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1. Hinkley Notes

The Downing Street review of the proposed Hinkley Point C nuclear power station is coming to an end – and a decision will have to be made soon, probably before the end of September. The latest wave of public relations activity from EDF, the company that hopes to build the plant, shows how nervous the company is about the outcome. Given the range of doubts about the costs, the construction risks, the reactor technology and the involvement of the Chinese, that nervousness is well justified. (1)

Here are the news highlights from the last month.

It's about the security stupid!

The Times says the review centres on the security threat posed by allowing a Chinese company to invest in critical infrastructure in the UK. But officials are also puzzling over cost and value for money. Building a gas-fired power station with the same generating capacity would probably cost about £2.7 billion, or 15% of Hinkley's total cost. Onshore wind power and large-scale solar will be cheaper to produce — at about £50-£75 per megawatt hour of power — by 2025. And two offshore wind farms off the Dutch coast are being built at a price of €72.70 (£61) per megawatt hour. (2)

Ben Chu, who has been critical of Chinese health and safety standards in the past declaring that behind every industrial accident in China today lies a reeking morass of corruption, (3) says *“it would seem to be an overreaction to cancel this project on security grounds. It's a stretch to believe that the Chinese have some sort of secret plan to sabotage the UK energy supply (or to retain the option of doing so), not least because this would destroy their own sizeable investment in the process and wreck their genuine aspirations to move up the engineering value chain ... It's also worth remembering that nuclear power plants, whoever owns them, are inevitably going to be closely regulated and inspected by the British state ... A better reason for May and her ministers to pause than security concerns is cost.”* (4)

Yet Ross Clark writing for the *Spectator* says Theresa May needs to look no further than the advice given to her and her aides before attending the G20 summit in Hangzhou. They have reportedly been advised to not to take their mobile phones, and to use temporary replacements while in China. They have also been given temporary email accounts which can be deleted upon return, and to avoid using public charging points for laptops and iPads. Any mobile phones that are taken to China should be concealed in security boxes out of fears that the Chinese security services have developed ways of accessing phones even when they are switched off. If these are genuine concerns, and not the inventions of paranoiacs inside MI6 or GCHQ, then they do seem to provide an answer to the Hinkley question: how can Britain possibly trust another country with its nuclear power infrastructure when we can't trust it not to spy on government aides attending an international summit? Of course we want to encourage trade with China – we want to do business there and for the Chinese to invest here. But to allow involvement in sensitive nuclear power infrastructure seems an odd place to start. (5)



Mark Wallace writing on the Conservative Home website says one of the state companies involved in Hinkley is the Chinese National Nuclear Corporation, which is a self-declared part of the Chinese security apparatus, and now a senior employee of the Chinese General Nuclear Corporation (CGNC), the body which would own a stake in Hinkley Point, stands accused of nuclear espionage in the United States. The risks therefore range from the possibility of opening our key national infrastructure up to spying right through to the risk that the Chinese government might be able to disrupt our power supply if it so wished – a fear raised by Malcolm Rifkind, who is not ordinarily given to conspiracy theories. Really it would be bizarre if China *did not* take the opportunity to embed some spooks and some software loopholes into our energy grid if we offered them the chance. (6)

Szuhsiung Ho, a senior adviser to CGNC is facing nuclear espionage charges in the US. He is accused of leading a conspiracy to steal American nuclear secrets to speed up the development and production of Chinese reactor technology. He is also accused of recruiting American experts to obtain sensitive nuclear technology for China in a plot that threatened US security. The case follows an investigation by the FBI and is being prosecuted by the National Security Division of the Department of Justice. The allegations raise the prospect that China could one day build a nuclear power plant in Britain using stolen American technology. (7)

Australia blocked the A\$10 billion (\$7.7 billion) sale of its biggest energy grid to State Grid Corp of China and Hong Kong's Cheung Kong Infrastructure Holdings citing security concerns. (8)

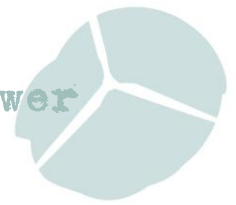
The *Daily Mail* says the Prime Minister now has the ammunition she needs to block China's involvement in Hinkley Point C. And she can do so immediately without losing face. (9)

The South China Morning Post says a far greater objection to Hinkley than security concerns is the fact that it is a deeply flawed project, driven more by political vanity than economic rationale, the numbers of which make no sense whatsoever. Theresa May would be right to pull the plug, regardless of any Chinese involvement. In short, Hinkley would be a horror show with or without China's involvement. (10)

According to various press reports the UK Government is considering a proposal to detach the development of Hinkley Point C from an agreement to allow China to build one of its own reactors at Bradwell in Essex. (11) But Professor Steve Thomas reckons that without Bradwell CGN would pull out. *"What Bradwell gives [China] is huge prestige that will help them in other export markets."* Anthony Froggatt from Chatham house says *"The primary reason for [China's] investment is the desire to have a Hualong design reactor – what they're proposing for Bradwell – in a western environment. If that's gone then there's less incentive to invest in Hinkley, and I think it's likely they would pull out."* (12)

Utility heads gang up against Hinkley

The head of energy giant ScottishPower Keith Anderson (13) has joined SSE chief executive Alistair Phillips-Davies (14), in expressing scepticism about the need for Hinkley Point C. Anderson said the subsidy deal for Hinkley should be renegotiated because it is too expensive. He said the deal no longer made sense in the light of lower gas and offshore wind costs. Phillips-Davies said the UK does not need Hinkley - it has plenty of alternative options for keeping the lights. The importance of the project for the UK's energy needs "has been repeatedly



overplayed", he said, insisting offshore wind and gas plants could fill the gap if Hinkley was scrapped.

Paul Massara, who was until recently RWE npower chief - says Hinkley is the wrong solution for meeting the UK's future energy needs. In view of the costs and "unproven, outmoded technology" involved, pressing ahead with Hinkley would be "madness". *"Listen to any informed energy market insider, and they will tell you that future grids will be smart, decentralised, flexible, and dominated by a mix of renewable energy, demand-side and energy efficiency measures, and storage"*. (15)

Board members say final investment decision invalid

Five board members of French state-controlled utility EDF are petitioning to have the courts annul last month's board decision to push ahead with Hinkley Point. All five represent the EDF unions. They say the decision should be invalidated because Jean-Bernard Lévy, the chief executive, did not tell them that the UK government planned to delay its decision on the plant. EDF has admitted that Jean-Bernard Lévy knew that a signing ceremony scheduled for the project site on the day after the board meeting had been pushed back by the UK. But the company insists that Mr Lévy did not know that a full review would take place. (16)

