New Power

REPORT

APRIL 2020

'One of the issues with innovation funding is that it is specific to particular sectors... there are fewer opportunities to truly look at opportunities across sectors'

Anna Ferguson, Power systems director, WSP

NI-RHI

'cash for ash' fallout hits Ofgem

NETWORK

will it limit our renewables rollout?

COAL EXIT

attention turns to gas investment

TOWARDS 2030

new directions in regulation

'What we have seen in the last 12 to 18 months is purpose on net zero that is starting to shape the agenda for businesses'

Mark Dickinson, Inspired Energy

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PER CENT DEMAND

NGESO on the system under Covid-19

'No matter where the bar is set for market assurance, there will still be failures'

Trevor Hutchings, Gemserv

Expert information for all those invested in the UK's energy future

Covid-19 'fast-forwarding power by a decade'

Reductions in electricity use in countries that have 'locked down' society to manage the Coronavirus pandemic have "fast forwarded some power systems 10 years into the future", Fatih Birol, executive director of the International Energy Agency, said on 22 March.

He said that economies that have taken strong confinement measures had seen electricity demand decline by about 15%, largely as a result of factories and businesses halting operations. But for countries such as Spain and the US state of California, with high wind and solar generation, that means traditional generators are likely to close while weather-dependent generators represent a larger proportion of supply. As a result, "the recent drop in electricity demand fast forwarded some power systems 10 years into the future, suddenly giving them levels of wind and solar power that they wouldn't have had otherwise without another decade of investment in renewables", he said.

The IEA's assumptions on falling demand were borne out by analysis by climate group Ember (previously Sandbag). Using data from Entso-e, weather-corrected, it said every country in Europe saw electricity demand fall in the week to 22 March. "These are very significant falls in the context of electricity demand, where temperature-adjusted changes are normally small," Birol said. Impacts were highest in Italy, Spain and France but the figures pre-dated the UK lockdown, and it had seen least impact at that time.

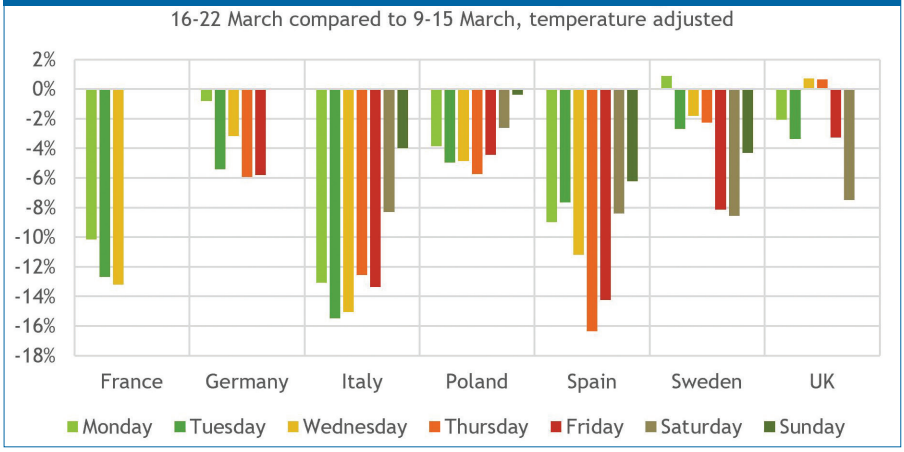
It estimated the impact in Italy at 20% over the past two weeks and it expected more reductions with more industry and services shut this week. Ember noted that the crisis had hit Europe in the previous 10 days. But it thought the experience from China indicated that the falls might be deep and long-lasting.

As people are working from home, the main reductions come from closing industrial operations and centralised business. But such users are also a major source of flexibility, adjusting usage (or using onsite generation) to help balance the system. "That option is hardly open today," Berol said.

He added: "This is an important moment for our understanding of cleaner energy systems, including some of the operational challenges that policy makers and regulators need to address to ensure electricity security." Long term, he said: "This highlights the need for policy makers to carefully assess the potential availability of flexibility resources under extreme conditions."

