New Power

REPORT

DECEMBER 2019

'There will be digital companies out there that have stuff that they don't realise is really useful in the energy world'

David Casale, Turquoise

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Far enough? Fast enough? Innovators respond

OFF TARGET

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Inside the manifestos: parties' power plans

INVESTING IN THE POWER SECTOR:

The Conservatives are targeting 40GW of offshore wind by 2030 and floating wind farms.

Labour aims to deliver "nearly 90% of electricity and 50% of heat" from renewable and low-carbon sources by 2030 (7,000 offshore and 2,000 onshore wind turbines and 15,000ha of PV). It will trial and expand tidal energy. Labour would expand storage and invest in grid and interconnectors, and community energy. Whenever public money is invested in energy generation, the public sector would take a stake.

The LibDems target is that at least 80% of UK electricity is renewable by 2030. The LibDems would remove restrictions on solar and wind and build more interconnectors. They would support tidal and wave power, energy storage, demand response, smart grids and hydrogen with an additional £12 billion over five years.

The three parties all want to maintain existing nuclear levels and the Conservatives promise £800 million investment in carbon capture, utilisation and storage by the mid 2020s (of which £400 million would come before 2024).

GOVERNANCE

The LibDems plan for UK and local Citizens' Climate Assemblies, a Department for Climate Change and Natural Resources and a cabinet-level chief secretary for sustainability in the Treasury.

Labour would ask the Office for Budget Responsibility to incorporate climate and environmental impacts into its forecasts.

INFRASTRUCTURE

Labour would create a new UK National Energy Agency and 14 new Regional Energy Agencies to own and maintain grid infrastructure and ensure decarbonisation targets are delivered. It would bring the supply arms of the big six energy companies into public ownership.

The LibDems would expand community and decentralised energy.

The Conservatives promise to "lead on a new green industrial revolution".

TRANSPORT

Electrification of transport is a priority for all parties. Labour promises a "full, rolling programme of electrification" and plans to bring rail back into public ownership. The LibDems would convert the rail network "to ultra-low-emission technology [electric or hydrogen] by 2035".

All the parties want faster progress on EVs. The Conservatives would invest £600 million in a fast-charging network (£400 million in spending plans to 2023/24). Labour promises to invest in electric vehicle charging infrastructure and in electric car clubs. The LibDems promise to cut VAT on EVs to 5%.

ENERGY EFFICIENCY

Labour plans to upgrade "almost all" UK homes to "the highest energy-efficiency standards by 2030". The LibDems promise a 10-year programme to reduce energy consumption from all buildings.

The Conservatives promise to spend £6.3 billion on energy efficiency – targeting social housing and fuel-poor families – with another £2.9 billion for schools and hospitals (spending plans refer to decarbonisation spending of £710 million for social housing and £2.1 billion for the public sector to 2023/24). The party promises "the creation of new kinds of homes that have low energy bills" but would also allow communities to set their own standards for development. Spending plans include an industrial energy transformation fund of £220 million to 2023/24.

GREEN FINANCE

Both the LibDems and Labour propose green requirements for listed companies. Labour would delist companies that do not contribute to tackling the climate issue. Both LibDems and Labour promise a new Green Investment Bank intended to attract private as well as public finance. Labour promises "full mobilisation of national resources, both public and private". That includes a Sustainable Investment Board to bring together the chancellor, business secretary and Bank of England governor.

The Conservatives promise to use the £1 billion Ayrton Fund (launched in September) to develop clean energy. Labour would borrow £250 billion for a Green Transformation Fund. Meanwhile, a National Investment Bank, backed up by a network of Regional Development Banks, would provide £250 billion of lending for enterprise, infrastructure and innovation over 10 years. Labour plans to increase direct support for R&D and reform the innovation ecosystem to better 'crowd in' private investment.

The Conservatives place clean energy second to life sciences in its innovation strategy.

OIL, GAS, HYDROGEN

All three parties would ban fracking – the LibDems and Labour permanently. Labour plans new taxation on oil and gas operators, while the Conservatives promise a sector deal – not least because of gas's role in producing hydrogen. Labour would invest to reduce the cost of green hydrogen. NP

Election view

New Power responds to power and energy promises from the main parties

What does the UK have to offer the world? In this month's *New Power*, reports and interviews reiterate that the UK is seen as a leader in meeting the technical and financial challenges of decarbonisation and the potential to expand that role should be welcomed and supported by a new government. Naturally, for *New Power*'s readers this issue assumes particular importance. But for most voters it is hard to imagine that the vision of a place on the world stage and the opportunity to be a keystone of an important new industry would not be a vote-winning strategy.

So the decision of the Conservative Party to downplay the climate issue, and Boris Johnson's lack of interest in, for example, taking part in a leaders' climate debate, look like a missed opportunity. The climate issue may divide potential Conservative voters who dispute the importance of climate change, but the bolder strategy would have been to argue that you do not have to agree that a phenomenon exists in order to supply high-value, high-technology equipment and services to countries that believe it does.

The question over Labour's plans is whether, in its drive to increase public ownership in the sector, it will undermine its own plans to place climate solutions in the forefront of its strategy.

A GOOD DEAL?

New Power questioned, when it was first floated, whether Labour's plan for buying the 'Big Six' would be a good deal for consumers. The past two years have not seen that deal look any better, as the companies continue to lose customers and margins get yet thinner. Instead, it has raised new questions. Assuming that Ovo's purchase of SSE gets the green light from the CMA and the startup led by disrupter Sean Fitzpatrick were to go ahead (clearly a question now), would Labour still expect to 'buy it back'? What message does that send to other mid-market operators? Is there a size over which new companies would be taken into state control? And what is the view of private investors Labour wants to 'crowd in' elsewhere, for example as innovators?

Labour plans to buy the supply arms but not (it seems) the far more lucrative home service operations of these companies. The idea that this will mean lower prices for customers looks fanciful given the cost of running companies' billing systems and the levies and taxes thought easier to collect via energy companies than taxation. It would be useful if the proposal raised the question again of whether taxation is a better way to collect those levies.

WHOLE SYSTEM CHANGE?

Labour's proposal to turn distribution network operators (DNOs) into regional energy agencies seems more logical, but it also raises concerns.

The DNOs, already striving to overlay a competitive, innovative distribution system operator (DSO) onto passive network owner/operator functions, are faced with another huge challenge. Because, although we expect electrification of heat, transport, industry etc, the true value in decarbonisation lies in taking a 'whole system' approach and one that is very much based on local needs and resources. Are the DNOs, reacting to a fast-changing electricity industry and with an institutional focus on electricity, best placed to take that approach?

As we explore in this issue, England's local enterprise partnerships and five energy hubs have already been looking at location-based energy issues and opportunities as part of their region's 'whole system'. Why are single-issue electricity networks better placed to deliver that than, for example, beefing up the energy hubs? The case must be made.

STEEL WINNER

Where Labour really comes through is its plan to decarbonise steel. These kind of industrial emissions are a really tough nut to crack and a UK breakthrough here would be welcome globally as well as domestically.

It is good to see the parties' focus both on green investment and on forcing companies to meet environmental standards. As for power generation investment, at this stage it is more important to see that the focus is on low-carbon technologies than it is to choose which ones. Market pressure should see a major rollout of onshore and offshore wind and of PV, all of whose costs are still falling.

That makes huge single investments like new nuclear and tidal lagoons much more difficult and much slower. The challenge for a new government will be to ensure whichever of these large projects it wants to pursue offers the most low-carbon power at the lowest price and least risk to consumers. That decision may not be taken in this parliament.

Commentators suggest that the likelihood of a Labour majority is tiny, although opinions are more split on whether it could lead an alliance of smaller parties. Its decision to make the green vision a key feature of its offer to voters is welcome. Not only on its own account, but also for its role in putting these issue on the agenda, whatever the makeup of the next government. NP

Capacity Market is a numbers game now

EDF Energy has opted two of its oldest nuclear units, both at Hunterston, out of the upcoming T-3 Capacity Market auction for delivery year 2023/24. In the T-4 auction, which relates to delivery year 2024/25, the two reactors at its sister plant, Hinkley Point B, are also opted out. Both plants have been in extended outages recently while EDF makes a safety assessment of the graphite blocks that form an essential part of the reactor core. Both are well past their original lifetimes.

It is not clear whether the plants will return to the market, which may happen if EDF can make economic and safety cases to bring the reactors back that meet its and the regulators' requirements. The withdrawal of Hunterston and later Hinkley will make a significant dent in the current overcapacity – especially as large coal-fired plants at Fiddlers Ferry, Cottam and Aberthaw are also closing.

What will replace them? The nuclear units each have a derated capacity of around 445MW. At the inception of the Capacity Market it was expected – intended, in some views – to bring forward new large gas turbines. Five large gas-fired stations have prequalified for the T-3 auction – four of them now Drax projects (OCGTs at Hirwuan, Progress Power and Millbrook, and the CCGT previously belonging to SSE at Damhead Creek) and Keadby. That represents more than 3GW of new-build capacity. In addition, another 2.8GW of refurbished gas capacity will be seeking 15-year contracts.

All these new-build projects could be outbid by 3GW of new interconnector capacity – ElecLink, IFA 2 and National Grid's Northern Sea link. The interconnectors are bidding for one-year contracts.

But it may be equally likely that the handful of sites that exit the Capacity Market in the next auction are replaced by 30 or 40 times their number, housing small-scale distributed generation plant. The influx of distribution-connected, small reciprocating engines and other small plant has been a major story of the Capacity Market since its first auction. That continues, despite Ofgem signalling very strongly that it would cut embedded benefits for such plant (and its recent confirmation of that, see panel below).

More than 170 small projects have prequalified for the auction, together offering 1.9GW of capacity, from sites as small as a few MW. Some familiar names often associated with large plant (ESB, SembCorp, VPI) were among those prequalifying the largest distribution-connected plant sized at 49MW. A further 170 small gas projects, totalling 3.8GW, sought prequalification but failed.

In addition, storage in the form of 435MW of batteries at 43 sites prequalified to bid for 15-year contracts. A further 235MW failed to qualify. NP

TARGETED CHARGING REVIEW OFF-TARGET FOR EMBEDDED GENERATON

Domestic customers with least power use and companies who have power generation on-site are set to be the losers as Ofgem announced the outcome of its Targeted Charging Review (TCR), one of several areas where the regulator is reconsidering how system costs fall as the structure of the power industry becomes less centralised.

Embedded generators say the change gives the wrong signals, and that the regulator should not address this issue in isolation but in a more fundamental charging review. They fear these decisions could clash with others now under discussion and say the piecemeal approach damages investor confidence.

In the TCR, the regulator has attempted to address ongoing payments for network extension that has already been built, known as residual charges. That is currently paid by both generators and demand customers. Now Ofgem has decided the costs will all fall on the latter. Because charges are currently paid on a per MWh basis, the regulator is concerned that customers that have onsite generation, and import little power as a result, pay little network charge – although, the regulator says, they still have the benefit of the network whenever they need it. The regulator now plans to charge the residual element of the bill as a 'banded' fixed charge.

A second element addresses how balancing service charges are allocated. At the moment they are also allocated on a 'net' basis and suppliers can reduce their payment by contracting small-scale generation to offset demand. Ofgem will remove that option, dramatically changing the economic relationship between suppliers and small generators.

Ofgem decided against one proposed change, which could see small generators become liable for balancing system charges (currently they are exempt). Instead, it will open a wider review of charges.

Ofgem says most domestic consumers will save about £5/year in their bills when these changes fully come into effect in 2022 (transmission changes take effect in 2021 and distribution a year later). However, the smallest users could face an annual increase of between £2 and £22 a year. The regulator says overall the changes will save £3.8 billon to £5.3 billion over the period to 2040.

Chris Hewett, STA chief executive, said: "It is abundantly clear that the regulator's current objectives are now outdated and absolutely vital that the next government addresses this."

Nina Skorupska, chief executive of the REA, said the change "undermines the move towards a more flexible power system... Ultimately, this decision will negatively impact subsidy-free renewables and until the 'forward looking charges' review is enacted we risk further shrinking the pipeline of new projects."

Rebecca Williams, RenewableUK head of policy and regulation, said Ofgem "risks damaging the UK's ability to deploy cheap renewables as fast as possible for consumers".

‘Standstill’ Capacity Market levies: 33 companies miss payment deadline

The deadline for suppliers to make ‘standstill payments’ of Capacity Market (CM) levies covering the period while the market was suspended passed on 22 November with approximately £38 million still owed to the Low Carbon Contracts Company (LCCC). LCCC had billed suppliers for £1.17 billion in payments on 14 November for payment within five working days – funds that will be redistributed to capacity providers that have not received CM payments since the market was unexpectedly suspended at the end of 2018 in response to a successful challenge over State Aid clearance.

The number of companies falling short was 33 – fewer than the companies that missed the initial payment deadline for this year’s Renewables Obligation payments, and some of which had made partial payment.

The LCCC believes that about £8 million of the outstanding debt is not recoverable, because the suppliers concerned have gone out of business. But it said it would vigorously pursue the remaining £30 million – not least because any shortfall in the funds, due to be credited to capacity providers on 13 January, will be ‘mutualised’. Suppliers that have paid will receive an additional invoice for their share of the shortfall on 13 December.

LCCC listed Toto, OneSelect, Eversmart, Electraphase, Ure, Solarplicity, Brilliant, Economy Energy, Our Power, Rutherford and Spark Energy as ‘ceased suppliers’. Of companies still in business, Hudson Energy – whose consumer brand is fast-growing Green Star Energy – was the biggest debtor to the CM fund. Its outstanding bill on 26 November was £8.9 million.

Two of the non-payers have also been ordered to make Renewables Obligation payments. Breeze Energy owes £500k in CM levies alongside £486k in RO payments, while Nabuh Energy added about £310k in CM levies to its £872k bill for the RO. Suppliers will also face bills for ‘mutualisation’ of any shortfall in the Renewables Obligation.

Other debtors (as at 26 November) included E (£3 million), Pozitive Energy (£3.8 million), Breeze Energy (£500k), Eddington Energy Supply (£2.5 million) and Eneco (£1 million).

