

# ***Nuclear Free Local Authorities*** **new nuclear monitor**



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## **NUCLEAR POWER IS NOT THE SOLUTION TO CLIMATE CHANGE**

*Pete Roche, NFLA Policy Adviser, argues that we should not be distracted from tackling climate change by a sterile debate about nuclear energy when there are proven, cheaper, cleaner and safer ways to meet our energy needs and carbon emission reduction targets.*

### **EXECUTIVE SUMMARY**

Recent press speculation that the Government is about to publish a new energy white paper which will revive nuclear power construction, has ignored the fact that electricity generation accounts for only around a quarter of the UK's carbon dioxide emissions. Replacing existing nuclear power stations could displace only around 5% of the UK's carbon dioxide emissions. Similar emissions reductions could be made easily, more quickly and much more cost effectively, without any of the nasty side effects, by implementing a few additional energy efficiency measures.

A new generation of nuclear power stations could not start coming on stream until around 2018 – 2020. In the meantime, a much more ambitious energy efficiency programme could be implemented by the Government, and making the most of local authorities' responsibilities in planning, as owners of public buildings and social housing.

Formidable hurdles to a nuclear revival remain, the most important of which is probably the lack of a solution to the problem of what to do with the nuclear waste we have already created. Other hurdles could theoretically be removed by, for example, radically reorganising the electricity market, yet again, reversing the liberalisation of recent years, and by reducing the public's rights to participate in planning inquiries and reducing openness, transparency and local accountability. The threat of creating new terrorist targets may simply have to be ignored.

Despite a carefully orchestrated public relations campaign, the nuclear industry may find the Government review and consultation on energy policy, which is likely to take place towards the end of 2005 or beginning 2006, concludes that the technology should be rejected for a second time.

### **INTRODUCTION**

Nuclear power has been rising up the political agenda over the past year and the media has been speculating that the Government is preparing to publish a new energy white paper soon, now that the general election is out of the way. Tony Blair has said that a decision on a new generation of nuclear reactors will have to be taken in this Parliament.<sup>1</sup> A white paper would need to consider the key questions crucial to decisions about whether or not to build new nuclear stations in Britain. It would, for example, have to examine options for the financing of new nuclear stations to ensure that markets could deliver new build - with the minimum of central interference.



## **THE LOCAL GOVERNMENT VOICE ON NUCLEAR ISSUES**

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According to Chris Lambert of the Westminster Energy Forum

*“Without government support in some shape or form, and without a robust new (construction) regulatory system, it is hard to see the market being able to overcome the range of investment*

One of the main reasons why nuclear power is being discussed again is because of the urgent need to tackle the climate change problem. There have been concerns expressed that other low carbon energy sources are not developing fast enough, and there are also worries that the UK may become too dependent on imports of natural gas for its energy supplies. This briefing will examine these two issues. It will ask whether nuclear power could have a role in tackling climate change, and also look at the alternatives. Secondly, it will revisit an ongoing theme of *New Nuclear Monitor* – the Hurdles to Nuclear Revival – and provide an update on several of those hurdles.

## UK CLIMATE CHANGE OBJECTIVES

The UK is already committed under the Kyoto Protocol to reducing greenhouse gas emissions by 12.5% below 1990 levels by 2008-2012. We also have a national goal of a 20% reduction in carbon dioxide (CO<sub>2</sub>) emissions below 1990 levels by 2010. In addition the 2003 Energy White Paper was intended to put the UK on a path towards a 60% cut in CO<sub>2</sub> emissions by 2050.<sup>3</sup>

The table below shows one of the Government’s scenarios - the central (low prices) scenario - for future energy demand detailed in Energy Paper 68 (EP68).<sup>4</sup> The projections in EP68 do not take into account policy measures, which are expected to reduce carbon emissions by 17.75MtC by 2010, listed as additional to the baseline in the UK Climate Change Programme.<sup>5</sup> The scenario also assumes no new nuclear plants will be built over the projected period.

## EMISSION PROJECTIONS (AT SOURCE), MtC

	1990	1995	2000	2005	2010	2015	2020
<b>Power Stations</b>	54.1	44.1	40.5	33.5	33.5	35.9	37.1
<b>Refineries</b>	5.1	5.9	5.1	6.1	6.4	6.6	6.6
<b>Residential</b>	21.5	21.7	22.5	22.7	23.1	23.7	24.3
<b>Services</b>	8.4	8.8	9.6	9.5	9.6	9.7	9.9
<b>Industry</b>	35.2	34.3	33.9	33.5	32.7	32.4	32.2
<b>Road Transport</b>	29.8	30.2	32.0	35.0	37.6	40.1	42.6
<b>Off-road</b>	1.6	1.5	1.3	1.3	1.4	1.4	1.4
<b>Other transport</b>	3.6	3.2	3.1	3.1	3.1	3.1	3.2
<b>Total</b>	159.3	149.6	147.8	144.9	147.5	152.9	157.3

We can see that power stations accounted for only around 27% of carbon emissions in 2000. Clearly, if the debate focuses on whether or not to build new nuclear stations it will ignore the fact that the UK’s electricity system is responsible for only just over a quarter of UK CO<sub>2</sub> emissions, and nuclear power provides only around 22% of our electricity. As well as looking at how to reduce carbon emissions from the electricity sector, we need to examine how to provide heat more efficiently and also how to reduce emissions from other sectors such as transport too.

