

# SCOTLAND before pylons



## BRIEFING NOTE – MARCH 2009

### The Proposed Beauly - Denny Upgrade To A High Voltage, Overhead Transmission Line Is Not Necessary

Scotland Before Pylons (SBP) coordinates the many groups that were formed to present the views of local communities affected by the Scottish Hydro Electric Transmission Ltd (SHETL) and Scottish Power Transmission (SPT) proposal at the Beauly Denny Public Inquiry (PI). We believe that the views promoted by objectors at the Public Inquiry mirror those felt by the majority of the people of Scotland who care about their family's health and Scotland's environment in all its many aspects and which attracts so many visitors.

The SNP Manifesto in 2007 suggested empowering local communities in energy related decisions was a key objective: "Involve communities more in renewable energy decisions. A Scottish energy revolution has greatest chance of success if it comes from the bottom up rather than just being imposed from the top down. Community opposition to industrial scale wind farms is just one example." The involvement of the members of SBP in the planning process surrounding the Beauly Denny proposals is a prime example of communities involving themselves positively in major decisions relating to renewable energy.

#### IN SUMMARY SCOTLAND BEFORE PYLON'S POSITION IS CLEAR:

SBP supports renewably generated electricity and seeks a pragmatic approach to transmission which recognises that the health of Scottish people, the Scottish landscape and local communities deserve serious consideration in selecting how and where to place transmission routes. Transmission lines have a minimum economic life of 50 years so spanning two generations of Scots. Is it reasonable for this generation to scar the landscape to the detriment of tourism, and the health of Scotland for future generations? SBP does not believe so.

SBP has suggested that proven and economically justifiable alternatives of sub sea cables, underground cables and upgrading the East coast line should be considered in preference.

SBP urges Members of the Scottish Parliament to ensure that Scotland will be both a global leader in renewable energy AND a leading steward of a sustainable environment, health and heritage. SBP asks MSPs to encourage Scottish Ministers to reject the Beauly Denny 400kV High Voltage Overhead Transmission Line (HVOTL) proposal, as submitted by the Applicants, for the benefit of Scotland.

This Briefing Note is intended to cover key points made by objectors at the Public Inquiry and relevant information not available at the time of the PI into the proposed HVOTL between Beauly and Denny. It updates the position on under grounding high voltage cables, issues affecting health, the discussion on sub sea links from Scotland, and advises of changes to legislation in some EU countries for High Voltage transmission lines. In addition the Cairngorms National Park is likely to be extended southwards before Scottish Ministers determine the applicants' proposal.

#### HIGHEST NUMBER EVER OBJECT TO THE PROPOSAL

17,295 people from Scotland and much further afield objected to the proposal to construct the Beauly Denny 400kV HVOTL. There were more objectors to this application than any previous planning application in Scotland. All four of the local authorities along the line formally objected, supported by Clackmannanshire Council, so triggering the Public Inquiry.

Just 45 letters of support for the proposals were submitted!

#### SBP OBJECT TO THE TRANSMISSION PROPOSAL NOT RENEWABLE GENERATION

Contrary to those who portray any objection to the Beauly Denny upgrade as a stand against renewable sources of energy, SBP supports the development of renewable energy sources in appropriate locations. SBP does not believe the proposed upgrade, essentially a new overhead line, is required especially when alternative new grid sub sea connections are being actively considered from Scotland.

#### WHY SBP CONTINUES TO HAVE CONCERNS ABOUT THE PROPOSAL

SBP believes any transmission line should respect and not jeopardise Scotland's heritage of landscape, history and culture, nor impact on tourism and the local economy. Pylons with a height of up to 50 metres or higher, are inappropriate in any landscape as fine as the Highlands of Scotland or the Ochil Hills, or routed close to key features of Scotland's historical heritage; nor is it necessary to take overhead lines near communities however small. Members of SBP presented a sound case in objecting at the Public Inquiry over an eleven month period. Now a year after the end of the Inquiry important new developments in technology, health and environmental awareness require Scottish Ministers to consider these in addition to the

Reporters' Recommendation, in reaching their decision. There are environmentally sound and economically justifiable alternatives which would offer an acceptable solution.

Since the Public Inquiry concluded in December 2007 there have been important developments in offshore technology. In mid-February the Scottish Government identified 10 sites off the Scottish East and West coasts which when developed could produce sufficient energy to surpass Scotland's current renewable targets. An offshore grid may be required to transmit this energy to points of demand.

The extension of the Cairngorm National Park into Perth and Kinross will require consideration which was not pertinent at the time of the PI.

The Beaully Denny proposal is included in proposed National Planning Framework 2 which states at page 159 "no assumption is being made about the need for transmission or transmission routes between Beaully and Denny". SBP is concerned that the proposal has not been adequately considered in the EE&T Committee debates, and by default may be accepted as essential infrastructure.

