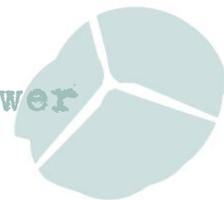


No.95 May 2017

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1. Wanted – an Energy Policy Fit for Purpose

The Government needs a new energy policy – that has been clear for a while – but now even Whitehall seems to agree. Nick Butler, writing in the *Financial Times*, (1) says the predominant view in Whitehall - from the Treasury to the business department which is now responsible for energy - is that current policies are mistaken and require radical reform. Those policies take no account of the structural fall in energy prices; the failure of new nuclear to live up to its promise; the changing pattern of demand; and, most important of all, the transformation in the global energy market being brought about by a range of new technologies. Each of those factors requires some adjustment in policy but taken together they justify a complete reset.

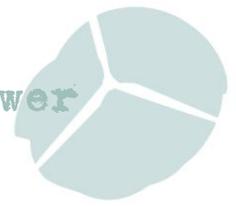
But given the preoccupation with Brexit, and a host of other problems in the government's in-tray, reforming energy policy is seen as too difficult. Instead Mrs May seems to have decided to blame the energy companies for charging "high" prices - and is threatening to impose some sort of price control. This is a dangerous path, according to Butler. Numerous reports, most recently from the Competition and Markets Authority, have concluded that although there is unnecessary complexity around pricing tariffs, there is no evidence of collusion or profiteering. From the outside the market looks competitive and would be even more so if consumers took the opportunities they have to switch suppliers.

The fact is that the lowest-cost sources are constrained by government policy which means prices are higher than they need to be. Power produced by onshore wind, for instance, would be by far the cheapest source of renewable supply, but government policy is against more onshore wind. Conversely government seems to have an obsession with building new nuclear power stations which is costing around twice the wholesale price for electricity.

A cap on household energy bills is set to be included in the Conservative manifesto, according to Work and Pensions Secretary Damian Green. He believes this could cut households bills by £100 per year. Price comparison company uSwitch said this would "*do more harm than good*". Previous market interventions had led to lower switching rates which then causes higher prices for consumers. A price cap would remove any incentive for energy companies to drive down prices and fight to keep their customers, entrenching the position of the incumbent big six. (2)

Ed Miliband, the former Labour leader, promised in the run-up to the last general election in 2015 that he would freeze people's energy bills, to the derision of Conservatives, who panned the idea as "shocking" and a return to 1970s-style interventionism. But Mr Green insisted that the Tory policy was different to the one proposed by Mr Miliband two years ago. "*The difference is we would have Ofgem setting the limit, it would be a cap, would be more flexible, it would reflect market conditions,*" he said. "*So the market would still have an influence. If the oil price fell again, consumers would benefit in the way that they wouldn't under Ed Miliband.*" (3)

In reality, the difference between the two policies is more about timing than the substance, according to the *Times*. The Competition and Markets Authority reported last year that there was a genuine problem with customers being overcharged, yet it backed away from radical notions such as price caps or breaking up the big six energy companies. The caution may be infuriating but it's essentially correct. Price caps cause shortages. They did in California in 2000, when producers chose to ration



supply rather than expand production. The same would happen in Britain, with a lack of replacement capacity for coal-fired power stations. Price controls will act only in the short term, if at all, while deterring investment. That would mean higher prices or energy rationing in the long term. Consumers will not benefit from government intervention like this; they rarely do. (4)

Energy companies have partly blamed green initiatives from the government for the rise in their bills in recent years. Mr Conn said that British Gas's average dual-fuel bills had risen by just over 3% per annum since 2007, or in total by £273. *"Of this: energy costs have not risen; transmission, distribution and metering cost increases have been about £150; and environmental and social policy costs about £100,"* he said. *"Our profits have been flat to slightly falling. Increases have been because of the costs of changing the energy system and policy costs, not profiteering from suppliers."* (5) Mr Conn told the BBC that British Gas is making about £50 per year per customer in profit. If plans to cut bills by £100 came into force, British Gas *"would absolutely be losing money"*, he said. (6)

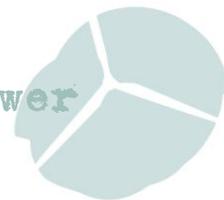
Octopus Energy, a small supplier, said the big six had brought the action upon themselves. *"For too long, they've been able to pass the costs of their gross inefficiency on to their customers,"* said Greg Jackson, founder of Octopus. The price cap also won the backing of Ovo Energy, which argued that the policy would force the Big Six companies to become more efficient. It would *"separate out well-run companies from badly run companies in a way competition just isn't doing"*. (7)

Co-leader of the Green Party Jonathan Bartley said the policy did not go far enough and he wanted more local choices of supplier for consumers. *"We don't just want the big six energy companies, we want 6,000,"* he said. *"We want a community renewable energy revolution. We want that control going down to local communities, so they can invest and get a return on their investment to have clean energy projects in their local area, have control of that energy supply and get that cheap, clean energy there."* (8)

Energy system not fit for purpose

Britain needs an energy system fit-for-purpose. A system that delivers cost effective low carbon energy for all customers from a smart and flexible energy system. What we have got instead is a system that tries to maintain pockets of the 'old' centralised system – such as nuclear power and capacity markets. World energy momentum (including investment) is towards smart flexible energy systems based on wind, solar, energy efficiency, demand side response, storage, interconnection – and probably, to a small extent, gas and a few other RE technologies.

The IGov project at Exeter University argues the current GB energy system is not fit for purpose: it is not allowing new ideas and new ways of doing things to come through – because the value in the energy system maintains the old system. IGov categorically disagree that investment in Hinkley Point C (HPC) or the development of the capacity market has been successful, or helpful, for affordable energy or for securing industrial opportunities. It remains shameful that Britain has the level of fuel poverty that it does. This is to do with a failure of governance. It would be far better for Britain, for jobs, for appropriate use of public monies or additional costs within the electricity bill - if the 35 year HPC costs to be paid for by customer bills - were spent on GB building infrastructure – in particular targeting the fuel poor.



According to BEIS's own figures, HPC, is extraordinarily expensive but almost more importantly, it undermines the move to a smart and flexible energy system. HPC is a very large electricity power plant which has to be operated in an inflexible way and this will have a negative impact on GB's transformation to flexible system operation. Moreover, as RE pays off its subsidy, it becomes virtually free thereby bringing down the average cost of electricity – as is occurring in those (competitor) countries with high proportions of RE. This is not the case with nuclear power, which is proportionately a high cost dimension of future electricity prices. (9)

Renewable Targets

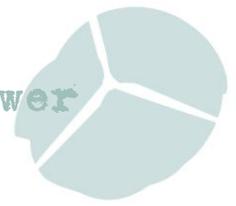
Britain is even preparing to scrap the EU's renewable energy targets as part of a bonfire of red tape after Brexit. The UK is currently committed to getting 15% of all energy from renewable sources such as wind and solar by 2020. Ministers have long been critical of the targets because they exclude nuclear power, carbon capture or gains from energy efficiency. The UK is currently on course to miss the target and incur millions of pounds in fines from the European Union. (10)

The Government's Clean Growth Plan – also referred to as the Emissions Reduction Plan – which will set out how it intends to meet the fifth carbon budget, which seeks to limit the UK's annual emissions to 57% below 1990 levels by the year 2032 looks set to be delayed again by the General Election. It was first scheduled to be published in 2016 but was postponed due to delays caused by the Brexit vote. Appearing before the Business, Energy and Industrial Strategy (BEIS) Committee on 19th April, Climate Minister Nick Hurd said work to deliver the Plan is “well-advanced”, but was unable to provide any certainty on whether it will be released before or after the election. (11)

