

briefing



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No. 65 (Addendum B)

Subject: New Nuclear Development[†]

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1.0 British Energy

1.1 British Energy is to be bought by EdF of France for £12.5bn. The mainly state-owned company, EdF says it wants to build four new reactors¹ - two at Hinkley in Somerset and two at Sizewell in Suffolk. EDF hopes to gain the necessary approvals by the turn of the year and will then negotiate its deal to sell 25 per cent of British Energy to Centrica.²

1.2 The Company has also promised to sell off unwanted land at other British Energy sites so that rival power companies can develop new reactors at Bradwell in Essex, and Dungeness in Kent, but there is a clause in the sale agreement, which allows EdF to delay this until 2011.³ BE confirmed at a public meeting on 18th November in West Mersea that the Bradwell site would be sold off to another nuclear developer, but only after consent has been given for two new reactors at Sizewell.

1.3 In the meantime BE has applied to the Government for environmental impact scoping opinions on possible Section 36 consent applications for four new nuclear power stations at Dungeness, Sizewell, Hinkley and Bradwell. The company has already signed transmission agreements with National Grid for new nuclear build at the four sites.⁴ BE says it has held talks with local communities around the four possible sites.⁵ Potential nuclear operators are required to consult the local community before nominating a site under the Strategic Siting Assessment process.

1.4 Centrica, the parent company of British Gas, has asked its shareholders for £2.2bn to help fund its purchase of a 25% stake in British Energy.⁶

1.5 The taxpayer remains liable for British Energy's £5.5bn decommissioning liabilities from its existing reactors, and any liabilities arising from any breach in its operating licence.⁷

¹ Guardian 25th Sept 2008 <http://www.guardian.co.uk/business/2008/sep/25/edf.britishenergygroup>

² FT 17th Nov 2008

<http://www.ft.com/cms/s/0/ac588a6e-b446-11dd-8e35-0000779fd18c.html>

³ Bloomberg 26th Sept 2008 <http://www.bloomberg.com/apps/news?pid=20601102&sid=ayBKeT8gYPgc&refer=uk>

⁴ Platts 17th Nov 2008

<http://www.platts.com/Nuclear/News/8178186.xml?src=rssheadlines0>

⁵ Guardian 18th Nov 2008 <http://www.guardian.co.uk/business/2008/nov/18/britishenergygroup>

⁶ Guardian 1st Nov 2008 <http://www.guardian.co.uk/business/2008/nov/01/centrica-british-energy-gas-prices>

⁷ Observer 28th Sept 2008 <http://www.guardian.co.uk/business/2008/sep/28/edf.utilities>

1.6 Meanwhile of the eight nuclear power stations owned by BE, two have been out of action completely for almost a year - Hartlepool and Heysham One – and are unlikely to return to service until early next year.⁸ Both reactors at Dungeness B are shut for different reasons, and might be back in operation by the end of December. Hinkley Point B and at Hunterston B are both running at 70% power because of cracks in the graphite core of their reactors. Only Torness, Heysham Two and Sizewell are working normally.⁹

2.0 Nuclear Siting

2.1 The NDA has offered land for sale at Wylfa, Bradwell and Oldbury. Potential nuclear power operators as well as renewable power and property developers are expected to be interested.¹⁰ In addition the NDA announced that it would jointly market land at Wylfa with EdF which also owns land adjacent to the reactor site.¹¹ An auction will be launched in the next few weeks.¹²

2.2 E.ON has confirmed that it has reserved 1600MW of capacity with National Grid at Oldbury, and that it would like to build a new reactor at the Gloucestershire site.¹³ The company has been buying up land near Oldbury. But it's unclear how soon the Oldbury site will be available because the nuclear plant is seeking consent to extend its generating life. The plant was scheduled to stop generating electricity in seven weeks, but the Nuclear Installations Inspectorate is deciding whether to allow it to stay open for another two years.¹⁴

