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1. Centralised utility model is dying

"The Solar Revolution [is] not 'for the future', or 'just over the horizon': it's our reality today."

Jonathon Porritt 9th Sept 2014

The UK Government's current policy framework is propping up the large-scale, centralised utility business model, which is dying, according to the latest Institute for Public Policy Research (IPPR) report. (1) A more decentralised model which makes use of new technologies such as solar power, wind turbines, smart thermostats and appliances, batteries and highly efficient lights would lead to lower bills and ensure more of the government subsidies offered for low carbon generation end up with communities rather than in the hands of big, foreign-owned utilities. (2)

Solar power costs are falling rapidly and the technology is fundamentally transforming energy markets across the globe. Respected Wall Street brokerage firm Sanford Bernstein believes solar will '*become so large that eventually there will be consequences everywhere*' and that solar will overthrow everything we take for granted in global energy politics within '*the better part of a decade*'. By contrast, the impact 'fracking' will have on electricity markets in the UK pales in comparison.

Solar-generated electricity without a subsidy is already as cheap as electricity provided via the grid, in large parts of the world. Citibank thinks it will reach grid parity in the UK by 2020. There have also been sharp cost reductions in high-tech batteries, which can store solar-generated electricity and enable it to be used when the sun isn't shining. Barclays estimates that solar and battery systems will reach grid parity for 20 per cent of US electricity consumers within four years.

A report from giant multinational investment bank, UBS, declares that it is "*time to join the [solar] revolution*". (3) UBS says large centralised power stations, like the proposed £16 billion Hinkley Point C nuclear power station could be obsolete with 10 to 20 years. Large power stations will soon become extinct because they are too big and inflexible, and are "*not relevant*" for future electricity generation, according to the bank.

Instead UBS says solar energy costs have fallen rapidly and the technology is now on the verge of being competitive without subsidies. Battery costs are declining fast and electric vehicles will soon cost the same as conventional cars. The Bank expects home solar systems, small-scale home battery technology and an electric car to be a sensible investment for consumers in much of Europe by 2020.

The UBS report follows similar analysis by other large financial institutions and energy experts who expect new solar and renewables to drive rapid change in large scale utility companies. (4)

Electricity generated by both onshore wind power and solar power, operating at small scales, is already substantially cheaper in the UK than electricity generated by offshore wind and nuclear, which the government is prioritising.



IPPR points out that the value of the largest 20 utilities in Europe has been cut in half over the past six years owing to the current and projected impacts of new technologies. At the same time the credit ratings of utilities across the world are being downgraded. According to Citibank, developments in Distributed Electricity Technologies (DETs) will halve the size of market open to utilities over the next two decades which could see the utility business model "crumble". DETs can enable individuals, communities and local authorities to become active in the market and benefit from new income streams to offset rising energy bills, including by investing in generation.

Earlier this year, Barclays downgraded its credit rating for the entire US electric utility sector (5) on the basis of its predictions for falling solar and battery costs, while Citibank has forecast distributed electricity generation will halve the size of the market open to utilities over the next two decades. Ex-npower boss Volker Beckers told *Business Green* in August that the centralised model has "*reached its natural end*". (6)

The government should be seizing the opportunity from these new technologies. This requires major reforms to how the energy system operates and is regulated. Unfortunately, the government is focused on supporting large-scale generation technologies, on which the dying traditional utility model is based. The government plans to levy £7.6bn a year from energy bills by 2020 to fund investments in low carbon generation. But it is prioritising nuclear power and offshore wind farms while restricting investments in solar and smart technologies. The 'contracts for difference' subsidy mechanism prioritises large-scale nuclear power and offshore wind developments over solar and small to medium-scale onshore wind, as well as other smaller generation technologies. This can be seen in how nuclear and offshore wind do not have to compete for contracts for subsidies while both solar power and onshore wind power do have to compete. It is also evident in the unbalanced allocation of subsidies between the different technologies, the complexity of the contracts themselves, which are best suited to large-scale developers, and in the low prioritisation given to the feed-in tariffs subsidy scheme for smaller technologies. Nuclear power and offshore wind are also the only generation technologies to have dedicated industrial strategies.

In 2012, 68 per cent of nuclear generation and 50 per cent of offshore wind generation in the UK was attributed to foreign governments. This is in stark contrast to Germany where smaller technologies are the focus and around half (47 per cent) of renewable power is owned by individuals and communities while energy companies own just 12 per cent.