Another way of reducing costs to consumers

Onshore wind is now cheap enough to deliver power to UK consumers without subsidy, according to a report released by management consultancy Baringa Partners. Commissioned by Scottish Renewables, the report finds the government could deliver 1GW of new onshore wind capacity at no additional cost to consumers above the wholesale cost of power. The findings mean the cost of decarbonising the UK energy system could be cut significantly, saving consumers money on their energy bills in the process. However, realising the promised savings depends on onshore wind being given access to the energy market. It is currently barred from Contract for Difference (CfD) auctions, where developers bid for 15-year price support contracts that give them a guaranteed price for the power they generate. (12)

Ministers could let onshore wind bid in a new contracts for difference (CfD) round one, without contradicting its previous pledges to end all new subsidies, according to Scottish Renewables. The Baringa Partners' report says 1GW of extra onshore wind capacity could be delivered at a highly competitive price of £49.40 per MWh. Baringa Partners' said “dramatic reductions” in cost around the world in renewables and storage technology were a “game changer.” Earlier this month, the Conservative thinktank bright blue published a survey, which claimed the majority of Tory voters backed onshore wind. Bright Blue said “*an unsubsidised fixed-price contract could now be offered to new onshore wind projects, which would be set at the current wholesale price. This would enable us to meet our carbon budgets in the most cost-effective way.*” (13)



Conservative opposition to windfarms means we could be missing out on one of the cheapest sources of electricity, according to Adair Turner, chair of the Energy Transitions Commission - a Shell-funded industry group. Lord Turner said a report by the commission found that the cost of wind power had fallen by 60% in the past five years. The analysis predicted that by 2040, wind and solar would account for 45% of the global power mix, with hydro and nuclear making up another 35%. The group said that by 2035, wind and solar could provide 98% of power in developed countries such as Germany and the UK, with gas power stations or batteries providing backup. Nuclear would not grow its share because of cost, while progress on carbon capture and storage of emissions from coal and gas power stations has been "too slow". (14) Lord Turner said he thought the UK government should only go ahead with new nuclear plans beyond those already established for Hinkley point "if we see cost reductions". (15)

Subsidy-free offshore wind in prospect

Meanwhile a German auction has received the lowest-ever bid for an offshore wind power project in the North and Baltic Seas. The auction fetched an average bid of €44 per megawatt hour and one bid of zero euros, following a general trend of lower prices in similar auctions in Denmark and the Netherlands. In Germany, the bids are on top of the wholesale power price. As a result, a bid of zero euros will receive only the wholesale power price. In Denmark and the Netherlands, bids are an all-in amount, which comprises the wholesale power price, plus a "sliding tariff" that tops up the difference to the bid amount. In all three countries, successful bidders will receive a free onshore and offshore grid connection and connecting sub-sea cable. So as a result, a bid of zero euros, as in Germany, is not exactly unsubsidised. That said, it's good to keep in mind that offshore wind projects take a while to build: last week's German auction was for projects to be completed by 2025 at the latest. (16)

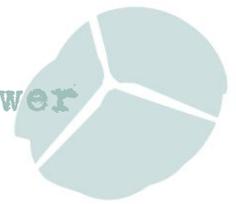
Greenpeace said: "*The UK government should take note of other countries who are benefiting from this booming offshore technology and jump on board with both feet while we are still leaders in the field.*" (17)

Four German projects were approved with a total capacity of 1,490 megawatts. One 900 megawatt project will be built without any subsidy at all. The three other parks, producing some 600 megawatts, will on average receive a subsidy of 0.44 cents per kilowatt hour fed into the grid - much lower than current subsidies for solar plants and wind turbines on land. (18)

The FT said this news is likely to raise further questions about the cost of Hinkley Point C. The government has promised it more than twice the current UK wholesale power price for its electricity for 35 years. (19)

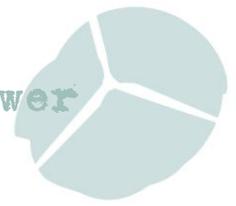
Unsubsidised Renewables

Unsubsidised renewables have become the cheapest source of new power — by far — in more and more countries, according to a new report from the United Nations and Bloomberg New Energy Finance (BNEF). In just one year, the cost of solar generation worldwide dropped on average 17%, the report found. The average costs for onshore wind dropped 18% last year, while those for offshore wind fell a whopping 28%.



The result is “more bang for the buck,” as the U.N. and BNEF put it. Last year saw 138.5 gigawatts of new renewable capacity. That not only beat the 2015 record of 127.5 GW, but it was built with a total investment that was 23 percent lower than in 2015. (20)

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1. FT 17th April 2017 <https://www.ft.com/content/18b01fdc-4081-36dd-8990-c999a44e89bd>
 2. BBC 23rd April 2017 <http://www.bbc.co.uk/news/uk-politics-39685106> and Times 24th April 2017 <https://www.thetimes.co.uk/edition/news/energy-price-cap-will-kill-competition-industry-says-nzhgkj6xp>
 3. FT 23rd April 2017 <https://www.ft.com/content/d6f949e2-280b-11e7-bc4b-5528796fe35c>
 4. Times 25th April 2017 <https://www.thetimes.co.uk/edition/comment/power-play-xmtxb258q>
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 6. BBC 25th April 2017 <http://www.bbc.co.uk/news/business-39702221>
 7. Times 26th April 2017 <https://www.thetimes.co.uk/edition/business/big-six-need-shock-of-a-price-cap-says-ovo-boss-vfj38w9f0>
 8. BBC 23rd April 2017 <http://www.bbc.co.uk/news/uk-politics-39685106>
 9. Submission to the Building Our Industrial Strategy Green Paper Consultation, IGov 12th April 2017 <http://projects.exeter.ac.uk/igov/wp-content/uploads/2017/04/Exeter-EPG-Submission-to-Industrial-Strategy-April-2017.pdf>
 10. Telegraph 14th April 2016 <http://www.telegraph.co.uk/news/2017/04/14/britain-preparing-scrap-eu-green-energy-targets-part-bonfire/>
 11. Edie 19th April 2017 <https://www.edie.net/news/11/UK-Clean-Growth-Plan-delayed-after-snap-general-election-announcement/>
 12. Business Green 13th April 2017 <http://www.businessgreen.com/bg/news/3008400/report-onshore-wind-now-so-cheap-it-could-go-subsidy-free>
 13. Utility Week 13th April 2017 <http://utilityweek.co.uk/news/Scottish-Renewables-calls-to-let-onshore-wind-bid-again-for-CfD/1300612>
 14. Guardian 25th April 2017 <https://www.theguardian.com/environment/2017/apr/25/uk-windfarm-subsidies-ban-cheap-energy-electricity>
 15. Telegraph 25th April 2017 <http://www.telegraph.co.uk/business/2017/04/25/business-state-collaboration-crucial-hit-carbon-reduction-targets/>
 16. Renew Economy 19th April 2017 <http://reneweconomy.com.au/offshore-wind-costs-maintain-falling-trend-germany-denmark-holland-10666/>
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 18. Deutsche Welle 14th April 2017 <http://www.dw.com/en/german-offshore-wind-park-to-be-built-without-subsidies/a-38430493>
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2. Wanted – a Smarter Power System

The UK's energy networks are not ready for the surge in electric vehicles (EVs) and solar panels that is coming within the next few years, according to a report from the Green Alliance. (1) The UK could suffer from an overloaded grid at peak times unless rapid action is taken to design a smarter power system. The report claims that the UK's energy system isn't prepared for the growing number of consumers choosing to buy EVs and solar panels. (2)

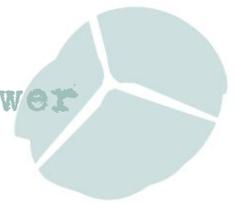
The Green Alliance says 2020 could be a tipping point when the Government will “lose the ability” to control the speed of small-scale energy deployment, as subsidies will no longer be needed.

“Politicians are arguing over whether or not to subsidise renewables without seeing how technology has changed the big picture. They believe that they hold the purse strings. But, within the next five years, the government will lose the ability to constrain small scale energy technologies by limiting subsidy because none will be needed. We are entering a new era where the consumer really can take control,” the report states. (3)

Network operators want people to use smart chargers, which can defer when cars are topped up, but most of the 12,000-plus charging points in the UK are “dumb”, with smart technology largely only used in pilot projects. A positive intervention could enable EV batteries to store enough energy to keep the UK's lights on for seven hours at a time by 2025, the report suggests, virtually eliminating blackouts. It also claims that distributed energy could save customers more than £1.6bn a year.