The *reNews* issue 161 published on 5th February 2009 provides a useful update on current and proposed onshore wind farms that may be developed in the next three years. Surprisingly few of the sites will be serviced by a Beaully Denny grid transmission.

The Government's efforts to meet its EU 2020 renewable energy targets, even if successful, may encourage the UK to adopt an unnecessarily costly and risky approach to reducing carbon emissions, according to the House of Lords Economic Affairs Committee.

Lord Vallance of Tummel, as Chairman of Economic Affairs Committee introduced the debate Report on The Economics of Renewable Energy on 24th February 2009. In his speech to the House of Lords he said *inter alia*

*"We are clear that the full costs of wind generation, though declining over time, remain significantly higher than those of conventional or nuclear generation. We are also clear that no significant investment in wind power would occur without government financial support. Our report includes an estimate of the cost of moving in line with the Government's targets from 6 per cent to 34 per cent in the share of electricity generated from renewable sources. We concluded that the extra annual cost in 2020 would be £6.8 billion, an increase of 38 per cent. In terms of the average household bill, that would mean an extra £80 a year. ..."*

He concluded by re-emphasising that:

*"In addition, the Government should not allow its pursuit of the immediate 2020 target to take its eye off the longer term. Much more research needs to go into more effective and economical forms of renewable energy, and into electricity storage technologies which could mitigate the inherent problems associated with intermittent supply."*

To read the report visit <http://news.parliament.uk/2009/02/lords-debate-renewable-energy-report/> This report suggests that rushing into a single line of transmission – which is so intrusive and detrimental to environment and health – is premature and unnecessary.

## **A FULL APPRAISAL OF THE PROPOSAL WAS NOT PUBLISHED TO JUSTIFY THE NEED**

If any project required a Strategic Environmental Assessment the Beaully Denny proposal was it. It is particularly frustrating that the applicants at the Public Inquiry did not provide a SEA as should be required if the application was submitted today. The in-depth analysis of alternative options would have been reviewed and much of the PI might have been unnecessary. A SEA published in January 2009 to assess the impact of offshore wind generators demonstrates the value of an SEA. To view the offshore SEA please see [http://www.offshore-sea.org.uk/consultations/Offshore\\_Energy\\_SEA/OES\\_Environmental\\_Report.pdf](http://www.offshore-sea.org.uk/consultations/Offshore_Energy_SEA/OES_Environmental_Report.pdf)

In the absence of a full assessment of the impact of and the need for the proposed Beaully Denny line, SBP still believe that an SEA into the alternative options should be completed before a decision on the proposals for the Beaully Denny line is announced. This is particularly so given the Scottish Government's targets for renewable generation by 2020 and the lack of a national transmission GRID plan for the UK including Scotland, which connects the main areas of renewable generation to the points of demand. In the absence of any substantive SEA, SBP believes that there are suitable alternatives to the Beaully Denny proposal which are more appropriate in meeting projected demand.

In 2007 Emeritus Professor Andrew Bain, former economic adviser to the Midland Bank and former Board Member of Scottish Enterprise, advised that the Beaully Denny upgrade was not needed before 2020 to transmit power from the Highlands to the South. With only a small investment he suggested that peak transmission and storage capacity of 2000MW could be available. Hydro schemes do not require additional transmission capacity as they can be managed to meet local demand and export to the South in relatively calm conditions when there is spare capacity in the transmission system. Offshore turbines, wave and tidal power technology – when sufficiently developed – will require a new transmission grid. The Beaully Denny upgrade would be premature at this stage.

There is recent evidence that the electricity regulator, Ofgem, when assessing this proposal overestimated the amount of payment due to generators if they are constrained by lack of transmission capacity. It appears therefore the economic justification for Beaully Denny is flawed. A further problem with the applicants' proposal is of vital importance. Steve Smith of Ofgem in a key piece of evidence to Scottish Parl Economy, Energy & Tourism Committee on 11th Feb 2009, Col 1624, stated clearly that there are two big drivers of constraint at the moment. "As you suggest, one is the interconnector between Scotland and England and Wales, but there is also a big constraint within Scotland – which is what the Beaully Denny transmission line is designed to relieve. The line would cure half the problem but still leave the other half." It appears that huge further costs are required to provide the links to the South.

For further information please contact Helen McDade, details provided on page 4.