## NUCLEAR CLOSURES

Generation from nuclear plants is declining as plants are gradually retired. By 2010 all of Britain's first generation Magnox reactors, operated by British Nuclear Fuels (BNFL), will be closed and the proportion of electricity provided by nuclear power will be down to around 17 to 18%.

By 2020 all but three of British Energy's stations will probably be closed with the proportion of electricity provided by nuclear generation falling to 7%. All of British Energy's nuclear stations, apart from Sizewell B, will be closed by 2023 unless they receive life extensions.

British Energy stations	Station Type	Started Operation <sup>6</sup>	Closure date for accounting purposes. <sup>7</sup>	Published Lifetime. <sup>8</sup>
Dungeness B	AGR	1982	2008	2006
Hartlepool	AGR	1984	2009	2014
Heysham 1	AGR	1983	2009	2014
Hinkley B	AGR	1976	2011	2011
Hunterston B	AGR	1976	2011	2011
Heysham 2	AGR	1989	2023	2023
Torness	AGR	1989	2023	2023
Sizewell B	PWR	1995	2035	2035

The Government's scenarios already take into account BNFL's plans to close its remaining Magnox stations by 2010. Energy Paper 68 also takes into account the expected closure date for British Energy's eight nuclear power stations but assumes the company is successful in achieving life extensions for three of its stations. By 2020, even with some life extensions, only Torness, Heysham 2 and Sizewell B are likely to remain open.

According to the Government's First Annual Report on the Implementation of the Energy White Paper, policies which were already current when the Energy White Paper was published, should be able to reduce emissions in 2020 down to 135MtC. The Annual Report says:-

*"To be on track for our longer-term goals, we will aim for cuts in carbon of 15-25 MtC below that level by 2020."*<sup>9</sup>

## NUCLEAR POWER'S POTENTIAL CONTRIBUTION

British Energy said in its 2001 submission to the Energy Review that nuclear power was displacing around 13.5MtC per year. The amount of CO<sub>2</sub> emissions displaced by nuclear power will depend on the level of emissions from an alternative fuel mix. Emissions from power stations have been going down since 1990 whilst electricity consumption has been rising. The amount of carbon produced per kWh is expected to continue to fall until 2010 despite a fall in nuclear generation. Consequently the CO<sub>2</sub> emissions which could potentially be displaced by a new nuclear programme will also fall. We can estimate that a new 10,000MW nuclear power programme would reduce emissions by around 6 – 8 MtC depending on the output.<sup>10</sup>

Putting this 6-8 MtC into perspective, it represents around 4 - 5% of total carbon emissions. It is, for example around half of the increase in emissions expected from the transport sector by 2020. Other policies set out in the Energy White Paper aim to reduce emissions by 15 – 25MtC by 2020. By aiming for the upper end of this target the contribution from nuclear power becomes unnecessary.

	<b>Estimated MtC reductions</b>
Energy efficiency in households	4-6
Energy efficiency in industry, commerce and the public sector	4-6
Transport; continuing voluntary agreements on vehicles; use of biofuels for road transport	2-4
Increasing renewables	3-5
EU Carbon trading scheme	2-4
Total	15-25

## **BAD TIMING**

One of the main problems for nuclear power is that the earliest a new generation of nuclear stations could start coming on stream would be 2018-21, according to Dr Catherine Mitchell – of Warwick Business School, and a member of the Cabinet Office’s energy review team.<sup>11</sup> This timetable assumes that everything goes well. In practice, everything rarely goes well and the earliest realistic date for delivery of power from a new UK reactor is around 2020.<sup>12</sup>

On the other hand energy efficiency improvements can be implemented now, with carbon savings beginning immediately, and up to seven times more cost effectively than building new reactors.

## **DO WE REALLY NEED NEW NUCLEAR STATIONS?**

The danger of promoting a new generation of nuclear reactors is, as then Trade and Industry Secretary Patricia Hewitt told a meeting of Energy & Environment Ministers in London in March, that it will detract from the need to give energy efficiency priority. Not only could this mean, as Gordon Brown mentioned at the same meeting, that we miss out on profitable, cost-saving measures,<sup>13</sup> but could also mean, as evidence from Finland is beginning to suggest, that we end up with higher carbon emissions than we would have had without nuclear power.