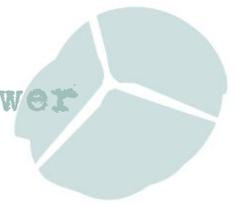
Unmanaged EV charging could lead to as few as six closely located vehicles charging together at peak time disrupting the local power supply, according to the study, which also claims that one in five of the UK's local grids are currently unable to accept distributed energy like solar PV. The Alliance puts forward several recommendations which it believes the Government should implement to ensure small-scale energy is well integrated, including; the creation of a new, independent system designer; and a shift from Distribution network operators (DNOs) to distribution system operators (DSOs). Disruptive technologies should be enabled to provide system flexibility, the report contends, while automation and aggregators ought to be adopted to make more flexible “time of use” tariffs attractive to consumers. The report suggests the UK could follow the example of California, which last year began to create EV charging infrastructure that support the grid, by awarding demand response contracts to an EV charging provider. (4)

The report says the combination of solar and household batteries could result in houses being able to supply their own electricity independently for months at a time by 2025. While 850,000 homes in the UK have solar panels, few have installed batteries – but that could change with products launched by E.ON. It will begin selling battery and solar packages from £7,500, arguing the combination of the two would elevate solar “to the next level”. The Green Alliance report was endorsed by E.ON:



“We’ve adapted our business and now we believe the way the system is governed needs to adapt too. That’s why we welcome this report from the Green Alliance and applaud them in not only asking the right question but also in coming up with answers that point us in the right direction. Put simply, in the coming years customers will increasingly take control of their own energy generation blurring the lines between consumer, generator and supplier. The benefits of this change, if handled correctly, could be huge for both customers and the country. Ultimately, the transition to a more decentralised energy system should be grasped as an opportunity, and not be placed in the too difficult to do pile.”

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1. People Power: How Consumer Choice is Changing the UK Energy System, Green Alliance, April 2017
http://www.green-alliance.org.uk/resources/People_power_how_consumer_choice_is_changing_UK_energy_system.pdf
 2. Guardian 20th Apr 2017 <https://www.theguardian.com/business/2017/apr/20/uk-unprepared-for-surge-in-electric-car-use-thinktank-warns>
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 4. Edie 20th April 2017 <https://www.edie.net/news/6/Green-Alliance--UK-energy-system-unprepared-for-EV-and-solar-growth/>



3. Island Energy

Connecting Scotland's islands to the GB electricity grid could spark a £2.5 billion British investment boom, according to Neil Davidson, an independent PR and Public Affairs Consultant. After years of waiting it could finally happen – no matter what party ends up in power in June. Scotland's island groups – the Western Isles, Orkney and Shetland – are some of the windiest places not just in Europe, but in the world. Together they are host to nearly a gigawatt of fully consented but as yet unbuilt wind farms, owned by the local community and generators including SSE and EDF. With capacity factors up to 50%, these farms could be up and running by the early 2020s, delivering green energy cheaper, faster and with a lot more certainty than the proposed Cardiff Bay lagoon or the mega-expensive Hinkley Point C.

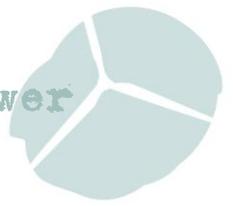
Together these projects could support up to 2,000 UK jobs in the period 2018-2022 and bring up to £725 million (gross value added) in economic benefit for the island economies.

What is holding these islands back is a lack of grid infrastructure – namely the long radial links to connect them to the GB mainland, who pays for them and how. Unlike other bits of strategic national infrastructure, such as railway lines and roads which are paid for by everyone, the cost of these grid links – over £1.3 billion – falls wholly on the wind farm operators.

UK business secretary Greg Clark visited Stornoway in the Western Isles in mid-April to meet a coalition of interests – including generators, local councils and the Scottish Government to hear their views. Mr Clark heard that after more than a decade of close co-operation and joint working between UK and Scottish governments, developers, islands councils, Ofgem and SSE, a workable solution has been identified – the categorisation of remote island wind as a separate technology, and the ability to compete for a Contract for Difference (CfD) in a forthcoming electricity auction round. This is nothing new. As long ago as 2013 the UK Government asserted that wind projects on the Scottish islands “*constitutes a separate class of renewable generation that warrants separate treatment and potentially a different level of support from other onshore projects*”. (1)

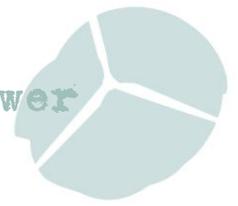
Iain Maciver, estate manager at Stornoway Trust, said his conversations with Clark had convinced him the minister was preparing to offer financial support for non-mainland windfarms. The minister had “*seemed very positive*” about the idea of allowing them to compete for subsidies, he said. The business department launched a consultation last November on whether it should make an exemption to its 2015 manifesto commitment to “*end any new public subsidy*” for windfarms. (2)

- Meanwhile the island of Eigg – which lies 10 miles off the Scottish mainland - is the first community in the world to create clean electricity for the whole island all day long. Owned by a community trust, Eigg – which is regarded as one of the most scenic islands in the Hebrides - creates energy from three different sources: the sun, the wind, and waves. In 2008, Eigg switched from a loud diesel generator to clean energy, which changed the living environment for the 100 people in the community. They used to have two huge generators that would power the island for a couple of hours a day. With the new switch, the clean energy runs for 24 hours, seven days a week. The electricity is not



connected to any mainland power lines. The clean energy makes up about 90 to 95 per cent of the community's energy. (3)

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 2. Guardian 13th April 2017 <https://www.theguardian.com/environment/2017/apr/13/scottish-islands-hold-out-for-government-u-turn-on-windfarm-subsidies>
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4. Balancing Green Energy with New Grid Connections

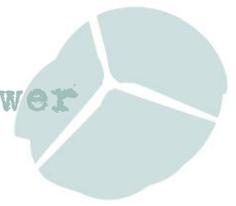
The UK National Infrastructure Commission's report '*Smart Power*' says a mix of storage, smart grid demand management and supergrid interconnectors could save UK consumers up to £8bn per year by 2030. (1)

We learnt in [nuClear News No.94](#) that a battery storage revolution is taking off. Over the last two years, battery costs have fallen 40%, with further falls to come as economies of scale take hold. Rapid growth in the market for battery storage, forecast by Goldman Sachs to increase by a thousand-fold from \$258m (£210m) last year to \$258bn in 2025, should in turn remove a number of the key economic constraints on renewable forms of energy. The largest portfolio of energy storage in the UK is set to be up and running by the end of 2018, as renewable energy provider Anesco has announced proposals to bring 185MW of storage onto the grid. The system is expected to play a significant role in balancing the grid, providing a sub-second response. (2)

If all the grid connections planned from the UK to other countries get built, they could deliver enough electricity to power more than 15 million British homes in the depths of winter. There are proposals for a dozen new links, snaking out under the seas around Britain to its European neighbours, helping to transform the electricity system and helping to balance supply and demand and avoid blackouts. The multibillion-pound plans for a dozen new projects that are now either under way or under consideration could more than quadruple capacity. Transporting an extra 15.2 gigawatts of power, they would link the UK for the first time to countries including Germany, Norway and Iceland.