Another day, another Hinkley Point C demolition job

Another day, another Hinkley Point C demolition job, said *The Times* after a report by the Energy and Climate Intelligence Unit (ECIU) was published. The ECIU said there are "*cheaper, quicker and simpler alternatives to Hinkley*". Four big wind farms or three more interconnector cables could bring as much electricity into the grid. And that might not be necessary anyway as "*we could negate the need for at least two fifths of Hinkley's electricity by cutting waste*". Neither do we need 3,200MW of "always on" baseload power. We could handle the same peak demand requirements through extra connectors or gas-fired stations, not least if industry rescheduled non-essential processes away from times of highest demand. The alternatives will save taxpayers at least £1 billion per year versus Hinkley, a project so daft that its electricity will cost us more than twice today's wholesale rate, an effective £30 billion subsidy. (17)

The report's author, Richard Black, describes Hinkley as "*A giant Godzilla that will either crush all before it or collapse under its own weight.*" Energy academics and investment banks have understood for years that renewables-based systems are becoming the logic-based choice, given not only climate change but also simply cost. Seventy-five percent of bosses asked in a survey think Britain should build more [renewables]. Even solar power, treated with huge scepticism in government ever since the late Professor David Mackay told ministers that it could not amount to a row of beans – garnered a huge thumbs-up.

The National Grid admitted its complete failure to predict the rapid advent of small-scale renewables. Four years ago it estimated that 0.5 gigawatts would be installed by 2021. Already, the total is 11GW – and 13GW more is now considered likely. That's an underestimate by a factor of nearly 50. Accordingly, Grid has now slashed its forecast for the building of big block power stations by more than 50%.



With the approval of the Hornsea 2 offshore windfarm the UK is on track to have the world's largest offshore wind farm up and running in the early 2020s. The inescapable conclusion, says Black, is that whether you like renewables or not, they are becoming the centrepiece of the British energy system. With none of the flashy controversy of an £18bn geopolitical timebomb, more and more UK electricity is coming from wind and, to a lesser extent, solar. (18)

Alternatives to Hinkley

With on-shore wind and solar projects now going ahead at much lower CfD strike prices than that promised for Hinkley, if and when it started up in the mid to late 2020s, the alternative scenarios are beginning to look very attractive, even when the extra cost of grid balancing to deal with the variability of wind and solar is included. And crucially, offshore wind projects are now set to get a lower strike price from 2026 (£85/MWh) than Hinkley would get if it ever starts up- £92.50/MWh. With only 38% of the UK public now supporting nuclear power, and 81% backing renewables, it seems like a rethink is called for, says Professor Dave Elliott. (19)

Dong Energy, the world's leading developer of offshore wind, says it is ready to offer the UK more offshore wind power should Theresa May scrap Hinkley. Dong's chief executive officer Henrik Poulsen told Bloomberg "offshore wind could be an economically-viable alternative to nuclear. In contrast to the massive price of building the UK's next generation of nuclear power stations and the very high strike price for the project, costs in the offshore wind sector are coming down quickly." (20)

Jeremy Leggett, the founder of solar panel maker Solarcentury, is delighted that others are picking up on arguments he has been making for years. *"Finally the message is getting through that Hinkley, and indeed nuclear, make no sense today simply because wind and solar are cheaper. If we accelerate renewables in the UK, we can get to 100% renewable power well before 2050,"* he says. *"The message is getting through on the feasibility of this too. One thousand cities around the world are committed to 100% renewable supply, some as soon as 2030. More than 60 giant corporations are committed to 100% [low carbon] supply, some as soon as 2020."* *The Economist believes improved electricity storage is a key answer to the frequently repeated criticism of wind and solar that it is intermittent, and points out that battery technology is fast improving. The magazine also champions interconnectors, which can link energy-hungry Britain with northern Europe, where there is a wind-energy surplus, or with a country such as Iceland – a centre of geothermal power due to its volcanoes. The Economist concludes: "All of these options would be cheaper than Hinkley, which would take 10 years to get going and represent a huge, continuing cost to bill payers, if it ever worked at all. Such a strategy would also buy time to see what new technologies emerge."* (21)

The government expects solar and wind power to be cheaper than new nuclear power by the time Hinkley Point C is completed, its own projections show. An unpublished report by the energy department shows that it expects onshore wind power and large-scale solar to cost around £50-75 per megawatt hour of power generated in 2025. New nuclear is anticipated to be around £85-125/MWh, in line with the guaranteed price of £92.50/MWh that the government has offered Hinkley's developer, EDF. On previous forecasts, made in 2010 and 2013, the two renewable technologies were expected to be more expensive than nuclear or around the same



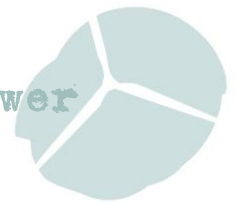
cost. This is the first time the government has shown it expects them to be a cheaper option. The figures were revealed in a National Audit Office (NAO) report on nuclear in July. *“The [energy] department’s forecasts for the levelised cost of electricity of wind and solar in 2025 have decreased since 2010. The cost forecast for gas has not changed, while for nuclear it has increased,”* the NAO said. (22)

Bridget Woodman, Course Director, MSc Energy Policy, at the University of Exeter, says the Hinkley delay makes it possible to start debating the sorts of options being considered widely around the world, with measures to encourage more flexible, smaller-scale, renewable systems incorporating demand-side measures and new technologies such as storage. These are extraordinary times for energy policy in the UK. After years of resigned acceptance that Hinkley would be built no matter how much of a basket case it was, even though few people argued that it makes sense, there is now a potential to have a real and considered debate about what sort of future electricity system we need. Now is the time to start considering the sorts of options being considered widely around the world, with measures to encourage more flexible, smaller-scale, renewable systems incorporating demand-side measures and new technologies such as storage. A system that is the absolute antithesis of what Hinkley Point C represents. Suddenly UK energy policy has become very exciting indeed. (23)

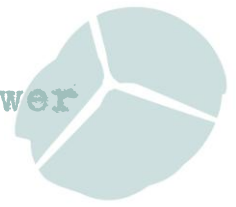
What about jobs?