2.3 Lawyers from a leading City law firm have warned that the drive to build nuclear power stations will inevitably provoke an "awkward and time consuming" political row, as well as legal challenges that could delay the process "by a year or more." The lawyers say "it remains to be seen" whether ministers can deliver ambitious plans for a new generation of nuclear reactors "without delay from the courts or electoral upset". The lawyers highlight at least nine potential problems after the successful Greenpeace challenge to the "flawed" market research conducted for the BERR. (see 3.3) The government's attempt to fast-track planning applications could have the opposite effect. "The new system is more complicated and could just invite further challenges, slowing everything up."¹⁵

3.0 Public Opinion

3.1 It is generally assumed that people living near existing nuclear sites will be more supportive of new reactors. But a recent opinion survey suggests as many as 38% of the population living close to reactors will only accept new reactors reluctantly if they are essential for energy security and tackling climate change.¹⁶ If you add the 16% of people who believe the risks of new reactors outweigh the benefits, it means a clear majority do not give unconditional support to new reactors.

3.2 Not surprisingly the Government does not highlight the fact that nuclear power's contribution to reducing carbon emissions can only ever be quite small – perhaps around 4%¹⁷ - and that the huge

⁸ Scotsman 11th Oct 2008 <http://business.scotsman.com/energyutilities/Delay-at-nuclear-power-plants.4582337.jp>

⁹ Independent on Sunday 5th Oct 2008 <http://www.independent.co.uk/news/uk/home-news/power-cuts-feared-in-uk-nuclear-plants-crisis-951810.html>

¹⁰ Guardian 10th Sept 2008

<http://www.guardian.co.uk/business/2008/sep/10/britishenergygroup.utilities?gusrc=rss&feed=business>

¹¹ NDA Press Release 24th Sept 2008

<http://www.londonstockexchange.com/LSECWS/IFSPages/MarketNewsPopup.aspx?id=1967618&source=RNS>

¹² Sunday Times 23rd Nov 2008 http://business.timesonline.co.uk/tol/business/industry_sectors/utilities/article5213271.ece

¹³ FT 10th Sept 2008 http://www.ft.com/cms/s/0/4c45c7aa-7f84-11dd-a3da-000077b07658.html?nclick_check=1

¹⁴ Times 21st Nov 2008

http://business.timesonline.co.uk/tol/business/industry_sectors/utilities/article5201452.ece

¹⁵ Guardian 18th November 2008 <http://www.guardian.co.uk/environment/2008/nov/18/nuclear-power-government-ministers-delay>

¹⁶ Guardian 30th September 2008 <http://www.guardian.co.uk/environment/2008/sep/30/nuclearpower.energy> Living with Nuclear Power in Britain: A Mixed-methods Study. Nick Pidgeon, Karen Henwood, Karen Parkhill, Dan Venables and Peter Simmons. Cardiff University and the University of East Anglia. Sept 30 2008.

<http://www.kent.ac.uk/scarr/SCARRNuclearReportPidgeonetFINAL3.pdf>

¹⁷ Guardian 17th January 2006. <http://www.guardian.co.uk/environment/2006/jan/17/nuclearindustry.energy>

cost of new reactors would produce much bigger carbon savings if spent on alternatives such as energy efficiency and combined heat and power plants.¹⁸

3.3 Twenty senior academics have already accused the Government of deliberately skewing the results of the second nuclear consultation by burying the fact that nuclear power can only make a small contribution to reducing CO₂ emissions.¹⁹ Now the Market Research Standards Board has ruled that the second consultation, conducted partly by Opinion Leader Research, presented information inaccurately or misleadingly and was imbalanced, following a complaint made by Greenpeace.²⁰

Recommendation: That the NSC ask staff to produce a short briefing aimed at councillors near potential sites for new reactors to highlight the fact that nuclear power cannot provide a solution to climate change.