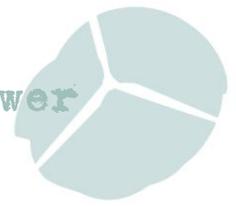
However, doubts remain over quite how many of the 15.2GW of projects will go ahead. The government said that it supports "*at least 9GW of additional interconnection capacity*" and about half of that has made it past a final investment decision. The business case for interconnectors relies on the opportunity for trading between markets with different prices. The more connected Europe becomes, the more prices will converge. But just as Britain seeks to build new physical links to Europe, it is preparing to sever political ties. It is not yet clear whether the UK will remain in Europe's Internal Energy Market (IEM), which enables smooth, tariff-free cross-border trading. Professor Michael Grubb, an energy specialist at University College London, has warned that leaving the market could have a serious effect on investment. (3)

Installing a 1,400MW electrical interconnector between Scotland and Norway will provide cheaper electricity to both countries and the rest of the UK, according to the finance director of the Swedish state-owned energy utility – Vattenfall. It would help "*balance out each market internally*" at a cheaper cost than batteries or demand response. "*Scandinavia's large hydro-electric storage capacity would complement the UK energy mix, with its relatively high share of wind and solar generation, because excess UK power could be exported when water levels drop, and hydropower also acts as a great energy supply when renewable generation dips in the British energy market.*" (4) The developers – who comprise Vattenfall, and three Norwegian hydro power generators – plan to build a £1.3 billion power cable between Boddam in Aberdeenshire and Eidfjord in Norway. The consortium – called North Connect and which is registered in Norway – aims to



link hydro power from Norway with wind energy from Scotland and is scheduled to start operating from 2022. (5)

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1. Smart Power, NIC March 2016 <https://www.nic.org.uk/wp-content/uploads/Smart-Power.pdf>
 2. Edie 10th April 2017 <https://www.edie.net/news/6/Largest-UK-energy-storage-portfolio-to-come-online-in-2018/>
 3. Times 15th April 2017 <https://www.thetimes.co.uk/edition/business/keeping-uk-connected-to-europe-just-as-it-leaves-wfzhj55jr>
 4. Scottish Energy News 13th April 2017 <http://www.scottishenergynews.com/swedish-utility-chief-claims-norways-hydro-power-inter-connector-will-cut-scottish-energy-bills/>
 5. Scottish Energy News 22nd June 2016 <http://www.scottishenergynews.com/scandinavian-energy-consortium-to-build-1-3bn-international-connector-between-scotland-and-norway/>



5. Nuclear Power – a false promise

Nuclear power was originally sold on a lie, writes Dave Elliott. While we were being told it would make electricity '*too cheap to meter*', insiders already knew it cost at least 50% more than conventional generation. Since then nuclear costs have only risen, while renewable energy prices are on a steep decline. And now the nuclear behemoths are crumbling. Dave's new book '*Nuclear Power: past, present and future*' for the Institute of Physics looks at the long turgid nuclear story in detail and includes full references.

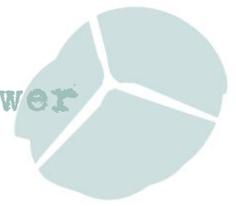
A classified internal US State Department Intelligence Report, circulated in January 1954, '*Economic Implications of Nuclear Power in Foreign Countries*', warned that the introduction of nuclear power would " ... *not usher in a new era of plenty and rapid economic development as is commonly believed. Nuclear power plants may cost twice as much to operate and as much as 50 percent more to build and equip than conventional thermal plants.*"

It wasn't just accidents that might be a problem. The poor economics of nuclear gradually became more apparent- as cheaper alternatives began to emerge. It turned out to be too expensive.

Given the problems some look to new 'Generation IV' designs. They are basically new versions of the old designs looked at in the 1950s, 60s and 70s in the USA and elsewhere - and abandoned as unviable, or after accidents. They include fast neutron plutonium breeders, High Temperature Reactors (HTRs) and Molten Salt Reactors (MSR) possibly using thorium as a fuel and possibly also in scaled down Small Modular Reactor (SMR) format. The message from the past is not promising.

1. Ecologist 12th April 2017

http://www.theecologist.org/News/news_analysis/2988856/false_promise_nuclear_power_past_present_and_no_future.html



6. Brexit & Radwaste

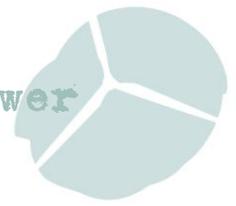
As Britain heads towards a hard Brexit and Brexatom - quitting Euratom - thanks to a freedom of information request, the Gizmodo website has obtained details of some of the internal worries of the Nuclear Decommissioning Authority (NDA). The document, dated 13th July 2016, runs through some of the biggest strategic challenges created by us leaving the EU.

An NDA subsidiary, Radioactive Waste Management Ltd (RWM) is engaged in research on deep geological disposal. Perhaps unsurprisingly, the EU is fronting a lot of the research cash. For example, one project - DOPAS - The Full-Scale Demonstration of Plugs and Seals, studied how to plug and seal radioactive waste. In this case Europe paid €8,700,000 - half the cost of doing it. It has also recently paid for a number of other similar projects. The document goes on to reveal that RWM is planning to seek European cash for future projects with similarly impenetrable acronyms. The best one is Europe putting an expected contribution of €3-4m into "DISCO" - a project studying the Dissolution of Spent Fuel in Waste Containers. Though it isn't explicitly spelled out in the document, the implication is obvious: If our relationship with Europe is currently up in the air - so is the ability to pay for these important research projects.

Perhaps the biggest danger though - reading between the lines - is the risks associated with Britain becoming more hostile to immigration. *"UK universities have a multinational community",* the document explains, *"UK universities have been very successful in attracting the best talent (students and academic staff) from across the world, which in turn leads additional funding, better teaching and higher quality research. An inability to attract non-UK EU nationals would have a negative impact on UK universities and indirectly on the NDA estate R&D programme."*

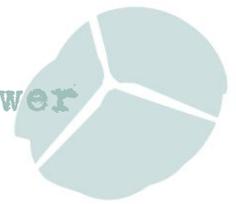
Ultimately then, it appears that Brexit is going to create headaches when it comes to getting rid of radioactive waste.

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1. Gizmodo 19th April 2017 <http://www.gizmodo.co.uk/2017/04/exclusive-brexit-could-make-cleaning-up-britains-nuclear-waste-harder/>



7. Hinkley Notes

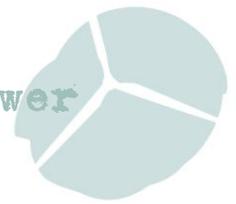
- The government has been slammed by the Information Commissioner's Office over a number of "unjustifiable" delays in publishing details of contracts for Hinkley Point C. Whitehall officials were guilty of "egregious" and unjustifiable delays before revealing details of government contracts for Hinkley Point C awarded to a company facing a potential conflict of interest. Leigh Fisher, a management consultancy, was awarded a £1.2 million contract by the Department of Energy and Climate Change for its advice on Hinkley Point, despite the British division of Jacobs Engineering, an American group that also owns Leigh Fisher, working for EDF on the project. The advice from Leigh Fisher helped the government to agree the 35-year subsidy deal with EDF. Details of the arrangement with Leigh Fisher, which has concerned MPs including Iain Wright, chairman of the Commons' business, energy and industrial strategy select committee, emerged in November after *The Times* obtained redacted details of the tender documents under the Freedom of Information Act. However, it took the business department almost six months to release information after it was requested. Public bodies typically are required to respond to FOI requests within 20 working days. The department also heavily redacted details of separate Hinkley Point contracts awarded to KPMG and Lazard, including passages regarding potential conflicts of interests. KPMG was paid about £4.4 million for its work by the department and Lazard £2.6 million. (1)
- EDF Energy has confirmed that discussions are ongoing in a dispute over pay involving ground workers at Hinkley Point C. (2) EDF said on 24th April it was still in dialogue with trade unions after payment offers were labelled "derisory" and "unacceptable" in a Unite press release. The row over bonus pay is threatening to lead to an industrial dispute among construction workers on the site. A consultative ballot is to be held among 700 members of Unite and GMB, which could lead to a vote on industrial action. (3)
- The news of a possible strike comes days after crew members had to be rescued from a Hinkley Point ship as it began to sink in the Bristol Channel. The three crew members of a former military landing craft had to be rescued following a mayday call in the Bristol Channel. The vessel, which takes building materials to the Hinkley Point C power station under construction, had started to take on water. A crew member was airlifted to hospital in Cardiff suffering from hypothermia after three lifeboats and a helicopter were scrambled to the scene. The craft finally beached in the mouth of the River Parrett. (4)
- Work is gathering pace on Hinkley Point C says the FT. (5) The once grassy valley, carrying the Holford stream towards the Bristol Channel, is being filled with earth and rubble excavated from the adjacent construction site. Last month concrete pouring started on the first permanent structures: an 8km network of tunnels that will carry piping and cables around the site. *The Guardian* says the site looks more like Mordor, from Lord of the Rings, a scarred landscape and hive of activity driven with a single purpose: ensuring these reactors do not repeat the delays and overspends at Flamanville and Olkiluoto. (6) Vincent de Rivaz, head of EDF in the UK, says work is on schedule. Yet as one set of hurdles is cleared, another is looming. French nuclear