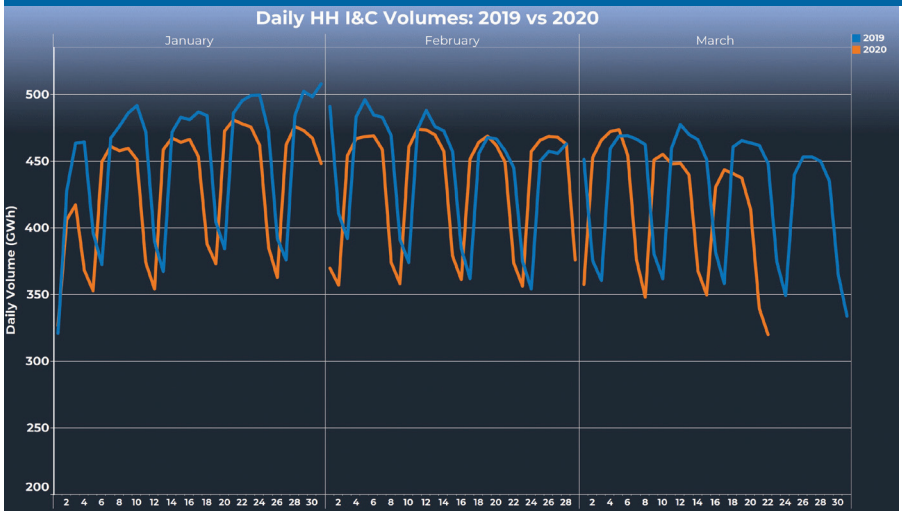
In time, electricity generation from renewables should not simply follow the weather, "but will have to be managed in an intelligent way in order to reduce costs and improve electricity security", Berol said, adding that government and regulators should plan for disruption: "Electricity networks are far more vulnerable than pipelines to extreme weather – a vital consideration for policy makers as they plan for increasingly electrified energy systems. The long-term task is to make networks tougher by investing in underground cables and decentralised storage – and by designing network layouts that are resilient to emergency situations such as hurricanes and floods." NP

ELECTRICITY DEMAND DAILY CHANGE



Source: Ember (above), Electralink (below)

DAILY GB HH I&C VOLUMES, 2019 V 2020



NGESO: electricity system is operating 'within normal envelope'

National Grid ESO said that the electricity system was currently operating "within the normal envelope" and it had not been required to contract more reserve or response to manage it.

In an update, it said demand had fallen by more than 15% on normal levels, which it described as between the 'medium impact' and 'greater impact' scenarios in its modelling (see graph p2). It expected the 'lockdown' announced on Monday to take that reduction nearer to 20%, with an increase in domestic demand throughout the day and a reduction in school and commercial loads. It had a 'sharp focus' on what would happen after the weekend's clock change, which typically sees demand fall and it was currently 'stress testing' for the summer period, which also typically sees plant maintenance outages.

However, it said transmission network owners had rescheduled maintenance that would have taken lines out of service and that would give it more options on balancing.

It is running regular ancillary service tenders on schedule, although the 'pathfinder' tender for reactive power on Merseyside will be delayed by a few weeks because the shift to home working has slowed the process.

The system operator highlighted the importance of timely and accurate information from industry members, acknowledging that power plant operators were uncertain about outage plans, especially if key staff members were ill or self-isolating.

DEMAND SIDE QUESTIONS

Industrial demand was "the customer segment most difficult to assess and therefore it provides the greatest uncertainty", the system operator said. Such customers are also now an increasingly important source of flexibility for the system, especially at times of lowered demand when there is less generating plant in operation.

Alastair Martin, founder of response provider Flexitricity, also told *New Power* that some of the priorities of the companies it dealt with had changed to remove flexibility: some, for example, were NHS suppliers and "we have always said that if you need to opt out [of response] your industrial process takes priority". But he said the company had not seen a major withdrawal of capacity and "it's a quantifiable and known issue".

The situation could potentially speed up the addition of new providers for some services. Martin agreed his company could potentially sign up new businesses to provide flexibility, although it was not clear whether site visits would be possible to assess the potential.

More radically, the system operator suggested that wind power might be used to manage frequency. That is an option that has been under development for some time and the programme was "very close to completion and credible", NGESO said.

One issue that was "top of the >

INDUSTRY ACTIONS

Network companies are rescheduling planned work so hard-pressed field workers are available for emergencies, according to the Energy Networks Association. Networks have well-tried 'mutual aid' arrangements that are regularly employed during storms or other occasions where vulnerable network assets can be affected. That has extended to neighbouring networks such as in France. However, those arrangements rely on the help of workforces from unaffected areas, so further measures are required at present.

ENA said with regards to work such as the gas mains replacement programme, "we've taken the decision to gradually slow this work and pause it where it is safe to do so". It said new gas and electricity connection projects would be reviewed on a customer-by-customer and project-by-project case, "prioritising critical national infrastructure".

In other measures:

- Northern Powergrid said it would postpone work that requires a planned power cut if deferring the work does not impact network resilience in the near term. It will put back plans for any non-urgent projects where the process of carrying out the work itself steps up the risk to customer supplies whilst it is carried out.
- Electricity transmission network owners are rescheduling work that would have taken network assets out of service during the summer, which will relieve pressure on the workforce and also give the NG ESO more options for balancing supply.
- National Grid Gas Transmission said it would contact stakeholders "to understand your requirements as we look to prioritise critical work to maintain reliability of supply". It added: "All our operational sites are secure, with a wide range of existing resilience and security measures, including full operational back-up locations and engineers trained across multiple roles."
- Regulator Ofgem is reviewing its work programme for 2020. It has suspended publication of any new information on its website, except legally required releases, critical updates and information relating to Coronavirus, pending completion of the review. It said meanwhile suppliers' legal obligations to their customers remained in place, but that stops short at continuing the rollout of smart meters.
- Energy suppliers and their agents have suspended the rollout.

list" looking forward to the summer was the need for 'foot room' or 'reverse margin'. That has been a growing need for NGESO in recent years as the summer period and local renewables depress demand in some areas to an extent that the SO needs to find more users to keep enough assets on the system to manage frequency and voltage. The lock-down will make that need more acute.