If the government decides it wants new nuclear stations built one of the main questions that will need to be answered is how new stations might be financed, what kind of government support might be necessary, and whether this support would be consistent with the market framework for energy. Nuclear power is very expensive, so the liberalised electricity market would have to be radically rearranged to get the finances to work. This will be a major concern to any non-nuclear companies operating within the current market.

If taxpayers’ and consumers’ money is going to have to be spent to drive carbon out of the economy, then we need to ensure it is spent in the most effective and environmentally sustainable way. Nuclear power is probably one of the least efficient ways of spending, so should only be countenanced after other, more cost effective methods of carbon abatement have already been implemented. Unless nuclear is the cheapest way to meet our energy needs, paying for it will actually make climate change worse. As Amory Lovins of the US Rocky Mountain Institute, explains:-

*“If we suppose pessimistically that saving a kilowatt hour costs as much as 3 cents, while generating a new nuclear kilowatt costs optimistically as little as 6 cents, delivered ... then each 6 cents you spent on such a nuclear kilowatt hour could have bought two efficiency kilowatt hours instead. Therefore, by buying the costlier instead of the cheaper option first, you generated an additional kilowatt-hour from, say, coal that would have been avoided if you’d bought the cheapest things first”.*<sup>14</sup>

Provided there are still energy efficiency gains to be made, these will almost always be a more financially effective way of spending public money than subsidising new nuclear power stations.

*"Each dollar invested in electric efficiency displaces nearly seven times as much carbon dioxide as a dollar invested in nuclear power, without any nasty side effects," says Lovins. "If climate change is the problem, nuclear power isn't the solution. It's an expensive, one-size-fits-all technology that diverts money and time from cheaper, safer, more resilient alternatives."*<sup>15</sup>

In a letter to *The Times* on 16<sup>th</sup> September 2004, the Chief Executive of the Government's Energy Saving Trust, Philip Sellwood said:-

*"To present nuclear power as one of the main ways of combating climate change is short-sighted ... nuclear power simply does not represent a viable option at present. Given the costs associated with nuclear power and current uncertainties surrounding the problems of dealing with nuclear waste, making the UK more energy efficient is a far safer, cheaper and more realistic solution..."*<sup>16</sup>

## **DELIVERING ENERGY EFFICIENCY**

The Government's energy efficiency strategy is not ambitious and can hardly be said to represent the 'step change' in energy efficiency promised in the 2003 Energy White Paper. The strategy for reducing domestic energy consumption, for example, relies mainly on requiring larger domestic energy suppliers to meet an energy saving target by encouraging customers to install energy saving measures (The Energy Efficiency Commitment). This programme, along with the Warm Front programme, which is designed to tackle fuel poverty, is producing savings, but much more could be done.

The 2003 Energy White Paper set out a programme to achieve cuts in emissions from the domestic sector of 5MtC by 2010. The subsequent Energy Efficiency Action Plan (EEAP) launched in April 2004<sup>17</sup> watered this down to 4.2 MtC. The Association for the Conservation of Energy (ACE) has described the new target as "*wholly unacceptable*"<sup>18</sup> and a majority of MPs signed an Early Day Motion backing the original 5MtC target.<sup>19</sup> The Energy Savings Trust told the Environmental Audit Committee that it does not agree with the new 4.2MtC target.

The Government has basically scrapped policies that could easily make up the extra 0.8MtC. For example, the Energy White Paper expected savings of 0.4MtC from increasing the uptake of A-rated household appliances. This in itself was a reduction from the 1MtC suggested by the Energy Savings Trust.<sup>20</sup> In the EEAP this was mysteriously dropped to 0.1MtC with no explanation. Similarly, the contribution from gas condensing boilers in the EEAP also appears to have been lowered.

Micro-combined-heat-and-power, or micro-CHP, can replace domestic central heating boilers. As well as generating heat for central heating and hot water, they can produce around 50% of a household's electricity needs, and use less energy than the standard heating boilers of today. By 2020, 13 million central heating boilers are likely to have been replaced in the UK. If micro-CHP boilers are used instead of conventional boilers, these homes could be producing around half the electricity produced by our current nuclear programme. A number of companies in the UK are already marketing domestic micro-CHP boilers.<sup>21</sup> The BG Group, one of the pioneering companies, says micro-CHP could potentially achieve cuts of around 5.4MtC.<sup>22</sup> In drafts of the EEAP, a saving of 0.1MtC was listed for micro-CHP, but this was dropped from the final plan, despite the fact that VAT on micro-CHP has been reduced. Admittedly the plan only runs until 2010 and most micro-CHP boilers are likely to be installed between 2010 and 2020, but the deletion of this target still displays a worrying lack of ambition.