4.0 Nuclear Costs and Finances

4.1 The Government's pledge not to subsidise new reactors, already looking economical with the truth after it emerged the industry will be given a "fixed unit price" for waste disposal,²¹ is looking even less credible after questions by Paul Flynn MP. It is clear from parliamentary answers given to the MP that a significant taxpayer-funded insurance subsidy is being offered to the nuclear industry. He asked the financial value of the insurance indemnity to be granted to the successful bidder to manage Sellafield, but was told it is not possible to put a meaningful financial value to the indemnity. The impossibility of quantifying the monetary value of the indemnity is the main reason that there is no commercially available insurance, and the reason an indemnity is needed.²² An unquantified taxpayer subsidy is also paying for part of the necessary security arrangements at nuclear power stations.

4.2 Construction costs for new reactors in the US will soar, according to Standard & Poor's Ratings Services. Construction risk issues that are "more acute" for new nuclear units than for other types of power projects include "cost inflation in input materials and labour, especially nuclear-related labour; supply chain bottlenecks; and a limited construction track record. S&P said it expects "project contingencies to be high to accommodate uncertainty in pricing." Capital costs, after including interest during construction could vary between \$5,000 per kW and \$8,000 per kW.²³

4.3 Duke Energy Carolinas has raised the expected construction costs of its proposed Lee Nuclear Station (2x1117MW) to \$11 billion, excluding financing costs. That's roughly twice the company's original estimates. Financing expenses would increase the nuclear plant's price to more than \$14 billion.²⁴

4.4 Arjun Makhijani of the Institute for Energy and Environment Research in Maryland, says electricity costs from new reactors planned in the US are estimated at 10 to 17 cents per kilowatt-hour. This compares with 8 to 12 cents for wind. And new large solar plants in California are expected to yield electricity prices about the same. Rapid new developments in solar and wind energy and energy storage technologies indicate that new nuclear power plants are likely to be economically obsolete even before the first new ones come online in the United States.²⁵

4.5 Europe's first new-generation nuclear power plant, being built in Finland, is now three years behind schedule and will not come on stream until 2012. The reactor being built is a French European

¹⁸ Amory Lovins on Energy, CNN, 16th Oct 2008

<http://edition.cnn.com/2008/WORLD/americas/10/10/amory.lovins/>

¹⁹ Channel 4 News 19th Sept 2007

<http://www.channel4.com/news/articles/society/environment/spinning+a+nuclear+consultation/821457>

Paul Dorfman (Ed) Nuclear Consultation: Public trust in Government, Nuclear Consultation Working Group, 2008.

<http://www.nuclearconsult.com/>

²⁰ Greenpeace Press Release 17th Oct 2008 <http://www.greenpeace.org.uk/media/press-releases/official-ruling-browns-pollsters-fixed-second-public-consultation-nuclear-power-20081017>

²¹ The Future will not be Nuclear, by Tom Burke, Prospect Magazine, September 2008. http://www.prospect-magazine.co.uk/article_details.php?id=10336

²² Guardian 4th Sept 2008

<http://www.guardian.co.uk/commentisfree/2008/sep/04/nuclear.nuclearpower?gusrc=rss&feed=uknews>

²³ Construction Costs To Soar For New U.S. Nuclear Power Plants, Standard & Poors, 15th Oct 2008

²⁴ The Business Journal 4th Nov 2008. <http://triad.bizjournals.com/triad/stories/2008/11/03/daily21.html>

²⁵ Nature 2nd Oct 2008 <http://www.nature.com/climate/2008/0810/full/climate.2008.103.html>

Pressurised Water Reactor (EPR). It was originally budgeted at €3bn, but is now expected to cost at least €4.5bn.²⁶ Nine months into construction, Europe's second EPR being built in France is already nine months behind schedule.²⁷