Four of Britain's major unions are big supporters of nuclear power, writes Ian Fairlie - all because of the jobs. Trade union leaders may think that nuclear power is a major provider of jobs. It is not. The recent analysis of jobs in the energy sector published by the Office of National Statistics reveals only 15,500 direct jobs in nuclear power compared with 43,500 direct jobs in renewables - including renewable heat, renewable combined heat and power, bioenergy and alternative fuels in 2014. But about 9,000 of the nuclear jobs will be at Sellafield, which will be getting reduced as the facility winds down in any case – whether or not we build new reactors. (24)

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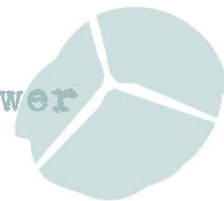


2. Wylfa

A second consultation on the proposed nuclear power plant in Anglesey has been launched. Horizon Nuclear Power estimates Wylfa Newydd, which will include two reactors with a total capacity of 2,700MW, will take around nine years to build and have an operational life of 60 years. The consultation will run until 25th October. (1)

Nearly two-thirds of people in Wales want all of Wales' electricity to come from renewable sources, a poll for the conservation organisation WWF has found. They also want the Welsh Government to invest more in improving the energy efficiency of homes. First Minister Carwyn Jones will publish his Programme for Government during the next few weeks and the focus is likely to be on how Wales adapts to Brexit. WWF is calling on the Government not to sideline investment in reducing emissions and tackling climate change. (2)

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3. The District Heating & Green Gas Alternative to Hinkley

Several recent renewable proposals illustrate how we can avoid building a new nuclear power station at Hinkley Point. Dong Energy for instance suggests building more offshore wind farms backed up with biomass or gas-fired plants. (1) Lightsource says solar PV could match the output of Hinkley within just two years. (2) Forum for the Future says we could get 20 GW of new capacity from farm-based renewables by 2020. (3) But Theresa May's delay in giving final approval to Hinkley also gives us a chance to look more holistically at future energy policy.

With around 4.5 million UK households suffering from fuel poverty and over 30% of greenhouse gas emissions attributable to heat, even with 100% renewable electricity we would still need to do a lot more to cut greenhouse gas emissions from the heat sector to meet climate targets.

In Aberdeen councillors have just unanimously agreed to an £11m investment to expand the City's district heating network – offering 350 more homes the chance to save on their energy bills. Aberdeen Heat and Power (AHP) has grown substantially since it began in 2002 and currently provides heat for 2,361 flats in 33 multi-story blocks, two sheltered housing blocks and 13 public buildings. (4) Only about 2% of heat is supplied via a heat networks in Britain compared with Denmark where 60% of the population is connected. As well as delivering significant carbon savings, district heating systems cut energy costs – heating a flat via a gas-fired network costs around 30 % less than it does using an individual gas boiler. (5)

The Scottish Government has a target to meet the equivalent of 100% of electricity demand with renewables by 2020. Although it is beginning to look like it may only manage about 87%, thanks mainly to Westminster's cut in subsidies (6) the Government is already seriously considering setting a target of providing 50% of Scotland's energy – as opposed to just electricity – with renewables. (7) Research carried out for WWF Scotland suggests around 350,000 Scottish dwellings need to be connected to a (renewables-fed) district heating network by 2030 – the equivalent of 50% of all households in Aberdeen, Dundee, Edinburgh and Glasgow - to meet climate targets. (8)

District heating networks can be fed with heat from a range of sources from gas-fired and biomass-fired Combined Heat and Power (CHP) stations which also generate electricity, to deep boreholes which extract geothermal heat from underground. In Glasgow heat is being captured from trapped water in old flooded coal mines via heat pumps. In Lerwick Shetland Heat and Power is hoping to extend its heat network by installing a 2MW heat pump made by Star Renewables in Glasgow to abstract heat from Lerwick Harbour. (9) In the London Borough of Newham there are plans to harness the energy from "fatbergs", the bus-size balls of grease which cost Thames Water an estimated £1 million a month to remove from its sewers. (10)

Despite enthusiastic support for energy storage technology from the *Telegraph* (11) the Government remains to be convinced we can cope with a high percentage of intermittent renewables. This is where CHP-district heating networks could be crucial. In Germany, for instance, as wind and solar PV take on a greater proportion of total electricity production, CHP



plants are expected to take on the role of providing more flexible electricity generation. At the moment CHP plants focus on meeting the demand for heat. Electricity production is seen as a useful by-product. But in future the focus will switch to providing electricity when the output from wind and solar is low. (12) On the other hand district heating systems could absorb large quantities of surplus electricity by using heat pumps to heat water which can be stored for use later. This means CHP district heating networks could be used to balance power grids in order to compensate for fluctuations in renewable output becoming the backbone of a new sustainable energy system. (13)

The UK Government currently expects most of our heating to be converted to electricity helping to double demand by 2050. (14) But as Labour's new "Green Gas Book" points out electricity distribution networks couldn't cope with the huge fluctuations in demand on a really cold winter's day without extensive upgrading. On top of that every household with gas central heating would have to rip out their boiler and radiators and install a completely new system probably using ground or air-source heat pumps. This would be extremely expensive for each individual consumer and most people probably couldn't afford it without massive subsidies. And why would we want to ditch the UK's gas distribution grid, developed over many years and only recently upgraded with new pipes anyway?

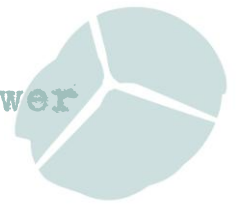
For those households unable to connect to a district heating network, the option of being able to use 'green gas' supplied by the gas grid offers further opportunities to make use of surplus renewable electricity. The UK now has 617MW of biogas capacity - enough to power 800,000 homes. The bio-methane sector has only just started to develop and has significant scope to increase the production of green gas. And 'Power to Gas' technology could make use of excess electricity generated from renewables to generate hydrogen gas by the electrolysis of water which could then be fed into the gas grid. (15)

We need to do a lot more to reduce carbon emissions from the heat sector anyway, and we need to tackle fuel poverty. Rather than continuing to waste surplus renewable electricity, ditching the recently modernised gas grid and hoping against all the evidence that we can get the exorbitantly expensive nuclear programme up and running in time to start replacing our fossil-fuel powered domestic heating systems, a combination of new district heating networks and Green Gas could help balance renewable electricity and reduce emissions from the heat sector - solving two problems at the same time.

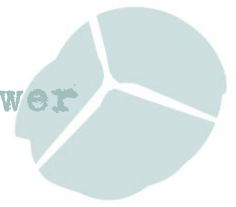
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4. Local Energy

(A longer version of this article appears here: <http://www.microgenscotland.org.uk/news/news-2016/role-local-authority-energy-companies-community-energy-co-operatives-building-low-carbon-energy-system-scotland/>)

Local Authorities across the UK have been showing an increasing interest in energy for several reasons. Firstly, as large consumers of energy themselves high energy prices have been having a big impact on council budgets. Secondly by generating their own energy or reducing consumption or encouraging community projects to generate energy or reduce consumption, they can bolster the local economy and generate revenue at a time of severe budget constraints. Thirdly decentralised energy and energy efficiency projects allow them to bring money into the local economy by making the most of grants and financial support available. Fourthly Councils want to assist local residents suffering from fuel poverty, and finally many have local climate change objectives.

