# Our Energy Challenge:
# securing clean, affordable energy for the long term

## Consultation response by the
## Nuclear Free Local Authorities (NFLA) Wales Forum

This submission is to be read in conjunction with the Nuclear Free Local Authorities Steering Committee response to the Review.

**Introduction - Energy Route Map**

1.1 NFLA (Wales Forum) welcomes the Welsh Assembly Government's Energy Route Map process, which began with a consultation process in 2005 and an Energy Summit before Christmas 2005, although we do not agree with all of the emerging conclusions, particularly the proposal to seek an extension of the life of Wylfa nuclear power station.

1.2 The Energy Route Map consultation document set out a vision of Wales as a showcase for clean energy whilst maintaining international competitiveness. It recognises "*that this will primarily be achieved in the short to medium term through an increased role for highly efficient gas and coal stations and renewables in the energy mix as well as greater emphasis on energy efficiency*".

1.3 The final version of the energy route map is expected to be produced in summer 2006 and will take into account the findings of the UK Energy Review. However NFLA (Wales Forum) welcomes the recognition by the Welsh Assembly Government that

*"…sufficient other new electricity generation will come on stream in Wales over the next 10-15 years to make the pursuit of new nuclear build unnecessary…"*.[1]

1.4 NFLA (Wales Forum) particularly welcomes the role the Welsh Assembly has attempted to play in the development of energy policy despite the lack of devolved powers in this area. However, it is the view of the Wales Forum, as stated in the NFLA Steering Committee submission that keeping nuclear power alive will divert scarce resources from the cheaper market winners, such as cogeneration, renewables, and energy efficiency, and it will reduce and retard the reduction of carbon dioxide emissions by saving far less carbon per pound spent than an alternative strategy.

1.5 Rather than simply seeing the development of new nuclear power as unnecessary, the Wales Forum encourages the Welsh Assembly Government to positively reject nuclear power and to set out a vision for Wales based on close co-operation between the Assembly Government and local authorities and the promotion of energy efficiency and renewable energy, along with the establishment of a renewable energy manufacturing base, with the ultimate aim of achieving a 60% or more cut in carbon dioxide emissions by 2050 in order to meet our climate change objectives.

**Climate Change**

2.1 In Wales, carbon dioxide emissions have risen by 0.2 per cent since 1990 while emissions in the rest of the UK have gone down. [2] The Welsh Assembly Government has a target of a 20% cut in carbon dioxide by 2020. This will be missed on current trends.

2.2 Although emissions of the overall basket of six greenhouse gases, which include methane, as well as carbon dioxide, have fallen in Wales, much of the reduction has been caused by a decline in coal mining and a reduction in livestock numbers on farms rather than by policies directed at dealing with climate change.

2.3 According to the Carbon Trust [3] in 2002 Wales used 130 terawatt hours (TWh) of energy. This was shared by consumers as follows:-

| **Consumer** | **Share of Energy Consumption** |
|---|---|
| Industry | 42% |
| Domestic | 24% |
| Transport | 23% |
| Public Sector | 11% |

Energy consumptions released, as carbon dioxide, 9.3million tonnes of carbon (MtC)

2.4 In the UK, nuclear power is estimated by the DTI to have contributed 3.2 per cent to total energy demand but in Wales this proportion is slightly higher at around 5 per cent because of the 30 per cent contribution of Wylfa nuclear power station to electricity generation in Wales. [4]

2.5 Crucially the Carbon Trust highlights the fact that over half the energy content of the coal and uranium ore and approximately half the energy content of gas is lost in the process of generating electricity.

2.6 According to the Welsh Assembly Government website, there are 220,000 households suffering from fuel poverty in Wales.

**Devolved Powers**

3.1 While responsibility for energy policy in the UK is a reserved matter, there are a number of areas relating to energy policy which are devolved to Wales. These include:-

- environment policy;
- support for innovation;
- housing;
- planning (apart for power station consents over 50MW);
- control of the budget for energy efficiency schemes in Wales;
- a unique remit to promote sustainable development;

3.2 Areas not devolved include:-

- promotion of renewable energy;
- promotion of energy efficiency;
- building regulations;
- power station consents (over 50MW);
- overhead electricity line and gas pipeline consents.

3.3 Despite the lack of devolved powers on energy policy, the Welsh Assembly Government has attempted to play a significant role in this area. In March 2001 the chair of the Economic Development Committee recommended that it should undertake a review of energy policy based on "the Assembly's responsibility to promote sustainable development whilst facilitating economic growth and development". A wide range of expert witnesses presented evidence and, following consultation, reports on renewable energy (April 2002) and energy efficiency (April 2003) were produced.