4.6 Steve Thomas of Greenwich University says - after 5 years of talk about a 'Nuclear Renaissance', the absence of any new orders in key markets such as USA, UK and Italy has led to increasing doubts, even before the extent of the impact on the world economy of the 'Credit Crunch' is apparent. He says the Government has yet to face up to the fact that loan guarantees will be necessary if nuclear orders are to be placed. It is one thing for taxpayers to be forced to fork out huge sums to save the global banking system, but quite different to volunteer similar levels of taxpayers' money simply to get nuclear power plants built when there are non-nuclear alternatives that would not need this level of support. The implications of the credit crunch for nuclear power are severe and it is clear that governments and utilities will no longer be able to easily pass the risk of nuclear programmes on to taxpayers and electricity consumers.²⁸

4.7 The financial crisis could not have come at a worse time for the nuclear industry. Clean technology firms face enough challenges in terms of getting project funding in a cash-constrained market, but the capital required to build a nuclear plant dwarfs that needed for, say, a decent-sized wind farm. Moreover, wind and solar can begin producing energy relatively soon after construction begins, and can expand their energy in line with additional construction. Nuclear plants don't produce any output until they're completed, and they can take a long time to build.²⁹

4.8 On the other hand, energy minister, Mike O'Brien, claims the economic downturn will not affect government plans for new reactors. He said, in a speech to Chatham House, that nuclear is a good way of tackling rising energy costs and other recessionary pressures.³⁰ Department of Energy and Climate Change officials said the speech was intended to show that Ed Miliband's new team will be pressing ahead with creating a new generation of reactors as a matter of urgency.

5. Toshiba/Westinghouse

5.1 Westinghouse has signed agreements with BAE Systems, Rolls-Royce and Doosan Babcock to collaborate on plans for new AP1000 reactors in the UK. The agreements are part of the Westinghouse strategy to "buy where we build" with plans for between 70 and 80% of the work and services required to construct the AP1000 being provided by the UK.³¹ The deal could see Barrow's nuclear submarine builders construct parts for new nuclear power stations.³²

6. Supply Chain

6.1 Ministers are close to giving the green light to a financial package of up to £30m to enable a Sheffield manufacturer to build a giant machine vital to the construction of a new series of nuclear reactors. The machine that Forgemasters wants to build is called an open-die press, capable of pressing down on metal with a force of about 15,000 tonnes, making it among the most powerful machines of this type ever built.³³

²⁶ Guardian 18th Oct 2008 <http://www.guardian.co.uk/environment/2008/oct/18/nuclearpower>

²⁷ Greenpeace International 27th August 2008 <http://www.greenpeace.org/international/press/releases/greenpeace-reaction-to-france>

²⁸ Nuclear Monitor No.679, 13th November 2008 & "The Credit Crunch and Nuclear Power" by Stephen Thomas, Non Proliferation Education Center, November 2008.

<http://www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=20081112-Thomas-CreditCrunchNuclearPower&PDFFolder=Essays>

²⁹ Business Green 30th October 2008 <http://www.businessgreen.com/business-green/analysis/2229349/carbon-concerns-put-nuclear>

³⁰ ePolitix 17th Nov 2008 <http://www.epolitix.com/latestnews/article-detail/newsarticle/energy-department-to-press-ahead-with-nuclear/>

³¹ PR Newswire 4th Sept 2008 <http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/09-04-2008/0004878948&EDATE=>

³² North West Evening Mail 4th Sept 2008 <http://www.nwemail.co.uk/news/1.233975>

³³ FT 24th Nov 2008

http://www.ft.com/cms/s/0/cae6da34-b9b5-11dd-99dc-0000779fd18c.html?nclick_check=1

7. Radiation and Health

7.1 A recent flurry of epidemiological studies has spotlighted the issue of the health effects of discharges of radioactivity from nuclear facilities yet again. Last year, researchers at the Medical University of South Carolina carried out an analysis of 17 research papers covering 136 nuclear sites around the world. The incidence of leukaemia in children under 9 living close to the sites showed an increase of 14 to 21%. This was followed by a German study which found 14 cases of leukaemia compared to an expected four cases between 1990 and 2005 in children living within 5 kilometres of the Krümmel nuclear plant near Hamburg, making it the largest leukaemia cluster near a nuclear power plant anywhere in the world. This was upstaged by the yet more surprising KiKK studies (a German acronym for Childhood Cancer in the Vicinity of Nuclear Power Plants), which found higher incidences of cancers and a stronger association with nuclear installations than all previous reports.³⁴