## POSSIBLE ALTERNATIVES

### Option One: Upgrading the East coast line

An upgraded existing East coast HV Transmission line could provide grid connection for the vast majority of the proposed renewable generators north of Perth. In its original design provision was made for this existing line to be upgraded with additional lines strung on the existing pylons when demand justified the upgrade. Such a substantial increase in capacity would provide easy transmission for proposed wind farms in the North and East of Scotland. SBP believes that the East coast line should be upgraded before Beaulieu Denny is considered for upgrading as it will be cheaper, and will meet demand for transmission from the North East. Plans for this upgrade are being prepared and SBP believes will be more cost effective than the proposals for Beaulieu Denny. It was particularly frustrating that the reporters would not hear crucial evidence from Sir Donald Miller. As Chief Engineer Sir Donald was responsible for building the East coast line during a distinguished career in the industry, retiring as Chairman of Scottish Power. For further details of the evidence not presented to the Inquiry please contact Helen McDade for further details – see contacts on page 4.

### Option Two: Sub sea links supported by the Scottish Government

At the PI, SHETL's own expert witness, David Bailey, Senior Consultant with Sinclair Knight Herz Consulting Engineers, gave evidence that sub sea cables would offer a technically viable and satisfactory alternative to the proposed overland, overhead upgrade. The sub sea options would cost considerably more than the overland upgrade as proposed, but if the environmental and social costs of the upgrade were taken into the equation then the sub sea options could well be economically justified. Stirling Before Pylons' witness Professor Nick Hanley's evidence to the Stirling session showed that a large proportion of the additional costs would be justified by the avoidance of the environmental costs in the Stirling area alone.

The possibilities of installing sub sea connections from Scotland to Europe, to Ireland and to England are being actively promoted by the Scottish Government. Whilst any sub sea link may not be installed for some years SBP believes that the options should be reviewed before any decision is made on the Beaulieu Denny proposal. It is important to remember that the costs are significant and the infrastructure is likely to be in place for at least 50 years. The impact of any overhead line must therefore be assessed within a long time frame spanning at least two generations. All alternative options should be carefully considered before approval, even conditional, is granted on a single route proposal.

Scotland's role in an electricity "supergrid" beneath the North Sea was underlined on 27th January 2009. The European Energy Chief Georg Adamowitsch held talks with Alex Salmond, the First Minister, and later announced that Scotland is to join the EU grid development. "We need a network of ideas to be at the end of the process, together, successful," Mr Adamowitsch said. "You have excellent renewable targets and we need your experts in our working group." *Source The Scotsman*

The imminent increase in offshore generation from wind turbines, wave or tidal generators will require sub sea connections. This anticipated energy generation off the Scottish coast is likely to connect to sub sea transmission links to Europe and Southern England when the Scottish Government's proposals are confirmed. The Crown Estate reports that an East coast sub sea link would cost about £1.7 billion to link the North of Scotland generators to the grid in Norfolk. The Scottish Government is committed to looking at all options. A study of the future National Grid transmission is expected to be published shortly. In a recent parliamentary question, Murdo Fraser MSP asked the SNP Government to conduct a feasibility study into a sub sea cable along the west coast of Scotland as an alternative to an overhead pylon line. In response, Energy minister Jim Mather said, "There are currently no plans at present to conduct such a study however these are always vital issues to the Scottish Government and are kept under review." SBP believes that the increasing requirement for a national strategy on transmission to accommodate offshore generation such a study is required now, and before a decision is taken on the Beaulieu Denny proposal.

### Option three: Under ground all or part of the line

Proposals to under ground limited sections of the proposed line were presented to the Public Inquiry and evidence led as to the impact and costs for AC transmission. There is an increasing use of under ground connections across Europe which could be replicated in Scotland. The possibility of DC connection was not fully explored at the PI and while not meeting the Applicants' aspirations could well provide a transmission link from the North of Scotland to the South at far reduced costs.

The feasibility of undergrounding significant parts of the line is technically proven. The undergrounding of high-voltage power lines is seen as an increasingly attractive option in Europe. Why not in Scotland? This Spring, Germany is expected to pass federal legislation that places limitations on new HVOTLs within 200m of individual properties and 400m of residential areas. In such cases Transmission System Operators (TSO) are required to consider alternative technologies such as cabling on designated planned projects, should the TSO choose to use cables, the regulator is required to accept the incremental costs.

In Salzburg, Austria similar legislation is expected to be approved this Spring, except that partial undergrounding will be required within 200m/400m of properties and in environmentally sensitive areas. This would mean around 60km of cables on the proposed Salzburg - Kaprun HVOTL.

Between France and Spain, and in Holland, contracts are underway to underground both AC and DC links, totalling 10km and 62km respectively. Six miles of HVOTL are being under grounded to enhance the landscape for the London Olympics. SHETL's proposal fails to follow current European best practice of placing cables underground near settlements and in environmentally sensitive areas.