regulators are investigating potential safety problems with steel components destined for Hinkley from a foundry suspected of falsifying quality-assurance documents. The probe involves Areva, the French nuclear reactor manufacturer and close partner of EDF, and has already caused temporary shutdowns of several existing reactors in France to check for faults. Only the hopelessly naive would believe EDF's claims that Hinkley will start generating electricity by 2025, says Geoff Ho, writing in *The Express*. The likelihood of it being delivered on time and on budget is remote. Unions are already threatening to go on strike over bonus payments, and there are the unresolved safety concerns about the EPR design. Given Britain's less than glorious history of infrastructure projects being delivered late and massively over budget, he cannot see Hinkley Point C bucking the trend. (7)

- A group of activists has filed a legal challenge with the French prime minister's office against the extension of EDF's licence for construction of the Flamanville nuclear reactor in northern France. The move by Greenpeace and other anti-nuclear groups is in response to safety concerns over the Flamanville reactor and is a precursor to elevation of their challenge to the State Council, the country's highest administrative court. The lobby groups said in a statement that the licence, issued in 2007 and renewed this year, should not have been granted because EDF and reactor supplier Areva were aware of technical shortcomings at Areva's Creusot Forge nuclear foundry since 2005. In 2014 Areva discovered that the lid of the Flamanville reactor vessel manufactured by Creusot Forge showed abnormally high carbon concentrations, which weaken its steel. (8)

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1. Times 24th April 2017 <https://www.thetimes.co.uk/edition/business/officials-rebuked-over-hinkley-contract-delays-865vv6wkj>
 2. Somerset Live 25th April 2017 <http://www.somersetlive.co.uk/hinkley-point-edf-energy-decline-to-rule-out-strike-action-in-dispute-over-pay/story-30290590-detail/story.html>
 3. Western Daily Press 22nd April 2017 <http://www.somersetlive.co.uk/hinkley-point-power-station-groundworks-staff-threaten-strike-action-due-to-derisory-payment-offe/story-30282993-detail/story.html>
 4. Burnham & Highbridge Weekly News 16th April 2017 http://www.burnhamandhighbridgeweeklynnews.co.uk/news/15227670.Dramatic_rescue_as_Hinkley_Point_C_craft_takes_on_water_in_Bristol_Channel/
 5. FT 21st April 2017 <https://www.ft.com/content/76e1c8a2-2678-11e7-8691-d5f7e0cd0a16>
 6. Guardian 21st April 2017 <https://www.theguardian.com/business/2017/apr/21/hinkley-point-c-edf-somerset-nuclear-unions-brexite>
 7. Express 23rd April 2017 <http://www.express.co.uk/comment/expresscomment/795177/hinkley-power-station-nuclear-edf-late-over-budget-comment>
 8. Reuters 19th April 2017 <http://af.reuters.com/article/energyOilNews/idAFL8N1HR1N3>



8. Local Authorities and Energy – Building a Low Carbon Energy System from the Grassroots Up

In October 2016, the No 2 Nuclear Power website published a briefing entitled “*Local Authorities and Energy: Building a Fairer Low Carbon Energy System*”:

<http://www.no2nuclearpower.org.uk/news/campaign-update/local-authorities-and-energy-building-a-fairer-low-carbon-energy-system/>

A version of this was also published by the Nuclear Free Local Authorities:

http://www.nuclearpolicy.info/wp/wp-content/uploads/2016/11/A265-_NB152_-Decentralised-energy-best-practice.pdf

The October report had built on earlier work commissioned by Claudia Beamish MSP entitled: “*The role of Local Authority Energy Companies and Community Energy Co-operatives in Building a Low Carbon Energy System for Scotland*” published on the Microgen Scotland website in July 2016:

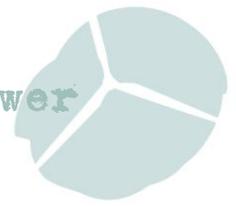
<http://www.microgenscotland.org.uk/wp/wp-content/uploads/2016/07/LocalAuthorityEnergy.pdf>

Here we pull together and update this earlier work. It will look at:

- The climate context;
- The global movement to establish towns and cities committed to 100% renewable energy;
- The work of the Association for Public Service Excellence (APSE) in co-ordinating local authority collaboration to maximise the opportunities for working together on the green energy agenda;
- UK Local Authority renewable energy projects and how they can be financed;
- Some recent examples of Local Authority renewable energy projects;
- The establishment of Local Authority Energy Service Companies

Climate Context

Four years of current emissions would be enough to blow what’s left of the carbon budget for a good chance of keeping global temperature rise to 1.5°C. That’s the conclusion of analysis by Carbon Brief, which brings the Intergovernmental Panel on Climate Change’s (IPCC) carbon budgets up to date to include global CO₂ emissions in 2016. For a 66% chance of staying below 2°C we have an estimated 19 years left. (1)



According to an article in *Nature* barring unforeseen and transformative technological advancement, anthropogenic emissions need to peak within the next 10 years, to enable us to achieve a realistic pathways to meeting the Paris Agreement. (2)

It short this means all hands to the pump. It is not sufficient to wait for national governments to take action – we all need to play our part and maximise our effort over the next decade.

100% Renewables – a global movement

Local Authorities across the Globe are showing an increasing interest in energy. In June 2016 the Global Covenant of Mayors for Climate & Energy, which represents more than 7,100 cities, and more than 600 million people, agreed to work together in an unprecedented alliance to tackle climate change. Michael Bloomberg, Former Mayor of New York City, writing in the *Guardian*, said:

“One of the best steps national governments can take to fight climate change is to empower their cities with the tools and autonomy they need to act.” (3)

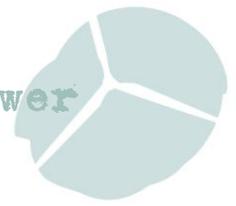
The Global Covenant Mission Statement says the cities participating in this initiative commit to targets that will eventually be more ambitious than those their respective national governments presented in Paris. (4)

There are now more than 25 cities and towns in the US committed to sourcing 100% of their power from renewables, including Salt Lake City and San Diego, after Madison in Wisconsin and Abita Springs in Louisiana both agreed in March 2017 to draw up plans to reach the target. Following respective city council votes, both cities have become the first within their states to commit to sourcing 100% renewable power, and joined the Sierra Club’s Ready for 100 campaign aimed at getting 100 US cities to commit to the ambitious target. (5) Ready for 100 is asking mayors, pastors, principals, civic and community leaders, parents, and students in cities large and small to commit to solutions that will help achieve 100% clean energy across the US by 2050.