8. Alternatives

8.1 The notion that we need nuclear power to address climate change does not reflect the realities of the marketplace or rapid new developments in energy technology, according to Arjun Makhijani of the Institute for Energy and Environment Research in Maryland. The common perception that renewables can provide only a small portion of energy supply is wrong. Intermittency problems can be overcome by co-ordinating different renewable sources.³⁵

8.2 New nuclear plants are so extraordinarily costly they would save about two to 11 times less carbon dioxide emission per dollar, about 20 to 40 times more slowly than investing the same money in efficient use of electricity or in renewables and combined heat and power.³⁶

8.3 Professor Ian Fells - the Today Programme's favourite expert - has been amongst those arguing, that future energy shortages in Britain cannot be solved by developing renewable sources alone.³⁷ He says he can't do the sums any way without having nuclear in the mix. The Centre for Alternative Technology has done the sums and found that through a radical rethink of how we use energy and massive investment in renewables, the UK could meet its energy needs without fossil fuels or nuclear.³⁸ "The sums" are contained in their report, Zero Carbon Britain.³⁹

8.4 The new Secretary of State for Energy and Climate Change, Ed Miliband, is reported to be drawing up plans - to be published at the end of November - which will introduce tough targets for cutting carbon emissions from the country's 26 million homes, along with generous incentives to help householders meet them. By prioritising energy saving the Government hopes to create employment, mitigate the effects of fuel price rises, make it easier for Britain to achieve energy security, and combat climate change.⁴⁰ World Nuclear News reported that the nuclear industry was sorry to see John Hutton go.⁴¹

8.5 Now that the Government has accepted a recommendation from the Committee on Climate Change to reduce carbon emissions by 80% by 2050, it will have to dramatically improve the energy efficiency of existing homes, since 85% of them are expected to be still standing in 2050. As well as a massive insulation programme, microgeneration schemes, such as solar panels, will need to be installed at a rate of around 600,000 every year for the next 42 years, rather than the paltry 121,000 expected over the next three years.⁴²

³⁴ See Westmorland Gazette 17th Oct 2008

http://www.thewestmorlandgazette.co.uk/news/3765532.Scientist_warns_of_cancer_risk_from_nuclear_facilities/

³⁵ Nature 2nd Oct 2008 <http://www.nature.com/climate/2008/0810/full/climate.2008.103.html>

³⁶ CNN 16th Oct 2008 <http://edition.cnn.com/2008/WORLD/americas/10/10/amory.lovins/>

³⁷ <http://fellsassociates.awardspace.com/site/PressRelease17thSept2008.html>

³⁸ Guardian 18th Sept 2008 <http://www.guardian.co.uk/commentisfree/2008/sep/18/energy.energy>

³⁹ <http://www.zerocarbonbritain.com/>

⁴⁰ Independent on Sunday 19th October 2008 <http://www.independent.co.uk/environment/green-living/milibands-blueprint-for-greener-homes-966239.html>

⁴¹ World Nuclear News 3rd Oct 2008 http://www.world-nuclear-news.org/IT_NP_UK_nuclear_loses_Hutton_0210081.html

⁴² Home Truths: A Low Carbon Strategy to Reduce UK Housing Emissions by 80% by 2050, by Brenda Boardman, FoE (EWNI) and Co-operative Bank, November 2007. http://www.foe.co.uk/resource/reports/home_truths.pdf

8.6 The scale of this challenge may seem somewhat daunting, but it can be done provided policies change. New technology will help to make these targets achievable. For example, Baxi Heating is one of several companies expected to introduce a micro-CHP boiler on to the market next year. These will replace existing domestic gas boilers, but can also produce electricity which can be either used by the householder or sold back to the Grid.⁴³ Bearing in mind that around 1.5 million boilers need to be replaced every year, the scale of this task looks a bit more achievable.⁴⁴

8.7 If all domestic gas boilers that reach the end of their useful life were replaced with micro CHP, we could in theory install the equivalent to one nuclear power station every year. By 2020, we could have the equivalent of ten nuclear power stations, before any new reactors are open. Whilst nuclear takes decades to build before saving any carbon or producing electricity, micro CHP can be installed 1kW at a time, producing power from day one.