## **MICRO-RENEWABLES**

In addition to micro-CHP, millions of homes and offices could have their own electricity generators, such as solar roofs, and roof-top wind turbines by 2020.<sup>23</sup>

By 2020, Britain could have a very different energy system from today. The turnover of housing stock means around 3 million homes<sup>24</sup> will be added to the housing stock, and 200,000 or so will be removed. Much better standards of efficiency will be used in these new buildings as well as refurbished ones. Energy supply

companies should become energy service companies, which can make a profit by selling less electricity and gas.

Most delivered energy is used in buildings. All new buildings and refurbishments should be built to a zero emission standard<sup>25</sup>, and new estates should incorporate district scale Combined Heat and Power (CHP) plants which will avoid the wastage associated with conventional power plants which waste up to 65% of their energy by discharging hot water.

The Energy Efficiency Action Plan sets out how the Government intends to make additional cuts of 12MtC across the business, public and domestic sectors by 2010. Clearly by re-instating the 5MtC target for the domestic sector, as well as setting ambitious targets for the period 2010-2020, and promoting micro-CHP and micro-renewables, it would be perfectly feasible to replace the carbon savings which might accrue from a replacement nuclear programme.

## **THE ROLE OF LOCAL AUTHORITIES**

The Government recognises climate change is one of the greatest threats to the environment that sustains our society. Yet it is not yet responding to the issue as a priority. Government must take the lead, for example by making its own estate energy-efficient. Multiple measures will be required to bring about change on the appropriate scale and at the necessary speed. In particular, the role of local government in climate change mitigation has received much rhetorical championing in recent years, but the reality is that the powers and resources devolved to local government, and the assessment regime under which it works, and which dictates its priorities, are clearly not aligned to the goal of climate change mitigation. This situation requires urgent government attention.

Some local authorities (e.g. Merton London Borough Council<sup>26</sup>) are beginning to adopt planning policies which promote renewable energy in developments above a certain size – requiring, for example, at least 10% of predicted energy requirements from on-site renewables such as solar energy. Woking Borough Council has pioneered a network of local generation plant, including combined heat and power and solar photovoltaics.<sup>27</sup> Local authorities have a role to play, and government needs to align planning guidance, building regulations and incentives for household energy saving and micro-generation etc., with its carbon reduction targets.

## **SECURITY OF SUPPLY**

The issue of whether we are going to be too reliant on future imports of gas from unstable or unreliable supplier countries is often raised in support of the case for new nuclear stations.

However, the Energy White Paper concluded that relying on imports of gas “need not be a problem”. Jonathan Stern, who leads a research group on gas at the Oxford Institute for Energy Studies, says the fact that gas supplies will be coming from overseas in future does not necessarily mean we will be more prone to supply disruptions. He says there is a touch of xenophobia in some of the scare stories.

For at least the next decade we will be importing from Norway, Belgium and the Netherlands. In the longer term there may be a need to import from Gulf Countries and Russia, but other European countries have been importing gas from Russia for 20 years with no supply disruptions. Most major disruptions to gas supplies in other countries over the past 20 years have been caused by domestic problems. We may see short-term increases in our bills while the UK invests in new infrastructure which will help insure us against emergencies in the future.<sup>28</sup>

Stern concludes that arguments equating increased imports with a growing lack of security are not supported by international experience.

The argument that large inflexible nuclear power stations, which must be run as base-load stations, somehow reduces our vulnerability to disruptions in supply is also open to question. During the late summer of 2002, at the height of British Energy’s financial difficulties, five of its eight stations had either one or both reactors closed. If our current reactors are replaced by ten new reactors built using modular construction techniques as suggested by the industry, they will all be exactly the same design and therefore vulnerable to generic faults which could see all ten reactors being

forced to close at the same time. Similar problems have occurred in France where factory production line techniques have been used to build components for several reactors at the same time.

## **WHERE NEXT?**

Former Secretary of State for Trade and Industry, Patricia Hewitt, said in March 2005 that three separate reviews would need to be completed by the government after the general election before any new U.K. nuclear construction could be considered. First, the Government must complete its review of the climate change programme. This should be ready to report by the summer. Next, the government plans to look at how its renewable energy and energy efficiency measures set out in its 2003 White Paper are meeting their targets. Then if new nuclear construction appears necessary, she noted, another white paper would have to be produced.

These reviews need not take long. The Energy Efficiency Innovation Review and the Climate Change Programme Review were already started before the General Election. So, by summer's end work could start on a consultation paper which could be released by the end of 2005 or early in 2006. This could mean a finalised White Paper could be ready by mid 2006 with any necessary legislation being introduced in 2007.<sup>29</sup>

## **HURDLES REMAIN**

A decision by government to promote the construction of replacement nuclear power stations does not, of course, magically remove the hurdles to a nuclear revival. Hurdles referred to in previous issues of *New Nuclear Monitor* have included the following:-

- (1) Lack of a solution to the problem of radioactive waste management.
- (2) The high cost of nuclear electricity
- (3) The financial risks associated with full-scale construction and commercial operation of reactors which are essentially unproven designs.
- (4) Clarification of UK policy on the need for adequate funding for decommissioning and nuclear waste liabilities.
- (5) The need for a Nuclear Installations Inspectorate licence for the new designs.
- (6) Public acceptability
- (7) The need for designs to be proliferation resistant.
- (8) The need for designs to be terrorist resistant.