Portland and Multnomah County in Oregon is the latest municipality to top commit to the 100% by 2050 target. The plan is to meet all electricity needs from renewable sources by 2035, and to transition away from all remaining dirty energy sources, primarily fossil fuels in the transportation sector, by 2050. (6)

Former New York City Mayor Michael Bloomberg and former Sierra Club Executive Director Carl Pope, have co-authored a book which will be published in the UK on 30th May 2017, called *Climate of Hope - How Cities, Businesses, and Citizens Can Save the Planet*. This conveys the authors’ belief that urban areas, local and state government, business, and individual action (including exercising the right to vote) can turn the tide in the fight against climate change. (7)

“It’s easy to be despondent about climate change,” Bloomberg and Pope write in the preface to their book. The difficulty of preventing the earth’s temperature from rising sounds enormous enough to make people give up and just hope for the best. *“We see it differently. Through our work with cities, businesses, and communities, we believe that -- without much help from [Central Governments] - we are now in a better position to stop climate change than ever before.”* Cities are getting the job done. Despite Government inaction, mayors and other municipal leaders are



moving full speed ahead with some of the most ambitious goals and actions to reduce carbon emissions and move us ever-closer to the achievable goal of 100% renewable energy.

Around the Globe, Paris, Sydney and Vancouver have all pledged to power their cities with 100% clean energy. An organisation called Renewable Cities aims to triple that number by 2020 (8) *"100% clean energy is the new standard for climate leadership,"* says Sierra Club Executive Director Michael Brune. *"Local leaders know that going all-in on clean energy will create jobs, boost their economies, and protect clean air, water and our climate."* Paris Mayor Anne Hidalgo, in nuclear France, said, *"Mayors of the world are ready for 100 percent renewable energy by 2050."* (9)

The Association for Public Service Excellence (APSE)

The Association for Public Service Excellence (APSE) has been developing a model for local government operating during an age of austerity which recognises the strategic advantages of a strong core of in-house services. In particular APSE Energy supports its members in keeping abreast of developments sweeping the energy sector, and argues that local authorities should take a leading role in shaping the transition to a low carbon local energy economy as large energy users, as investors in infrastructure via their planning and economic development roles, as organisations that private sector suppliers are keen to collaborate with and, crucially, as bodies with a democratic mandate to act positively on behalf of local people. (10)

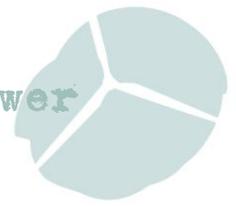
Energy provides a real area of opportunity for local authorities. The trailblazers are showing what councils can do, and there is no reason why others cannot follow in their footsteps. APSE Energy's vision is to tie together energy use, energy efficiency and renewables with the core values and aims of the local authority itself – promoting economic growth and tackling fuel poverty. With effective collaboration between a large number of local authorities APSE seeks to enable and facilitate the municipalisation of energy services. This means the public and community as well as private ownership and managerial control of local energy generation and supply networks and delivery of energy efficiency works.

UK Local Authority Renewable Energy Projects

In 2016 the UK Government effectively removed financial incentives for renewable projects. The Renewables Obligation does not now apply to solar farms of either above or below 5MW and whilst the Feed in Tariff regime does still technically apply, the rate is very low and combined with the capacity cap effectively means that this avenue to finance is also closed off. Consequently new projects have to proceed on a different basis, with more focus on what happens to the power generated and how this can enhance the business case.

Standard solar projects where an organisation like a local authority might build a solar farm and sell electricity to the grid may not currently achieve a high enough rate of return. But this doesn't mean that local authorities should give up - there are other options.

The first option for a local authority would be to undertake all of the preparatory work on a solar project and then wait for the price of solar panels to fall. Grid parity when solar PV costs no more than fossil fuel generated electricity is not far away. We can expect the cost of solar panels to have fallen sufficiently over the next couple of years to make new projects viable.



A second option might be to build a solar project now but to boost the financial return by maximising the income from or value of the electricity generated. This can be done by:

- creating a private wire to a nearby user or the council's own premises to allow the solar electricity to be sold at the retail price rather than the lower wholesale price it might achieve if it were sold to the Grid (or for the council to save the retail cost for every kWh it no longer has to buy from the Grid);
- entering into a sleeving operation to council premises elsewhere using the national grid – allowing the council to save the difference between the retail and wholesale price minus a fee for use of the Grid;
- using battery storage and selling power when it is most valuable at peak times via the National Grid or the Capacity Market, or simply allowing the council to use the electricity itself in the evening or when there is no sun;
- setting up an Energy Services Company (ESCO) and selling power at the retail price direct to domestic customers or local businesses or entering a white label deal with a pre-existing ESCO; A Green Power Purchase Agreement can also boost income. For instance council-owned Bristol Energy has a green plus tariff which sells electricity at a slightly higher price.

The easiest solution is for a council to use the power itself. It is then able to save paying, say 10p/kWh for each unit of power it consumes, rather than only receiving around 5p/kWh by selling it to the grid.

If it's not possible to use the power on site or to supply a user by way of a private wire cable which the authority owns, then solutions using the national grid have to be considered. The power could still be delivered to the local authority via the national grid using an arrangement known as sleeving. This simply entails the electricity being exported into the grid where it is generated and then taken out at the various offices and buildings that the council owns and operates in the area.

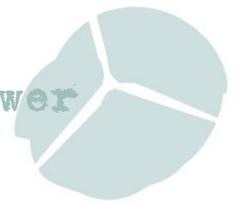
Is there a Winning Formula?

The feed-in tariff (FiT) is no longer enough on its own for projects to be viable. Projects which rely only on FiTs might only be able to achieve a return of perhaps 1%. Projects that incorporate some form of storage capacity might be able to boost this to a 5% return. But projects that use a private wire or use the electricity on-site might achieve up to 12%.

The winning formula, according to the Solar Trade Association, (11) is to reduce the cost of buying the solar PV panels (costs are continuing to fall); increase the price the electricity is sold at and add some luck and institutional drive in the council.

A Local Strategy

Despite the gains to be made over 70% of local authorities across the UK have no strategy in place to invest in solar. The lack of incentives from central government is seen by many as the



main barrier to deploying council solar, according to a survey carried out by LG Solar. The company sent Freedom of Information requests to 435 local authority bodies with a range of questions covering their solar strategies. Responses were received from 332, with 47% claiming reduced subsidies in recent years have left it difficult to invest in solar. The second most cited reason for councils failing to invest in future solar is the lack of capital to front investment. (12)

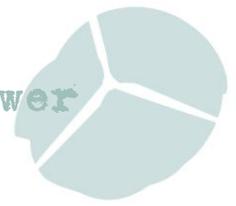
Nevertheless some local councils have been successful in developing new solar projects and plans despite diminishing subsidies. Local councils across the UK are emerging as one of the key actors in the large-scale solar market now that the Renewable Obligation Certificate (ROC) scheme finished in April 2017. Historically, council progress in identifying council-owned land and organising the necessary paperwork to take a site through to fully-discharged planning approval has been slow, and in many cases, either FiT rates had been reduced drastically by the time things were ready to break ground for the site build. Today however, with the subsidies largely over, this hurdle is no longer in play. And in the meantime, the cost of building solar farms is coming down in spite of the exchange rate deterioration post Brexit. As such, there is plenty of optimism that councils could emerge as the first real post-subsidy vehicle for new solar development. (13)

Local authorities also need to develop energy storage strategies, so they will not be left behind when this new technology takes off, according to Association for Public Sector Excellence's (APSE) associate Ray Noble. He said the price of energy storage systems will come down "faster than solar". Councils need to put in place the right strategy or work with government to produce the right networks to make certain it happens in their area. Noble said storage will change the face of the energy market beyond recognition. (14)

How can Local Authorities finance renewable projects?

How do you unlock the vault? Local Authorities potentially have access to billions of pounds, according to the Solar Trade Association including:

- Reserves – the public sector is hoarding billions according to Eric Pickles. Some projects will come to the fore, so an LA might decide it can get a better rate of return from, say, a solar park. Three different Local Authorities invested in the Swindon Solar Park (see below).
- Housing Revenue Account – could be used to fund solar on rooftops.
- Capital Projects – solar can be used to mop up unspent capital project funding
- Public Works Loan Board – long-term money at low interest rates. One authority borrowed at 2.7%. Most will be 3.5-4%. Lots of ways LA finance teams can play with how they pay the money back. (Probably the second best option)
- Bond Offers – (as in Swindon) – a long time since public sector projects used this type of finance. Swindon was done with Abundance. A partnership with the community. Minimum investment £5. (Probably third best option)
- Share Offer. There is a £10m share offer in London with a 4% rate of return imminent.



