mainland.

The Moyle interconnector

The Moyle interconnector links the Northern Ireland and Scottish electricity grids through a submarine cable running 53 kilometers across the North Channel from Ballycronan More in Islandmagee, County Antrim, to Auchencrosh in Ayrshire (1).

An interconnector agreement was first signed between Northern Ireland Electricity (responsible for regulated electricity transmission, distribution and supply in Northern Ireland) and Scottish Power in 1991, and public inquiries into the project were held in Scotland and Northern Ireland in 1994/5. Construction contracts were awarded in 1999 and the interconnector was fully operational by April 2002, linking the Northern Irish electricity system into the much larger electricity systems and markets of Great Britain and the European mainland (2, 3).

The cost of construction was £150 million (215 million Euro), with 35% of the project costs funded by the European Regional Development Fund (4). In 2003 the interconnector was sold by the Viridian Group plc (the parent company of Northern Ireland Electricity) to Moyle Holdings Ltd, a not-for-equity-distribution company (5).

The interconnector has a capacity of up to 500 megawatts (MW), about the same as a modern medium sized power station, and consists of two submarine cables with converter systems at each end connecting into the Northern Irish and Scottish transmission systems. Capacity of 375 MW has been allocated for third party access, allowing trading between Northern Ireland and Scotland and beyond, and at an auction in December 2001 Scottish Power obtained capacity to export power from Scotland to Northern Ireland through the interconnector(6).

North – South interconnectors in Ireland

Three electricity interconnectors link the electricity systems of Northern Ireland with the Republic of Ireland. The main North - South interconnector between Tandragee and Louth was restored in 1995, having been out of service for twenty years as a result of terrorist activity, and currently has the capacity to trade 2 x 600 MW following an upgrade in 2001. At the current time trading predominantly takes electricity from the North into the Republic of



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Ireland market (7).

The other two North - South interconnectors between Strabane - Letterkenny and Enniskillen - Corraclassy were commissioned in 1994 as standby links, primarily to allow the two Irish grid companies to provide mutual assistance in emergency. They have also been upgraded during 2001 to full system interconnectors with a capacity of 120 MW each.

Upgrades to the three interconnectors required investment of £13.6 million (19.6 million Euro) by Northern Ireland Electricity and Ireland's Electricity Supply Board (ESB), including £4.5 million (6.5 million Euro) of European Regional Development Fund support.

Other cables and interconnectors

The Scottish electricity grid and the National Grid for England and Wales are linked by an Anglo-Scottish interconnector, and the National Grid is in turn linked to continental Europe's electricity grid by a cross-Channel interconnector between England and France (8). The result is an electricity supply network which is able to transfer power between nations depending on demand needs and market prices.

National Grid and ESB, the grid operator in Eire, have recently completed a feasibility study into the construction of a 1000 MW subsea interconnector directly linking Ireland and Wales. The results are currently being analysed before a decision is made on whether to develop the project further (9, 10).

Irish nuclear connections

The interlinked electricity supply networks of Scotland, Northern Ireland, and the Republic of Ireland allow electricity to be exchanged between regions. As a result, electricity generated at nuclear power stations is able to enter the supply networks of both Northern Ireland and the Republic. "The Moyle interconnector with Scotland is already bringing competitive electricity prices to both parts of Ireland and we are now seeing how the freeing-up of energy markets is encouraging innovative transactions between the participants," according to Harry McCracken, Director of Northern Ireland Electricity (11). The entire output of the Torness and Hunterston nuclear power stations in Scotland is contracted to Scottish Power and Scottish & Southern Energy (12), and as a consequence electricity from these power stations will contribute to the load exported by the Moyle interconnector.

The National Grid of English and Wales also receives electricity generated by nuclear power stations operated by British Energy and British Nuclear Fuels, as well as French electricity with a sizeable nuclear component which reaches the Grid through the cross-Channel interconnector. These are in turn available to the Scottish networks, supporting export via the Moyle interconnector. If the interconnector between the Republic and Wales is constructed as planned this nuclear contribution will be directly available to the Irish supply network.

Sustainable alternatives

Although the interconnector network allows the export of nuclear energy from the electricity grid in the United Kingdom / Scotland, it also creates the potential to allow the supply of electricity generated from renewable sources to enter wider markets. The European Electricity Directive (13) aims to further develop a single European market for electricity and establishes common rules for the generation, transmission, distribution, and supply of electricity. Under article 21 of the Electricity Directive customers are entitled to choose their electricity supplier. The directive recognises the importance of information on environmental impacts as well as development of markets, the network, and interconnections.

Ireland and Scotland are favourably situated to exploit Europe's wind energy resources, and thus have the potential to become exporters of green electricity. This opportunity has been recognised by the renewable energy company Airtricity, among others, who operate a number of onshore and offshore wind farms (14). Airtricity is a licensed independent electricity supplier recognised by Ireland's Commission for Energy Regulation which supplies electricity to customers in both the Republic of Ireland and Northern Ireland, and also trades into the Dutch and German electricity markets (15).

The export of electricity generated by wind farms is complicated by the intermittent nature of wind power, given that interconnector trading requires predictability and control. Interconnector cable capacity, the way in which it is allocated, and the rules and costs governing trading can all act as obstacles to the export of renewable electricity, but these obstacles are not insurmountable.