Co-op Energy was the second largest debtor on that date, owing more than £6 million, but it had disputed the invoice, as had Flow Energy (owing £2 million).

BACK IN THE ROUTINE

November also saw the regular CM payments routine resumed, so suppliers were also asked on 14 November to provide credit cover of the order of £100 million for the following month’s levies, which LCCC said it had received in full.

The next invoice for ‘business as usual’ CM monthly payments, of about £80 million, will be issued on 1 December and capacity providers will receive payment on 10 February. NP

Ofgem sounds warning over debt collectors

Ofgem has warned that it will refer insolvency practitioners to their regulator or publicise bad practice if they do not treat energy customers fairly.

The warning follows a number of energy supplier failures where the ‘supplier of last resort’ that takes on customers does not take on the failed company’s debt book. Customers have complained that they have been pursued by debt collectors.

In an open letter, the energy regulator admits that it does not have a regulatory role in the governance of insolvency practitioners but says it monitors customer experience during a transfer. It says it has seen “a mixed level of service and regard for consumers, including the vulnerable. Some practices have been very good and some have been extremely disappointing, and we believe some poor practices have led to avoidable consumer harm.”

It promised to raise concerns directly with insolvency practitioners “with the clear expectation that they put things right as quickly as possible”. It may escalate a complaint through formal channels within the insolvency practitioner’s organisation, or consider a referral to the Insolvency Service or other appropriate regulator. “We will also consider making a public statement on our observations of the customer experience offered by an organisation’s insolvency practitioners,” it said. NP

EC considers: how can we develop competitive markets where renewables can compete?

Clean energy will lead to higher bills and we have to be honest about that. That was the message from Florian Ermacora, head of the energy markets unit at the European Commission.

Speaking at the European Utility Week/Powergen conference in November (together to be known as Enlit in future), Ermacora said security of supply is still a key objective of energy policy. Competitive markets in electricity, gas and other areas are key to achieving these objectives.

He set out some of the necessary steps. Among them, he said: "We need to get renewable energies into the market and allow them to compete. It is important to have more short-term markets," so variable wind and solar can be accommodated.

The next step was the need "to get the customer into the equation". Ermacora said the EC had tried to open the door to aggregators, including those offering demand-side response, "which is hugely important if we want to keep the bill in check". He noted that by 2050 "there will be four to six times more renewable energy in the grid, nearly all of it wind and sun. That means period of lots of cheap electricity and periods without much electricity – that is an important feature of market design."

Ermacora said the principle must be market first, even if countries successfully argue that they need a capacity market. "Capacity markets must demonstrate that security of supply objectives are not achievable with the market, so market reform plans will be needed and will be required for State Aid approval. Subsidies should be as low as possible and adequacy assessments must include cross-border suppliers," he said.

Making sure that member states allow power and gas to flow freely across interconnectors, rather than reserving capacity to protect their own supplies if there are fears of a shortage, has been a longstanding concern for the EC. Ermacora said it remained a priority. "We need to free the internal energy market. We know that many transmission lines have been blocked for security reasons, but new legislation says 70% of interconnector capacity must remain open for trading," he said.

Finally, he admitted that we can't just depend on electricity. Ermacora said gas will be needed – but, in the long run, natural gas will not do the trick on decarbonisation: "Then the discussion on low carbon gas will be very relevant. Regulatory questions such as gas quality will arise which need consistent rules so as not to distort the market."

Ermacora noted that there were questions over the use of hydrogen: "Would it be low or no carbon? Where would it come from and where would it be used? It is hard to see that we will have a system where hydrogen replaces gas in gas grids. Is this the best value use for it?" He also spoke about the need to create a level playing field on hydrogen, saying network companies "want to build electrolysis on the rate base." NP

Get ready: coal finish and EV surge expected

The UK should prepare for a more volatile relationship with its neighbouring power markets in the second part of the next decade. That forward view came in comments from speakers at rating agency Moody's annual investor conference on European utilities.

First, we should get ready for more coal phaseouts across Europe. So said John Fedderson, chief executive of Aurora Energy Research. He told the November meeting that the UK's coal phaseout was "very old news" now. But he thought an important European decision on coal's future had been under-recognised: current regulations mean coal plants will no longer qualify for Capacity Market payments after 2025. "In my opinion this will close the coal plants in Europe by the end of the decade," Fedderson said.

That meant the large coal fleets such as those in Poland and Germany would start to close down – also helped on their way by rising carbon prices. Fedderson saw the fastest phaseouts on the horizon in Germany, at least for the country's hard coal units. Two years ago German companies would have expected those plants to remain in operation for decades, he said, but now some will close within a few years.

The trend away from coal was reinforced by Alessandro Canta, head of finance and insurance at Enel, who spoke shortly afterwards. He said Enel had already announced €4 billion of impairment on its coal-fired stations in Italy and two plant closures elsewhere in Europe.

Some coal plants might be converted to burn gas, Canta suggested, but otherwise he spoke about wanting to be a company focused on sustainability. >

The likely effect of closing coal plant will be to exacerbate a narrowing of demand-supply margins across Europe, as identified by two members of Moody's EMEA infrastructure finance team, senior vice-president Paul Marty and associate managing director Neil Griffiths-Lambeth. They said margins would be depressed as renewables replaced fossil generation. The UK would see fairly flat demand during the coming year and further into the decade, they said, because energy efficiency gains were "increasingly challenging". Meanwhile, more data centres and electric vehicles would increase demand in the Nordic countries.

Mark Lewis, global head of sustainability reserach at BNP Paribas Asset Management, predicted that electric vehicles would "take off" because they offered so much more mobility for a unit of energy than fuelled vehicles. He predicted a cost curve like that seen for PV and said oil would have to drop to $10 per barrell to compete with electric.

For these and other speakers during the day, "storage is the obvious next step".

UK LEADING THE WAY ON COAL EXIT AND OFFSHORE WIND ENTRY

The coal phaseout was also the driving factor in reshaping the energy market in GB, Moody's said, in an in-depth report on GB.

It said coal's "dramatic decline" had driven rapid decarbonisation in GB, largely because of the UK's Carbon Price Support (CPS) carbon tax. It said: "Unless the price of coal falls significantly compared to gas or the total price of carbon collapses, which is not our base case, we expect that the coal phase-out will be complete by 2022, well ahead of the UK government's 2025 target."

UK generators have recently confirmed plans to close two of the UK's plants – RWE's Aberthaw and SSE's Fiddlers Ferry – after this winter.

The ratings agency said it the fate of CPS did represent downside risk for power prices. In 2017, then-chancellor of the exchequer Philip Hammond said the total carbon price of about £24.5 (made up of an EU ETS carbon price of €7.4/tonne and the £18/tonne carbon price support) was "set at the right level". That could see the support reduced from as early as April 2021 and could be removed entirely in 2022 if no coal-fired plants are operating, because after coal goes a reduction in CPS "would not result in a significant increase in the carbon intensity of British electricity generation". A no-deal Brexit would mean a Carbon Emissions Tax replaces the CPS and EU ETS, with carbon priced at £16/t.

Moody's highlighted that gas had benefitted from the high carbon cost of coal and biomass conversions at Drax and mass rollout of PV had been important factors in raising renewables' contribution. But offshore wind would dominate in the next period. It said that by the end of 2019 the UK would be the largest offshore wind generator in the world, with 10GW of offshore wind in operation, compared with 7GW in Germany, the second-largest market. It expects Contracts for Difference awards in Round 2 and 3 to add a further 10GW of capacity over the 2019-25 period. Alongside "modest growth in biomass, solar and onshore wind" it estimates that GB will see around half its electricity generation coming from renewables by 2025, compared with 33% in 2018. It assumes onshore wind will be economically viable without subsidy but will be unable to gain planning approvals on a large scale.

The surge in offshore wind and further investment in interconnectors means the coal phaseout can be achieved without putting pressure on reserve margins, Moody's said. In fact, margins would ease – "we also expect further reductions in underlying demand and growing contributions from distributed renewables and interconnectors to depress demand for transmission connected generation in GB" – and "power prices will remain in the £45-55/MWh range through 2022". NP

One of three 270t onshore transfom-fers on its 1,500km journey to New Deer, where it will serve the Moray East offshore wind farm

A frantic autumn for suppliers

In the first of an occasional series looking at developments in regulation, Nigel Cornwall considers which could have impacts on competitive markets

Moving into the autumn there has been a distinct increase in regulatory activity. Ofgem kicked off the month with a modest reset of domestic retail price caps – down £75 to £1,179, based on its representative consumption for the notional domestic customer. This predated the successful challenge to its methodology by Centrica supported by other large suppliers (which I will pick up in a later article). But other stand-out developments at Canary Wharf have potentially big, and probably adverse, impacts for suppliers.

FURTHER SUPPLIER FAILURES AND THE 'HOLE' IN THE RO

There continue to be frequent exits from the GB energy retail market. Given the chaotic levels of new entry enabled by the dramatic fall in market entry costs in recent years, especially from pre-licensed 'supplier in a box' solutions, this was inevitable. The trend will continue, and so will consolidation. As last year, the compliance process for the 2018/19 Renewables Obligation (RO) saw a shakeout.

Failed or struggling suppliers have again left significant unpaid RO bills. Four recent entrant suppliers were named and shamed by Ofgem in October, one of which – Toto Energy – has since gone into administration and its customers moved through the supplier of last resort (SoLR) scheme to EDF Energy. As October drew to a close, provisional enforcement orders were also issued to Nabuh and Breeze. GnERGY, which is also widely rumoured to be struggling to meet its commitments, has got a final demand.

Few were expecting the level of RO shortfall notified by Ofgem in early November. It said 42 suppliers did not meet their obligations, and the overall deficit was eye-watering – more than £200 million. The regulator is trying to recover some of this, but failed supplier debts have already pushed it above the threshold for triggering mutualisation. This means more pain for other suppliers already struggling to get by, and whose tariffs do not reflect these unforeseen new commitments.

It is looking unavoidable now that some form of major surgery will be needed by BEIS on addressing credit risk under the RO. The obvious options to consider are reducing the compliance timetable, introducing shorter compliance periods or suppliers collateralising the scheme. But all of these hold major implications for both sides of the market and achieving agreement across stakeholders will be difficult for incoming ministers.

TIGHTENING LICENCE RULES AROUND SUPPLIERS

Ofgem was already resetting requirements to ensure new entrants – and existing businesses – better understand market risks and are resourced to deal with them. Business failure is, of course, an organic threat in any well-functioning competitive market. But recent experience has brought home the reality that existing standards around financial resilience and customer service in energy supply have been found wanting in far too many cases.

New rules and entry processes for suppliers entering the market were announced back in April, along with new draft applications regulations. Implementation of both occurred in July. But Ofgem has also now proposed new regulations for suppliers' current operations. They fall under three broad themes: promoting more responsible risk management; encouraging more responsible governance and increased accountability; and improving market oversight.

Key among the proposals is a 'fit and proper' requirement on suppliers and a principle for them to be open and cooperative with the regulator. There is a very necessary requirement for suppliers to maintain 'living wills' that identify and plan for risks to customers and the wider market if they fail. There are also new arrangements and a menu of options to protect at least 50% of the value of customers' credit balances in the event of market exit. This has been subject to widespread abuse by suppliers to fund their operations. Another sensible proposal is capability assessments or 'milestone checks' when suppliers cross thresholds that trigger new social and environmental obligations. Ofgem is also minded to bring forward new rules that would allow it to request independent audits of supplier customer service operations and financial status of poor performing suppliers.

Other areas discussed, but without firm proposals, include exit arrangements. For example, Ofgem warned that it will treat trade sales shortly before market exit "very seriously, as they reduce the >

competitiveness of SoLR events and may not lead to best outcomes for customers". It may disallow such trade sales on a case-by-case basis. It also wishes to explore possible splitting of customer portfolios of a failing supplier. This is a very important consultation and it closes on 3 December.

These options are very sensible. They align with good practices seen in some other developed competitive energy retail markets. But they will not be popular with newer suppliers because of the additional cost and complexity they will bring, a point borne out in an accompanying draft impact assessment. It is, of course, also closing the stable door after the horse has bolted.

UNMAKING THE ELECTRICITY MARKET MAKER

The energy industry has been debating trading liquidity issues for more than a decade now and I have argued vociferously for more supportive arrangements for smaller suppliers to access energy on reasonable terms. So a third major recent intervention of note by Ofgem concerns the market maker obligation (MMO). This was introduced in 2014 alongside a package of other measures to 'secure and promote' access to wholesale electricity markets for smaller suppliers and newer entrants. The MMO has now been suspended.

Suppliers depend on liquid markets to manage risks of exposure to wholesale prices and volatile energy imbalance charges. But trading multiples in the GB market are relatively low and spreads wide. Smaller and new suppliers do not have the financial standing to buy energy in advance like their larger competitors and, especially in a flat market, many go unhedged. This exposure contributed to a wave of failures in 2006 and 2008, when wholesale electricity prices spiked, and will have been a factor in some recent failures for small suppliers locked into aggressive fixed price tariffs.

The question Ofgem is facing is what to do with the secure and promote arrangements in a rapidly changing market structure. It suspended the licence condition on 18 November. In the circumstances it had no alternative. The suspension is by no means the end of the story. Ofgem flagged further work in its Forward Plan for this year and announced in May that it would undertake an options assessment to support a decision on future liquidity policy, building on thoughts summarised from previous responses and its own market monitoring work. It is considering whether interventions are still required and, if so, what form they should take. It emphasised exploring alternatives to the MMO even before its suspension.

The issues around market making are complex and highly controversial among different types of industry stakeholder. Since the MMO was introduced, churn has increased by about 20%, spreads for the mandated products have decreased from about 1% to 0.3%, and many new suppliers and generators have entered the market. These are all good indicators. But against this, there are concerns that in additions to burdens on the obligated parties the MMO distorted the market concentrating trading in specific, limited windows.