IPPR says the Government should rebalance the allocation of subsidies so that more is made available for distributed generation technologies. In addition, given the challenge that smaller developers face in getting support via the contracts for difference mechanism, consideration should be given to increasing the capacity threshold for the small-scale feed-in tariffs programme so that larger technologies are eligible (for example from the current maximum installation size of 5MW up to 15MW).

Smart technologies and energy efficiency have the potential to radically cut energy costs by reducing peak demand. In the US these technologies have been shown to be capable of delivering a staggering 90 per cent reduction in the peak time electricity price. The costs of energy efficiency technologies are falling rapidly. Highly efficient light emitting diodes (LEDs) have reduced in cost by 85 per cent over the last five years.



As well as pressure from new technology and independent suppliers, utilities are also facing increasing competition from community energy projects. *"Communities and consumers are fed up with the old energy model and can now get directly involved"*, says Philip Wolfe, a director of Community Energy England. *"Social enterprises are springing up all over the country with renewable and energy saving projects owned and controlled by local communities."*

"Distributed electricity technologies such as solar power, batteries and smart thermostats, give reason for great optimism but they are being held back by a bias in both policy making and regulation which favours the large-scale utility business model," said Will Straw, associate director of the IPPR.

Dave Toke, reader in energy policy at Aberdeen University says solar PV could theoretically generate all of UK energy (not just electricity) by 2050 using just 1% of land. As well as declining costs PV has rapidly been increasing in efficiency. There is a lag between the highest laboratory tested efficiency and the efficiency of the currently installed panels, but let us assume that the commercially available panel efficiency in 2050 has caught up more or less with the highest efficiency currently achievable in the lab – around 45 per cent (a little more than 3xs present average efficiency). So assuming that in 2050, one square metre of solar panel will have a peak capacity of approaching 1 kWe –typical domestic panels at the moment are 250 watt per square metre and ones being installed in some solar farms are now 300 watts per square metre.

Toke says there are some revolutionary developments underway in battery technology, which allied with the trend towards a 'smart' information technology society make the variability in solar power an advantage. It can, for example, be stored in domestic, commercial or central industrial nodes to feed a variety of needs (including electric cars) as required. By contrast inflexible nuclear production is at a disadvantage under this paradigm since it needs the rest of the system to be organised to suit its needs for as much continuous production as possible. (7)

Green MEP for South-west England, Molly Scott-Cato, says the case for building Hinkley Point C should now be firmly closed. The Greens cite three strong arguments for not proceeding with the controversial Hinkley C power plant: European Competition law; cost and delay, and the irrelevance of nuclear for future electricity generation. Greens have challenged the legality of up to £17bn worth of 'back door' government subsidies to EDF, the company planning to build Hinkley C; a deal currently being investigated by the European Commission to see if it constitutes illegal State Aid . Greens also point to a similar reactor being built in Finland, which is now expected to be almost a decade late and well over budget. Finally, Greens highlight a report from giant multinational investment bank, UBS, which concludes that the proposed £16 billion Hinkley Point C nuclear power station could be obsolete within 10 to 20 years (8)

Whatever the outcome of the Scottish Referendum it is clear, says Matthew Lockwood on Exeter University's IGov Blog that the political model is broken, but so too are the institutions of the corporate energy model. One of the few groups even more unpopular than politicians in today's Britain are the large energy companies. The idea of do-it-yourself energy production by households and local communities should resonate strongly. (9)

For More Information See: Stop Hinkley's Media Briefing: Stop Hinkley calls on European Commission to "Just Say No" to UK Nuclear Subsidy Plan, 2nd September 2014
<http://www.stophinkley.org/PressReleases/pr140902.pdf>

In the World Nuclear Industry Status Report 2014, Steve Thomas, Mycle Schneider and Antony Froggatt tell the remarkable saga of Hinkley Point C as it awaits a decision on subsidies from the European Commission

Energy Post 21st Aug 2014 <http://www.energypost.eu/saga-hinkley-point-c-europes-key-nuclear-decision/>

Stop Hinkley's Joint Submission with the Nuclear Free Local Authorities and Cities for a Nuclear Free Europe, March 2014, is available here:

http://www.stophinkley.org/EngRevu/NFLA_CNFE_SH_Euro_Commission_nuclear_subsidies_submission.pdf

