

Nuclear Free Local Authorities new nuclear monitor



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THE GOVERNMENT'S ENERGY WHITE PAPER ONE YEAR ON: NUCLEAR PROSPECTS REMAIN POOR

Introduction

On 4th December 2003, Energy Minister Stephen Timms told the UK Nuclear Industry Association Annual Energy Choices Conference in London that the Government would review its position on nuclear new build in 2006.¹

When the Government published its Energy White Paper² in February 2003, the then Energy Minister, Brian Wilson, said:

*"If renewables and energy efficiency can prove themselves over the next five years there will be no need for new nuclear power stations."*³

The White Paper promised that before any decision to proceed with building new nuclear power stations, there would be a public consultation and the publication of a White Paper setting out the Government's proposals.⁴ So a new round of public consultations may start soon after the next General Election, about two years earlier than previously assumed.

In the meantime, the debate about new nuclear build has continued unabated. New costings for nuclear electricity have been released by the Royal Academy of Engineering⁵ and the David Hume Institute.⁶ Trade Unions at British Nuclear Fuels' (BNFL's) Chapelcross nuclear station, which is due to close in March 2005, have launched a campaign for a second station to be built on the site,⁷ and Professor James Lovelock, doyen of the Green movement, who conceived the Gaia theory - that the Earth is in effect a single giant super-organism - has said nuclear power is the only answer to climate change.⁸

These developments strengthen the case made by NFLA in *New Nuclear Monitor*, since it was first published in July 2001, for openness and transparency, and public and stakeholder engagement, in any initiatives that might prepare the ground for new nuclear stations.



THE LOCAL GOVERNMENT VOICE ON NUCLEAR ISSUES

NUCLEAR AS A 'RESEARCH PRIORITY'

The Government has now published its First Annual Report on the Implementation of the White Paper,⁹ and launched a website to keep the public informed on progress.¹⁰ The Annual Report says that to keep the nuclear option open the Government will maintain the work it is already undertaking in research, design and development, but gives no further details.

On 1st April 2004, the UK Energy Research Centre (UKERC) was established by the Research Councils. Professor Jim Skea, Director of the Policy Studies Institute (PSI) and an expert in energy and environmental research, was appointed Research Director Designate for the centre on 1 April.¹¹ UKERC will research sustainable ways of powering the UK, co-ordinate research into the development of reliable, diverse, affordable and safe ways to supply energy while minimising carbon dioxide emissions from burning fossil fuels. UKERC is expected to bring together key stakeholders, including non-governmental organisations, and leading research workers to promote collaborations.¹²

As discussed in *New Nuclear Monitor No. 6*, the Energy White Paper endorsed the view of the Energy Research Review Group that nuclear power (particularly waste) should feature amongst a group of six research priorities. NFLA have been able to confirm that nuclear-related research will be within the remit of UKERC.

Previous issues of *New Nuclear Monitor* have called for a mixed stakeholder panel to be established to oversee nuclear related research, with a membership drawn from beyond the research community and including representatives from local government and environmental NGOs. The research undertaken should not be confined to technical issues, but should also encompass:-

- Public acceptability issues;
- Economic and commercial issues; and
- International developments.

As argued in previous issues, work exploring public acceptability should cover:

- *What the public consider to be a 'solution' to the long-term management of radioactive wastes.* This might be defined in terms of reaching a significant milestone in the implementation of policy, for example, securing planning consent for new facilities for long-term storage or disposal, or construction of the facility, or a period of successful operation.
- *What the public would consider to be adequate progress in putting the rest of the 'nuclear house' in order.* This might be defined in terms of reaching significant milestones in: (a) winding down reprocessing and the accumulation of separated plutonium and highly active liquid waste; (b) immobilising potentially mobile and hazardous materials, including separated plutonium, highly active liquid waste and challenging intermediate level waste; and (c) demonstrating an ability to decommission and dismantle existing nuclear power stations.
- *What the public would consider to be an acceptable standard of safety for a new generation of reactors.* This might be defined, for example, as there being no physically credible events which could require off-site actions. This could require the development of reactor designs that could survive the total absence of coolant and withstand high impact external events, such as the deliberate crashing of a commercial jet airliner.

- *What the public would consider to be an acceptable level of expert agreement about the risks of low level radiation.* Much hinges on the outcome of the current review of the risks of low level radiation by the Committee Examining Radiation Risks of Internal Emitters (CERRIE)¹³, which is expected to report in October 2004. Initial indications are that the Committee's report will highlight the uncertainties associated with the current radiation risk models.