Six independent generators and three growing, intermediate suppliers argued in response to the RWE disapplication request that without a replacement the MMO should not be suspended. "We are concerned that liquidity will fall back to even lower levels without it", the response stated. They noted that out of 41 respondents to Ofgem's previous open letter on MMO changes, the large majority – 30 respondents who are predominately independent suppliers, generator and energy traders — were against its suspension for this reason.

They went on to "urge Ofgem to commit to a clear timetable to develop and implement an alternative liquidity support measure as soon as possible, and by spring 2020 at the latest", given there is a clear majority of GB market participants who consider that a measure to support GB wholesale market liquidity is both necessary and desirable. I agree, and suspension of the MMO should be without prejudice to the outcome of the analytical work still underway, but this needs expediting.

A key strand of this work is being undertaken by consultancy NERA. The emerging thinking was previewed at a workshop on 1 October. Frustratingly the workshop materials are not up on the Ofgem website at the point of writing. I hear that, if trading support is to be retained, it may be on a voluntary, probably tendered, basis. Arrangements already implemented in Singapore but also being scoped in Australia might provide a reference point, illustrating that this is not an issue limited to GB.

Reading between the lines, it looks like Ofgem needs convincing of the case for retaining market making arrangements, and if it does they are likely to look rather different to those they will supersede. Nevertheless, the basic argument for intervention is no less now than it was earlier in the decade, arguably more so. And having taken more than five years to establish a safety net, we would not want to see it taken away in less than five months simply because of changes to wider market structure that of themselves do not seem to have materially improved the trading environment. NP

Nigel Cornwall is a respected energy industry commentator, and recently launched @ NewAngliaEnergy Follow him on twitter @newangliaenergy

DAVID CASALE

Getting in at the birth of a new industry

Innovation in energy has fallen to a tenth of what it was a decade ago, Turquoise's David Casale tells Janet Wood. But that still means a healthy pipeline of new ideas to pursue

Ten years ago David Casale was finishing a seven-year stint as co-founder of supplier Utilita. But he says he "handed back his badge".

On today's fleet of suppliers, he says: "I think they are all very vulnerable. Last time I added it up it was £3 billion of turnover and £2 million of net profit. It's not really a very sustainable industry." Most importantly, he saw the business model as a "sham".

Promises to provide green power are 'greenwash', he says, and so are 'green bonds' and 'green equities'. – their role is now simply billing customers. He thinks making promises to supply 'non fossil fuel' is a much clearer approach, not just for customers but for investors.

"It is a much better way of getting what you want. You don't have to interpret it," he says, unlike customers having to interrogate the word 'green'.

Casale is optimistic that technology can solve climate problems and for the past seven years he has been putting his industry knowledge to use at Turquoise, raising capital, advising on transactions and assessing potential new energy investments.

> "Investors.. threw money at anyone who said they had a clean technology

Turquoise's investment area is pre-profit, pre-revenue new technologies. Casale says: "We are pretty unique. There are not many merchant banks or venture capitalists left who are prepared to work on those high capital-cost projects, with revenues so far down the line they are hardly visible, and profits an order of magnitude beyond that. You need a special kind of investor."

He says the number of such investors has dwindled from a peak after the 2009 climate summit, when "McKinsey said we will need every technology to the max if we want to stand any chance of decarbonising. At that stage, there were a lot of high-net-worth individuals – and investors of all flavours – who threw money at anyone who came in and said they had a clean technology."

And there were many more ideas to throw money at. The market was "overstimulated", he says. "There was a lot of rubbish making its way to our door," most of it over-valued and not ready to be offered to an investor.

He adds: "It has taken those fledgling businesses a long time to understand how to realistically value their companies and understand how much cash they will need to go through the development process. Many were inexpert and a few were snake-oil sellers."

Casale says the marine sector "encapsulates everything about over enthusiasm, about government and investors getting it wrong, with some very weak delivery without understanding some of the challenges they had to face".

That chimes with SuperGen chief Deborah Greaves' comments in an October interview with *New Power* about the need to take investment through all the steps from prototype to wave tank etc, including wave tanks hosted by the University of Plymouth, where Greaves is a professor.

>

WHAT NOW?

Now we have moved on from that overstimulated phase. Casale says the number of proposals he sees is a tenth of what it would have been in 2009, although there remains a healthy stream of innovations.

I ask what the components are of a successful project. To knock on Turquoise's door now you need more than an idea. "We want to see a working prototype – although we often go to sheds," Casale says.

"Normally you need a lead investor," he adds – in some cases that has been Turquoise, in others it has been East Anglia's Low Carbon Innovation Fund, which Turquoise manages. Add to that perhaps strategic investors and "you need all of those to come together", he says.

"When they can justify why they need £5 million… and have some words that explain how they can get to point B," he will take a look, he says, adding: "We often have to explain what [Point B] is…

"One of the first things we do is look at the financial model. But you can only put in what you know, not what you don't know. We must have looked at hundreds, possibly thousands, of company projections. None of them have ever been right." About half of the ideas Turquoise invests in will not reach point B.

> We have investments that have been there for 12 or 15 years

But the company is in it for the long term. "We are big fans of patient capital and we don't see too many quick turnarounds," Casale says. Funds and investors typically talk about horizons of three to five years for returns, but for Turquoise five years is a minimum and "that's good work … we have investments that have been there for 12 or 15 years. In this sector it is harder to get technology to work, it's harder to get the capital to keep it alive, it's harder to get customers to adopt it and to get them to pay for it."

Casale says that typically, at the next stage, "you make a profit because someone is interested in buying you". That would be a trade sale to a strategic player in the relevant sector, he explains, rather than taking off as a standalone company.

How many investors are there who can take the risks that Casale describes? Investors are quite wary after seeing bubbles like wave and tidal and storage or fuel cells, he says, but "our database is over 1,000 investors, who have had sensible adult conversations about getting their chequebook out".

I ask whether that is, in effect, crowdfunding and Casale says that is a complementary approach. Turquoise is in conversation with crowdfunder Abundance, for example, and has taken projects from the latter's portfolio. "We are trying to find a way of working with them – their model is changing and maybe at some point in time we should find a way of combining," Casale says. Abundance comes in at a later stage with lower risks, he notes.

"We have seen crowdfunding coming in to some of our clients in big numbers. It's a good way of bumping up grant funding from friends and family – one of our clients got about £3 million." But he is wary. "I have yet to see much research on what investors are getting out of it," he says.

What is the flavour of the month? Casale says: "The storage bubble is still with us." But he says many of those innovations are not coming from the power sector but, for example, from are chemists. "So they need to up their game in understanding the role they play in managing the grid."

> Casale's 'big ask' from government is a patient capital obligation

Digital is the next big thing and Casale is joining a new digital team at Turquoise alongside his current portfolio. He is excited, he says, because "there will be digital companies out there that have stuff that they don't realise is really useful in the energy world. They have heard of National Grid and that's it – they don't even know what doors to knock on."

THE ROLE OF GOVERNMENT – PATIENT CAPITAL

Given what Casale has said about overstimulating some industries in the past, how can government best add impetus to private investment?

I ask about Enterprise Investment Scheme (EIS) funding, intended to make investment in high-risk early stage projects more attractive by offering it as tax relief. It was pulled from electricity generating projects because it was being used to support low-risk projects – some with guaranteed returns. But Casale says: "We still have that. It's an important part of our industry," for early projects.

Venture capital funds are also there, but "they are not really early stage", says Casale. "They like to see revenues and profits. They can consume a lot of time, only to say, 'come back when it is profitable'," although a project with revenue may spark their interest.

Casale's 'big ask' from government is a patient capital obligation on all investments. He explains: "It would take equity in companies that are not as slow as fusion – some are just falling away because they need too much capital. It's not because the technology doesn't work.

>

"The UK would invest patient capital in long-term growth. It has to be long-term equity investment – always matched [with private funds]. Returns would be on the order of 15 years."

Casale puts the minimum investment needed at £200 million, and he says it may not invest every year. But he admits that needs cross-party support because it would not see returns for more than a decade. That would be the next step, he says, and more effective than the Green Investment Bank, which "ended up just doing what the world was doing anyway".

It remains to be seen whether the incoming government will pick up the suggestion. NP

MARK HEWETT

Global changes could make or mar UK plans

The UK could be a global clean energy player but it will have to be ready to cope with issues from Chinese industrial decisions to market consolidation

The UK power industry – and clean energy companies especially – should prepare to weather some global storms in the next decade, says Mark Hewett, head of organisational dexterity at Capgemini. Hewett was drawing on insights for the UK industry from Capgemini's annual World Energy Markets Observatory report, now in its 21st year.

The report argued that, globally, climate change objectives for 2050 are increasingly at risk. But whereas in many other major economies investment in green energy has been falling, the Observatory saw the UK rising last year. What is behind that contrast? What has made the UK attractive and will it continue? Hewett says it is the cross-party support on the climate issue. If you put Brexit aside, he says, climate change is, "dominating the UK political agenda. Climate protests have galvanised support from areas where you would not expect to see people on marches. We have also seen that in other countries, but the UK has had a real groundswell. All political parties have taken it on board. Industry is pushing for it too, so it … moves faster."

> "Climate change is dominating the UK political agenda

In fact, Hewett says that in his opinion this is an industry the UK should seize. "We could lead the world on this. It is attractive for politicians and for industry and we have cracked some really difficult issues like offshore wind."

He says Brexit means the UK is looking for its place in the world: "Could it be the low-carbon future?" The growth of renewables is a core part of the transition for buyers, "not just a corporate social responsibility sop".

The UK needs to help solve the problem. "We are a small island in a big sea and if we don't sort this out we will be a smaller island in a bigger sea," says Hewett.

The Observatory takes a global and regional view, so I take the opportunity to get the big picture. We discuss a lot in the UK how domestic policies and issues affect investment in green energy. What are the global trends or issues that may affect our ability to hit our targets?

WATCH CHINA'S INDUSTRY

Hewett agrees that what happens in China has global implications. Chinese development is slowing down "but from a heck of a pace". How China restructures within its industrial landscape, to take account of the slowdown, will affect all its trading partners. >

He sees it potentially making more of a shift to focus more on 'belt and road' regions.

There are implications for specific imports. "Part of the reason we in Europe could seize on low-cost PV was because it wasn't landing in China," Hewett says, adding that cheap materials came towards the UK and "that enabled us to get ahead". Whether that continues now depends on Chinese industrial decisions.

He continues: "If they decide Europe is a steady revenue stream it could be good for us. But it is a single party state and virtually all decisions are made with geopolitics in mind. They could dial back [European exports] to retain control. The 'belt and road' initiative is not done out of the goodness of their hearts."

> If [China] decides Europe is a steady revenue stream it could be good for us

China's decisions will also affect the availability of raw resources. That includes rare earths. Hewett says: "Access to rare earths is really important [for renewables] and also critical for the smart grid and smart systems that we will need in order to drive forward a low carbon future. The vast majority sits in some pretty remote areas and in China. If China and South America continue to hold control of those rare earths, then geopolitics will continue to play a very important role."

Decisions made in the US also have UK implications. One example Is fracking. The US may reduce its investment in fracking depending on changes in the global gas market and that could make Asia Pacific a more important market and "a lot of the decisions made in the US are increasingly focused on the Asia pacific regions", he says. Practically, too, "we leant on US research on fracking in order to get moving", and we could see that interest waning.

CONSIDER GLOBAL COMMODITIES

When I ask about the global gas market Hewett says: "We can balance [the gas risk] a lot easier by investing in wind against potential rise in gas price." He notes that "we have been able to drive down the cost of offshore wind because we have a significant coastline and a lot of wind".

He adds: "The energy transition argument is being won. It involves difficult decisions and for some it will mean higher prices in the short term. It will be accelerated by higher gas prices, which will also benefit those who produce the gas. There are very difficult decisions to make and we need courage from global and national and industrial leaders."

I ask how important the availability is of clean energy in attracting inward investment to host countries – mentioned several times recently by *New Power*'s interviewees.

Hewett agrees it is vital: "Not just for manufacturing and classic industry but even more for high technology – they are data intensive, where your need a lot of power, for example to run data centres." That is needed if you are going to have world-beating service industries, he says. "You can get yourself ahead of the competition."

PREPARE FOR CONSOLIDATION AND RESTRUCTURING

I ask about industry restructuring, which is a feature of the Observatory. One highlighted change is consolidation in the renewable energy business.

> Supply chain consolidation is happening now

"Supply chain consolidation is happening now," Hewett says, but "it is part of the natural business cycle". He compares it with the automotive sector, where it made sense to get some components made on site to tighten the supply chain, keep costs low and get a consistent supply to make sure spare parts are available and allow the company to grow.

"We will have to consolidate vertically down the supply chain to guarantee it [growth]. Otherwise that low-carbon future is at risk."

Hewett expects that to happen as much through business model innovation as through traditional consolidation – and data is the key.

"Partnerships are quicker to create because you can share data effectively instantaneously across the world," he says. And with more data granularity you can partner with small innovative companies and share data on specific activities.

That extends to the energy supplier model, where Hewett also sees new business models – but most of all new entrants. Oil and gas companies (notably Shell) are entering the market and "beyond that, how long before Amazon and Google do it? They are consolidating across everything else, why not offer a utility package for a single price per month. I don't think that is too long on coming." NP

FLEX

Northern auction

Northern Powergrid is to procure flexibility for network resilience via a dynamic purchasing system and e-auction.

Claiming the first auction for such services by a UK distribution network operator (DNO), the company will conclude each competition with a reverse e-auction to procure flexibility from customer-led assets.

In the scheme, named Restore Flexibility, participants will be paid a price per MWh – set by the auction – to shift their energy consumption or flex generation assets after receiving an instruction from the DNO.

Firms across seven locations will bid to be in a position to provide flexibility, with the aim of procuring up to 100MW of capacity in total. The locations are: St Andrews Road (Huddersfield), Staygate (West Yorkshire), Wold Newton (East Yorkshire), Featherstone (West Yorkshire), Greatham (County Durham), Denwick (Northumberland) and Guisborough (North Yorkshire).

Northern Powergrid sought bidders from major energy users (such as factories or supermarkets), power generators up to 100kW, aggregators and storage operators.

UKPN goes big, high and low

UK Power Networks has launched its largest ever tender for flexibility services.