8.8 A drive to train builders and tradesmen to carry out green refurbishment projects, and install microgeneration systems, including micro-CHP boilers could be an enormous business opportunity and a huge source of employment. This "Green New Deal" would create jobs, revive the economy, slash poverty and head off environmental disaster.⁴⁵

8.9 The Government is legally bound to abolish fuel poverty by 2016 and to eliminate it among the most vulnerable households by 2010.⁴⁶ With rising fuel prices as many as 5m households, many of them pensioners, now face a stark choice of "heat or eat". And according to the NHS at least eight old people are dying every hour from cold related illnesses in the winter months. A judicial review launched by Help the Aged and Friends of the Earth in the high court failed in its attempt to force the UK Government to live up to its promise, made in 2000, to eradicate fuel poverty.⁴⁷ Fuel Poverty campaigners are struggling to see how nuclear power will help the situation.

8.10 If the government is serious about renewables and energy efficiency, Britain doesn't need to build major new power stations, according to a new report by independent energy experts Poyry. If the UK achieves its commitment to meet EU renewable energy targets and its own ambitious energy efficiency action plan, then major new power stations (coal, gas or nuclear) would not be needed to meet electricity requirements up to at least 2020.⁴⁸

8.11 The UK is committed to producing 15% of its total energy demand (not just electricity) from renewable sources by 2020 under EU wide energy targets - in 2005 we managed only 1.3%. The House of Lords European Union Committee says wholesale changes will be needed in the Government's approach to energy policy if the target is to be met. It says energy efficiency measures should form the starting point and the Committee calls for a 20% energy reduction target by 2020. The Lords also point out that 41% of the UK's energy use is for heating and cooling. The Committee stresses that renewable heat technologies and micro-electricity generation should be as important a part of meeting the UK's renewables target as large-scale electricity generation. It calls on the Government to increase existing micro-generation grants and to introduce a system of renewable heat grants to ensure individuals have an economic incentive to explore options for micro-energy generation at home.⁴⁹

⁴³ Lancashire Evening Post 25th Sept 2008. <http://www.lep.co.uk/businessnews/New-green-boilers-to-secure.4529846.jp>

⁴⁴ MicroChap 10th Jan 2008

<http://microchp.blogspot.com/2008/01/nuclear-energy-and-micro-chp.html>

⁴⁵ Independent on Sunday 19th October 2008 <http://www.independent.co.uk/environment/green-living/green-energy-is-not-a-middleclass-conceit-more-the-only-way-forward-966068.html>

UNEP 21st Oct 2008 <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=548&ArticleID=5955&l=en>

⁴⁶ Guardian 6th Oct 2008 <http://www.guardian.co.uk/money/2008/oct/06/householdbills.economy>

⁴⁷ Help the Aged Press Release 23rd October 2008

http://press.helptheaged.org.uk/_press/Releases/_items/_Government+fuel+poverty+failure+escapes+legal+reprimand.htm

⁴⁸ Greenpeace 1st August 2008 <http://www.greenpeace.org.uk/media/press-releases/energy-experts-say-renewables-and-efficiency-could-plug-energy-gap-20080801>

<http://www.greenpeace.org.uk/files/pdfs/climate/meeting2020renewabletarget2.pdf>

⁴⁹ The EU's target for renewable energy: 20% by 2020, House of Lords European Union Committee, October 2008.

<http://www.publications.parliament.uk/pa/ld200708/ldselect/ldeucom/175/175.pdf>