Additionally *New Nuclear Monitor* has 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, such as what the public consider to be a 'solution' to the long-term management of radioactive wastes, and what the public would consider to be an acceptable standard of safety for a new generation of reactors.

The need to explore public acceptability issues appears to have been previously accepted by the Government. But a short six month consultation on a draft White Paper will not meet the requirement, increasingly recognised as an essential first step in assessing public acceptability issues, to involve the public in the framing of any assessment programme.<sup>30</sup>

## **PLANNING PROPOSALS**

British Energy (BE) has also discussed the practical obstacles to a nuclear revival. As well as some of the hurdles mentioned above, the nuclear utility sees the current planning framework as an obstacle. It says the system should deal with planning issues rather than technical and safety ones, and the time spent on public inquiries should be reduced, curtailing one of the few chances the public has to have a democratic input into the decision-making process.<sup>31</sup>

New proposals which could make it almost impossible for the public to object to major projects such as nuclear power stations have been proposed in Scotland. A leaked Scottish Executive memo, entitled

Modernising the Scottish Planning System, suggests that if the Executive considers a project to be of national significance then it should "limit the scope for it to be challenged on grounds of need ... limiting the issues to those such as location, and detailed consideration of associated environmental effects". National priorities set by the cabinet would be subject only to scrutiny by the Scottish Parliament, but would not require the Parliament's approval.<sup>32</sup>

In addition objectors to new nuclear construction would be prevented from seeing detailed plans at planning inquiries under new guidance drawn up by the DTI's Office for Civil Nuclear Security. New guidelines suggest that information about safety issues and potential hazards, should be concealed from the public because of terrorism fears. Instead, the attorney general would select an "appointed representative" to argue the case on their behalf, for which the objectors would have to pay.<sup>33</sup>

Reducing the public's rights to participate in planning inquiries and reducing openness, transparency and local accountability, undermines public confidence. It is not the way to tackle the public acceptability issues associated with the nuclear industry.

## **THE RADIOACTIVE WASTE DILEMMA**

The issue that is frequently highlighted as the most important to resolve, is the need to find a 'solution' to the problem of the long-term management of radioactive waste before new build is allowed to proceed. What is not clear, however, is what the public would consider to be a solution. As *New Nuclear Monitor* has previously highlighted, it may be that the achievement of a solution may be viewed as requiring no new nuclear. In other words, a decision to cap the production of nuclear waste may be seen by some sections of the public as a prerequisite to achieving a radioactive waste solution.

The Committee on Radioactive Waste Management's (CoRWM's) work on the Radioactive Waste Inventory has shown that a programme of ten replacement reactors would more than double the amount of high level waste or spent fuel we will be left to deal with – depending on whether spent fuel continues to be reprocessed or not, which is unlikely.<sup>34</sup> A new nuclear programme may, therefore, make reaching agreement on a method of nuclear waste management more difficult.

The Committee on Radioactive Waste Management (CoRWM) is working towards making its recommendations on waste management options to the Government by July 2006. But Gordon MacKerron, Chair of CoRWM, has pointed out that the nuclear waste issue will not be resolved in July 2006.<sup>35</sup> This might be a significant moment in the process, but CoRWM is only the 'front-end' of a very long process – the issue will not be resolved just because recommendations have been made on options for nuclear waste management. A site selection process will be required after July 2006. Environment Minister, Elliot Morley has explained:-

*“Once CoRWM's recommendations have been delivered in July 2006, Government has decided policy in light of it, and the facility or facilities required are clear, we foresee that the process and criteria to be adopted for a site selection will also be the subject of discussion in an open and transparent way.”<sup>36</sup>*

Clearly there will still be a long way to go after July 2006.

## **NUCLEAR COSTS**

The then Energy Minister, Mike O'Brien, told the Nuclear Industry Association (NIA) Energy Choices 2004 Conference on 2nd December, that it is up to the private sector to prove that nuclear power is economic:

*" ... at the moment there is no commercial proposition on the table... If we thought that a [nuclear] project was a commercially serious proposition we would look at it."*

He said the nuclear industry would have to come up with an economically viable proposal before the Government would consider building new nuclear stations. The 2003 Energy White Paper said:

*“... the current economics of nuclear power make it an unattractive option ...”*

This has been repeated by ministers on several occasions subsequently.