Some local authorities have been developing ambitious renewable energy projects of their own like Cornwall County Council's solar park, Bristol City Council's wind farm projects, Southampton City Council's district heating scheme, Glasgow City Council's projects on LED lighting, geothermal power and solar farms, Manchester City Council's innovative work on the development of smart meters and low carbon energy procurement. (1) Cornwall County Council has launched a plan for the whole County to become energy self sufficient by 2025. This will require considerable infrastructure investment. (2)

Some local authority schemes are beginning to start generating energy beyond the Council's own specific needs, at least at certain times of day or as far as individual council buildings are concerned, so some councils are beginning to think about whether energy can be sold direct to other consumers rather than just to the Grid. And despite the recent subsidy cuts councils with renewable projects in the pipeline have not given up. Instead they are looking at installing energy storage or selling surplus electricity via private wires and power purchase agreements to local customers at a price closer to the retail price rather than the wholesale price they would have got by selling to the grid. The falling costs of PV panels will also help to make solar economic for local authorities very soon if it isn't already. (3)

Consequently some Local Authorities have been discussing the possibility of establishing Local Authority Energy Service Trusts (LAESTs) or Energy Service Companies (ESCOs) so they can take a more active role in energy policy and even sell energy direct to the public to help the alleviation of fuel poverty in their locality.¹ (4)

The potential development of a new form of 'municipal enterprise' in energy policy harks back to the pre-war era when it was common for local corporations to run local water, gas and electricity boards. It may well be possible that new models for municipal energy companies

¹ An ESCO is a company which finances and organises the installation of energy efficiency measures, and maintains the system to ensure energy savings during the payback period. The savings in energy costs are then used to pay back the capital investment of the project over a five- to twenty-year period.



could help local authorities play a significant role in providing a solution to some of today's pressing energy dilemmas.

The Institute for Public Policy Research (IPPR) has argued that Britain's cities could transform efforts to create a cleaner, smarter and more affordable energy system, provide an alternative to the big utilities, and boost their local economies in the process. IPPR would like to see more cities engaging in the energy supply market, and raising finance for investment in low-carbon energy infrastructure – particularly generation. It argues that together these steps would allow cities to tackle Britain's energy crisis. With the big energy companies so widely distrusted, IPPR believes the local authority "brand" can encourage otherwise reluctant low-income households to switch suppliers and save money. (5) Cornwall's Plan shows that there is no reason why rural local authorities should not be involved in this area as well. (6)

None of this will be either cheap or easy. For those Councils who aspire eventually to be players in the domestic energy market there is one specific major obstacle in the Electricity Act 1989. This involves the requirement to pay around £6 million for the set-up fees, associated costs and registration requirements in order to consider supplying electricity to customers. Nottingham City Council's Robin Hood Energy has gone for a fully licensed commercial supply model. This involved the signing of some 146 commercial contracts. The Greater London Authority has applied for a 'licence lite' arrangement which would allow Energy for London to buy all the small heat and power generation produced by boroughs across the capital and other public bodies and then sell it on to Transport for London and the Metropolitan Police. (7)

At present, most authorities are looking at slightly less ambitious arrangements compared with Nottingham. Some may become a 'white label' supplier which means they won't hold a supply licence, but instead will work in partnership with a licensed 'partner supplier' to offer tariffs under their own brand. (8)

Aberdeen already has a more narrowly written ESCO contract where the arms-length company Aberdeen Heat & Power Company has runs its local, and increasingly extensive, district heat network on formerly Council owned social housing properties. Since 2002, £1.6 million has been spent (£730,000 from the Scottish Government's Community Energy Programme) on the scheme. (9) Now the City council is looking at setting up an energy service company which could potentially be involved in the generation, transmission, distribution and supply of energy, as well as supporting services such as energy efficiency, energy savings, renewable energy and emissions reductions. The plans follow the unveiling of Aberdeen's sustainable energy action plan, which was approved by the council in May with the aim of reducing carbon emissions across the city by 31 per cent by 2020 and 50 per cent by 2030 against a 2005 baseline. Initiatives included in the plan include the development of an energy from waste combined heat and power plant at Tullos, as well as an anaerobic digestion facility and energy centre that are being developed as part of Aberdeen's plans for a new conference centre. (10)

In Southampton a District Heating Network is operated by the French Company, Engie, working in partnership with the City Council – under the name of Southampton Geothermal Heating Company Ltd (SGHC). (11) In Islington the Bunhill Energy Centre and Heat Network which provides heat to 850 homes and two leisure centres is owned and managed by the Borough Council. (12)



There are also examples of collaborations between local authorities – an idea that might be a better model for rural local authorities. The Association for Public Service Excellence (APSE) has a vision of an effective collaboration between a large number of local authorities to enable and facilitate the municipalisation of energy services. Local authorities working together could have great influence and be able to deliver economies of scale in green energy to promote economic growth and combat fuel poverty. (13)

The emergence of a number of innovative local energy initiatives presents a challenge to UK energy policy but also an opportunity to move to a more democratic, locally-controlled sustainable energy market. Local Authorities have a unique ability to be visionary and pragmatic at the same time.

Robin Hood Energy

Nottingham's Robin Hood Energy (RHE) Company is the first local authority-owned electricity and gas company since the electricity industry was nationalised in 1948. It is a not-for-profit company which is fully licensed for commercial supply. Its key social objective is to tackle fuel poverty, so it is predominantly aimed at domestic customers. RHE signed up its first customer in September 2015. It is installing smart meters prioritising customers who have traditionally used prepayment meters. Since Robin Hood Energy was launched by Nottingham city council in September 2015, it has become one of the cheapest suppliers in the East Midlands. RHE is also creating local and high quality new jobs. (14)

Robin Hood Energy (RHE) is now working with a number of Councils on to allow them to become a 'white label' supplier which means they won't hold a supply licence, but instead will work in partnership with a licensed 'partner supplier' to offer tariffs under their own brand. (15) The first to take up this offer and launch will be Leeds City Council, who will be in partnership with RHE. Other Councils are likely to follow such as Islington.

Bristol Energy

Bristol Energy has even wider goals. Fully open since early 2016, the company aims not just to supply energy at competitive prices – it reckons its tariffs can save customers an average of £250 a year – but to invest in community-based renewable generation and ultimately in renewable heat supply as well. Bristol Energy forecasts a 12% return on the council's investment after five years, rising to 35% after 10, with money reinvested for social good. Bristol Energy wants to support locally generated renewables by increasing the amount of renewable energy it can purchase through Power Purchase Agreements (PPAs). (16)

Greater Manchester Combined Authority

There has been a long established culture of co-operation between the 10 local authorities in Greater Manchester on energy efficiency projects. Now the Greater Manchester Combined Authority is planning to establish an Energy Service Company (ESCO) under the title 'Energy for Greater Manchester'. (17)

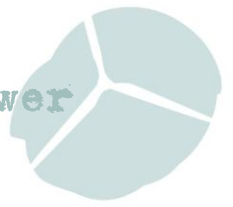


Our Power - Scotland

Our Power is a new energy supply company established by Scottish social housing providers who want to make the energy industry work better for the residents and communities they serve. Our Power aims to reduce heat and fuel costs by passing benefits from the energy sector to communities. This is done by not paying dividends to shareholders, by finding the most efficient ways to operate, by generating our own power and by reinvesting any profits to benefit customers and communities. Our Power seeks to buy a minimum of 30% of its energy from renewable sources. (18)

- Meanwhile more than 3,500 churches across Britain have moved their electricity supply to renewables, or are planning to do so. The majority of the Salvation Army's sites, about a third of Quaker meeting houses, and about 2,000 Catholic churches are running entirely on renewable energy. (19)

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5. Time for Engie to get the hell out of nuclear

Engie, formerly GDF Suez, owns 40% of NuGen, the Company which wants to build three new nuclear reactors at Moorside in Cumbria, next to Sellafield. Yet Engie is fully aware that *“the future is going to be much more about decentralized energy”*. As Greenpeace Belgium says it's time for Engie to be consistent and get the hell out of nuclear power.