## THE COST OF UNDERGROUNDING

It is well recognised that the cost of undergrounding a transmission line is more than an equivalent length of OTL. Whole life costs have been independently assessed at 3 to 5 times, considerably less than the multiplier of up to 20 times originally claimed by the Beaulieu Denny applicant. Any movement in the price of copper will significantly affect the total cable cost just as the terrain will dictate civil engineering costs. Undergrounding cables is now environmentally acceptable in rural and urban areas, can be completed as speedily as OTL, it is not subject to operational difficulties in bad weather and, depending on ground vegetation, the landscape can be completely re-instated within 24 months. The cable manufacturers can produce up to 250 km of cable annually from 15 factories in Europe.

### WHO PAYS FOR THE UPGRADE?

The cost of transmission line upgrades is shared between all 28 million electricity consumers in the UK and not just customers contracted with SSE. The underground sections proposed by SBP, if stipulated by Scottish Ministers, could be expected to add just £1 per annum to the average household electricity bill (currently is £474 per year).

For further information on undergrounding please contact Peter Pearson as below.

### THE HEALTH OF THE SCOTTISH PEOPLE - IS ANYTHING MORE IMPORTANT?

Health has long been high on the Government's agenda. Any High Voltage Overhead Transmission Line can affect the health of local communities near the line as we discuss.

Extensive evidence on this topic was presented at both the strategic and local public inquiries. New studies since the Public Inquiry continue to support the need for precautionary measures to protect public health from HVOTLs. The Swiss National Cohort Study (Huss et al., American Journal of Epidemiology Nov 5 2008) analysed 4.7 million people over a 5 year period and shows a clear and quantifiable association between HVOTLs and Alzheimer's disease. This association becomes stronger with proximity to power lines and duration of exposure. Living within 50 metres of a high-voltage power line for 15 years or more reveals a doubling of risk of Alzheimer's disease.

The evidence demonstrating risk of Alzheimer's is now quantitatively comparable with that for Childhood Leukaemia, for which the UK's own Draper Report (2005) reported a doubling of risk for young people living within 200 metres of HVOTLs. With 700,000 Alzheimer's sufferers in the UK, the Swiss study should persuade the Health Protection Agency (HPA) to change its position of inaction (based on the claim that few children contract leukaemia) to one of active precaution. However, the HPA's current advice to government dates from 2004 and makes no reference to such recent epidemiological studies.

Again the UK is lagging significantly behind other European countries in introducing precautionary measures. Switzerland started in 1999, followed by Sweden, Italy, the Netherlands and now Germany and Austria.

Westminster Government is expected to pronounce on the recommendations of SAGE (Stakeholder's Advisory Group on Electric and Magnetic Fields) shortly, but with no change in the HPA's position it is unlikely that this will result in any meaningful precautionary measures.

Stirling Before Pylons lodged petition PE812 on this issue with the Petitions Committee of the Scottish Parliament in 2004. PE812 continues to have active cross-party support and is one of the longest running petitions in the system. It will be reviewed again in February, but as the Scottish Government's responses continue to defer to the HPA 2004 position instead of addressing the most recent evidence there is currently an impasse.

Scotland Before Pylons believe the information and facts contained in this Briefing Note are accurate at the time of preparation. For clarification on any point or to update the information please contact the persons named below:

### HEALTH ISSUES

**Caroline Paterson** carvik.pater@virgin.net  
or 01786 462567

### UNDERGROUND CABLES POSSIBILITIES

**Peter Pearson** peter@baker-pearson.net  
or 01786 833399

### SUB MARINE LINKS

**Eddie Hughes** enquiries@braemoresquare.com  
or 01854 655357

### LANDSCAPE ISSUES - OCHIL HILLS

**Nicki Baker** nicki@baker-pearson.net  
or 01786 833399

### LANDSCAPE ISSUES - BEAULIEU DENNY LANDSCAPE GROUP (including Highland Landscape issues)

**Helen McDade** policy@jmt.org  
or 01796 484935

### SUMMARY OF ABBREVIATIONS

AC	Alternating Current
DC	Direct Current
EE&T	Environmental Engineering and Technology
EU	European Union
HPA	Health Protection Agency
HV	High Voltage
HVOTL	High Voltage Overhead Transmission Line
KV	Kilovolt: 1,000 volts
MSP	Member of the Scottish Parliament
OTL	Overhead Transmission Line
PE812	A petition submitted to the Scottish Parliament by Stirling Before Pylons
PI	Public Inquiry
Q & A	Question & Answer
SAGE	Stakeholders' Advisory Group on Electric and Magnetic Fields
SBP	Scotland Before Pylons
SEA	Strategic Environmental Assessment
SHETL	Scottish Hydroelectricity Transmission Ltd
SNP	Scottish National Party
SPT	Scottish Power Transmission
SSE	Scottish & Southern Electricity
TSO	Transmission System Operators
UK	United Kingdom