A paper by Joan MacNaughton, the Director-General of energy policy at the Department of Trade and Industry, written for the new Secretary of State, Alan Johnson, lists a series of questions which will need to be answered before new reactor build can proceed. These include questions about how stations might be financed, what kind of government support might be necessary, and whether this would be consistent with the market framework for energy.<sup>37</sup>

Clearly, if the government decides it wants new nuclear stations built it is going to have to work out a way of getting the finances to work. It will need to persuade investors to provide most of the funding, and they may take a lot of persuading, and the liberalised electricity market may have to be radically rearranged.

BNFL's Chief Executive, Michael Parker, has claimed that discussions are already under way now on how to create the right environment for new nuclear build.<sup>38</sup> However, the bottom line is that nuclear power is expensive, and as long as it remains one of the most expensive ways of reducing carbon emissions, it will require either taxpayers' or consumers' money to subsidise new reactors. Any system which involves either subsidies or manipulation of the market is likely to meet opposition from utilities not involved in nuclear generation as well as the European Union's Competition Commission.

## **TERRORISM**

Previous issues *New Nuclear Monitor* have said that the public will need to be convinced that the new generation of reactors will have an acceptable standard of safety and security. For example there should be no physically credible events which could require off-site actions. This is likely to require the development of reactor designs that could survive high impact events, such as the deliberate crashing of a commercial jet airliner. After September 11th 2001 one might have expected that new reactors would be designed to be less vulnerable to terrorist attack. With the British Nuclear Fuels/Westinghouse AP1000 design, the reactor type most likely to be built in the UK, the reverse appears to be the case. It is called an *inherently safe* system, but the AP1000 is basically a type of "Pressurised Water Reactor" (PWR), like the Sizewell B reactor, but with many of the safety systems stripped out. Major cost savings perhaps, but by sacrificing some of the structural integrity of the dome, the AP1000 could be less able to withstand accidents and deliberate actions such as aircraft impact and nearby explosion.

With reprocessing extremely unlikely to be the chosen nuclear waste management method for a new generation of reactors, each reactor will have a spent fuel pond nearby, similar to Sizewell B's which represents ten times the radioactive inventory released during Chernobyl reactor disaster in 1986. Terrorists could plausibly mount a successful attack on the pool of spent fuel at a nuclear power reactor, according to a study undertaken for Congress by the US National Academy of Sciences in contradiction to the position of the Nuclear Regulatory Commission. NAS said an attack would be difficult but "certainly no more difficult than the Sept. 11 attacks."<sup>39</sup>

## **CONCLUSIONS**

An examination of Government energy scenarios shows that, although all but three of the UK's nuclear stations will be closed by 2020, replacing them will only displace around 5% of the UK's carbon emissions. These savings are of an order of magnitude which could easily be saved much more cheaply by additional energy efficiency measures.

By 2020 more households and buildings will be generating their own electricity by the use of micro-combined heat and power boilers, roof-top wind turbines and solar panels. Local authorities will have an increasing role to play in tackling climate change in a sustainable manner, but government needs to align planning guidance, building regulations and incentives for household energy saving and micro-generation etc., with its carbon reduction targets in order to harness local authority resources.

In the meantime, most, if not all of the hurdles to a nuclear revival remain. Moves to speed up the planning process in Scotland and to restrict information due to terrorism concerns are going in the wrong direction as

far as tackling public acceptability issues are concerned. Providing a solution to the problem of nuclear waste remains a big hurdle to new nuclear construction, and it is now clear that when CoRWM reports in July 2006 this will only be a small step on the road to a possible solution. The high cost of nuclear electricity and the large risks associated with such a capital-intensive construction project remain as hurdles to investment in new reactors.

Finally, events since 11<sup>th</sup> September 2001 have not helped reduce the perceived threat of a future terrorist outrage in the UK. The public is going to find it very hard to understand why, if the situation is so serious with regard to terrorism that the Government needs to use draconian measures, and yet it appears to be able to contemplate the construction of up to 10 more potential Chernobyls.

The UK Press has been full of speculation for most of the past year that the Government is about to launch a new nuclear programme. Yet the practical obstacles to reviving nuclear construction remain formidable. In fact, a few commentators have suggested that many of the news stories may be part of an orchestrated campaign by the nuclear industry.<sup>40</sup> According to the *New Statesman* a carefully planned public relations strategy is forcing nuclear power back onto the political agenda. For example virtually bankrupt BE, having been bailed out with taxpayers money, has appointed Monsanto's former top UK lobbyist, enlisted the help of a former energy minister, and has paid £1m to PR firm, Financial Dynamics.<sup>41</sup>

However, although the nuclear industry has clearly been running a public relations campaign, a Government review and consultation towards the end of 2005 or beginning 2006 does seem to be planned. But with nuclear power only able to play a very limited role in tackling climate change, likely to have a negative impact on other more cost effective carbon abatement measures, and whilst formidable hurdles to its revival remain, there is still every chance the Government will reject the technology a second time.