After offering contracts at 28 sites last year, it is now offering 115 sites with a total capacity of 170MW. It includes 55 high voltage sites, and the UK's first 60 low voltage sites. It is making £24 million worth of flexible services available,

It has released a 'heatmap' of sites on the online platform Piclo. The map invites tender submissions for UK Power Networks' 2019/20 procurement programme by March 2020, with results set to be announced later in spring 2020.

The company has also launched a new Smart Grid website, which includes an online 'flexibility hub' to make it easier for customers to find out about the process.

Bids in the tender will have to meet robust economic criteria to ensure they will benefit customers, by offering lower costs in comparison to the traditional approach of building new assets. Further updates on the tender process are due to be released online in December.

WPD trial joins Nodes

Western Power Distribution has launched IntraFlex, a new innovation project with Nodes and Smart Grid Consultancy. It will start with stakeholder engagement aimed at validating the market design and ensuring its value to the UK electricity system.

Funded via a Network Innovation Allowance, the two-year project will deploy the Nodes platform to create a flexibility market operating close to real time for WPD.

It will allow providers to offer flexibility in the day-ahead and intra-day timeframes.

The focus of the trial is to understand how to deliver a link between DNO procurement and balance-responsible party (BRP) imbalance positions. It will trial a short-term marketplace for DNO flexibility and an active rebalancing link to the intraday market operated by Nord Pool, as well as an information exchange with day-ahead markets. This should lower supplier exposure to imbalance costs and reduce the cost of providing flexibility.

The project will utilise a market platform designed and operated by Nodes, an independent marketplace where grid owners, producers and consumers of energy can trade decentralised flexibility and energy owned by Nord Pool and Agder Energi.

STABILITY

ESO tender extended

National Grid ESO has extended a tender to provide stability services to the system for periods up to five years to 17 January. New contract terms have been published.

It has invited bids from transmission and distribution system owners and from commercial service providers, which twill be considered in parallel. Providers must be Balancing Market units and NGESO says that because it needs "high confidence in service delivery" it will only consider limited technologies in this 'phase one' tender: synchronous compensators and synchronous generators running in a synchronous compensator mode, which could be provided from existing plant, or conversion or new build from existing or new BM participants.

It promised to consider a broader range of technologies in a phase two tender next year.

Payments will reflect both location – NGESO has provided list of substations setting out where the need is high, medium and low – and the ability of providers to offer high inertia at relatively low levels of generation.

Contract periods start within the year from 1 April 2020 and >

end within the three years from 31 March 2023.

OFFSHORE WIND

Boost for North East

The Offshore Renewable Energy Catapult has announced ambitious expansion plans in the Humber region. It wants to open a base of operations in Grimsby and create 50 to 70 jobs in the region in the next 10 years.

Chris Hill, operational performance director for ORE Catapult, said: "The Humber's O&M cluster includes Ørsted's expanding East Coast Hub, Innogy's planned base for Triton Knoll, and suppliers including CWind, James Fisher and Rix Sea Shuttles, and is supported by expertise in the wider Humber area, including Aura and the University of Hull. Therefore, it makes it the ideal location from which the Catapult can continue, and expand, its technology innovation and research activities, working with industry and academia to ensure the UK remains a world-leader in the global offshore wind sector."

O&M makes up almost a quarter of the lifetime costs of an offshore wind project and 75% of O&M content comes from the UK supply chain. ORE Catapult says the UK has a competitive advantage in servicing the offshore fleet and can supply products and services to a fast-growing global market.

GAS

Grain opens call

National Grid Grain LNG has launched an 'open season' process for customers interested in buying capacity at its liquefied natural gas storage facility from 2025. The opportunity follows the end of long-term contracts that underpinned the original construction and development of the terminal, which was commissioned in July 2005, and a positive response could see the terminal's capacity increased.

A new service proposal is under consultation until 10 January. The market can place legally binding bids for the capacity until 10 March, and Grain LNG is expecting to allocate capacity by the end of March 2020.

The company said the offer includes existing and new-build infrastructure and it may result in an increase in the total site storage and regasification capacity to more than 30% of UK gas demand, up from 25% currently.

The company is offering:

- A 'Base User' service, which is designed for parties looking to take a significant undertaking in the terminal over a 15-25 year contract;
- A 'Package User' service, which offers customers a series of 10 day 'packages' with no minimum send out obligation.

Following final bids, Grain LNG expects to award capacity in the first quarter of 2020.

STORAGE

Grid-scale for Hull

Harmony Energy has won planning permission for a second 49.5MW battery at Creyke Beck substation in Cottingham, near Hull.

This is the second battery on the site to be brought forward by Harmony Energy, which develops, builds, owns and operates renewable energy assets in the UK and overseas.

The company said this was the latest of a "large pipeline of utility-scale storage and subsidy free solar projects" that it will build, own and operate. Construction is about to start on its first battery project on the south coast.

COMMUNITY

Co-op and Ovo joint venture

Midcounties Co-operative and Octopus Energy have launched Co-op Community Energy, a joint venture focused entirely on supporting renewable community energy projects across the country.

The intention to create the joint venture was announced when Midcounties and Octopus Energy signed a strategic energy partnership in August. The two companies have now created a stand-alone company and appointed a management team led by managing director Tom Hoines. He joins from Noble Green Energy, developers of renewable energy projects in the UK, where he was general manager.

The joint venture has secured five new power purchase agreements (PPAs) with hydro-electric sites operated by the National Trust across Wales. The new agreements take the number of sites supplying renewable energy to Co-op Energy customers to 79.

WALES

Marine strategic plan

Wales' first ever strategic plan for marine management has been published. The blueprint acknowledges policy differences between the devolved administration and the UK government where matters are reserved, highlighting the >

issue of offshore oil and gas development.

The Conservative government is supportive, unlike Welsh ministers. Environment and energy minister Lesley Griffiths said: "We completely oppose any extraction of fossil fuels in the seas surrounding Wales. Where offshore fossil fuel extraction has land-based elements – that is, any elements that would fall into the responsibility of Welsh government – we will apply our policy to avoid continued extraction of fossil fuels, using all powers available to us."

The plan sets out the Welsh government's intention to expand the network of marine protected areas and strengthen the protections that apply to other designated areas. It has sector policies that target the key uses of Welsh seas, which include subsea transmission cables and renewable energy generation.

PPA

Looks familiar for E.On

E.On is to buy more than 20GB of windfarm output from RWE Renewables for the next 2.5 years. The power purchase agreement (PPA) will help E.On keep its promise, made earlier this year, to provide its 3.3 million GB residential customers with electricity backed by 100% renewable sources. The wind farms involved total 892MW onshore and offshore, including a proportion of the London Array.

The wind farms were originally built by E.On. Ownership transferred to RWE at the start of October as part of an asset swap. RWE Renewables is actively seeking corporate PPAs.

WASTE

Conversion close next year

Simec Atlantis Energy has appointed Mitsubishi Hitachi Power Systems Europe to carry out the design and development of the combustion system for its open to convert Uskmouth power station to burn biomass.

The contract includes large-scale testing of the waste-derived pellets that will fuel the plan in future.

MHPS Europe is the European arm of a joint venture company of Mitsubishi Heavy Industries and Hitachi.

The contract will cover:

- Completion of industrial scale milling tests on the fuel pellets;
- Completion of industrial scale combustion tests on the fuel; and
- Completion of Uskmouth furnace burner system design.

These final tests have to be completed before Simec can negotiate the major engineering, procurement and construction contract to supply the full combustion system and secure project finance. Completion is expected in Q2 2020.

The fuel supplier for the project, Simec Subcoal Fuels, will have a dedicated industrial-scale pilot production line for supply of the test fuel at its pelleting facility in the Netherlands. The project will seek to achieve financial close in Q3 2020 with generation beginning in 2021.

LOCAL SUPPLIES

Ground heat in Sunderland

Residents in 364 homes across seven tower blocks in Sunderland are seeing their gas boilers replaced with heat from ground source heat pumps.

There will be a ground source heat pump for each flat, which will also be connected to a district heating system consisting of ambient shared ground loop arrays.

An underground aquifer will provide the heat source for the tower blocks, accessed via open loop boreholes drilled to depths of 60m. The ambient system prevents heat losses, overcoming overheating in the tower block communal areas, and boosts the system efficiency.

The independent heat pumps mean that tenants can shop around for their electricity deal, while reducing carbon emissions by an estimated 420 tonnes or nearly 70% per year and improving local air quality.

Gentoo Group is delivering the 'Core 364' project with the support of Engie and ground source heat pump specialist Kensa Contracting.

Work started in October, with all systems expected to be replaced by late summer 2020.

Hackney supplier

London's Hackney Council has announced plans to launch a publicly owned energy services company in spring 2020. Called Hackney Light and Power, the new company will be owned, run, and managed by the local authority.

The company's launch will include plans for a large-scale rooftop solar project, including London Fields Lido and the West Reservoir Leisure Centre, which the council says will generate revenue for reinvestment in decarbonisation and public amenities for the benefit of all Hackney residents.

It also promised a new, borough-wide home insulation programme at zero upfront cost to householders to reduce fuel poverty, and a rapid expansion >

of electric vehicle charging points in the borough.

Announcing the launch, the council recalled that in the 19th century, the local council – then called Shoreditch Vestry – created the Shoreditch Electric Light Network. It was the first municipal energy company to generate electricity from burning waste.

LOCAL DATA

AI to check network users

Western Power Distribution (WPD), ElectraLink and IBM have joined forces to launch a virtual monitoring (VM) data project, funded through WPD's Network Innovation Allowance.

The VM Data project will enable WPD to identify and monitor the status and distribution of electric vehicles and low carbon technologies on its low voltage network by analysing data from ElectraLink's Energy Market Data Hub using IBM's analytics services and IBM Watson Studio, which allows users to build and scale AI.

The project will investigate the feasibility of creating half-hourly load profiles for WPD customers that can be fed into a virtual monitoring tool for the network operator.

The tool will use cognitive analytics, a variety of data sets and tested proof of concept models. The ability to virtually monitor electric vehicles and other technologies connected at the local level at scale will increase the effectiveness of WPD's planning, facilitating more deployment of these technologies.

Laurence Carpanini, energy solutions leader, IBM Global Business Services, UK and Ireland, said: "This project will prove that intelligent use of data can successfully fuse advanced analytics and machine learning in Western Power Distribution's business to plan for the rapid uptake of electric vehicles and other technologies in the UK and maintain oversight of their network in the changing energy landscape."

NEWS IN BRIEF

Media reports claim Irish power company ESB is poised to take a 50% stake in EDF's proposed 450MW Neart na Gaoithe offshore windfarm earmarked for a location in the outer Firth of Forth.

ESB has announced the closure of two peat-fired generating plants after failing to obtain planning permission to switch them to burning biomass. The power stations – the 100MW Lough Ree plant in County Offaly and the 135MW Lanesborough facility in County Longford – will stop generating electricity from December 2020. The two plants, which were commissioned in 2004, employ 80 people between them. Their closure will end Irish power generation solely from peat.

Ireland's transmission system operator, EirGrid, has released its latest analysis of how Ireland's power sector might evolve over the next 20 years. It expects electricity demand to grow significantly to meet the demands of data centres and hi-tech companies such as Amazon and an increase in the uptake of electrified transport and heating. Energy storage will grow in importance as more demand is met from solar and wind projects, particularly offshore schemes.

Proposals to establish a world-leading marine energy cluster off the Pembrokeshire coast have taken a significant step forward now the four local authorities involved in the Swansea Bay City Region Deal have signed off a detailed business case. The £60 million Pembroke Dock project is designed to provide construction and testing facilities for wave and floating wind energy technologies in and around Pembroke Dock and Milford Haven.

The Scottish government has begun consulting on options for expanding permitted development rights (PDR) regime in a move that could remove the requirement for many types of energy projects to obtain planning permission. Current proposals include non-domestic solar, district heating, non-domestic and domestic energy storage, as well as both domestic and non-domestic micro-renewables. Electric vehicle charging infrastructure is also in the frame.

Irish energy and climate change minister Richard Bruton has announced a major review of the security and sustainability of Ireland's energy supply as the country moves to meeting 70% of its power demand from renewables by 2030.

The Republic of Ireland has been fined €5 million for failing to carry out an EU court-ordered environmental impact assessment on a 70-turbine windfarm at Derrybrien, in County Galway.

Greencoat Renewables has acquired the 20.4MW Killala community wind farm in County Mayo for €37.2 million.

Donald Trump's company is to pay the Scottish government £225,000 to cover legal bills after the US president's firm was defeated in a long-running and acrimonious court battle over an offshore windfarm visible from his Scottish golf resort.

Ireland's leading environmental coalition has cried foul over proposed new planning legislation, which green groups claim will make it much more difficult to challenge decisions on major developments such as power plants and other infrastructure projects, including power lines.

MEETINGS

@ Energy systems storage
Renewable UK
London
2 December

@ Durham Heat Hub Workshop
Durham Energy Institute
Durham
2 December

@ Heat networks in the UK: regulation and market frameworks, innovation and investment, and decarbonisation and the relationship with customers
WEETF
London
3 December

@ Decarbonising Trucks, Trains, Boats and Planes
REA
London
3 December

@ Local networks enabling the electrification of transport
IET
Crawley
3 December

@ Heat Recovery Steam Generator User Group 2019
IMechE
Nottingham
4-5 December

@ GB Commercial Arrangements relating to Interconnector Capacity Calculation
NGESO
Online
5 December

@ Scottish Green Energy Awards 2019
Scottish Renewables
Edinburgh
5 December

@ Finance update for customers
DCC
London
5 December

@ Developing smart electricity networks – decarbonisation, flexibility and integration
WEETF
London
5 December

@ Annual Energy Policy Review
UKERC
London
9 December

@ Energy Policy Debate: UK pathways to decarbonising heat
Energy Institute
London
10 December

@ Joint European Stakeholders Group
10 December

@ RenewableUK Christmas Connect
Renewable UK
London
10 December

@ Common issues and pilots
SmartDCC
London
11 December

@ GB Commercial Arrangements relating to Interconnector Capacity Calculation
NGESO
Online
17 December

@ Energy Industries Club
Speaker: Nicola Shaw, executive director, National Grid
London
18 December

CONSULTATIONS CLOSING

@ Supplier Licensing Review: Ongoing requirements and exit arrangements
Ofgem consultation
Closes 3 December

@ The planning system for electricity storage: follow up consultation
BEIS
Closes 10 December

@ Heat Network (Metering and Billing) Regulations 2014: proposed amendments
BEIS consultation
Closes 12 December

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appg PRASEG All-Party Parliamentary Group for Renewable and Sustainability Energy

LowCVP Low Carbon Vehicle Partnership

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Digitalisation: lead or follow?