3.4 Both reports attempt to steer Wales towards becoming 'a global showcase for clean energy developments and energy conservation', and reflect UK national energy strategy by, for example, setting a target of generating 4TWh per year

from renewable sources by 2010, which amounts to around 20% of Welsh electricity production.

3.5 The reports also recommend a non-statutory 'Green Dragon' energy efficiency certificate for buildings in Wales that would be above normal building regulation standards.

3.6 In an energy statement to the Assembly on 26 February 2003 the Economic Development Minister also talked about working in partnership with local authorities on small-scale micro-generation technologies and energy efficiency.

3.7 The Welsh Assembly Government produced an Energy Efficiency Action Plan in February 2004. This is long on generalities, and short on specifics and does little more than reiterate standard energy efficiency advice. Unlike the UK Government's energy efficiency action it contains no targets or timetables. This is probably the result of the lack of devolved powers in this area. However, NFLA (Wales Forum) would encourage the Welsh Assembly Government to work closely with local authorities to establish targets and timetables commensurate with climate change objectives. If Wales is to become a global showcase for energy conservation it must be ahead of the UK as a whole.

**The Potential for Renewables**

4.1 In Wales, the potential is significant**.** Existing and proposed onshore and offshore wind farms could generate over twenty five per cent of Wales' electricity demand within six years. [5]

4.2 Tidal lagoons in Swansea Bay and the Severn Estuary could add another 25% in the time it would take to build a new nuclear power station. Large lagoons could also be used to store power thus replacing fossil-fuelled spinning reserve for grid balancing. Smaller contributions to our electricity needs could also be obtained from energy crops and wave, solar and other 'free flow' tidal power schemes.

4.3 In Wales, nuclear power is estimated to contribute 30 per cent of electricity generated. The potential for renewable energy, together energy efficiency, means the electricity sector can easily deliver the required reductions in carbon emissions without new nuclear stations, and much more quickly. The developers of the tidal lagoon proposal, for example, estimate that the Swansea Bay scheme could be "up and running within 18 months to two years". [6]

4.4 Friends of the Earth Cymru estimate that if 750,000 homes in Wales install micro-CHP (Combined Heat and Power Boilers which replace central heating boilers but also generate electricity) by 2020 (the UK replacement rate is approximately 1.3 million central heating boilers a year) then the overall electricity output of the boilers would be equivalent to 10-15 per cent of Welsh electricity demand.

4.5 The Welsh Assembly Government's 'benchmark' of generating 4 TWh per year of energy (mainly electricity but also some heat) from renewable resources by 2010 amounts to approximately 20% of Welsh electricity demand. However, it is possible that present proposals for onshore and offshore wind farms could result in Wales obtaining as much as 27 per cent of its electricity demand from wind energy alone by 2012; far sooner than a new nuclear power station could be built, particularly if offshore schemes, such as the proposed 750MW Gwynt-y-Mor wind farm off the north Wales coast proceed.

**Liquefied Natural Gas – security of supply**

5.1 Liquefied Natural Gas (LNG) will clearly have a growing role in the UK energy mix. But if we are concerned about a reliance on gas imports for our future energy supplies, then we should be using the gas that we do import as efficiently as possible. For example, LNG should not be used in combined cycle gas turbine power stations unless the waste heat is used locally.

5.2 A 2GW LNG-fired CCGT power station has been proposed on the site of the former power station near Pembroke. An amended application for a 1.6GW power station at Waterston, Milford Haven may also be forthcoming. Approximately 25 per cent of the energy content of gas extracted in the Middle East is used in the processes of liquefaction, transport and re-gasification. If the gas is then burnt in a CCGT power station operating at 55-60 per cent efficiency, then well over half of the energy content of the original gas is wasted. New power stations should be suitably sized and sited locally so that waste heat can be used. A scheme such as this has been developed at the Immingham gas-fired power station in Lincolnshire.

5.3 Friends of the Earth Cymru estimates that the two proposed CCGTs will waste the equivalent of 1,750 MW of heat - more than the generating capacity of both Wylfa and Trawsfynydd nuclear power stations, when they were both operating.