Engie is not a household name in the UK but the £32bn French company is one of our largest power generators and business energy suppliers. It was formed in 2008 by the merger of Gaz de France and Suez, and is roughly one third owned by the French State.

As well as owning 40% of the NuGen joint venture with struggling ToshibaWestinghouse, it is also the parent company of the Belgian utility, Electrabel, which operates all seven of Belgium's nuclear reactors, but only owns half of Tihange 1; 89.8% of Tihange 2&3 and Doel 3&4; and 100% of Doel 1&2.

Surprisingly Engie employs 20,000 people in the UK. It is the UK's eighth biggest foreign employer. For instance it runs catering, cleaning and district heating services at Edinburgh's Royal Infirmary hospital. It is also Britain's eighth biggest electricity generator, pumping 5% of its gas and making revenues of £3.7 billion in the UK in 2014.

The Chief Executive of Engie UK, Wilfrid Petrie, says *“It's very difficult today to build a new power plant [in the UK] with current market conditions”*. Instead, the Company offers localised services that could include installing insulation, district heating and solar panels on existing buildings as well as supplying gas and electricity. *“We see the emergence of a new type of organisation within cities,”* he says. Engie, he believes, can build on its relationships with councils and other commercial customers to expand its British business by developing local, decentralised energy in urban areas, where demand is high. *“We don't want to sell a huge amount of energy. Our big focus is on the demand side. The future is going to be much more about decentralized energy,”* he says. (1)

Engie won the contract to power the Olympic Park in East London and has been using this as an opportunity to turn its energy supply business on its head and create a model which is being quietly rolled out across the UK from Whitehall to Leeds. The Olympic site includes two energy centres and a network of over 11 miles of pipe work and a small fleet of biomass boilers, combined heat and power plants and water storage units. Petrie explains that biomass provides the steady baseload power needed throughout the day by burning waste wood sourced from UK landscapers. To meet peak demand the energy can also be stored in hot water tanks which are topped up using combined and heat and power boilers which run on gas. As a result the Olympic Park is able to generate 75% of its own energy with carbon emissions 20% lower than the rest of the UK while using smart technology to keep costs low.

The company is one of the leaders in a trend which seeks to disrupt the traditional energy supply model. Instead of focusing on large, expensive power plants based far from the



customers it supplies, Engie starts with the customer and builds so-called 'decentralised' energy systems to fit. This decentralised energy model works because it has the flexibility to provide bespoke solutions to directly meet local needs. The Olympic Park scheme, for instance, is different to Engie's Whitehall district energy scheme. (2)

The company has built a growing network of district heating and electricity, powered by its own onsite boilers and combined heat and power (CHP) units such as the Southampton District Energy Scheme which is supplemented with Geothermal Energy; (3) it is developing a new district heating network with Cheshire East Council which will focus on low and zero carbon sources of heat, including geothermal energy; (4) in July it signed a power purchase agreement with Equitex to buy all the electricity generated by a new CHP plant in Wrexham (5); and in March it was awarded a contract to construct, operate and maintain gas-fired CHP energy centres for three NHS Trusts in Liverpool, as well as carrying out site-wide upgrades to energy-consuming equipment. (6)

Petrie says the future of the British energy industry will be in these kinds of "*distributed energy networks*", which are localised and low carbon. Engie is soon to launch a new retail operation which it will run through joint ventures with local councils in big urban areas such as London, Birmingham, Southampton and Coventry. As well as gas and electricity, Engie would provide consumers with bundled energy services, which could include district heating from a centralised location, or piped hot and cold water for heating and cooling, as well as insulation, energy-efficiency products and small-scale generation in the form of solar panels or wind turbines.

Petrie points to the recent launch of Robin Hood Energy, an energy supplier launched by Nottingham city council, as an example of the kind of services that Engie could offer alongside local authorities. Nottingham provides district heating to thousands of homes and is developing a small-scale renewable power station using solar panels and woodchips. (7)

Engie has understood for a while now that "*the future is going to be much more about decentralized energy*". Greenpeace Belgium says it is time now for the Company to be consistent and get the hell out of nuclear power. (8) We should be calling on Engie in the UK to do the same and give up on NuGen and drop its plans to take a 40% share in Europe's largest proposed new nuclear development.

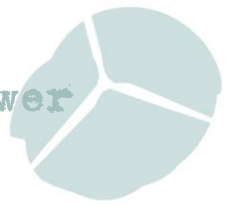
Please write to:

Wilfrid Petrie, Chief Executive, Engie, 40 Holborn Viaduct, London. EC1N 2PB

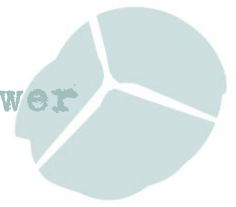
And tell him to get Engie out of nuclear.

Keep up to date with developments in decentralised energy which are relevant to Cumbria at www.cumbrianenergyrevolution.org.uk

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6. New housing for a new low carbon era

The Government says England needs 1 million new homes by 2020. In terms of carbon emissions the emissions from these new houses will all be additional to existing emissions, so it is vital they are as close to zero as possible.

Passivhaus or 'Passive House' is the fastest growing energy performance standard in the world with 30,000 buildings constructed so far, mostly since the turn of the century. The Passivhaus standard is basically a relatively simple approach which involves excellent thermal performance, exceptional air tightness and mechanical ventilation with heat recovery. (For a 90 second video explaining the Passivhaus see here: <http://www.passipedia.org>)

These three elements allow the designer to minimise heating demand, so that, for instance and in some residential buildings all that is required is a heated towel rail to keep the building warm. This heat can then be recovered and circulated by a Mechanical Ventilation and Heat Recovery (MVHR) unit. The low heating demand of Passivhaus Buildings of less than 15kWh per square metre per year means that annual fuel costs are reduced by a factor of 5-10. For example a household living in a 70m² Passivhaus with gas heating could spend as little as £25 per year on space heating.