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 3. Will Solar, batteries and electric cars re-shape the electricity system? UBS 20th August 2014 <https://neo.ubs.com/shared/d1V0tO4LmKMZuB3> A summary of the report is published in The Guardian 27th August 2014 <http://www.theguardian.com/environment/2014/aug/27/ubs-investors-renewables-revolution>
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 5. Business Green 30th May 2014 <http://www.businessgreen.com/bg/news/2347374/barclays-downgrades-us-power-sector-over-solar-threat>
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 7. Dave Toke's Blog 6th Sept 2014 <http://realfeed-intariffs.blogspot.co.uk/2014/09/just-1-per-cent-of-uk-land-area-could.html>
 8. Molly Scott Cato MEP 7th Sept 2014 <http://mollymep.org.uk/2014/09/07/three-strikes-and-youre-out-say-greens-on-hinkley/>
 9. IGov 12th Sept 2014 <http://projects.exeter.ac.uk/igov/new-thinking-blog-the-times-they-are-achanging/>



2. Time to join the local energy revolution

The Stop Hinkley Campaign says local authorities across the West Country are already joining the revolution:

“It’s time for local authorities in Somerset to join the revolution and start looking at how they too can play a pivotal role in the development of low carbon energy projects by emulating work going on in the rest of the West Country rather than relying on an outmoded centralised utility like EDF Energy.”

A few recent examples include: Wiltshire Council is installing the UK’s largest local authority solar rooftop (1); Bath & North East Somerset Council has completed the installation of solar panels on Keynsham Civic Centre (2); Bristol is hoping to become the UK’s solar power capital (3); Exeter City Council has installed solar panels on council buildings (4); Plymouth City Council announced half a million worth of solar contracts in 2013 (5).

There are growing moves in local government across the UK to develop more comprehensive energy policies, as part of a move towards more decentralised energy production. (6) Manchester Councillor Mark Hackett, chair of the Nuclear Free Local Authorities, is calling for the development of more comprehensive and joined-up energy policies at local authority (LA) level. (7) Two models are available for LAs to become active players –an Energy Service Company (ESCO) or an Energy Service Trust (EST). If Councils move in this direction it may even create an 'energy renaissance' within local government, harking back to the pre-war days of municipal gas, electricity and water companies. As well as setting up municipal energy generation schemes, LAs should also take a much more active role in developing low carbon renewable energy projects, ramping up energy efficiency programmes, and supporting community-level microgeneration.

A number of Councils are already producing significant amounts of renewable energy and some are now considering ways to develop surplus energy that could be sold to the local communities. Decentralised energy models like an ESCO offer real opportunities for councils and communities.

An ESCO is a commercial structure, created specifically to deliver a decentralised energy service to customers. It recognises that what clients want is a warm home which is light and has appliances that work, rather than simply electricity and gas.

So, for example while an ESCO may ask a customer to continue to pay the same amount each month for energy services, these services may be provided by delivering extra insulation or energy efficient appliances instead of continuing to provide the same amount of electricity and gas. Then, once the capital costs for insulation and appliances have been recouped by the ESCO, bills can fall.

Nottingham City Council, for example, is setting £1 million aside to develop an ESCO. The Council predicts that 177,000 households could be £120 better off once the scheme is fully operational. The not-for-profit independent ESCO will include a high street shop, call centre and specialist staff. In the initial phase of the Nottingham ESCO, it will use electricity generated from the Council's Eastcroft incinerator as well as excess power from solar panels, waste food plants



and electricity and gas bought from the market at competitive rates which will be sold to the public. Any profit gained from the ESCO would be reinvested into electricity supply to build up the company. As a part of generating excess electricity Nottingham is developing large solar panel 'canopies' above two car parks. These schemes are estimated to generate around £121,000 a year for the Council.