ENERGY WHITE PAPER – FIRST ANNUAL REVIEW

The Government First Annual report on implementation of the Energy White Paper provides a summary of the practical steps which the Government has already taken in pursuit of its long-term goals. Plans for promoting Energy Efficiency and Combined Heat and Power were published alongside. The Government says it will be seeking the public's views as it reviews the Climate Change Programme during 2004.

The report highlights 112 key milestones set out by the Sustainable Energy Policy Network as a first step towards achieving the White Paper's long-term commitments.¹⁴ Only one of these milestones deals directly with nuclear power, concerning the maintenance of nuclear skills. The Annual Report contains very little mention of the nuclear option apart from saying that the Government will maintain the work it is already undertaking in research design and development.¹⁵ There is no clarification of the position on pre-licensing reviews of new reactors by the Nuclear Installations Inspectorate, for example.

PRE-LICENSING SAFETY REVIEWS OF NEW REACTOR DESIGNS

More information on pre-licensing reviews is available in a Parliamentary Office of Science and Technology Briefing.¹⁶

In 2001, BE and BNFL asked the NII to start a pre-licensing review for the AP1000 – the BNFL/Westinghouse reactor design most likely to be used in the UK if new nuclear stations are ordered. In autumn 2002, the NII anticipated asking the government for resources to set up a division for pre-application review of new reactors,¹⁷ but this has now been put on the back-burner. The NII has stated that, until the government signals its intention to seek new nuclear build, it will make no bids for additional resources for pre-licensing of new reactor designs. The NII has had limited exposure to the development and assessment of new reactor designs to date. Thus, gaps in in-house knowledge would take time to fill and so limit the pace at which new nuclear build could be developed in the UK.

However, the NII is known to be maintaining "a watching brief" on AP1000s by staying in regular contact with the US Nuclear Regulatory Commission (NRC), which is currently undertaking a design certification process for the AP1000 and has informally set a target date of December 2005 for completing its review.¹⁸

THE ECONOMICS OF NUCLEAR POWER

Energy Minister, Stephen Timms MP, told the House of Commons Standing Committee looking into the Energy Bill on 25th May 2004 that:

*“...at present the economics [of nuclear power] are very unattractive.”*¹⁹

This is despite recent reports from the Royal Academy of Engineering and the David Hume Institute.

PB Power in a report for the Royal Academy of Engineering (RAE) published in March 2004²⁰ estimates the cost of electricity from new nuclear plant at 2.3p/kWh, and up to 5.4p/kWh for onshore wind. These figures are extremely biased and misleading. Nobody outside of the nuclear industry gives such low costs which assume everything goes well for nuclear and everything goes badly for renewables. The figures are basically the same numbers submitted by British Energy and BNFL to the Policy and Innovation Unit's (PIU) Energy Review in 2001. The nuclear companies told the PIU that they expected to be able to generate electricity from an AP1000 at between 3p/kWh for the first unit and 2.5p/kWh across a large programme of ten reactors.

PIU (February 2002) expressed scepticism regarding these optimistic projections.²¹ It estimated the costs of electricity from Sizewell B, the last nuclear plant to be built in the UK, at around 6p/kWh and that a cost of 3-4 p/kWh for new nuclear electricity is more credible. No AP1000s have been built anywhere in the world - the industry's cost predictions are pure speculation, and depend on achieving construction costs below the bottom end of the International Energy Agency's estimates and quicker construction-to-commissioning times than have been achieved in the past. For example, it is claimed that adoption of modular construction techniques will make it possible to build advanced reactors in a time frame ranging from 30 to 44 months, compared to the typical 100 months required to build another Sizewell-type station. The economics also relies on being able to run AP1000 reactors for 60 years, (compared to Sizewell B, which it is assumed will run for 40 years). There is similar optimism in estimates for power generation, operations and maintenance (O&M) costs. Cost reductions are assumed to derive from improvements in maintenance and greater availability of the plant.

The PIU concluded:

*“...it seems unlikely that construction cost and performance guarantees can be as firm for nuclear as for CCGTs [Combined Cycle Gas Turbines]; operating performance will be difficult to guarantee at the level suggested; there is no certainty that a 10 [reactor] programme could be completed in an orderly way; and the economic results are sensitive to changes in several of the above parameters”.*²²

WIND COSTS

With regard to the costs of wind energy RAE has taken current costs (5.5p) whereas the PIU looked at costs in 2020. PIU estimated the cost of onshore wind at around 1.5-2.5 p/kWh; offshore wind at around 2-3p/kWh. Wind energy prices are continuing to fall as the technology develops - not something that the nuclear industry has ever experienced. Some wind farms are already generating at less than 2p/kWh.