The Government is planning to build 40,000 new 'affordable' homes by 2020, but having ditched the zero carbon homes standard in 2015, the residents of these homes will be needlessly saddled with higher fuel bills. If each of these homes was built to Passivhaus standard they could be saving perhaps as much as £1,000 per year on heating bills. That means an extra £40m per year going into the local economy. (1)

Following the cancellation of the Zero Carbon Homes standard in 2016 a model motion for Councils was drawn up by the Green Party and the Passivhaus Trust. This noted the negative impact the cancellation will have on householders living in fuel poverty in new housing; the missed opportunity to reduce carbon emissions in new developments; and the loss of income to the local economy as a result of these lower energy efficiency standards. The motion recognises that under the principle of localism councils can determine their own standards on land that they own if those standards comply with UK building regulations. The Passivhaus Standard offers an alternative to the UK's diminished energy efficiency ambitions for new build housing; and can deliver heating bills of less than £100 per year for the average three bedroom terrace. The motion says this council agrees to specify a Passivhaus Standard on all buildings on all council-owned land or as a condition of sale of any council land. A version of the motion has now been agreed by Leeds City Council.

Kirklees Council, which had the first ever universally free insulation scheme which insulated over 50,000 homes with cavity wall and loft insulation has approved a budget of £1.1m for the additional cost of taking a project to build around 30 houses up to Passivhaus standard. The Council has also established a Passivhaus task group to look at the standard to see what can be done. The Council is currently going through the production of its local plan which envisages 20,000 new homes by 2031. If each home saved £1,000 on fuel bills – that is £20m per year which stays in the local economy that wouldn't otherwise have done so. (2)



Exeter City Council has been an early adopter of the Passivhaus standard. The council pioneered building to the standard in 2009. Since then the Council has delivered five different housing developments across the City – all council stock. Currently a 27 Passivhaus development is being built. In September the Council will start on its first development for older people with care needs of 53 homes and a Passivhaus standard leisure centre and bus station is in the design stage.

An ambitious house building programme by Norwich City Council is putting the Council at the forefront of the development of energy efficient homes. In January the council's cabinet awarded the building contract for a development of ten flats built to Passivhaus standard. This is one of the first projects to use the council's new 'Fabric First Framework'. Due to the specialist nature of Passivhaus construction and design, the framework brings together a group of small, medium and large contractors with the expertise necessary to carry out this type of work and assist the development of a number of Passivhaus projects. A newly-formed Regeneration Company, which is wholly owned by the council, is planning a development of 172 houses, of which 112 will be built to Passivhaus standard making it one of the largest Passivhaus schemes in the UK. A further 105 Passivhaus properties are already being planned. The three Norwich schemes together will virtually double the total number of certified Passivhaus dwellings built in the UK to date. (3)

Wolverhampton City Council has built three schools to Passivhaus standard schools, and Leeds City Council (4) has built one, as has Devon County Council. (5)

A Passivhaus development in Bristol of nine apartments and 17 houses - is so energy efficient the homes barely use any heating, even in the depths of winter. They need no radiators or gas boiler and use just a tenth of the energy required to heat a conventional home. (6)

In Glasgow, Collective Architecture has developed proposals for the refurbishment of 3 blocks of flats, originally built in the late 1960s. The plans for Cedar Court, on behalf of Queens Cross Housing Association, propose the retrofit of 314 homes to Passivhaus standard. The project is using a pioneering ventilation system to provide fresh, clean air into the building. (7)

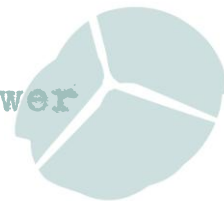
Leicester University's Centre for Medicine is currently the UK's largest Passivhaus building, and one of the largest in Europe. (8) Interserve's office building, also in Leicester, is the first certified Passivhaus Carbon Negative commercial office to be built in the UK. (9)

This is just a snapshot of some of the Passivhaus projects going on around the UK. The 2016 UK Passivhaus Conference and Exhibition on 25th October at the Islington Building Design Centre will focus on the delivery of Passivhaus, particularly large-scale projects in the UK, Europe and Worldwide. The conference will include leading UK case studies, seminars about various aspects of Passivhaus design and delivery, a major exhibition of Passivhaus products. (10)

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7. Smart Grids and all that

A "smart energy" revolution could help ensure that the UK does not suffer blackouts, according to National Grid's new executive director Nicola Shaw. She said technological advances will reduce the need to build new conventional power stations in the UK. An "*internet of energy*" will allow fridges, washers and dishwashers to help balance energy demand. Some commentators say the UK needs more gas-fired power to prevent blackouts. Ms Shaw agreed that more investment in gas-fired power was needed, but argued that between 30% and 50% of fluctuations on the electricity grid could be smoothed by households and businesses adjusting their demand at peak times.

"We are at a moment of real change in the energy industry. From an historic perspective we created energy in big generating organisations that sent power to houses and their businesses. Now we are producing energy in those places - mostly with solar power,"

More and more people and companies are adjusting their energy consumption to use more when power is at its cheapest. *"All of that is a real revolution ... a smart energy revolution that's changing the way we think about energy across the country,"* she said.

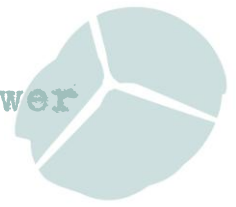
Prof Phil Taylor, professor of energy systems at Newcastle University, said: *"People are used to the idea that they pay more for using the trains at peak time, or they queue more if they use the roads at rush hour. Technology has enabled us to bring this price flexibility to energy consumers. No-one will be forced to link their home to the energy internet, but if they do choose to use it, it will save them money, save pollution and save power stations needing to be built."* (1)

GMB attack

In response, the GMB union called National Grid "naively complacent". Justin Bowden, its national secretary, said: "Avoiding winter blackouts with a 'smart energy' revolution is fanciful nonsense. The smart grid is years away. What's needed to guarantee the lights stay on over the coming winters are new power stations and the go-ahead for Hinkley Point C."

The National Infrastructure Commission's first report concluded that the future of the UK's energy network should focus on decentralised generation combined with localised storage networks. This echoed the conclusions of a similar report authored by solar firms Lightsource, Foresight Solar and Good Energy alongside the likes of KPMG and UK Power Networks, produced at the time of the feed-in tariff consultation, which stated that electricity bills could fall if the government pursued a decentralised strategy. (2)

A report by the Association for Decentralised Energy concluded that this so-called demand-side response (DSR) – reducing the use electrical equipment at certain times; shifting demand to other times or increasing on-site generation - can contribute a range of benefits to the electricity system, from securing supply and balancing the system, to increasing competition and reducing network investments. The total potential DSR capacity across the industrial, commercial and public sectors, including highly efficient CHP assets and on-site back-up generation, is conservatively estimated to be 9.8 GW by 2020. This includes:



- 2.8 GW from industrial demand flexibility
- 1.7 GW from commercial and public sector demand flexibility
- 2.3 GW in flexibility available from the 5.2 GW of current on-site CHP capacity
- 3 GW of on-site back-up generation capacity (non-CHP)

Delivering UK's potential 9.8 GW of DSR capacity would deliver substantial benefits across both the energy system and UK industrial, commercial and public sectors. This means DSR could meet up to 16% of peak demand. This could save consumers £600m by 2020 and £2.3bn by 2035. It could also deliver £8.1bn in network investments savings by 2030.