- Joint Venture – conventional deployment with a private sector company can reduce capital cost and reduce the interest payments. A JV with a solar company can reduce costs by cutting out the middle man.
- Commercial borrowing – why – unless it's really cheap?

There is a recent example of an LA pension Fund using funds to finance solar. The door is opening slowly. (15)

Recent examples which illustrate different ways Councils can make solar pay.

Forest Heath District Council

Forest Heath District Council in Suffolk has bought a solar farm using capital reserves - the Toggam Farm solar farm, in Lakenheath. The Council finalised the purchase of the 12.5MW site on 19 August 2016 for a fee of £14.5 million. The council says the solar farm, which began generating power in June, will bring in £300,000 in the first year from renewables subsidies, even after the capital outlay has been recouped. This is expected to rise to just over £700,000 per year after a decade, bringing in millions for the council over the 25 year project. The council turned to solar to make a better return on its investments. The Council is now looking to follow up on the purchase with plans to become a local energy provider. (16)

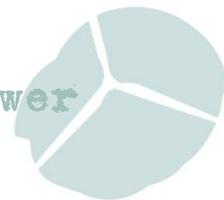
Havering London Borough Council

Havering London Borough Council has put forward plans to build two of its own solar farms – a 6MW farm on a former landfill site and a 9.5MW project on scrub land.

The council intends to fund the proposed solar parks using its own capital budget reserves. However, it is also looking at the potential to release a portion of the capital cost to the public to allow residents to invest directly in the solar parks alongside the council and receive a better, long-term, financial return than would be possible from normal bank or savings accounts. There would also be a community fund set up to maintain and improve the area for the benefit of local people. The Council has recently completed five rooftop installations on council-owned properties. In total nine of the council's buildings now have solar panels, generating more than 450kW of energy and saving the council over £2 million over the next 25 years through smaller energy bills and income from generating electricity. (17)

Swindon Borough Council

Swindon Borough Council is building a second solar farm funded by a unique council solar bond, which raised over £2.4 million from more than 800 investors in just six weeks. Following the success of its first investment offer, which raised £1.8 million from community investors to co-fund the Common Farm development at Wroughton, the council launched a second offer in November 2016. The bond offer closed on 23 December after selling out over a month early, with the remaining £3 million needed to meet construction costs of the Chapel Farm solar park being invested directly by Swindon Borough Council.



The second farm, with a 5MW capacity, is on a council-owned former landfill site at Blunsdon. The project is being developed by Public Power Solutions, a wholly owned company of the council.

The council plans to install 200MW of renewable capacity by 2020. Chapel Farm takes the current figure to 167MW – over 80% of the target. Profits from the solar farm are expected to make a contribution towards community initiatives while also funding a council manifesto pledge to build a sound barrier along the A419 dual carriageway. (18)

Hounslow London Borough Council

Hounslow Council says it was the first local authority to incorporate battery storage into a solar project after investing £2 million to install a 1.73MW array atop Western International Market (WIM). In the first year alone, the project was expected to reduce carbon emissions by 50% and earn the council £255,000 each year.

Charles Pipe, energy manager at Hounslow, said: *“While the Government’s dramatic cuts will impact solar deployment, there are still options available to local authorities. All energy installations must meet specific criteria and have as close to a seven-year payback as possible. Solar can meet this and more – offering immediate savings and the potential for more in the future. For our project at Hounslow, we expect to make several million in the next 20 years. It can and does work, councils simply need to understand that solar investment is no longer a risk.”* (19)

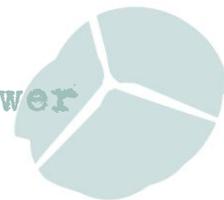
Bristol City Council

Bristol City Council has signed a Power Purchase Agreement (PPA) with a local sports stadium. Bristol Sport is set to benefit from significant savings on its energy bills after completing the deal with the Council to purchase energy generated from new solar panels installed on the West stand of the Ashton Gate Stadium. The partnership has seen the council fund the new 117kW solar installation as part of the stadium’s refurbishment which will produce clean energy to be sold to Bristol Sport at a reduced rate for use on site. In exchange, the council will gain revenue from supplying the power, alongside an income from the feed-in tariff for generating the electricity. The installation was carried out by EvoEnergy and is expected to generate around 95 MWh per year. Due to the stadium’s size and activities, all of the electricity generated from the rooftop system is expected to be used on site. (20)

Independent consultant and local authority expert Stephen Cirell says councils should be using PPA style schemes to increase solar deployment in response to government subsidy cuts. *“Power purchase agreements (PPAs) with commercial tenants of local authority owned buildings, or indeed the council simply using the electricity in the buildings it occupies itself is the answer,”* he said. (21)

Portsmouth City Council

Portsmouth City Council (PCC) has been rolling-out solar schemes worth up to £10 million with PV panels being installed on council owned buildings across the city between 2016 and 2020. The council hopes to deploy over 2MW each year. The interesting point, however, is that Portsmouth City Council is proposing to carry on, where many other authorities have called a halt to such work, due to the FiT rates plummeting. What the council has done is to recognise



that despite the business cases losing a large chunk of government subsidy, a good financial return can still be achieved by taking a different route. Most local authorities are large users of electricity and the prices they pay for it average around the 10 pence per kWh mark. So if solar PV can be fitted to those buildings that need the electricity and it can be used on site, the business case still stacks up. Instead of there being a payment of so many pence via a FIT, the council makes a saving on the electricity bill it would otherwise pay. (22)

West Sussex County Council

West Sussex County Council is to invest up to £3 million in the roll-out of solar across schools in the region in a scheme intended to create new revenue for the council and save the schools millions. Following a successful pilot in 2015, the local authority's Environmental & Community Services Select Committee approved an expanded programme to install solar PV systems in up to 52 additional schools in 2017/18. The original plans put forward by the ECSSC suggested between 38 to 48 schools however this could now increase, although they were unable to confirm an exact number. (23)

Neath Port Talbot Council

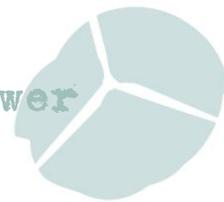
Thousands of new and existing homes are to be fitted with a range of low carbon technologies including integrated solar PV and battery storage systems as part of landmark funding agreement for the Swansea Bay area of Wales. UK and Welsh government ministers signed the Swansea Bay City Region (SBCR) deal on 20 March which secured £1.3 billion for the region, one of the biggest investments to ever be secured in Wales. Among the various programmes to be initiated using the SBCR funds is the Homes as Power Stations project to be led by Neath Port Talbot Council. (24)

Isles of Scilly

The Isles of Scilly are to be used as a test hub for smart energy technology in a £10.8 million project backed by the EU and Hitachi. The project will see rooftop solar panels and new energy management systems installed on 100 council-owned homes, about a tenth of the islands' housing stock, with the households receiving discounted electricity. Ten of the homes will also be fitted with batteries or other technologies to help manage lags between supply and demand. A subsequent phase of the Smart Energy Islands project is expected to see electric cars deployed on the archipelago, with their batteries also used to help manage supply and demand. By 2025, the project aims to cut electricity bills by 40 per cent, meet 40 per cent of energy demand from renewables and for 40% of vehicles on the islands to be either electric or low carbon. (25)