RAE has added an additional cost to its estimate for the cost of wind for stand-by power when the wind isn't blowing. How this cost is derived is not clear. Stand-by power is only required when the level of intermittent power on the grid is greater than the inherent variability in the grid. This

is unlikely to be reached until wind is about 20% of UK supply. Taking this into account most commentators add somewhere in the range of 0.2p - 0.3p to the cost of wind to cover standby, whereas RAE has added 1.7p/kWh.

The David Hume Institute used RAE's figures.

A good summary of recent energy costings is available in the Greenpeace, Sea Wind Europe report by Garrad Hassan. These use the most authoritative figures available - those from the PIU review and the IEA world energy outlook.²³

Dr Catherine Mitchell of the Warwick Business School, and member of the PIU energy team recently complained to a conference in Edinburgh that RAE's costings were not based on any evidence.²⁴

In conclusion the Government considered the relative merits of nuclear versus renewable technologies in preparation for the Energy White Paper and concluded that:

"...technologies such as onshore and offshore wind and biomass are potentially... the most cost effective ways of limiting carbon emissions in the UK".

Since RAE and the David Hume Institute's figures for nuclear are not new, there is no reason for this conclusion to change.

THE HURDLES TO NUCLEAR REVIVAL

The hurdles to a nuclear renaissance go far wider than a lack of commercial competitiveness. The Energy White Paper highlighted the issue of nuclear waste (see below) but as pointed out in *New Nuclear Monitor No. 1* (July 2001), the 'polluter pays' principle leads to a further pre-requisite for new build:

"These are that all the liabilities associated with the life-cycle of a reactor, including long-term waste management, should be adequately costed, and arrangements put in place to ensure that the costs will be met by the company concerned. This is necessary to remove the risk that public subsidy will ultimately be required to meet long-term costs".

As a consequence of British Energy's financial difficulties, public confidence that nuclear power is capable of funding its own liabilities, without public subsidy, will have been severely damaged. The Government is being forced to accept financial responsibility for around £3.3bn of BE's nuclear liabilities (waste management and decommissioning costs) despite the fact that the arrangements for a nuclear decommissioning fund were set out in BE's original share prospectus ten years ago.

Following an inquiry into legislation needed to establish the Nuclear Decommissioning Authority (now embodied in the Energy Bill), the House of Commons Trade and Industry Committee called for:

"...a statement of policy by the DTI that approval of any proposal from the private sector for new nuclear plant would be conditional, amongst other factors, upon the establishment and maintenance of a segregated fund to meet the costs of clean-up at the end of its useful operational life."²⁵

Current Government policy is set out in a 1995 policy document.²⁶ That document is explicit about how funding should be provided for decommissioning and states:

“The government believes that it is right that, for those parts of the industry which are privatized, segregated funds for decommissioning should be established”.

However a recent DTI consultation document - *“Modernising the Policy for Decommissioning the UK’s Nuclear Facilities”* (November 2003) appears to downgrade this commitment. It says the Government:

“...expects that all operators will take the steps necessary to ensure that their decommissioning work is adequately funded. No nuclear project should be started unless it is clear that sufficient funds will be available to complete decommissioning in a safe and secure way”. [para 13]

In the debate in The House of Lords on the Energy Bill on 15 January 2004, the Government spokesperson, Lord Whitty told the House (Column GC170) that in principle the Government supports the idea that future nuclear operators should meet the costs of decommissioning, and the ‘polluter pays principle’, but:

“there may again be circumstances in which a private sector operator cannot meet its nuclear obligations ... we must retain the possibility of the Government meeting such costs ... in certain circumstances, it is inevitable that the operator will not have sufficient funds to cover those costs ... Ultimately there may be some liability to be borne by government ... using the NDA as a conduit or interface for any future British Energy-type crisis should not be prevented by this legislation”.

Thus, not only has the Government failed to produce the policy statement requested by the House of Commons Trade and Industry Committee, but it has also held out the possibility that future nuclear operators could be bailed out. In other words it has failed to *‘remove the risk that public subsidy will ultimately be required’*.

The danger is that investors in new nuclear stations (should a decision be taken to go-ahead with their construction) would be more favourably disposed towards new build if the provisions in the Energy Bill, referred to in the House of Lords above, become law. This is because, in principle, the provisions would enable the owner of new nuclear stations to reap profits for directors and pay out to shareholders whilst under-providing for its liabilities in the knowledge that, should the liabilities become unmanageable, there exists mechanisms to allow the Government to bail the company out.