## **RECOMMENDATION**

All local authorities should seriously consider the recommendations made at the 7<sup>th</sup> UK and Irish Standing Conference on Nuclear Hazards in Drogheda 10<sup>th</sup> – 11<sup>th</sup> March\*, in particular that local authorities consider contracting their future electricity supplies from renewable and non-nuclear energy providers; and that all councils should consider the opportunities for renewable generation and energy conservation when developing policy and when considering large commercial and residential planning applications.

### **\* THE CONFERENCE MADE THE FOLLOWING RELEVANT RECOMMENDATIONS FOR ACTION:-**

- That all local authorities consider contracting their future electricity supplies from renewable and non-nuclear energy providers.
- That all councils consider the opportunities for renewable generation and energy conservation when developing policy and when considering large commercial and residential planning application.
- That all Councils participate in the current consultations on radioactive waste management policy in the UK (CoRWM) and the justification for operating reprocessing facilities at Sellafield (NDA).

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## REFERENCES

- <sup>1</sup> Prime Minister's monthly Press Conference 12th May 2005  
<http://www.number10.gov.uk/output/Page7481.asp>
- <sup>2</sup> Pearl Marshall & Ann MacLachlan, "Vendors, investors discussing potential new U.K. construction", Nucleonics Week – Vol. 46 No.18 April 28th 2005
- <sup>3</sup> DTI (February 2003) 'Our Energy Future – Creating a Low Carbon Economy,' Cm 5761.  
<http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf>
- <sup>4</sup> DTI, Energy Projections for the UK, Energy Paper 68.  
[http://www.dti.gov.uk/energy/inform/energy\\_projections/index.shtml](http://www.dti.gov.uk/energy/inform/energy_projections/index.shtml)
- <sup>5</sup> DEFRA (Feb 2001) 'Climate Change: The UK Programme, Section 2 Chapter 9.  
<http://www.defra.gov.uk/environment/climatechange/cm4913/index.htm>
- <sup>6</sup> The United Kingdom's national report on compliance with the obligations of the international convention on nuclear safety, DTI, September 2001.
- <sup>7</sup> Dates given by BE to BNFL National Stakeholder Dialogue Spent Fuel Management Working Group, Summer 2000.
- <sup>8</sup> These were the dates given by the DTI to the team carrying out the recent Energy Review in a document dated June 2001. The document points out that Energy Paper 68 (which is a DTI scenario) adds another 5 years to the date shown above for the life of Hinkley B, Hunterston B and Heysham 1. The paper does not explain the phrase "published lifetime". Also House of Lords Written answer 8 January 2002, by The Parliamentary Under-Secretary of State, Department of Trade and Industry (Lord Sainsbury of Turville)
- <sup>9</sup> DTI & DEFRA (April 2004) First Annual Report on the Implementation of the Energy White Paper  
<http://www.dti.gov.uk/energy/sepn/annualreport/firstannualreportfull.pdf>
- <sup>10</sup> EP 68 uses a baseline nuclear output of 66 TWh in 2010, and examines a scenario in which nuclear generated electricity is only 45TWh, and concludes that CO<sub>2</sub> emissions would be some 2 MtC higher than the baseline. Alternatively if the output were 74TWh, then emissions would be some 0.7 MtC lower than in the baseline ie around 1MtC is displaced per 10TWh of nuclear output.
- <sup>11</sup> Catherine Mitchell, "Action Stations" Guardian 8th September 2004  
<http://society.guardian.co.uk/societyguardian/story/0,7843,1298972,00.html>
- <sup>12</sup> MacKerron, G (September 2004) 'Nuclear Power and the Characteristics of Ordinarity – the Case of UK Energy Policy' NERA Economic Consulting.
- <sup>13</sup> Pearl Marshall "Official says reviews needed before new U.K. nuclear built" Nucleonics Week, Vol46 No.11 March 17th 2005
- <sup>14</sup> "Why Nuclear Power's Failure in the Marketplace is Irreversible (Fortunately for Nonproliferation and Climate Protection)" by Amory Lovins, Rocky Mountain Institute, Transcription of a presentation to the Nuclear Control Institute's 20th Anniversary Conference, "Nuclear Power and the Spread of Nuclear Weapons: Can We Have One Without the Other?" Washington, DC, April 9, 2001. [www.nci.org](http://www.nci.org)
- <sup>15</sup> Guardian 12th August 2004, "Nuclear Plants Bloom" by John Vidal,  
<http://www.guardian.co.uk/life/feature/story/0,,1280884,00.html>
- <sup>16</sup> Letter from Philip Sellwood, Chief Executive Energy Saving Trust to The Times 16th September 2004  
<http://www.timesonline.co.uk/a###rticle/0,,59-1264441,00.html>
- <sup>17</sup> Energy Efficiency: The Government's Plan for Action, DEFRA, April 2004  
<http://www.official-documents.co.uk/document/cm61/6168/6168.pdf>
- <sup>18</sup> <http://www.ukace.org/pubs/press/ST040426.pdf>
- <sup>19</sup> [http://edm.ais.co.uk/weblink/html/motion.html/EDMI\\_SES=03/ref=96](http://edm.ais.co.uk/weblink/html/motion.html/EDMI_SES=03/ref=96)
- <sup>20</sup> Evidence to the Environmental Audit Committee 19th May 2004, Q371  
<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmenvaud/490/4051908.htm>
- <sup>21</sup> See for example Guardian, 12th June 2003 'PowerGen markets boiler that generates electricity' by Paul Brown  
<http://www.micropower.co.uk/content1.cfm?pageid=98.&> Hewitt, C (2001) "Power to the People: Delivering a 21st Century Energy System" IPPR
- <sup>22</sup> "Natural gas – meeting the UK's energy challenges". BG Group Advertisement, The Parliamentary Monitor, December 2003.