The energy industry is united in a wish to digitalise, and to open its data to innovators and entrepreneurs. It considers it is making good progress but when *New Power* spoke to data companies it found a wish for faster action

Ofgem has been pushing the energy industry to open up its data so innovators in the sector and in infrastructure provision can get to work.

Backed up by a report from the Energy Data Task Force (EDTF), working with the Energy Systems Catapult, the regulator has called on companies to move towards an 'open data' assumption unless there are very good reasons to close data off. And it wants action fast.

Data sharing has also been on the agenda at the UK Regulators Network (UKRN) a co-ordinating and research group that brings together regulators from rail to water – and including energy. Earlier this year, it invited interested parties to join a round table discussion to check on progress.

A report based on their discussions (see panel opposite) gave the industry cautious good marks. It said collaboration and co-operative behaviours do exist within [regulated] sectors and there is a growing industry commitment to share data. It also said: "There is already a large degree of data sharing taking place within sectors. There are good examples of co-operation, collaboration and openness around data, with certain sectors such as energy being well advanced in this area."

> "There is scope to go further and be more ambitious

The group had mixed views on whether regulators should mandate data sharing (and, if so, whether regulated companies should be funded to do so). Failings included lack of a central portal and different data standards across regulated sectors. Among the recommendations were:

- Promotion of data standards, definitions, and shared frameworks, to enable easier and more confident data sharing;
- Further clarity, granularity and definition of what data can be shared, including best practice guidelines; and
- Guidelines on consistent data quality measures and targets.

But the group members assessing their progress were all from regulated utilities and they recognised that they had a partial view. The group's final recommendation – as a 'Quick win' – would see the membership of the Digital Transformation Task Group widened.

Because the UKRN report asked regulated utilities to give an account of their progress – but did not open its doors to the third-party innovators it wants to use the data – *New Power* invited feedback on the report from companies working in this space. Their consistent wish was for networks to move further and faster in opening up their data.

Chameleon provides smart meter services and user packages. It said: "We support the Task Group's recommendations, especially on data standards, but think there is scope to go further and be more ambitious."

Generally, it said: "The digitalisation of regulated industries is well overdue and should be the norm, integrated into all aspects of their work and future plans. As seen in other industries, digitalisation is no longer optional, and customers expect excellent, joined-up, intelligent services and products. Innovation is stifled when there is no, or poor, data and when access to that data is restricted or limited. >

WRITING GUIDANCE FOR AN EVOLVING INDUSTRY

Ofgem is seeking views from a broad spectrum of organisations on how to create a set of guidance on data 'best practice'. The regulator expects to evolve its own work in accordance with the outcome, and will use the guidance as part of its regulatory rules, such as for licensed energy market activities.

It wants expertise from broad range of perspectives and specialisms, naming cyber security, information law, energy, data management, digital services and economics,but saying it wanted wider input, including other regulated markets. It said: "By writing this guidance in a 'neutral' way, we can take steps towards lowering the barriers that make it challenging for energy data to be used jointly with information from other traditionally separate markets, such as transport and water."

Ofgem promised not to wait until the guidance is perfect to use it, because, "a lot of time will pass and that means opportunities for better and more coordinated work will be lost". Instead, it expects the guidance to be the first of many iterations.

The guidance will complement an Innovate UK £1.9m Modernising Energy Data Access Competition. Ofgem says: "The best practice guidance will define our overarching expectations for how energy data is best used, whereas the competition is challenging innovators to deliver solutions that will ease access to and the exchange of energy data between organisations."

Ofgem and BEIS plan to jointly own and iterate the new guidance.

"Data security and privacy are important but we should have 'security by design' and any privacy concerns should be resolved in pragmatic ways and not limit innovation."

Other companies responded to *New Power*'s questions as follows:

> It's a vicious cycle of mutual ignorance

IS YOUR EXPERIENCE OF USING DATA FROM THE ENERGY AND OTHER REGULATED SECTORS IN AGREEMENT WITH THE REPORT?

Joy Aloor, head of energy business advisory at Siemens, said: "It is quite surprising to see the study has reported that there have already been examples of collaboration and co-operation with respect to sharing data across various sectors. The existence of data in a digital form itself is questionable, given most of the asset data has yet to be captured and converted into a digital form that is useful to others. This certainly hasn't happened in the infrastructure sectors."

He said there is further to go on releasing data than the report suggests: "We haven't reached a stage where we have enough information to process and make decisions within each sector. For example, the energy sector is struggling to have visibility of connected resources within the energy sector to balance supply and demand."

> It is more important to speed up data availability than to get consistency

Graham Ault, executive director and co-founder of Smarter Grid Solutions, said his company focuses on electricity system data and he was optimistic that the EDTF principles would promote further open data: "The electricity sector has already taken several steps forward with making some network and market data open to facilitate network connections and market participation, with third party analysis of networks and markets." SGS already uses network heat maps and high-level substation capacity data.

Alastair Martin, founder of demand-side response (DSR) company Flexitricity, agreed that even fairly static physical data would offer lots of possibilities. But he wanted it to be easier to access.

He said: "The report seems to have something of a focus on below-ground infrastructure. That's great for safe digging, but it doesn't always answer the questions one may have. For example, if I knew the capacities, populations served and associated treatment works of all service reservoirs in south-west England, I would be able to demonstrate the value of aligning water pumping to solar PV generation. To do that now, I have to convince a water company to work it out for themselves, but why would they do that unless they can see value in it?"

The other way round, the water company knows the water data but not the electricity side. "Either way, it's a vicious cycle of mutual ignorance," he added.

For Eamonn Bell, head of market strategy at DSR company GridBeyond, it was market and granular operational data that would add value for new players and for customers. With National Grid as the single buyer of grid services for the transmission network, so far, he said: "The experience of using industry date of the DSR sector is markedly different to that of large power stations."

National Grid ESO has been "forging a path for some time towards operating more open and transparent markets for balancing services" but users have not found it an easy pathway. "For innovation to take hold in the markets, and so that new, faster, and better managed services may take root, market data needs to be more widely shared amongst all participants." >

Bell said the next steps for the energy sector proposed in the UKRN report do not improve the market environment for DSR – even though there is general agreement that flexibility is needed as soon as possible.

EDTF chair Laura Sandys has pushed the industry to be less cautious about making 'imperfect' data available. There is a tendency, she told a fringe meeting at this year's Conservative Party conference, to make sure data has been cleaned and tidied before it is opened. That is because the industry wants to offer a good user experience, but it simply slows down innovation, said Sandys. If the data is useful, opening it to other users means jointly they will 'clean' it much faster. And if they do not use it, the original owner will have wasted time and money making it presentable.

> Consistency between sector data may not really be necessary per se

New Power asked for views on data openess:

IS IT MORE IMPORTANT TO GET CONSISTENCY BETWEEN SECTOR DATA OR TO SPEED UP DATA AVAILABILITY IN ENERGY?

GridBeyond's Bell said there were some fundamental requirements: "The industry should be aware of what is connected where, and have access to that data on a common format across all 14 distribution networks."

However, he agreed that it is more important to speed up data availability than to get consistency between sector data: "Industry participants need access to industry data today, not at some point several years down the line."

Ault also agreed wholeheartedly. He said: "To identify and implement the needed low carbon energy asset investments, network investments, system operational changes and new business models to hasten the energy system transition, then speed is the overriding concern with opening electricity system data that our customers and stakeholders are most interested in."

> Policy decisions need to be made around adopting common standards

Martin said: "Speed is vital in electricity, and quite important in any industry that uses it."

Bell said: "All published data should of course be consistently formatted and machine readable. Bulk conversion of data types could happen later if mandated, a task more easily achieved if all sector data is self-consistent to begin with."

However, Martin thought: "Consistency between sector data may not really be necessary per se; what works is data available using standard tools (APIs) with enough commentary to enable users from other sectors to interpret it."

He praised Elexon for its API approach but he noted: "Any other industry can publish their own data using their own schema. For example, a water industry API would probably follow a different schema. Fine, provided it's public."

The view from Siemens's Aloor was longer term: "A whole system approach to infrastructure development will make this question irrelevant as we will be developing the infrastructure on a common communication, information and data platform."

WHAT WOULD BE THE NEXT STEPS TO OPENING DATA THAT WOULD BE MOST USEFUL FOR INNOVATORS?

When *New Power* asked this question there were calls both to widen and deepen the data available.

Aloor took up the sector point made by Martin, calling for creation of a 'whole system' through sector coupling. "Adopting to common standards in all infrastructure sectors from customer layer, component layer, communication and information layer, functional layer, business layer to market layer is the key in achieving this goal. Therefore, policy decisions need to be made around adopting these common standards across all sectors to enable innovators to start work on developing the whole system," he said.

Ault reiterated the five high level recommendations made by the EDTF. That meant in SGS's domain of smart, flexible power distribution systems, "it is geographical network data, network electrical models, load profiles, headroom or capacity, flexibility services locations, forecast network loading and any new time or location-differentiated network tariffs". That would enable innovators to identify value-adding opportunities and then make investment, planning and operational decisions to create value in the system.

Bell wanted market data in depth to enable DSR. He said that meant "embedding the 'presumption to publish' within all new RIIO plans for National Grid and for the DNOs...

"[NGESO] should be open about all remaining bilateral contracts they hold for provision of balancing services. After a purge of some bilateral contracts in 2018/19 NG should finish the job and make clear what services they get outside of open market structures."

The ESO should also publish all data that currently constrains any balancing services contract. And "fundamental elements of the operation of the electricity grid – such as second-by-second sys- >

tem frequency and constraint hotspots – should be published in real-time."

Martin said for any data not affected by confidentially issues, "proceed now" should be the approach to opening it up. He said DNOs could start by publishing their internal technical standards for connection of customers or generators. And he recalled an a slide taken from an internal Amazon presentation.

> Mandate that data... about all bilateral and non-market-based balancing services contracts should be made public

"The gist of it was this: anyone may create a database of any useful information for any purpose within the business in any format they like, but they must make the contents of that database available throughout the company via the company's common internal data systems," he said.

WHAT RULE-CHANGES, IF ANY, SHOULD BE FIRST ON THE LIST FOR OFGEM OR OTHER SECTOR REGULATORS?

GridBeyond's Bell said Ofgem should mandate that data – if only metadata – about all bilateral and non-market based balancing services contracts should be made public, so as to provide better information to all market participants.

Aloor noted: "Most of the policy decision-making sits within ministerial departments rather than with the regulators. Most of the time the regulators' responsibility is limited to the implementation of policies. Therefore, it is important to look at the policy decision-making processes and make sure that it is independent of the political system by providing more power to civil servants."

He said there is an opportunity to create a new world class industry focused on the energy transition. "However, delays in the policy decision-making processes are hampering those chances of success. Regulators are helpless in these matters."

Ault placed the responsibility on Ofgem, saying it should "quickly assess and resolve the confidentiality and security implications of open data availability and require the network companies to publish this data". NP

QUICK WINS: BROADEN THE TASK GROUP MEMBERSHIP

The UKRN looked for some quick wins for its next step and the first was to broaden the task group membership. Companies *New Power* spoke to would welcome that opportunity.

Graham Ault, Smarter Grid Solutions: "It is important that the Infrastructure Client Group membership should include incumbent or existing system participants as well as newer and often smaller energy system participants and innovators. Sectoral sub-groups will provide more focused quick wins within each sector but a whole system, cross-cutting sub-group can tackle the wider opportunities."

Joy Aloor, Siemens: "We still work in a traditional hierarchical way in this country and the decisions are carried out from policy makers to regulators to infrastructure operators to supply chain to consumers. This needs to change. Ideally, we need to bring all the stakeholders in the decision-making processes, in particular the supply chain, private sector and investment communities… unfortunately, this group is considered as the bottom of the food chain in our country. Other nations operate differently. It is time we adapted our approach, otherwise private sector and investment communities will look to operate elsewhere."

Chameleon: "We think any task group should include representation from new entrants and innovators and the tech sector as well customers."

Eamonn Bell: "The Task Group should have a member able to raise the concerns and needs of users of industry data. There should be a DSR representative."

ONE VIEW: DIGITAL IS TRANSFORMATIONAL

In a personal opinion, Joy Aloor, head of energy business advisory at Siemens, said data-sharing will transform the energy industry. "The industry really needs to be in position where it is capturing and converting any critical infrastructure asset data into more usable forms." That included information that can help create digital twins of infrastructure.

He added: "Current digital transformation programmes in the infrastructure sector are only taking place at an IT layer to automate manual processes. Complete digital transformation happens only when we undertake the transformation of IT/OT [operational technology] and IoT [internet of things] layers where information passes seamlessly from level to level; from component to sensor, operational to business, then to market level through the communication and information layer.

"Digital transformation at OT and IoT layers will make digital twins more active and will enable decisions to be made based on real time information. We are some way from this reality even though it's been part of the conversation for a very long time.

"We cannot consider infrastructure developments separately, as infrastructure sectors do not function independently of others, but work together as a whole system. In this instance, data sharing doesn't arise any more. What is needed is a common communication and information infrastructure which can integrate our all infrastructure sectors together."

Do you know your place?

Bespoke energy strategies are being put together individually or jointly by England's 38 Local Enterprise Partnerships and their plans shoud be delivered via five energy hubs. Janet Wood mapped the local energy action

Earlier this year the Labour Party created a flurry in the energy industry when it proposed bringing swathes of the electricity and gas sectors into public ownership. Among the aims was to give local decision-makers more power to take energy decisions: to grasp opportunities to shift to low-carbon options, build more green energy capacity and develop centres of expertise in the supply chain.