THE NDA AND ENVIRONMENTAL PRINCIPLES

The NDA will be under enormous pressure to speed up the timetables and reduce costs for decommissioning and clean-up. Already the UK Atomic Energy Authority (UKAEA) has accelerated the timetable for decommissioning all of its site, including Dounreay, Winfrith and Windscale. Whilst faster decommissioning may be a laudable aim, speeding up the process must not be done at the expense of the standard of environmental restoration. Decommissioning and clean up should be carried out according to a clear set of environmental principles which set high standards using best international practise and the Best Available Technology. The Government has said that there is no direct link between the creation of the NDA and any future proposals for new nuclear capacity.²⁷ Yet according to *The Times*, accelerating decommissioning timetables will help the industry make the case for building new reactors.²⁸

The Government will fail to dispel suspicions that the establishment of the NDA is simply an exercise in ‘clearing the decks’ to prepare the ground for new build, until it sets out a clear set of environmental objectives for the new authority.

CHAPELCROSS II?

A trade union led campaign for Chapelcross II began in June 2002 when BNFL announced the closure date for the existing nuclear station near Dumfries in south-west Scotland. The campaign has already lobbied the Scottish Labour Party Conference and will shortly begin lobbying in Holyrood and Westminster. The arguments being used in favour of a new station appear to be based on (a) security of supply; (b) the availability of nuclear skills; (c) climate change; and (d) making ‘keeping the nuclear option open’ a reality.²⁹

SECURITY OF SUPPLY

Security of supply has certainly risen up the political agenda since a BBC TV drama documentary: ‘If ... The Light Go Out’.³⁰ The scenario painted by the programme was of a United Kingdom heavily reliant on gas imported via a single pipeline from Russia, which is attacked by terrorists. This leads to widespread power cuts with severe social consequences.

Martin O’Neil MP, chair of the House of Commons Trade and Industry Committee recently told a conference in Edinburgh that the chances of a major problem in the UK in the next 4 – 5 years is fairly remote, and in any case our dependence will not be on a single gas pipe from Russia. Norway will also become a major supplier of gas to the UK. All other G8 countries, apart from Canada, are major importers of energy.³¹ The PIU did not foresee any immediate major threat to the UK, although there may be potential future risks. However, provided these risks are kept under review and the PIU’s recommendations, for example on gas supply infrastructure and diversity of supply, are carried out, there should be few problems. Future security risks will be significantly less if the UK has in place an energy-efficiency and renewable strategy for the long term since this should reduce gas dependence beyond 2020.³²

In 2020, Britain could have a very different energy system from today. Much better standards of efficiency will be used in new and refurbished buildings. Energy supply companies will become energy service companies, which can make a profit by selling less electricity and gas.³³ Millions of homes and offices could have their own electricity generators, such as solar roofs, roof-top wind turbines and micro-CHP. Electricity supplies will come from renewables, some decentralised, some offshore. Up to 30% of Europe’s current electricity demand could come from offshore wind alone.³⁴ Input from nuclear and coal will have declined and gas will remain the most popular fuel for heat and electricity. However, as many renewable technologies would be cost competitive by then, there would be no risk of over dependence on gas. Hydrogen could be emerging as another form of energy carrier.³⁵

A number of companies in the UK are already marketing domestic CHP boilers which can replace domestic central heating boilers and generate electricity as well as heat, using less energy than the standard heating boilers of today.³⁶ Whilst not zero carbon technology, micro-CHP boilers reduce greenhouse gas emissions by using energy much more efficiently and addressing the huge heat losses in the energy system. Some projections suggest a rapid take up of micro CHP, with some 5-12 million units installed by 2020. This scale of market penetration could replace over half of the UK’s nuclear capacity.³⁷

IS NEW BUILD THE BEST WAY TO PRESERVE JOBS?

Chapelcross currently employs some 450 people. This is quite a high figure for a station which generates only 196MW (compared with around 1,200MW generated by the AGRs). Part of the reason why the number of people employed is so high is because the station also produces tritium for the UK's nuclear weapons programme. The BNFL station is due to close in March 2005.

A replacement nuclear station at Chapelcross would be unlikely to employ anywhere near as many people. One newspaper report suggested the number could be as low as 90.³⁸ The Government will not even begin the process of deciding whether or not to build new nuclear stations in the UK until 2006. The NII would then have to begin reviewing the chosen reactor design. A planning application would have to be submitted, followed by a public inquiry. Construction of a new station would, therefore, be unlikely to begin before around 2010 at the very earliest.