More Information: Keep up with the local energy revolution as it happens by signing up to weekly Micro Power News here: www.microgenscotland.org.uk or follow the most important news here: <http://www.cumbrianenergyrevolution.org.uk/news/>

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 2. Solar Portal 5th Aug 2014
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 3. PV Compare 14th Jan 2014 <http://www.pvcompare.net/en/BRITAIN-S-SUNNIEST>
 4. Exeter Express & Echo 19th Nov 2013 <http://www.exeterexpressandecho.co.uk/Solar-panels-bringsavings-Exeter-City-Council/story-20099254-detail/story.html>
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http://www.theecologist.org/blogs_and_comments/commentators/2524973/local_authorities_are_key_players_in_our_renewable_energy_revolution.html



3. Ending fuel poverty

The End Fuel Poverty Coalition has published an Affordable Warmth Manifesto. (1) The Manifesto makes six demands:

- All low income homes to be brought up to and Energy Performance Certificate Band C by 2025.
- Energy Efficiency should be made a National Infrastructure Priority.
- There should be a cross-departmental fuel poverty strategy.
- Trusted agencies such as local authorities should be used to improve homes. Social workers and health workers should be encouraged to refer people.
- A better deal for low income energy consumers.
- Employment and income policies that allow people to afford basic services.

The 2013 Energy Act places a legal duty on the UK government to set a new fuel poverty target and a strategy for meeting that target. The government is proposing to set a target that will make sure as many fuel-poor homes as is '*reasonably practicable*' achieve a minimum standard of Band C on the Energy Performance Certificate (EPC) scale by 2030. But 2030 is too long to wait and current programmes are woefully insufficient for meeting even this target. In addition, too many loopholes undermine the target and more action is required to tackle all the causes of fuel poverty.

The Manifesto says there has been a dramatic decline in energy efficiency spend since 2010 and the complete abolition of public energy efficiency programmes for low-income households in England. Scotland and Wales, by contrast, have continued to provide public funding for energy efficiency. Low income households in England now have to rely on the Energy Company Obligation (ECO) alone.

The Coalition calls for a public investment of £2-3bn a year, including the funds currently allocated to the ECO, in order to address market failure for all low income homes, not just those defined as 'fuel poor' in the Government's new definition. This average level of investment would allow energy efficiency installations to ramp up quickly from 2015, delivering retrofits to 2m low-income homes by 2020, and enable the scheme to grow further in order to bring all 5.9m low income homes up to EPC Band C by 2025.

Meanwhile, eight of the UK's largest trade unions have called on the Labour Party to develop a domestic energy efficiency programme that cuts bills, creates jobs and is good for the environment. (2) This calls for all UK homes, not just low income households, to be brought up to at least Band C by 2025.

In a letter to Labour leader Ed Miliband, the unions have set out a number of key elements they believe should be included in the party's policy on energy efficiency. The submission is based on evidence from UNISON's 'Warm Homes' report, (3) which suggests that such an approach would tackle fuel poverty by saving consumers between £300 and £600 each year. The unions want



grants of up to £10,000 to be available to all six million low incomes homes and zero interest energy efficiency loans for those able to pay. There should be a street-by-street delivery programme with local authorities taking a lead role.

The unions say that the UK is quickly reaching crisis point with dwindling gas supplies, and within the next five years will need to import up to 70% of its gas from other countries. UNISON general secretary Dave Prentis said: "*The government's Green Deal has failed miserably. It is a national tragedy that five million homes are languishing in fuel poverty because of poorly insulated homes, and it is these households that are the least well prepared to absorb future increases in energy prices. What we desperately need is a strategy that will address the UK's energy crisis by eliminating the need for large scale fracking and bring millions of people in from the cold.*"

The unions believe a suitable scheme would make "significant inroads" into helping the UK meet its legally binding carbon emission target, and would also create more than 100,000 skilled jobs, offer significant opportunities for apprenticeships.

In November 2013 Labour announced plans to produce a Green Paper in 2014 on its plans for energy efficiency. (4) FoE's Energy Campaigner says the Green Paper is due to be released very soon, but the party must be wary of trying to cash in on their opponents' weakness on the issue by coming out with something only slightly better. Environmental, fuel poverty, and business groups have made clear they will be happy with nothing less than an ambitious programme to insulate all homes occupied by those on low incomes to a good standard by 2025, and a persuasive loan offer for those able to pay for it themselves. "*Our expectations are high, and I very much hope we won't be disappointed.*" (5)

The National Insulation Association (NIA), responding to the estimates that there were 31,100 excess winter deaths in England and Wales in 2012/13 said "*There are still some 7m solid walls, 5m cavity walls and 7m lofts that lack effective insulation and tackling these as quickly as possible should be an absolute priority to help address the cost of living as well as reducing fuel poverty and excess winter deaths.*" (6)