National Grid says one thing, but does another

So National Grid's decision to cancel a scheme which would have financially incentivised companies to reduce electricity demand during peak times in winter months was greeted with much annoyance. The Demand Side Balancing Reserve (DSBR) tender was reportedly withdrawn by the Grid due to a lack of willing participants, following the application closure earlier this summer. The network operator confirmed that it would not be procuring any capacity for this winter.

Energy consultancy Inenco Group, which worked closely with National Grid to help communicate the financial rewards of DSR to businesses, believes the decision is short-sighted. The announcement reflects a growing sense of unease within the business community that 'smart-grid' technologies are not progressing quickly enough to create a "truly smart energy network". (4)

One senior industry source said the DSBR had been hampered by limited funds caused by National Grid's largesse with the accompanying Supplemental Balancing Reserve (SBR) scheme, which offers payments to power plants to provide back-up services. "*The underlying issue with the DSBR is payments are capped at £17,000/MW,*" he said. "*It was undercapitalised from the start because National Grid was held to ransom by power stations that said they would shut down. It is a ridiculous situation where you have got coal plants being paid up to £88,000/MW, while more cost-effective demand-side services are being frozen out.*" (5) They paid so much to the companies running coal power stations that there is not enough available for those who are willing to reduce their demand. (6)

Dan Byles from Smarter UK says the UK has been a consistent thought leader on smart grid and smart energy solutions. There is a strong consensus across industry and government that developing the smart grid is not just beneficial but essential for ensuring a resilient, clean and lower cost energy network. A dynamic DSR is a core element of the smart grid - fundamental to the business case for the eye-wateringly expensive smart meter roll out programme. (7)

Storage moves ahead

Meanwhile, of the 37 bids National Grid received for so called enhanced frequency-response, 34 were for batteries. Nearly all of those were lithium-ion. The 201MW awarded is the single largest procurement of storage ever seen in Europe, and featured some very low prices." (8)

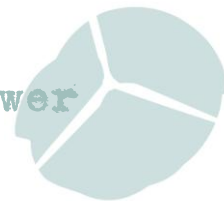


Only eight contracts were awarded to the winning bidders. EDF Energy's was the biggest individual project, winning a £12m deal to build 49 megawatts (MW) of battery storage by its coal and gas plants at West Burton in Nottinghamshire. Vattenfall won a contract to build 22MW of batteries next to its Pen y Cymoedd wind farm in Wales, while E.On is to build a 10MW battery by its biomass plant at Blackburn Meadows near Sheffield. Low Carbon secured £15m of deals to build two projects, one in Kent and one in Cumbria, with a combined capacity of 50MW. The other winners were Element Power, RES and Belectric. (9)

In Scotland, installation plans for a 300MW pumped-storage hydroelectricity (PSH) scheme were announced. The £200m PSH electricity storage facility on the Isle of Lewis will significantly increase (from 40% to 80%) the use of the Western Isles cable being installed by the National Grid to export and import renewable electricity from the islands. (10)

Both the SNP and Scottish Greens have urged the UK Government to develop a national renewable energy storage strategy. Callum McCaig, SNP MP and spokesperson for energy and climate at Westminster urged the UK energy secretary, Greg Clarke to implement a "stable framework" to ensure stability for investment and guarantee support for projects like the proposed 400MW Cruachan PSH scheme and the Coire Glas scheme. (11)

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1. BBC 31st Aug 2016 <http://www.bbc.co.uk/news/business-37220703>
 2. Solar Portal 31st Aug 2016 http://www.solarpowerportal.co.uk/news/gmb_labels_national_grid_smart_energy_vision_fanciful_nonsense
 3. http://www.theade.co.uk/flexibility-on-demand--giving-customers-control-to-secure-our-electricity-supply_4180.html
 4. Edie 23rd Aug 2016 <http://www.edie.net/news/6/National-Grid-demand-side-service-withdrawal-risks--undermining--business-confidence/>
 5. Business Green 23rd Aug 2016 <http://www.businessgreen.com/bg/news/2468632/national-grid-slammed-over-short-sighted-decision-to-shelve-demand-response-scheme>
 6. FT 22nd Aug 2016 <http://www.ft.com/cms/s/0/99ac8702-6871-11e6-a0b1-d87a9fea034f.html>
 7. Business Green 30th August 2016 <http://www.businessgreen.com/bg/opinion/2469131/smart-grids-and-dumb-decisions>
 8. Renew Economy 31st Aug 2016 <http://reneweconomy.com.au/2016/storage-electric-vehicles-power-market-linkages-84804>
 9. Telegraph 26th Aug 2016 <http://www.telegraph.co.uk/business/2016/08/26/eight-uk-battery-projects-win-funding-from-national-grid/>
 10. Edie 24th Aug 2016 <http://www.edie.net/news/10/Scottish-energy-production-boosted-by--200m-hydropower-scheme-/>
 11. CommonSpace 23rd Aug 2016 <https://www.commonspace.scot/articles/9122/scottish-parties-call-national-plan-renewable-energy-storage>



8. National Policy Statement on Energy

The government has a legal duty under section 6 of the 2008 Planning Act to review the National Policy Statement (NPS) on Energy, according to lawyers Leigh Day, because of dramatically changed circumstances over the last five years since the national policy statements enshrining the nuclear element were first published.

A report by Together Against Sizewell C (TASC) underlines the government's duty to undertake a review and demonstrates why new nuclear has to be written out of the government's energy policy.

The sections of the Overarching NPS on Energy (EN-1) which the TASC report says show the policy needs to be reviewed are section 3.5.1 to 3.5.11.

Section 3.5.8, for instance claims that:

"...nuclear power is economically competitive with other forms of generating technology (including the lowest cost renewable technologies) and new nuclear is likely to become the least expensive form of low carbon electricity generation."

Section 3.5.9 says:

"...it is important that new nuclear power stations are constructed and start generating as soon as possible and significantly earlier than 2025."

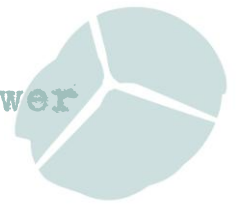
It is also worth noting that section 2.2.22 says:

"Looking further ahead, the 2050 pathways show that the need to electrify large parts of the industrial and domestic heat and transport sectors could double demand for electricity over the next forty years."