Stirling Council

Stirling Council completed the 1,500th installation of solar PV on its housing stock in March and paved the way for battery storage to follow its lead. The install was completed on a new build bungalow in Bannockburn as part of a wider renewable investment scheme launched to alleviate fuel poverty and reduce the council's carbon footprint. To date more than £8 million has been spent on delivering the solar rollout, and the council has now committed to invest an additional £4.25 million over the next two years to install solar on an additional 1,200 homes. And battery storage technologies could also feature in future installs should the results of an initial pilot scheme in 50 homes be deemed a success. German battery manufacturer Sonnen has



been selected to provide the storage systems. This will enable tenants to optimise self-consumption of their solar energy, thus saving more money on their bills. Tenants can use the battery to tap into off-peak electricity tariffs, as well as connect other loads such as heating, or hot water. (26)

Glasgow City Council

Seven primary schools in the Glasgow area are to be fitted with solar panels with a combined total capacity of 350kWp under plans by the city council. Each of the schools will receive a 50kWp system to be installed by Campbell & Kennedy (C&K), which must design, install and connect the systems by the end of April 2017. A statement from Glasgow City Council said: "This project will enhance the council's commitment to the sustainability and resilience of these schools whilst providing a practical teaching resource for pupils. (27)

Fife Council

Fife-based Living Solutions (LS) has taken delivery of a new hybrid Renault Kangoo van, supplied by local company – Bright Green Hydrogen (BGH). The Levenmouth Community Energy Project – led by BGH in Methil, Fife – is a collaborative initiative supported by Fife Council and Toshiba. This new development involves demonstrating that hydrogen derived by electrolysis using surplus electricity generated by wind turbines and solar panels can be used to power vehicles. It is the first project of its kind in Scotland to use green hydrogen to fuel a fleet of hybrid/electric vans to the road. This new vehicle will add to Living Solutions' green credentials, as they are already working to create an eco-friendly zero emissions tree-surgery service – as they ramp up their contracting business. (28)

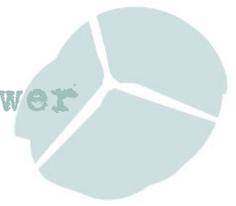
Barnsley Council

Through its Energise Barnsley scheme Barnsley Metropolitan Borough Council is aiming to install solar panels on 5000 council homes. So far 321 have been fitted with free solar panels saving tenants an average of £130 to £150 per year on their energy bills. The 'Barnsley Solar Bond' raised £800,000 in investment in under three months over the summer of 2016. The remaining finance is through a long term loan from ethical lender, Charity Bank. (29)

A new £250,000 trial to demonstrate how home batteries can increase capacity on the electricity network and enable more homes to install solar panels has been launched. Distributor Northern Powergrid has chosen Moixa Smart Batteries to be installed in 40 homes and linked in a virtual power plant. Solar panels will also be installed in 30 homes through the Energise Barnsley community energy initiative to test how the solution can reduce peak solar output onto power networks when there is low local demand. Northern Powergrid is funding installation of the batteries in Oxspring, near Barnsley. If successful, the project is expected to help network operators save "millions of pounds" for customers by reducing the need to upgrade infrastructure. (30)

North London Boroughs

Camden, Islington and Waltham Forest Councils have joined forces for the '24/7 Solar' project, part-funded by National Energy Action. It will test the potential benefits of storing daytime electricity generated by solar panels to supplement the household's evening use. This will



provide evidence as to whether the technologies can effectively reduce the energy bills of those householders in or at risk of fuel poverty. Councillor Meric Apak, Cabinet Member for Sustainability and Environment said: “Solar plus storage is of huge interest to Camden Council. Fuel poverty is a very serious issue, blighting people of all ages and circumstances nationwide and storing solar energy can be one of the methods to offer our tenants significant savings to help reduce this burden.” (31)

Wind Turbines to Fund Social Housing

The examples above of recent local authority action on renewable energy all concern solar power. But other forms of renewable energy could also be used for innovative projects. A wind turbine project in Cardenden in Fife, is supported by Ore Valley Housing Association. The turbine will benefit the local community, not only by providing clean, green energy but also through funds raised through profits. Ore Valley intends to use at least 50% of the profits to provide support for the community through grants and investments for local projects and enterprises. (32)

Meanwhile Berwickshire Housing Association (BHA) and Community Energy Scotland (CES), have launched a new joint company called Berwickshire Community Renewables. In a groundbreaking initiative the company has installed three wind turbines to generate income to deliver hundreds of new homes in a scattered rural community. The two partners eventually expect to make £30m from selling the electricity to the grid – with BHA getting £20m and CES the remaining £10m to help fund other projects. (33)

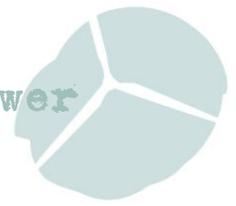
Establishment of an Energy Service Company (ESCO)

Nottingham City Council has become the leader in establishing a municipal energy company by setting up Robin Hood Energy (RHE) - the first local authority-owned electricity and gas company since the electricity industry was nationalised in 1948. Since Robin Hood Energy was launched by the Council in September 2015, it has become one of the cheapest suppliers in the East Midlands.

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. It is installing smart meters prioritising customers who have traditionally used prepayment meters. RHE is also creating local and high quality new jobs. (34)

In addition other objectives include:

- Enabling local ownership of renewable generation
- Supporting community energy projects.
- Matching local generation to local demand by using Power Purchase Agreements.
- Acting as a vehicle to assist other local authorities develop municipal energy models including Energy Service Companies.



Setting up the company was a huge and complicated process with over 146 contracts having to be signed. Nottingham is now sharing this experience with other Local Authorities. Robin Hood Energy (RHE) is also working with a number of Councils 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. (35) The first to take up this offer and launch is Leeds City Council, which has launched White Rose Energy – a partnership between the Council and RHE. (36)

The Association for Public Service Excellence (APSE) has agreed to provide capacity to deal with the inquiries being received by RHE and to support those local authorities that are taking the idea forward. They will also have a role in ensuring the RHE message gets out to all local authorities, housing associations and other public sector providers. (37)

The cost of establishing a supply company has been estimated at between £2m and £5m. RHE cost around £2.5m to set up. Setting up a company with an electricity supply licence to sell electricity directly to members of the public can be complex and expensive. But if all of the various hurdles can be overcome it means the full value of any electricity being generated by the authority can be secured. Another option is to partner with a pre-existing company that already has an electricity supply licence. This can be done through a 'licence light' or a 'white label' deal. The white label idea is based on the premise that local people trust their local council and it has a unique position to influence them to switch suppliers. By doing so it ensures that customers are treated more fairly.

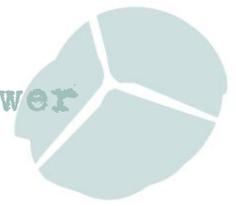
Licence light is an arrangement with an existing electricity supplier which allows the licence light holder not to fully comply with all of the onerous conditions that normally apply to a company with a supply licence. APSE considers this type of licence to be flawed, and, in fact, has effectively been overtaken by events. As well as Nottingham City Council, Bristol City Council has obtained a full supply licence. 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). (38)

Cheshire East Council has established a 'white label' arrangement with Ovo Energy.

Wirral Council has become the latest local authority to announce plans to set up its own energy company probably through a white-label arrangement. A longer term aspiration is to establish a Liverpool city region "Fully Licenced Operator" arrangement similar to Nottingham City Council's Robin Hood Energy. (39)

Liverpool City Council has already announced plans to form a community energy company called the LECCy offering "white-labelled" tariffs of Robin Hood Energy

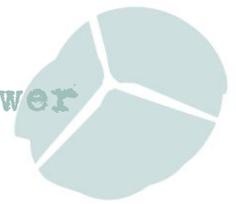
Leicester City Council and Leicestershire County Council also have plans to create a not-for-profit energy scheme to help combat fuel poverty and encourage poorer residents onto cheaper



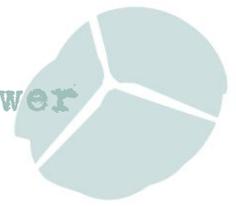
tariffs. The partnership has been in the works since December 2015 when the councils agreed to put out a joint tender for a suitable energy supplier. (40)

Warwickshire County Council is planning to build an additional six solar farms and to set up a council-run energy company. (41)

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