A reminder from nuclear News No 57 December 2013: The July 2012 draft report for DECC by McKinsey argued that an enormous 155 TWh of electricity demand reduction is possible, with 140 TWh of that at negative cost. This compares to the 25TWh which Hinkley Point C might achieve at a very optimistic load factor. In the residential sector alone potential efficiency savings amount to 66TWh. Current Government policies expect to save 44TWh, but are unlikely to achieve this without changes. But even if current policies do achieve this, 22TWh of savings in the domestic sector will remain un-captured. Across all sectors there are 100TWh of potential efficiency savings which the Government is failing to even attempt to capture. This would be more than enough to replace the existing nuclear programme (70TWh) or enough to replace four power stations the size of Hinkley Point C operating at an unlikely 90% load factor.

McKinsey, 2012. Capturing the full electricity efficiency potential of the U.K. Draft report.

<http://www.decc.gov.uk/assets/decc/11/cutting-emissions/5776-capturing-the-full-electricity-efficiency-potential.pdf>

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2. 24 Dash 3rd September 2014 <http://www.24dash.com/news/environment/2014-09-03-Unions-demand-Labour-ends-UK-fuel-poverty>
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4. World nuclear industry status

Globally the nuclear industry is in decline, with rising operating costs and an ever-shrinking share of world energy production. It is losing the race for investment and new generating capacity to fast growing renewable energy technologies. Of 67 new reactors under construction around the world, at least 49 have encountered construction delays, most of them significant (several months to several years) including 21 out of 28 reactors in China. (1) According to Forbes Magazine, China can mostly ignore democracy when it comes to building new reactors - it has perhaps the most relaxed regulatory regime in the world. Yet nuclear is being outstripped by wind. China turned on 16GW of wind capacity in 2013, yet it only managed to turn on 4.7GW of nuclear in the last four years. (2)

The *World Nuclear Industry Status Report 2014 (WNISR)* provides a comprehensive overview of nuclear power plant data, including information on operation, production and construction. The WNISR assesses the status of new-build programs in existing as well as in potential newcomer nuclear countries and looks in detail at how the changing market conditions are affecting the economics of nuclear power. WNISR2014 also updates a Fukushima Status Report featured for the first time in 2013 that triggered widespread media and analyst attention. While the Nuclear Power vs. Renewable Energy chapter provides comparative data on investment, capacity, and generation and assesses how nuclear power performs in systems with high renewable energy share.

The World's 388 operating reactors with a combined installed capacity of 333 GW are 50 fewer than the peak in 2002. Total installed capacity peaked in 2010 at 367 GW before declining to the current level, which is comparable to levels last seen two decades ago. The nuclear share of the world's power generation declined steadily from a historic peak of 17.6% percent in 1996 to 10.8% in 2013. Nuclear power's share of global commercial primary energy production declined from the 2012 low of 4.5%, a level last seen in 1984, to a new low of 4.4%. (3)

The nuclear industry remains remarkably optimistic about its future despite evidence that it is a shrinking source of power says Paul Brown. The headline figures for 2014 from the nuclear industry describe a worldwide boom in progress, with 73 reactors presently being built and another 481 new ones either planned or approved. Between now and 2030, the industry expects another 74 reactors to close, but 272 new ones to come on line. (4)

More Information: The rise and fall of nuclear power in six charts. Vox 1st Aug 2014
<http://www.vox.com/2014/8/1/5958943/nuclear-power-rise-fall-six-charts>

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3. Greenpeace 30th July 2014 <http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/the-latest-world-nuclear-industry-status-repo/blog/50131/>



4. Ecologist 2nd August 2014

http://www.theecologist.org/News/news_analysis/2500809/nuclear_industry_prepares_for_global_boom_or_is_that_doom.html



5. The Chinese are coming

According to *The Sunday Times* (1), Bradwell has emerged as the favourite site for a new Chinese-built and designed nuclear plant. China General Nuclear Power Corporation (CGNPC) and China National Nuclear Corporation (CNNC) have already agreed to help finance Hinkley Point C in Somerset. CGNPC and CNNC will have up to a 40% stake in the Hinkley project, but they also pushed for permission to build their own plant in Britain. In June, David Cameron signed an agreement with the Chinese premier Li Keqiang that paved the way for such a plant.