The proposal envisaged a series of national, regional and community energy agencies that could provide the expertise required.

Regional agencies would be spun out of, and based on the areas of, existing electricity distribution network operators. But in making its proposal Labour runs the risk of setting a central energy model, and one that is based perhaps too firmly on electricity networks.

Key to a successful localised energy framework for heat and power is taking advantage of local self-organising energy grouping that have been taking shape around existing Local Enterprise Partnerships (LEPs) – and groups that look at heat demand alongside energy.

LEPs are non-statutory bodies. This means they can look and operate very differently from each other, in terms of size, capacity and governance. All LEPs must be chaired by a business person and at least half of the members must come from the private sector.

The 38 LEPs have responsibility for bidding for central government funding and influencing local funding streams, and for ensuring that these deliver against the locally agreed priorities.

Each is producing an energy plan, on its own or with other LEPs.

For all the LEPs energy is an enabler and for some it is an important industry in its own right. As a result, five energy hubs have been created under the Department for Business, Energy and Industrial Strategy. The hubs have been created to increase public sector capacity to bring forward energy schemes and they are at arm's length from BEIS, with flexibility to agree objectives that align with local needs.

Energy offers an opportunity for local and regional groups, and one that has been organising in a relatively fluid way around other place-based initiatives. LEPs from the North West and North East hubs, for example, have joined forces as NP11 to produce a strategy for energy and clean growth aligned with the Northern Powerhouse.

Meanwhile, energy also represents a potential constraint for local development. Access to network capacity was the most frequent problem cited in the LEP energy plans, both for new local electricity generation but also for new demand – whether because of domestic expansion or because commercial and industrial customers have sought to expand their import capacity. At least one LEP plan aims to turn that into an opportunity by developing expertise in smart grids.

Below we present a summary guide to England's current place-based energy framework: 38 LEPs, five energy hubs and a snapshot of the energy issues in each.

@ SEE WWW.NEWPOWER.INFO FOR LINKS TO CURRENT LEP ENERGY STRATEGIES >

Greater South East Hub

Eleven LEPs are members of the Greater South East Energy Hub and it has a complex mix of sub regions. The eastern and coastal region can claim to be the "only part of the UK with expertise and operations in all areas of energy generation", with both offshore wind and oil and gas to support, nuclear, a gas terminal and onshore conventional and renewable generation. Kent, too, has an offshore renewables industry where more benefits could be retained in the region.

Other areas of the hub are very different. Oxfordshire has "an ambition to be one of the top three innovation ecosystems", for example. But fast growth and growing populations across the inland areas – London, the M3 corridor, the Thames valley and the Oxford-Cambridge arc – offer a different sphere of innovation. Here the constrained grid, knowledge industries and the needs of transport mean smart grids, microgrids and new business models are expected to emerge that make use of the distributed generation that is most likely to be deployed.

- Buckinghamshire LEP
- The Business Board (Greater Cambridgeshire and Greater Peterborough)
- Coast to Capital LEP
- Enterprise M3 (West Surrey and most of the county of Hampshire, including Guildford, Winchester, Woking, Farnborough and Basingstoke)
- London LEP
- Hertfordshire LEP
- New Anglia LEP (Norfolk and Suffolk)
- Oxfordshire LEP
- Thames Valley Berkshire LEP (Reading, Bracknell, Maidenhead, Slough, Windsor)
- South East Midlands (Bedford Borough, Central Bedfordshire, Luton and Milton Keynes. District councils: Aylesbury Vale, Corby, Daventry, East Northamptonshire, Kettering, Northampton, South Northamptonshire and Wellingborough, Northamptonshire)
- Southeast LEP (East Sussex, Essex, Kent, Medway, Southend, Thurrock)

South West Hub

The South West Energy Hub comprises seven LEPs and its hub is at the West of England Combined Authority.

The region's 600-mile coastline means it has energy resources to spare – a joint energy strategy for Cornwall, Devon and the Scilly Isles notes that the region "is home to the best wind resource in Western Europe, the best solar and geothermal resource in mainland the UK, and has huge resource potential for marine renewables". Nevertheless, the region currently imports 88% of its energy, at a cost of £9 billion annually. The aim is to become a net exporter, while making use of new power generating capability to provide renewable power for electric heat and vehicle options. Consistent planning regimes across the region is seen as an important enabler to roll out projects.

Elsewhere in the region resources are different but ambition remains high: Gloucestershire aims to become a national leader in low-carbon heat, with test projects planned in the Forest of Dean and the Cotswolds. Solent LEP, meanwhile, wants to become a centre of expertise on low carbon options for shipping and marine industries, while building on existing smart network projects on the Isle of Wight.

- Cornwall and Isles of Scilly LEP
- Dorset LEP
- Gfirst LEP (Gloucestershire)
- Heart of South West LEP (Devon, Plymouth, Somerset and Torbay)
- Solent LEP (Isle of Wight, Portsmouth and Southampton, the M27 corridor and the Solent)
- Swindon and Wiltshire LEP
- West of England LEP (Bath and NE Somerset, Bristol, South Gloucestershire)

>

North West Hub

Five LEPs make up the North West Energy Hub. Some include among the biggest energy assets, such as the nuclear complex at Sellafield with its skilled staff. But national parks such as the Lake District need support in developing local energy projects.

The region has seen a boom in heat networks that could present a replicable model for other regions. But some projects have been held up by lack of funding.

- @ 871 (Cheshire and Warrington)
- @ Greater Manchester
- @ Cumbria
- @ Lancashire
- @ Liverpool City Region LEP

North East Hub

The six LEPs in the North East Energy Hub represent some of the UK's largest energy users and some of its largest energy generators. That remains the case as the focus shifts from fossil generation to offshore wind and other low-carbon generation – the North East can claim that its offshore energy and subsea technology cluster is nationally and globally important. The industry clustered in the region means it has the energy scale to take on some of the UK's big challenges: investigating carbon capture and storage as well as the potential to produce and transport hydrogen in place of natural gas.

- @ Humber LEP (Hull, East Riding, North Lincolnshire and North East Lincolnshire)
- @ Leeds City Region LEP
- @ Northeast LEP (County Durham, Gateshead, Newcastle, North Tyneside, Northumberland, South Tyneside and Sunderland)
- @ Sheffield City Region LEP
- @ Tees Valley LEP
- @ Enterprise Partnership (York, North Yorkshire and East Riding

Midlands Hub

The Midlands Energy Hub comprises nine LEPs and the energy hub operates via Nottingham City Council.

The region stretches from the Welsh borders to counties flanking the M1 and energy production and use varies across the region. In the Marches LEP there is more opportunity for generation across the renewables portfolio, with opportunities for both wind and solar. The area has a particular focus on biomass and leads on anaerobic digestion – giving rise to interesting possibilities to consider lowering emissions in energy and agriculture simultaneously.

Moving eastwards through the region the link between energy and transport becomes more important and the nature of the transport demand changes: Leicestershire and the Nottingham and Derby (N2D2) areas are hubs for freight and distribution so there is particular interest in developing electric vehicle infrastructure.

It is the central and eastern part of the region that also notes how important it is to meet the needs of businesses with large energy demands. Leicestershire in particular hopes to tap into "a vast wind resource", while the Black Country and South East Midlands areas aim to combine energy efficiency in those businesses with on-site generation, especially PV.

- @ Black Country LEP (Boroughs of Dudley, Sandwell, Walsall and the City of Wolverhampton)
- @ Coventry and Warwickshire
- @ D2N2 (Derby, Derbyshire, Nottingham and Nottinghamshire)
- @ Greater Lincolnshire
- @ Greater Birmingham and Solihull
- @ Leicester and Leicestershire
- @ Marches LEP (Herefordshire, Shropshire and Telford & Wrekin)
- @ StokeStaffs LEP
- @ Worcestershire

Deal or no deal?

The government is consulting on its proposal to use a regulated asset base model to finance nuclear new-build. Janet Wood took a look at the options and found a complex set of arguments

Nuclear's future in the UK remains uncertain. But it seems that the major parties accept that some nuclear plants will be required – especially if there is a switch to electric vehicles and at least a partial switch to heat pumps, on the way to the UK's Net Zero target.

Labour's recent *Thirty recommendations by 2030* policy document stated: "It is assumed that the UK's nuclear generating capacity is maintained at its current level," and so far, at least, the Liberal Democrats have not revived the anti-nuclear stance discarded when Ed Davey had responsibility for the technology at the then Department of Energy and Climate Change (DECC).

> The application of RAB remains particularly problematic to new nuclear

If replacement nuclear is required, how should it be financed? As we discussed in the November issue of *New Power*, the shift towards distributed generation has seen a surge in small, capital-light projects – and made large, long-lived assets look still more difficult to fund.

The government's current answer is to move to a regulated asset base (RAB) approach, similar to that used for the Thames Tideway Tunnel (TTT), and it is consulting on whether that is the right answer.

So far, responses to a consultation on the subject, which closed in November, have been far from giving it full support. Citizens Advice, for example, said concerns raised last time the model was considered "remain pertinent". The watchdog said: "While the model put forward in your consultation tries to address some of the fundamental flaws identified in 2010, such as by trying to create efficiency incentives through gain/pain-sharing factors, the application of RAB remains particularly problematic to new nuclear. This is because new nuclear projects frequently suffer significant time and cost overruns. The RAB model would push these very high materiality risks at least in part from investors on to consumers – and consumers have no way to manage them."

The Institution of Civil Engineers (ICE) and The Infrastructure Forum (TIF) were among several organisations that pointed how different a nuclear project would be from the TTT.

The large investment required was one issue. TIF put the price tag for new nuclear at about £20 billion, compared with £4 billion for TTT. It said: "The structure, as a result, will likely need to target higher investment grade ratings, reflecting a lower risk profile, in order to attract the necessary capital. … The most significant implication of this difference of scale will be the relative difficulty of mounting a TTT-style financing competition."

ICE also noted that in comparison to TTT, new build nuclear has "significantly higher scale and complexity", so the risk of late delivery was higher. The Nuclear Economics Consulting Group (NECG) summarised some of the challenges: "A long and uncertain development and construction period; an unfavourable new build track-record; the complexity, cost, tenor and uncertainty of nuclear safety regulation; and uncertain revenue after commercial operation. Completion risk includes delays, cost-overruns and the possibility of abandonment prior to completion."

That means the RAB model "will require a large, complex process to develop and agree arrangements that satisfy all parties involved and protect the public interest." To that list ICE added "risk apportionment, construction cost overrun, time overrun, approvals and payment sequencing". And the Infrastructure Forum spoke about the non-WACC (weighted average cost of capital) building blocks (eg regulatory depreciation life, decommissioning, opex costs, tax etc over the duration of the licence should be agreed ex ante) so that investors know what they are bidding against.

WHO WILL REGULATE?

Overseeing costs during construction would be the job of a regulator – possibly, but not necessarily, Ofgem. The Energy Systems Catapult said: "There is a cost to establishing and operating an economic regulatory regime. The source of funding to >

cover these costs should be clear." Citizens Advice, meanwhile, pointed out how important the regulator would be, because, "the build time and cost overrun potential of this type of investment, and the ability to benchmark efficient costs, differ markedly from those of more formulaic investments like pipes and wires, creating significant risks to consumers".

It added: "Consumers are badly served by any model that exposes them to the construction cost risks associated with nuclear new build, given their high frequency and magnitude. An entirely laudable desire to reduce the cost of capital could easily be outweighed by any inflation in the volume of capital that consumers need to pay off."

ES Catapult agreed that alongside the cost of capital, "the biggest influence on the price of electricity from nuclear plants is the management and containment of risks during construction that affect the duration and cost of the project". It said an economic regulator can protect consumer interests by assuring consumers that projects are being delivered consistent with established good practice. "Developing this expertise is essential for the cost of nuclear to fall in the UK…

"An important role for the economic regulator is to exercise an element of governance over plans brought forward by developers."

But Together Against Sizewell C said: "With so little experience of building NPP in the UK, and with the developer holding all the data, we doubt the effectiveness of the regulator in controlling costs."

Citizens Advice said this was a case where the detail mattered. "The extent both of consumer exposure to risk, and the strength of the incentives on the project developer, will depend heavily on how the gain/pain sharing factors are configured. For example, who bears most of the risk – consumers or investors? Is the exposure subject to caps/floors and if so where are they set? Are the sharing factors constant [linear] or are they sculpted [kinked] in some way that means the strength of incentives varies depending on the scale of under/over-spend?

"Those factors are so crucial – the potential materiality associated with them is so gigantic – that it is not possible to provide support for this model without further detail."

SELLER'S MARKET?

A key issue is that a nuclear project, unlike TTT, would have fewer guarantees over its output, as it has to compete to sell its power, rather than being a monopoly supplier.

Equally, there is concern as to the effect on the market of a nuclear fleet underwritten by RAB. Energy UK pointed out that "this would be the first time that a RAB model has been used in the competitive generation market and great care needs to be taken to ensure that competition is not distorted. There must be checks and balances". It also discussed the interaction between returns for the plant owner and returns for energy suppliers who buy the plant's output. "We recognise that the inherent difficulty in forecasting costs brings additional risk. The

The world's largest crane, 'Big Carl', is now on site at EDF's Hinkley Point C

WYLFA DEVELOPMENT CONSENT DELAYED

When Hitachi decided to halt work on its proposed new nuclear station at Wylfa it decided to end work on a securing a variety of environmental and other consents. But it did not withdraw its application for a Development Consent Order for the project. Now the secretary of state has said she wlll delay making a decision on that application until 31 March.

The secretary of state wants to know how environmental standards will be assured and there are other questions that may have been answered if the project team remained in place. For example, where land is required for ecological mitigation, when will compulsory purchase permissions lapse, and how will Hitachi manage such a lapse? The secretary of state has asked for responses and third party comment by 31 December.

arrangements for supplier cost recovery should not expose suppliers to significant risk of short-term cost increases that cannot practically be recovered in customer tariffs or contracts.