There will be a significant amount of work during the de-fuelling of the reactors, although BNFL has been unable to give a precise number it is thought to be around 150. And there will be no shortage of work for those with nuclear skills who are prepared to move to other sites. But replacement jobs will be required now, not in five or more years' time. The decision to close Chapelcross has, in fact, been a catalyst for development of an economic regeneration strategy. The Corridor Regeneration Strategy (CoReS) Steering Group has been established.³⁹ John Plant, of Scottish Enterprise Dumfries and Galloway - the lead agency in the working group - said it was unusual to be given so much notice. The Agency normally has to react very quickly to company closures.⁴⁰

The focus of economic development in the Chapelcross area clearly needs to be on a regeneration strategy which can deliver jobs in 2005, not on a campaign for a new nuclear station which has no chance of success in the near future, and may detract from other efforts.

CLIMATE CHANGE

The Chapelcross Trade Unionists argument that a new reactor is required to help tackle climate change will have been bolstered by Professor James Lovelock. Writing in *The Independent*, Professor Lovelock said nuclear power is the only answer to climate change.⁴¹

Lovelock is right to suggest that climate change represents a serious threat to the environment and civilisation, but he overlooks the large reductions in greenhouse gas emissions that can be achieved by adopting energy efficient and renewable technologies, as *The Independent* itself acknowledged in an editorial on 29th May.

Nuclear power is one of the least, if not *the* least, efficient way of reducing carbon emissions in terms of pounds spent per tonne of carbon saved.⁴² A massive nuclear power programme would put severe pressure on the world's recoverable uranium reserves, leading to the use of poorer and poorer quality ores which would require increasing amounts of fossil fuels to extract them.⁴³

MAKING 'KEEPING THE NUCLEAR OPTION OPEN' A REALITY

The Scottish Executive Partnership Agreement, which is a joint statement of policy by the two coalition parties in the governing coalition, says:

"We will not support the further development of nuclear power stations while waste management issues remain unresolved".⁴⁴

The Committee on Radioactive Waste Management (CoRWM) - a new independent body appointed by UK Government Ministers – is reviewing options for the management of solid radioactive waste in the UK. It's draft work programme submitted to Ministers in March 2004 envisages making recommendation on options in November 2006.⁴⁵ It is, therefore, far too early to start planning the construction of new nuclear power stations now.

As made clear above, aside from the nuclear waste issue, there are also important issues of public acceptability, that the Government has not even begun to address which will need to be resolved first.

SUMMARY & CONCLUSION

This issue of New Nuclear Monitor has reviewed developments in the debate about new nuclear stations over the past year since publication of the Energy White Paper. It has examined new costings for nuclear electricity from the Royal Academy of Engineering and the David Hume Institute, but found no evidence that would change the Government's conclusion that the economics of nuclear power are very unattractive.

It has examined developments in policy on the establishment by nuclear operators of segregated decommissioning funds, and found that Government considers that to remove risk 'public subsidy will ultimately be required'. The establishment of the Nuclear Decommissioning Authority is also being undertaken in a way that does not remove concerns that cleaning up the nuclear legacy is being planned with one eye on enabling nuclear new build rather than prioritising environmental protection. Accelerating decommissioning timetables increases these concerns.

However, there appears to be very little progress by the Nuclear Installations Inspectorate in examining new designs for nuclear reactors despite new calls by trade unionists for a second reactor at the Chapelcross site in south-west Scotland. On current evidence this Briefing concludes that the Scottish Executive's policy of waiting until waste management problems are resolved before considering new build in the right one.

The Committee on Radioactive Waste Management is not expected to report until November 2006, and there will be further consultation processes to be undertaken by Government before a new radioactive waste management policy is established.

This Briefing also finds that the argument that we need new nuclear power stations to meet the Government's climate change commitments ignores recent developments in renewable and energy efficiency technologies, and fails to take account of the impact of a worldwide expansion of nuclear power on the availability of uranium supplies.

These developments continue to sustain the policy of Nuclear Free Local Authorities that openness, transparency and public stakeholder engagement, is essential to calmly assess the case for any new nuclear stations in the UK. A mechanism to implement NFLA policy now exists with the creation by Government of a UK Energy Research Centre.

RECOMMENDATION

NFLAs recommend that the UKERC now establish a mixed stakeholder review panel that can monitor and report regularly and openly upon the prospects for new nuclear build in the UK.

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