The two types of reactor under discussion are derivatives of western designs. It is understood that there have been preliminary talks between the Chinese and Britain's National Nuclear Laboratory about submitting one of the two designs for approval by the Office for Nuclear Regulation.

In a joint statement, Prof. Andy Blowers, Chair of the Blackwater Against New Nuclear Group (BANNG) and Val Mainwood, Coordinator of Bradwell for Renewable Energy (BRARE) said:

"It's hard to credit that they would pick on such an obviously unsuitable site. New nuclear power stations with stores of highly radioactive spent fuel would spell economic and ecological disaster for the Blackwater estuary and the communities in the area. We are scandalised at the irresponsibility of our Government in even contemplating such a dangerous and inappropriate project ... What the Government and their Chinese friends need to realise is the sheer weight of dismay, anxiety and opposition among the Blackwater communities. Just three years ago a 10,000 signature, face-to-face petition against new build here was delivered to the Minister of Energy in Whitehall; in recent months there has been a massive cry of outrage at the discharge of radioactive substances into the estuary and atmosphere from the old power station. Imagine the scale of opposition should rumours of new build be turned into the real thing."
(2)

Meanwhile, CGNPC and CNNC are poised to hire new advisers as talks over plans to build a Beijing-designed atomic reactor in Britain reach a critical stage. It is understood that the Chinese are close to appointing Rothschild, the investment bank, to nail down the final details. (3)

China aims to become a world leader in nuclear power by 2020 - making the leap from follower to leader by engineering "major technological breakthroughs" and "industrial upgrades". China has imported some of the world's most advanced nuclear reactor technology in the past few years, including one design from US firm Westinghouse and another from French nuclear giant Areva. Chinese scientists and engineers have sought to adapt the overseas technology to their own. But the American and French designs differ, resulting in two separate Chinese spin-offs. (4)

R.J. Barry Jones, Emeritus Professor of Politics and International Relations at Reading University reminded readers of the *Colchester Gazette* that nuclear power is not a business like any other business and that Chinese state-owned companies are not companies like any other companies. The discussions about possible Chinese involvement at Bradwell seems to have been undertaken without any examination of the motives of the Chinese state-owned companies and



their political masters. China is looking to the longer-term establishment of regional, if not wider, political dominance. They are also particularly keen to reverse past humiliations, like those inflicted on China during the Opium Wars of the 19th century. The range of motivations for Chinese involvement in any new nuclear at Bradwell – only fifty miles from central London – thus demand greater investigation than has been the case to date. These motivations should certainly not be overlooked in the Government's rush to secure a substantial share of the future business in offshore Chinese currency and financial arrangements for their friends in the City of London.

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<http://www.thesundaytimes.co.uk/sto/business/Industry/article1450398.ece>
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 4. South China Morning Post 14th Sept 2014 <http://www.scmp.com/news/china/article/1591984/china-plans-be-world-leader-nuclear-power-2020>



6. Old reactors struggle along

EDF Energy announced on 11th August that four of its nuclear reactors require inspection following the discovery of a defect on a boiler at reactor 1 of the Heysham 1 nuclear plant. The inspection will cut over a quarter of the UK's nuclear fleet from service - around 2.5 GW of capacity. The operator first discovered a fault in the boiler spine of one of the Heysham nuclear units during a maintenance period in 2013. Further investigations continued this year while the unit ran at reduced load, and with the affected boiler isolated, before a maintenance outage in June confirmed the defect. The operator has now opted to perform a full inspection of the affected 660 MW Heysham 1-1 reactor as well as those of a similar design, including: the 610 MW Heysham 1-2, 620 MW Hartlepool 1 and 620 MW Hartlepool 2 nuclear units. (1)

EDF discovered the defect at Heysham 1 - "*cracking in a boiler spine*" - a metal tube which supports the full weight of the reactor boiler in November 2013 and that boiler, one of eight in the reactor, has been out of service since then. But it waited for the results of "more detailed inspections", which began in June, before deciding to switch off both reactors at Heysham 1 and two more of the same design at Hartlepool. Steve Thomas, professor of energy policy at the University of Greenwich, said there might have been an explosion and serious contamination if the boiler spine had failed and water had entered the reactor vessel. He said: "*Given the safety consequences, it does seem very strange that there was a nine-month gap before announcing the shutdowns.*" He said ONR should explain why it had permitted reactors of the same design to keep generating after being informed of the safety problem. "*The regulator should not be in any way concerned about costs to EDF or even the risk of the lights going out.*" (2)