Local authorities, as significant purchasers of electricity, therefore have increasing opportunities to use their purchasing power to encourage

generators and suppliers to develop renewable energy capacity. Under the European Electricity Directive local authorities, like other customers, are entitled to choose their electricity supplier, and there is no reason why they should not adopt environmental as well as economic and efficiency criteria when selecting a supplier. In the United Kingdom over half of local authorities (55 per cent) already buy a proportion of green electricity which exceeds the minimum 3% green energy content specified in law by the government, and 12 per cent obtain more than 80 per cent of their electricity from green sources (16). Rotherham Metropolitan Borough Council, the London Borough of Lewisham and Trafford Metropolitan Borough Council are all examples of authorities which have switched to using 100% green energy. In United Kingdom green energy is exempt from the climate change levy - a tax on non-renewable energy sources - and avoiding the climate change levy through the use of renewable energy may offer local authorities the potential to make financial savings.

Case studies and guidance on the purchase of green power are available from the Department of Trade and Industry (17), and some authorities have been working to set up a consortium for the purchasing of renewable energy (18). Green electricity tariffs are available from all major electricity distribution companies, but there is considerable variation in the extent to which these tariffs improve upon the minimum standard specified by the government or promote the generation of renewable energy (19). Grant funding opportunities may be available to help local authorities, commercial businesses, and domestic users generate and use renewable energy.

In the Republic of Ireland and Northern Ireland Airtricity provides electricity generated by wind power to a number of local authorities. Despite the encouraging progress already made, there is still considerable potential both in the Republic of Ireland and the United Kingdom to increase the proportion of green electricity purchased by local authorities.

Suggested action

NFLA member councils can review their policies relating to energy use and investigate opportunities to promote and adopt energy from renewable sources as an alternative to 'brown' nuclear and fossil fuel energy. Many authorities will have already taken steps in this direction, but a further review may still be worthwhile as this is a

rapidly developing area and a number of new opportunities have arisen over recent months. Councils can look beyond their own use of renewable energy and also take steps to encourage the use of renewables in the surrounding area through planning powers and partnerships.

The Energy Saving Trust has suggested a set of questions a local authority can ask to examine how the authority uses and promotes renewable energy (20):

Strategic issues

- Does the council have a target for the percentage of electricity consumed in the local area that should be generated from renewable sources? If so, is this in line with national or regional targets?
- Does the council have a target and a strategy for decreasing carbon dioxide emissions from activities in the local area? If so, what priority is given to renewable energy in this strategy?
- What partnerships has the council made locally to promote and develop renewables?
- What other policies does the council have to develop the use of renewable energy?
- What priority and support does the council give to this area of work?

The council's use of renewables

- Does the council purchase its own energy from renewable sources? If so, what proportion?
- Does the council know what impact the climate change levy has had on its total expenditure?
- What funding opportunities have the council made use of in relation to renewable energy projects?

Planning activities

- Does the Council's Local Development Framework identify renewable energy as a priority?
- Does the council have supplementary planning guidance on renewable energy developments?
- Has the Council undertaken a community renewable energy planning study? If so, how

- does the council's Community Plan promote renewable energy?
- Are the departments responsible for putting together the various local development documents aware of the environmental benefits and technological state of play of selected renewable energy technologies?
 - Does the council have an initiative to promote the environmental benefits of renewable technologies through the planning department and does the planning department have adequate information and published material to promote these technologies to developers and architects?
 - Have renewable technologies ever been written into council policy or the planning specification for a particular development involving council property?
 - How is the installation of solar photovoltaic panels viewed in the Local Development Documents?

NFLA member councils are advised to consult the Energy Savings Trust's excellent website for local authorities for further information (21).

Conclusion

Whilst the development of the grid distribution infrastructure between Ireland, UK and continental Europe is welcome, its consequence is to bind the futures of Irish, UK and European energy policy together more closely through a single European electricity market. New nuclear build in the UK, if it occurs, would allow the supply of nuclear generated electricity to Ireland to continue and possibly expand. However, the converse also applies, and there is potential for the export of green electricity from the Republic. If both nations develop renewable and low carbon sources and energy conservation policies, demand for nuclear generated electricity will be undercut. Local authorities can play a strong role here by reviewing their own use of energy and by taking steps to encourage the use of renewable energy in their area of responsibility through their planning powers and partnership working.

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'Case study : Gloucestershire County Council : Successfully purchased green power'. <http://www.dti.gov.uk/energy/renewables/publications/pdfs/insertgcc.pdf>
18. Green Electricity Marketplace website: <http://www.greenelectricity.org/business.html> More information on efforts to establish a green electricity purchasing consortium can be obtained from john.sinclair@sutton.gov.uk
19. Friends of the Earth recommend a set of green electricity tariffs for domestic users on their website: http://www.foe.co.uk/campaigns/climate/press_for_change/choose_green_energy/
20. Energy Saving Trust (2004): 'Renewable energy: information for scrutiny members' http://www.practicalhelp.org.uk/downloads/scrutiny_renewables_updatingv2.pdf. The Energy Saving Trust recommends using these questions to address renewable energy issues through the local authority scrutiny process.
21. Energy Savings Trust Practical Help: local authorities home page: <http://www.practicalhelp.org.uk/localauthorities/>