"Foresight is key for suppliers, for example, a supplier would need to see costs fixed for two years ahead in order to price these into two-year fixed deals. From a non-domestic perspective, the ability to flex tariffs to make up for these types of changes is even more limited as customers often agree prices in advance (sometimes years) and for longer periods of time."

FUNDING DEVELOPMENT

The NECG pointed out that costs start being incurred well before a RAB project is under way. "The investment in developing and implementing the proposed RAB model will … be significant, even if it does not deliver the desired level and type of new NPP investment."

It broke those costs down to include development costs, design, licensing, site preparation, engineering and other activities leading up to a financial investment decision and the start of construction. It said that cost should be included in the asset value if a project went ahead.

> "Supplier cost recovery should not expose suppliers to significant risk of short-term cost increases

The cost of development may deter many potential investors, and that would materially affect the project cost because there would be fewer companies reaching any bidding round. A developer may make a large investment and then decide not to proceed. NECG said: "If these development costs are only recovered if the NPP is completed and placed into operation, this will make the NPP development process riskier and more uncertain for developers."

It also said the government should consider "if and how … developers might recover these costs if they do not go forward … This would increase the potential that real NPP projects will proceed to a successful financial investment decision", but "on the other hand, if this approach is too generous, it could lead to less well-prepared developers moving forward, with resultant difficulties during project implementation".

WOULD DECC HAVE CHANGED ITS VIEW?

Citizens Advice referred back to analysis by the then DECC of the RAB model, which said transferring a construction risk from generators to the consumer, "would represent the most fundamental change to the current arrangements". At that time DECC said: "Moving to a RAB system would require the government to sacrifice all market benefits and competitive pressures for greater efficiency, optimal operation and innovation that could be retained under other options considered as part of this project."

DECC also said: "The generation sector – where competition is viable and a key feature of the current market – is different to the natural monopoly market for the provision of transmission and distribution networks. As such, the government does not consider this an attractive option for reform."

IS THERE ANOTHER MODEL?

Some organisations put forward other financing structures in their consultation response.

ES Catapult said there was "evidence of the willingness of investors to invest in proven nuclear power generation". It thought the regulator should retain some freedom to design revenue incentives during the operational phase of the project, to incentivise efficient ongoing exploitation of the RAB asset to deliver best value for consumers within the market context at the time.

NECG said that the RAB model presents significant uncertainty, may not be fully developed and implemented for some time, and may not be attractive to developers, investors and lenders. Its alternative was a "simpler and faster approaches, such as setting up a new Crown Corporation".

ES Catapult's proposal had similarities. It said the construction phase dominates the cost of energy from nuclear and this phase most needs supply chain improvement and efficiency. Its alternative model was for "government to procure a fleet of nuclear power stations from developers with funding from the government balance sheet. These could be operated by a UK nuclear operating organisation and licensee with subsequent options to operate under a long-term management and operations contract, or privatise early in the long-term operations phase."

Could government be forced to deliver new nuclear as a state project after all? NP

The New Power Leader

JANET WOOD EDITOR, NEW POWER

Grab the XR opportunity before it disappears

The large elephant in the room when discussing decarbonisation in the UK is heating and the gas network.

It is not ignored by industry and policymakers – for these it is the next big challenge and one that's scale is much larger than the last big challenges of closing coal and (starting to) decarbonise power. But it is largely unknown to the population at large. That's not surprising: it is a huge and frankly horrendous public acceptance challenge and one that will hit probably every domestic customer not just in the pocket but in the sitting room, the kitchen and the bathroom. When the scale of the transformation really becomes known, policymakers can expect very significant pushback and a lot of fear about the distributional effects.

Policymakers have fought shy of bringing this into the public debate and that is not surprising. No politician wants to give voters bad news about costs or about – as is almost certain – a loss of choice and probably a lot of inconvenience in getting there. Politicians and the industry would rather have some solutions to present and we are rather a long way from that.

There is usually a good argument to wait until you have some concrete offerings before going out to put them before the electorate. But look at the public debate at the moment. Climate change is at the top of the news agenda, with flooding fire and other natural disasters. We have campaigners from Extinction Rebellion (XR) on regulator strike and camped out in Westminster. I have seen calls to action and rules of engagement for XR on the family noticeboard in many a kitchen.

XR maybe not be going away but inevitably the heat will go out of it as public attention moves on. But while it is driving the agenda it is an opportunity to be seized. There is uncomfortable news to give to voters about a heat transition that requires investment, inconvenience and tough choices. We can't actually give most people the choices yet but we can explain what the problem is and be upfront about what it will mean for customers. In the end, we have to spend some years in major trials and see what comes out of them before we make decisions. But we can tell consumers that as well.

Don't miss the moment. XR is a huge opportunity to start putting those tough choices to the public and we should seize the chance to introduce them to the heat problem. NP

Take advantage of local energy action

There is a lot to be said for Labour's plans for regional and local energy agencies charged with helping deliver new energy industries across the UK. A distributed industry is coming towards us very fast and it should meet local needs and take advantage of local opportunities.

But let's make sure that is built on all the work done by the Local Enterprise Partnerships. Those organisations have looked in depth at what is needed locally to meet energy needs for all their stakeholders – transport, heat, electricity; business and domestic users; even visitors where they are an important issue.

This is just the type of ground-up whole-systems thinking that should be encouraged and used. They should be a major influencer on any new energy agency.

RECENT UPDATES TO *NEW POWER*'S ONLINE DATABASE OF UK POWER ASSETS

Project name	Developer	Status	Startup	Capacity	Location	Ownership
Costa Head	Hoolan Energy	Approved		20	Orkney	Hoolan Energy
Dogger Bank Creyke Beck A	Forewind	Approved	2015	1,200	Teesside	SSE, Equinor
Dogger Bank Creyke Beck B	Forewind	Approved	2015	1,200	Teesside	SSE, Equinor
Dogger Bank Teesside A	Forewind	Approved	2015	1,200	Teesside	SSE, Equinor
Eishken	GDF Suez	Approved		150	Isle of Lewis	Uisenis Power
Forthwind	Forthwind	Approved	2023	12	Firth of Forth	Forthwind
Hesta Head	Hoolan Energy	Approved		20	Orkney	Hoolan Energy
Seagreen A+B	SSE, Fluor	Approved	2020	1,050	Angus	SSE, Fluor
Sofia	Forewind	Approved		1,200	Teesside	Innogy
Tolsta	2020 Renewables	Approved	2017	42	Isle of Lewis	BayWa R.E.

Over 5GW of offshore wind picked up contracts for difference (CfD) deals in the UK's third auction round in September. Four onshore projects in the Scottish islands totalling 275MW also secured contracts. Prices will stabilise their revenues at between £39.65 and £41.61/MWh, a significant reduction on previous UK auctions.

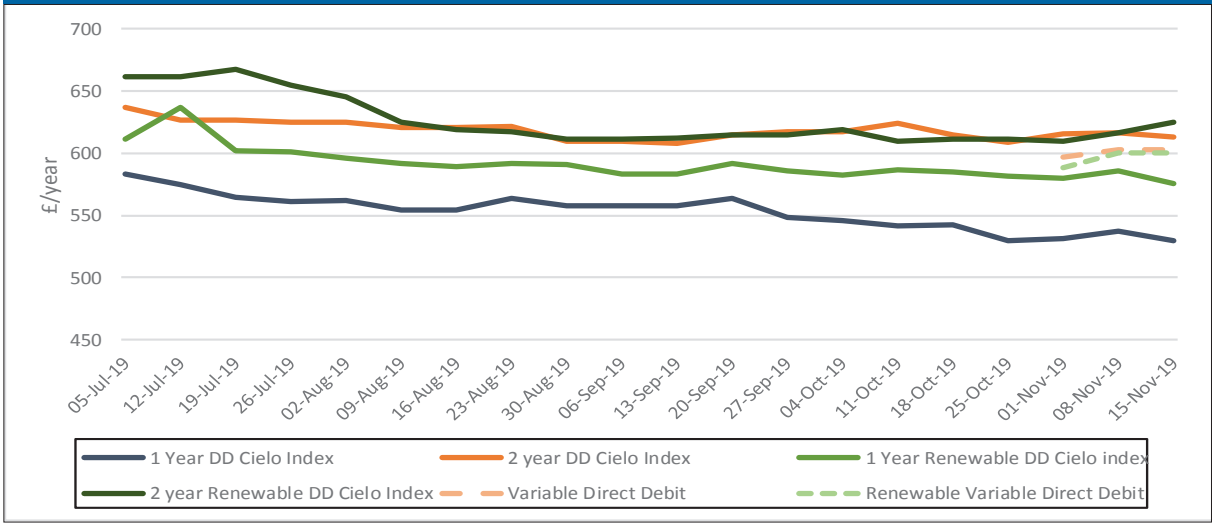
DATA *RETAIL PRICES*

New Power's monthly index of retail prices, provided by Cielo Index

CIELO COMMENT: The Cielo Index tracks prices being paid by end customers for contracts of different durations and generation types. The chart shows the annual amount being paid for electricity supply over time for different contract types, now including variable prices being offered for sale. During November, 1 year contract prices continued to fall, whilst longer term prices increased.

Data supplied by and copyright Cielo Index.

CIELO INDEX: ANNUAL ENERGY BILL IN POUNDS FOR AN AVERAGE SIZE CUSTOMER PAYING BY DIRECT DEBIT

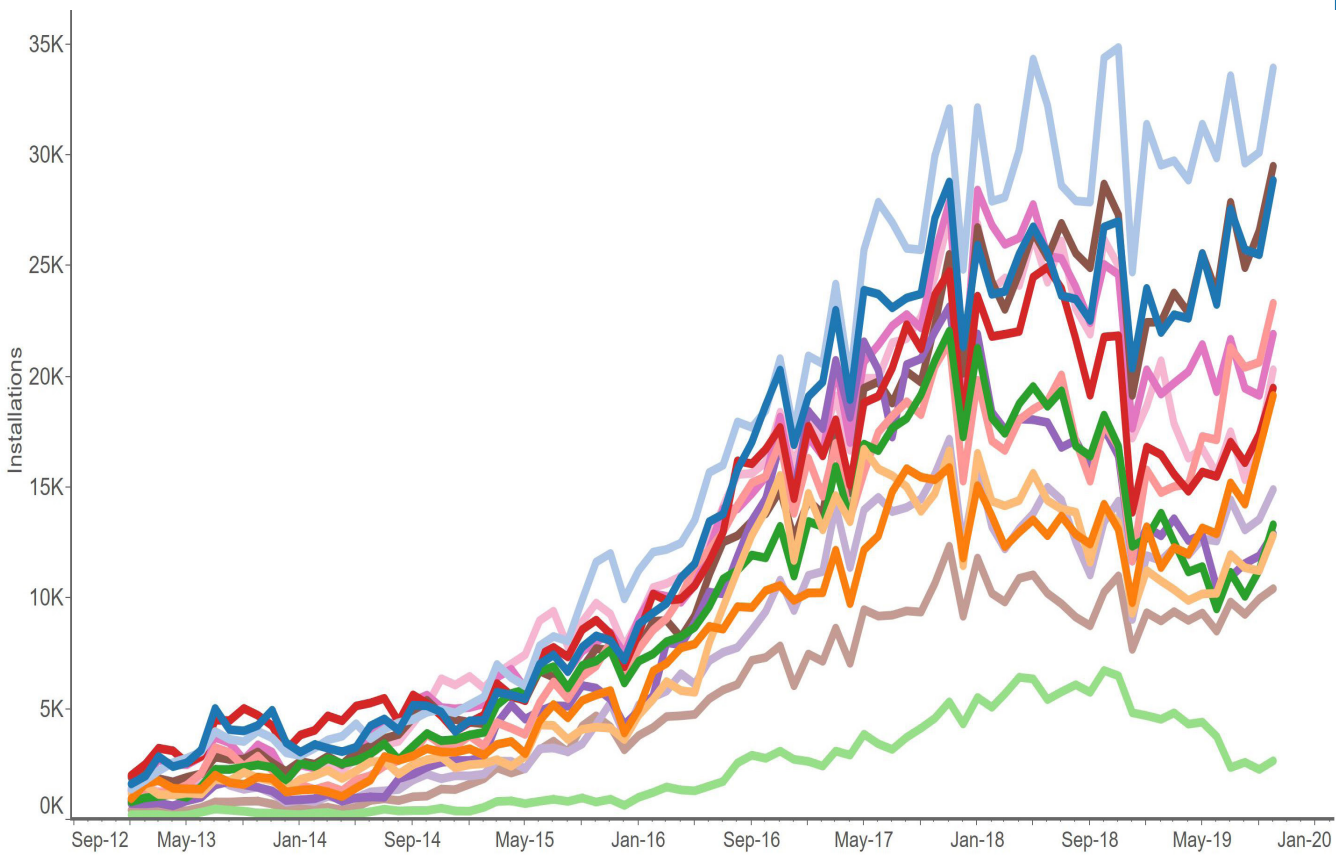


ElectraLink

As the smart meter rollout continues, *New Power* will be tracking progress with the kind assistance of ElectraLink.

All data on this and the following page are supplied by and are copyright ElectraLink.