The Nuclear Free Local Authorities (NFLA) asked why had taken 9 months to close down Hartlepool and Heysham nuclear reactors after the problem was originally found? The NFLA is concerned that at no time did EDF give any indication to the local Community Liaison Council at Heysham that there were serious issues with the reactor over the nine months this issue was being investigated. (3)

EDF Energy said at first that it would take eight weeks to find out whether other boilers in the four reactors had the same cracking, but then in September it announced that the reactors may not be back online until the end of the year - there could be a "*phased return to service between the end of October and the end of December, 2014*". (4)

Centrica, which has a 20% share in EDF's existing nuclear operations, issued a second profit warning in less than a month because of the unexpectedly long shutdown. Centrica said its earnings per share will now fall by 0.6 pence a share to 0.9 pence a share, a steeper decline than the 0.3 pence a share it had previously forecast. (5)

As nuclear plants are prone to breaking with age, the World Nuclear Industry Status Report 2014 warned that network operators across the world should be braced for more of the same. Britain is by no means a special case. Most of the EU's 211 operational nuclear plants were built in the 1970s and 1980s and were designed to last around 40 years, so many are due to close. (6)

The likelihood of National Grid having to pay factories and other heavy energy users to power down at times of peak demand increased, said the *Business Green* website. The grid operator



announced that in addition to its Demand Side Balancing Reserve (DSBR) programme, which promises to cut peak demand by up to 300MW by paying businesses to curb energy use on demand, it is tendering for a Supplemental Balancing Reserve (SBR) service, inviting generators to bid to bring mothballed power plants back online to help meet any energy shortfall. (7)

The Telegraph said the reactor closures compounded growing concerns that Britain is facing blackouts. National Grid announced it was resorting to emergency measures to bolster power supplies by paying mothballed and idle power stations to fire up. The confirmed nuclear delay compounds a situation that is already far bleaker than had been expected just a few months ago due to the partial closure of two fire-damaged coal power plants and the planned closure of one unprofitable gas power plant. (8)

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 2. Times 11th August 2014 <http://www.thetimes.co.uk/tto/business/industries/utilities/article4172886.ece>
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7. Hunterston renovated

Another of EDF's reactors, Hunterston B4, is also offline. It was switched off on 1st August for its statutory outage: one of its biggest yet. More than 13,000 separate pieces of work are scheduled to be completed, with a total spend of more than £20 million. One of the main jobs is replacing the generator transformer, a £5 million project. The reactor is expected to come back on line in the second week of October. (1)

The BBC said the major overhaul follows the decision to extend the station's working life by a further seven years. Hunterston B opened in 1976 and was originally scheduled to be decommissioned in 2011, but will now generate electricity until 2023.

Hunterston B is due to submit a Periodic Safety Review to the Office for Nuclear Regulation (ONR) in January 2016. As a result of a decision by the last Meeting of Parties of the Espoo Convention, to which the UK is a Party, an Environmental Impact Assessment and public consultation should be carried out as part of the plant life-time extension process. (2)

Anti-nuclear campaigners say the money being invested at Hunterston could be better spent elsewhere. Dr Richard Dixon, of Friends of the Earth Scotland, said: "*You could create many more jobs if you were investing in energy efficiency, insulating people's homes, and in particular in renewables. You would get more jobs for the same amount of money and you wouldn't be creating more nuclear waste, for which we have no solution.*" (3) We don't need Hunterston B, Scotland is exporting electricity most days. (4)

Meanwhile, the Labour Group on North Ayrshire Council has raised concerns about the safety of transporting radioactive waste between Hunterston and Torness, after EDF has requested a licence from the Scottish Environment Protection Agency to move waste between the two plants. (5) Questions about the possible threat of terrorist sabotage on convoys transporting waste were also raised by Dr David Lowry, but he said ONR's response was inadequate. (6)

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1. Nuclear Engineering International 5th Aug 2014
<http://www.neimagazine.com/news/newsgenerator-transformer-replaced-during-hunterston-outage-4335072>
 2. Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context Implementation Committee Thirtieth session Geneva, 25–27 February 2014
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