- <sup>23</sup> Paul Brown, “Home wind turbines cut bills and pollution”, Guardian 3rd May 2005, <http://society.guardian.co.uk/environment/news/0,14129,1475224,00.html>
- <sup>24</sup> Calculated from figures on p.3, Improving Domestic Energy Efficiency – A technical overview, background work for Energy White paper 2003. DEFRA ref no IDG/EES/WP13.
- <sup>25</sup> See <http://www.zedstandards.com/>
- <sup>26</sup> [http://www.merton.gov.uk/sustainabledevelopment\[1\].pdf](http://www.merton.gov.uk/sustainabledevelopment[1].pdf)
- <sup>27</sup> [http://www.takingstock.org/Downloads/Case\\_Study\\_2-Woking.pdf](http://www.takingstock.org/Downloads/Case_Study_2-Woking.pdf)
- <sup>28</sup> Observer Special Report: The Future of Energy, 3<sup>rd</sup> October & “UK gas security: time to get serious” by J. Stern, Energy policy Vol.32 No.17, November 2004.
- <sup>29</sup> Pearl Marshall “Official says reviews needed before new U.K. nuclear built” Nucleonics Week, Vol46 No.11 March 17th 2005
- <sup>30</sup> See New Nuclear Monitor No.2 pp 3&4
- <sup>31</sup> “Blair to Press Nuclear Button” by Michael Harrison, Independent, 15<sup>th</sup> February 2005. [http://news.independent.co.uk/business/analysis\\_and\\_features/story.jsp?story=611234](http://news.independent.co.uk/business/analysis_and_features/story.jsp?story=611234)
- <sup>32</sup> “FoE anger at leaked Planning Law Changes” by Kirsty Scott, Guardian 4<sup>th</sup> May 2005 [http://www.guardian.co.uk/uk\\_news/story/0,,1475689,00.html](http://www.guardian.co.uk/uk_news/story/0,,1475689,00.html)
- <sup>33</sup> “Terror fears draw veil over nuclear plants”, by Richard Norton Taylor, Guardian 6th May 2005 [http://www.guardian.co.uk/uk\\_news/story/0,3604,1477455,00.html](http://www.guardian.co.uk/uk_news/story/0,3604,1477455,00.html)
- <sup>34</sup> Preliminary report on the Inventory. CoRWM Document No. 542 <http://www.corwm.org/PDF/Inventory.pdf>
- <sup>35</sup> Speech by Gordon Mackerron on ‘Consulting the Public’ to Nuclear Industry Association, Energy Choices 2004 Conference, 2<sup>nd</sup> December 2004.
- <sup>36</sup> Government’s Response to House of Lords Select Committee on Science and Technology report on “Radioactive Waste Management” page9. <http://www.parliament.uk/documents/upload/GovRespRWM.pdf>
- <sup>37</sup> Secret Papers reveal new nuclear building plan, by Oliver Morgan, The Observer 8th May 2005 <http://observer.guardian.co.uk/business/story/0,6903,1479279,00.html>
- <sup>38</sup> Platts Nuclear News Flashes 28th February 2005
- <sup>39</sup> “Study finds vulnerabilities in pools of spent nuclear fuel” by Matthew Wald, New York Times 7<sup>th</sup> April 2005. <http://www.nytimes.com/2005/04/07/politics/07nuke.html> See also the talk given by Dr Gordon Thompson to the 7<sup>th</sup> UK and Irish Standing Conference on Nuclear Hazards, Drogheda 10<sup>th</sup> and 11<sup>th</sup> March 2005 & NFLA Briefing No.45 12<sup>th</sup> May 2005
- <sup>40</sup> See for example “Nuclear Delusion” by Tom Burke, Guardian 2<sup>nd</sup> March 2005. <http://society.guardian.co.uk/environment/story/0,14124,1428025,00.html>
- <sup>41</sup> “The Nuclear Charm Offensive” by Jonathan Leake and Dan Box, New Statesman 19th May 2005 <http://www.newstatesman.co.uk/nscoverstory.htm>