MONTHLY SMART METER ROLLOUT BY GRID SUPPLY POINT



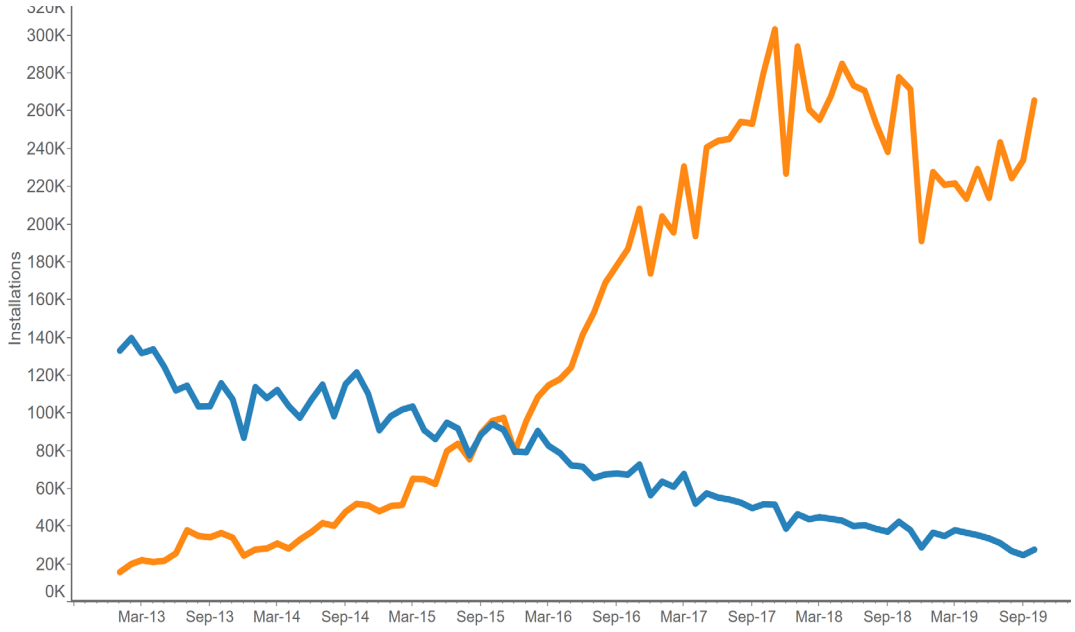
Gsp Group

- East Midlands
- Eastern England
- London
- Merseyside and North Wales
- North Eastern England
- North Scotland
- North Western England
- South Eastern England
- South Scotland
- South Western England
- Southern England
- Southern Wales
- West Midlands
- Yorkshire

ELECTRALINK COMMENT

The upturn in smart installations this month has been significant across every GSP group, with the notable exception of North Scotland, which has experienced a small increase but is clearly lagging behind the other GSPs and has been since the start of our monitoring.

MONTHLY SMART VS LEGACY ELECTRICITY METER INSTALLATIONS

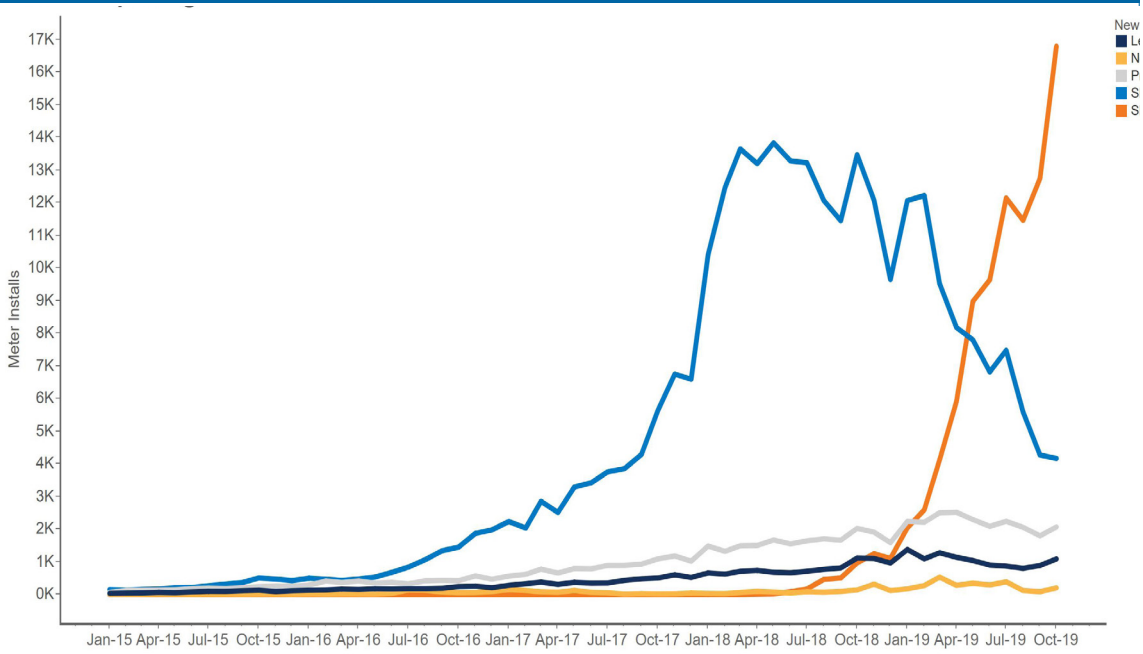


Meter Type
- Legacy
- Smart

ELECTRALINK COMMENT

The total number of smart meters is still increasing following the sharp drop in December 2018. The monthly number of Smart installs is still 5% lower than the same month in 2018 in October 2019.

INSTALLS REPLACING SMETS 1 METERS



New Meter Type
- Legacy Credit
- Non-SMETS
- Pre-Payment
- SMETS1
- SMETS2

ELECTRALINK COMMENT

The trend of installing a smart meter to replace a smart meter is continuing. With very few Smets1 meters being replaced by a non-smart install. Smets2 Installs now make up 70% of Smets 1 replacements

All of the price statistics in this section are derived from the Energy Imbalance Prices produced by Elexon. These are available from the Elexon Portal: www.elexonportal.co.uk.
Elexon makes sure that payment for imbalances in wholesale electricity supply and demand is settled accurately and efficiently. For more information on the BSC or Elexon's services, visit www.elexon.co.uk.

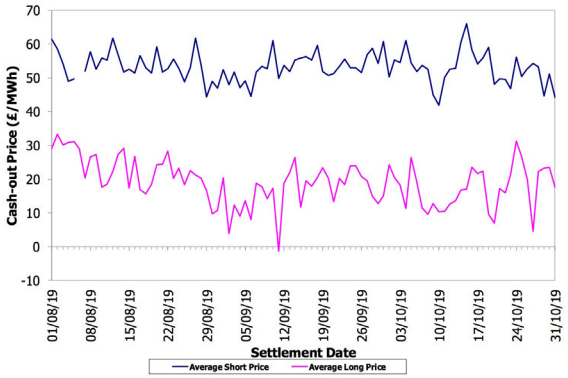
SYSTEM PRICES (LONG SYSTEM), £/MWH

	Min	Max	Median	Mean	St Dev
October 2019	-65.98	48.03	19.89	17.33	10.73
September 2019	65.82	50.00	18.26	16.38	12.02
August 2019	-65.93	45.00	23.50	22.11	9.46
July 2019	0.00	45.00	29.03	28.00	6.77

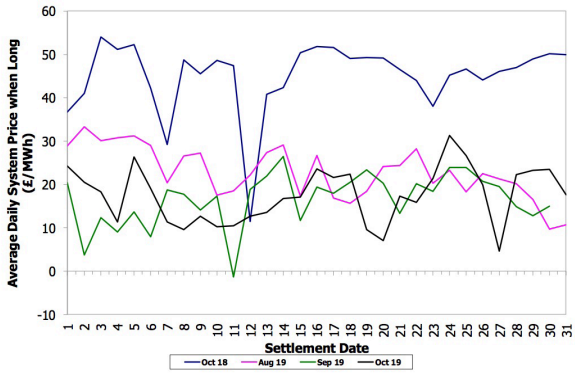
SYSTEM PRICES (SHORT SYSTEM), £/MWH

	Min	Max	Median	Mean	St Dev
October 2019	16.95	157.81	52.50	52.93	11.91
September 2019	22.41	100.00	54.00	53.33	10.27
August 2019	25.22	110.00	53.93	54.30	9.52
July 2019	26.1	120.00	54.50	58.30	13.44

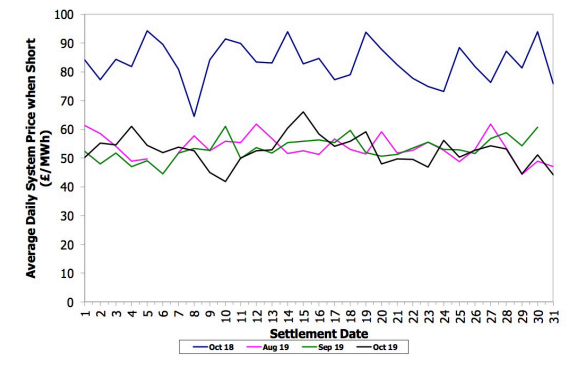
DAILY AVERAGE SYSTEM PRICES, £/MWH



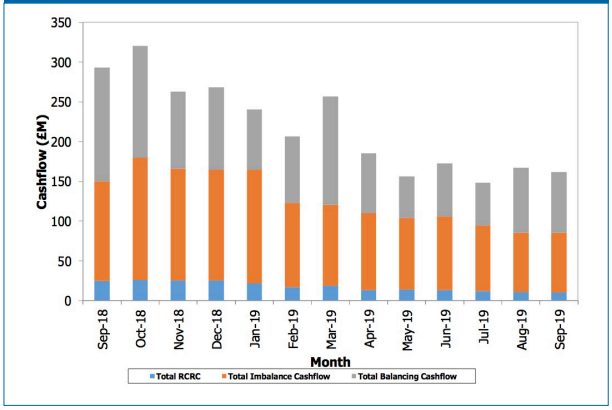
AVERAGE LONG SYSTEM PRICE PER SETTLEMENT DAY, £/MWH



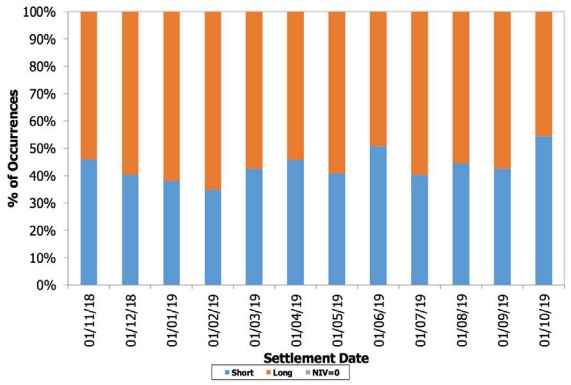
AVERAGE SHORT SYSTEM PRICE PER SETTLEMENT DAY, £/MWH



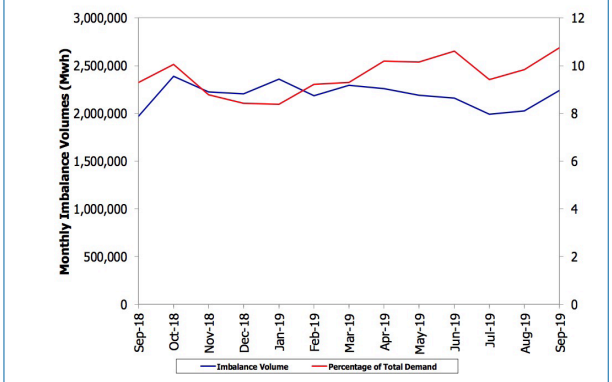
CASHFLOWS IN THE SETTLEMENT SYSTEM



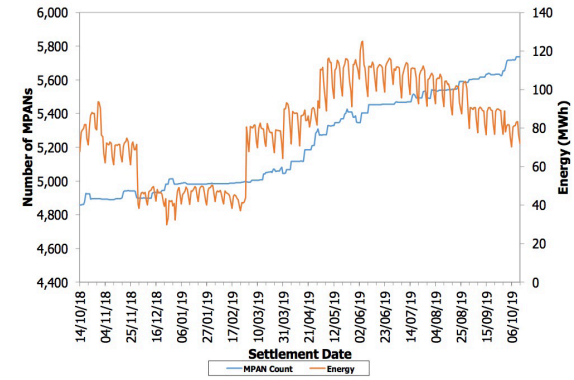
LONG VS SHORT SYSTEM OVER PAST YEAR



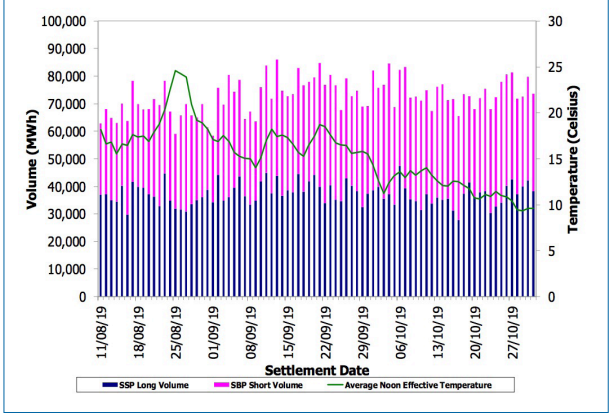
MONTHLY IMBALANCE VOLUMES



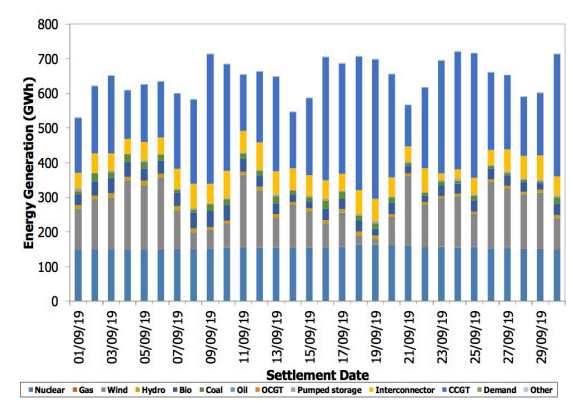
MICROGENERATION METERS AND ENERGY EXPORTED



DAILY IMBALANCE VOLUMES



DAILY GENERATION BY FUEL TYPE



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USING *NEW POWER*'S ONLINE DATABASE

New Power's database includes all types of power projects: gas (combined cycle gas turbine (CCGT), open cycle gas turbine (OCGT) and small engines), coal, onshore wind, offshore wind, hydro, photovoltaics (PV), energy from waste, biomass, wave and tidal, etc; also interconnectors and storage.

Sort entries by: project name; developer; project type; location (mostly by county); country (England, Scotland, Wales, Northern Ireland); original planned start-up date; planned capacity; status (see below); actual start-up; current capacity; transmission capacity and from when; ownership.

You can use other categories to refine your search.

To access the database, use the 'subscriber area' tab. You will be asked for your login and password.

We welcome updates, please email the editor.

www.newpower.info