**Clean coal technology**

6.1 According to the engineering company, Mitsui Babcock, replacing an old boiler with an advanced super-critical one could reduce carbon dioxide emissions by 23 per cent [7] In Wales, Aberthaw and Uskmouth power stations could be retrofitted with advanced super-critical boilers, feedwater heating and oxyfuel firing. The latest boilers also allow biomass to be added to the fuel mix. This, claims Mitsui Babcock, could reduce emissions by a further 20 per cent. Biomass co-firing at Aberthaw and Uskmouth could be done with crops supplied from a local source. Mitsui Babcock estimates that the combined effect of retrofitting boilers and biomass co-firing can reduce emissions from coal down to similar levels as a gas-fired power station.

**Wylfa**

7.1 The Welsh Assembly Government has indicated that it would like to see the life of the Wylfa Magnox station on Anglesey extended beyond 2010, by up to five years. Anglesey Council has also called for a two-year life extension because Wylfa's shutdown would also likely lead to the shutdown of Anglesey Aluminium. The aluminium plant has relied on Wylfa for its power since both plants started operating in 1971. [8] NFLA Wales Forum would oppose any further life extension to Wylfa on the grounds that the ageing process has raised question-marks over the plants continuing safety. [9]

7.2 The NDA's Final Strategy published on 31st March 2006 shows Wylfa closing in 2010. [10] The NDA told the industry journal, Nucleonics Week (16th February 2006) that it had identified "three major obstacles" to extending the life of Wylfa, although it "has not completely ruled out an extension at this stage." The three obstacles are: (1) the closure timetable for the Springfields Magnox fuel fabrication line; (2) the closure timetable for the Magnox reprocessing plant at Sellafield; and (3) the fact that safety authorisations are only in place to allow Wylfa to operate to 2010. The NDA has pointed out that Anglesey Aluminium has "had several years to plan for this and a further four years to go." [11]

7.3 BNFL has told the House of Commons Welsh Affairs Select Committee, that the Nuclear Decommissioning Authority (NDA) do not consider a life extension for Wylfa to be realistic. All of the fuel for the Magnox stations has already been manufactured at Springfields in Preston. BNFL also said that, because of

commitments the UK has made under the international OSPAR agreement, the Magnox reprocessing facility is due to close by 2012. [12]

7.4 On 23rd May 2000, British Nuclear Fuels Ltd (BNFL) announced a lifetime strategy for its fleet of Magnox nuclear power stations. The strategy provided expected closure dates for each of the stations. At that time BNFL was developing a new kind of fuel, known as Magrox, which could be reprocessed through the Thermal Oxide Reprocessing Plant (THORP) at Sellafield, rather than the Magnox reprocessing plant (B205). Had the development of this fuel been successful, it would have been used to fuel the Oldbury and Wylfa Magnox stations. BNFL told its Stakeholder Dialogue group in January 2002 that it had abandoned Magrox. [13]

7.4 It is also known that BNFL has investigated the possibility of building a new "head end" plant on THORP which would allow Magnox spent fuel to be reprocessed. This has, however, been rejected mainly on the grounds of cost.

7.5 The closure of the Magnox reprocessing plant, B205, is a crucial part of the reductions in radioactive discharges to the sea proposed by the UK Radioactive Discharges Strategy. The UK facility which discharges most radioactivity into the sea, by far, is Sellafield. And some 80% of the estimated critical group dose from Sellafield's current liquid discharges is attributable to Magnox reprocessing and associated historic waste treatment. The closure of B205 is inextricably linked to the closure of the Magnox reactors, because BNFL has always insisted that spent Magnox fuel must be reprocessed. Indeed if B205 fails to meet the required throughput rates it may be necessary to close Wylfa earlier than 2010 so that B205 can still close around 2012. [14]

7.6 BNFL continued to insist to the Welsh Affairs Select Committee that reprocessing is the only way to deal with Magnox spent fuel. However, the company has investigated the possibility of directly disposing of Magnox spent fuel in a cement grout, as well as dry storage and reprocessing through THORP. In March 2003 BNFL said "these options are not cheap and we would have to take into account the views of the regulators and other key stakeholders in assessing them" [15] Of course, if Springfields has already closed then it will not be possible to continue to operate Wylfa beyond 2010 whilst storing the spent Magnox fuel.

7.7 It appears, therefore, that all the possible ways of keeping Wylfa open longer have already been investigated, and BNFL and the NDA have decided that it should close by the end of 2010.