Section 3.3.14 says:

"As a result of this electrification of demand, total electricity consumption (measured in terawatt hours over a year) could double by 2050. Depending on the choice of how electricity is supplied, the total capacity of electricity generation (measured in GW) may need to more than double to be robust to all weather conditions. In some outer most circumstances, for example if there was very strong electrification of energy demand and a high level of dependence on intermittent electricity generation, then the capacity of electricity generation could need to triple. The Government therefore anticipates a substantial amount of new generation will be needed."

The TASC report argues that a basic assessment of electricity demand up to 2050 was not carried out before the final NPS was published. This was admitted by the Government in October 2009. Nor was an assessment made of the potential for energy efficiency, which the Government itself regards as more cost effective. It would have made more sense to assess the potential for the cheapest option – energy efficiency – before deciding how much energy we need to generate.



An Energy Efficiency Strategy was finally published in November 2012, after the National Policy Statement on Energy was approved by Parliament. The Ministerial Foreword to the Strategy says energy efficiency could save the equivalent to the energy generated by 22 power stations through socially cost effective investment in energy efficiency.

Thus, the policies and decisions regarding the need for new-supply side infrastructure were made before a full assessment had been carried out of the potential for demand-side measures that the government itself agreed constituted 'one over-arching simple truth: the cheapest energy we all have to pay for is the energy we do not use'.

Britain is consuming 17% less energy than it was in 1998, (1) and 15% less in 2014 than in 2000. (2) When Hinkley Point C was first mooted by the government in 2006, official projections were that today's electricity consumption levels would be more than 25% higher than they currently are. Despite our GDP having increased by 18% over the decade, demand for electricity has consistently fallen year on year, largely due to far more efficient usage. (3)

Installing energy efficiency could be £12 billion cheaper than the construction of Hinkley Point C according to consultants Utilitywise. The cost of implementing energy efficiency measures is estimated to be less than £6 billion, while the construction of the new nuclear plant Hinkley Point C is expected to cost around £18 billion. Utilitywise has called this cost an "unnecessary expense" and highlighted the opportunities to reduce energy consumption through efficiency.

Eddie 1st Aug 2016 <http://www.edie.net/news/6/Energy-efficiency-would-be-cheaper-than-Hinkley/30645/>

A crash programme to replace all the lights in the UK with LEDs could cut electricity bills, and cut peak electricity demand by about 8GW, a saving of about 15% of all power consumption.

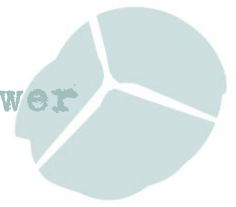
Ecologist 8th June 2016

http://www.theecologist.org/blogs_and_comments/commentators/2987760/the_urgent_case_for_an_mass_switch_to_led_lighting.html

In deciding when to review part of a national policy statement the Secretary of State must consider whether there has been a significant change in circumstances. If there has been a significant change in circumstances on which the policy regarding the need for new nuclear power stations was based; and if those changes were not anticipated at the time then the policy should be reviewed.

TASC argues that the data upon which the original policy was based has changed so fundamentally over the last few years that a review of the NPS as expressed in EN1 is obligatory under Section 6 of the 2008 Planning Act. All government targets can be met without the nuclear component and TASC urges the Secretary of State to re-examine the policy and amend it to remove controversial, costly, dangerous and politically toxic nuclear power from the mix.

EN-1 was presented to Parliament in July 2011. It was based on an analysis of the evidence outlining different 'pathways' to 2050 published by DECC in 2010. But now circumstances have



changed significantly. TASC has drawn up a number of pathways, using the very latest 2014 DECC evidence. These showed how ‘demand-side-led’ pathways *more successfully* achieve government policy objectives than all the government pathways, all of which involved more nuclear power stations.

In May 2011 DECC told the House of Lords Science and Technology Committee that it is possible to generate a pathway that does not use nuclear, but it is not desirable. TASC says the evidence it presents using the 2014 pathways, shows exactly the opposite – i.e. that pathways using new nuclear power will actually hamper the achievement of government energy policy objectives:

Not even the 4 latest government pathways (printed in the Carbon Plan in December 2011) demonstrate anything approaching a doubling of consumption by 2050.

Cost effectiveness is repeatedly stated as an objective of government policy. The TASC pathways would save every person in the UK money every year and the total savings to the economy are very large indeed. A non-nuclear, more demand-side-led energy policy is a money saving policy and more successfully achieves this government energy policy objective.

EN-1 para 3.3.4 states that ‘nuclear power is a proven technology that is able to provide continuous low carbon generation which will help to reduce the UK’s dependence on imports of fossil fuels. TASC’s pathways require less imported fossil fuels than the Government’s pathways.

The potential for energy saving – seen as an important contribution to energy security - was not fully assessed by the Government until November 2012 when its Energy Efficiency strategy was published, after EN-1 had been presented to, and approved by, Parliament in June/July 2011. TASC’s pathways lead to greater energy savings than the government’s pathways which all involve new nuclear power.

TASC’s pathways equally successfully achieve the government’s energy policy objective of ensuring a diversity of supply sources, and in some cases more successfully, than do policies involving a nuclear component.

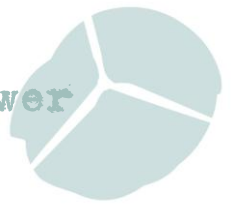
DECC told the House of Lords that any pathway without nuclear tends to need significant effort on balancing—that means storage, interconnection, demand shifting, and a requirement for backup generating capacity. In fact TASC’s pathways achieve the vital policy objective of balancing the supply of electricity at peak times and during 5 consecutive very cold and windless days more successfully than the Government’s pathways.

All TASC’s pathways would cost the country less than any of the government pathways.

TASC’s pathways achieve reductions in CO₂ emissions more successfully than the Government’s pathways.

TASC concludes that the case for a review of EN-1 is unanswerable.

1. Guardian 15th Aug 2016 <https://www.theguardian.com/business/economics-blog/2016/aug/15/uk-green-energy-sector-needs-nurturing-hinkley-point-nuclear>



2. **Edie 31st August 2016** <http://www.edie.net/news/6/UK-plays-leading-role-as-European-Union-hits-energy-efficiency-target-six-years-early/>
3. **Times 30th July 2016** <http://www.thetimes.co.uk/edition/comment/hinkley-and-the-hunt-for-an-energy-strategy-2gvb6jd6f>
4. **TASC 29th July 2016** <http://www.tasizewellc.org.uk/index.php/submissions-and-reports/150-report-from-together-against-sizewell-c-requires-new-secretary-of-state-to-review-nuclear-component-in-energy-policy>