7.8 Non-nuclear technologies are the way to safeguard the Anglesey economy. New jobs should be created in non-nuclear electricity generating technologies on the island. This would help safeguard jobs at the power-hungry smelter at Anglesey Aluminium and create more jobs in maintenance and manufacture than a new highly automated nuclear power station would create. [16]

7.9 NFLA Wales Forum shares the concerns of the All-Ireland Nuclear-Free Local Authorities Forum about the safety implications of a possible life extension to Wylfa [17] and supports the call for a Nuclear Free Wales by 2010. [18] We remain deeply concerned that the Secretary of State for Wales, Peter Hain, despite voicing serious concerns about nuclear power, has expressed support for this dangerous proposal. [19]

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Gwynedd Council
Merthyr Tydfil County Borough Council
Newport County Borough Council
Pembrokeshire County Council
Rhondda, Cynon, Taff County Borough Council
Torfaen County Borough Council

Notes

[1] Welsh Assembly Government Energy Policy Update Paper for the Economic Development and Transport Committee, March 2006.
[2] Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland: 1990 –2003; quoted in Friends of the Earth Cymru, Evidence to the Welsh Affairs Committee, Inquiry Into Energy In Wales
[3] 'Wales Energy and Carbon Emissions Study', by Carbon Trust Wales as presented to the National Assembly Sustainable Energy Group meeting of October 4th 2005
[4] DTI's Digest of UK Energy Statistics 2005 states that electricity makes a 17% contribution to the UK's total energy demand and that nuclear power in 2004 made a 19% contribution to total electricity generation.
[5] The calculations are as follows:
Wales electricity demand = 20 TWh/yr Onshore wind capacity = 200MW (already built) plus 800MW additional target by 2010. At 30% load factor this = 300MW average annual output Offshore wind capacity = North Hoyle 60MW plus Scarweather 100MW plus Gwynt y Mor 750MW = 900MW in total
35% load factor = 315MW average annual output In all, 615MW from both onshore and offshore wind farms In one year, 615MW average would generate 0.615 x 8.76 = 5.39 TWhrs/yr or 27% of current demand in Wales. This would supply 810,000 people in Wales.
[6] The Western Mail 14th December 2005
[7] BBC News website November 27th 2005
[8] Nucleonics Week 16th February 2006
"Ministers look to extend life of plant" IC Wales 24th January 2006
http://icwales.icnetwork.co.uk/0100news/0200wales/tm_objectid=16622001%26method=full%26siteid=50082%26headline=ministers%2dlook%2dto%2dextend%2dlife%2dof%2dnuclear%2dplant-name_page.html
"Will Wylfa Nuclear Power Station's Life be extended?" News Wales 24th January 2006
http://www.newswales.co.uk/?section=Environment&F=1&id=8304
[9] "Review of Agaeing Processes and their influence on safety and performance of Wylfa Nuclear Power Station", Large and Associates, Greenpeace March 2001.
[10] NDA Final Strategy, 30th March 2006, http://www.nda.gov.uk/Our_Business--Strategy_(782).aspx?pg=782#Downloads
[11] as [8]
[12] Oral Evidence given by Mr Adrian Bull, Head of Energy Policy Studies, and Miss Dorothy Seed, Head of Stakeholder Engagement, British Nuclear Fuels, 28th February 2006.
http://www.publications.parliament.uk/pa/cm200506/cmselect/cmwelaf/uc876-iii/uc87602.htm
[13] BNFL National Stakeholder Dialogue, Spent Fuel Management Options Working Group. July 2002
[14] UK Strategy for Radioactive Discharges, 2001 – 2020, DEFRA, July 2002, para 7.3.19
[15] "A life beyond closure", BNFL World, March 2003
[16] "Non-nuclear plant the way to save Anglesey jobs, say Friends of the Earth", News Wales 7th Feb 2006
http://www.newswales.co.uk/?section=Environment&F=1&id=8339
[17] Irish Times, 9th Feb 2006
[18] "Lib-Dems call for Nuclear Free Wales" ICWales 30th January 2006
http://icwales.icnetwork.co.uk/0100news/0200wales/tm_objectid=16645576%26method=full%26siteid=50082%26headline=lib%2ddems%2dcall%2dfor%2dnuclear%2dfree%2dwales-name_page.html
[19] "Hain: I support nuclear plant" Daily Post 21st March 2006
http://icnorthwales.icnetwork.co.uk/news/regionalnews/tm_objectid=16839421%26method=full%26siteid=50142%26headline=hain%2d%2di%2dsupport%2dnuclear%2dplant%2d-name_page.html