NG AT HOME

Meanwhile, NGESO explained its own response to the lock-down and the potential absence of key workers. It has split the staff for its two control rooms so that there is no overlap, and most staff work from home and communicate with operators (preserving social distancing within the control room) via screens.

The company has plans for accommodation on-site for each control room if it becomes necessary. NP

Covid-19 may require wholesale rescheduling of deadlines set in secondary legislation

Deadlines in industry mechanisms are likely to have to be revisited as a result of the coronavirus emergency.

Staff and access issues due to illness, self-isolation or lack of construction progress during the lockdown are likely to cause some Capacity Market participants to miss "significant progress" deadlines in construction. Knock-on delays, for example in processing planning applications, will also affect companies' ability to maintain expected timetables.

The Capacity Market is just one example of mechanisms where deadines have been set in secondary legislation and will have to be revisited by the Department for Business, Energy and Industrial Strategy. That fear has already arisen for solar PV developers seeking to beat an end-March deadline to qualify for feed-in tariffs.

New solar projects had to register completion with Ofgem by 31 March to qualify for the scheme. But Community Energy England highlighted a number of projects on school roofs where completion was set to be delayed. For example, access to buildings which have been closed for deep cleaning has been a problem and "access to schools beyond the closure date of this Friday [20 March] is in many cases impossible", it said.

Other projects could be held up by supply chain disruption, sickness among key project workers, social distancing, or even issues such as key-holders self-isolating at crucial times.

One community developer said: "It would be deeply regrettable having got this far and put in so much effort, blood, sweat and tears, for us to miss the FiT deadline. It would also put the whole of our initiative at economic risk in terms of paying back our loans and community bonds."

In a response to a concerned developer, Ofgem said it was "alert to the potential impact" and it was making plans in line with government guidance and in contact with BEIS and "as part of this we are feeding in views on the impact to BEIS including those where we recognise that legislation dictates specific timelines". NP

Ofgem censured for its role in Northern Ireland RHI 'cash for ash' debacle

Northern Ireland's renewable heat incentive (RHI) scheme, administered by Ofgem's E-serve division (now part of its 'delivery' function), was a "project too far" for the politicians and civil servants involved, the public inquiry into the botched measure has concluded.

The scheme, dubbed "cash for ash", was established to encourage businesses and farms to switch from burning fossil fuels to biomass, such as wood pellets. But as the fuel cost less than the subsidy, claimant companies had a "perverse incentive" to burn more and collect more in subsidy payments.

The Northern Ireland Executive is facing a payments bill which could be as much as £490 million, which represents a huge potential drain on the taxpayer. Controversy over the scheme, which was closed to new entrants in 2016, was instrumental in the political collapse of the administration at Stormont more than three years ago. >

Stormont first minister Arlene Foster oversaw the introduction of the scheme in 2012 when she led the then Department of Enterprise, Trade and Investment (DETI), now the Department for the Economy.

The inquiry's report said the scheme was "novel, technically complex and potentially volatile, especially because of its demand-led nature and the wide range of variables – such as fluctuating fuel costs – which could affect its operation. These features together made the scheme highly risky, yet the risks were not sufficiently understood by all those who should have understood them within the Northern Ireland government, either at the outset or any time during the life of the scheme. Without the necessary resources and capability, DETI should never have embarked on such a novel and complicated, demand-led scheme."

> "There was a multiplicity of errors and omissions

The inquiry, chaired by former judge Sir Patrick Coughlin, concluded that the failures of the scheme were not the result of corruption, although the report did criticise the treatment of one whistle-blower.

"Responsibility for what went wrong lay not just with one individual or group, but with a broad range of persons and organisations involved, across a variety of areas relating to the design, approval, management and administration of the NI RHI scheme throughout its life.

"Across those different areas, there was a multiplicity of errors and omissions… There were repeated missed opportunities to identify and correct, or seek to have others correct, the flaws in the scheme."

The civil servants involved were under-resourced, ill-trained and often out of their depth. Basic checks on the scheme were missing. Record-keeping was poor, reports and advice to ministers were often inaccurate, incomplete or misleading in important respects. Foster admitted she signed off the regulatory impact assessment of the scheme despite the absence of key cost information. The scheme was set up without adequate cost controls.

Most of the hearing's recommendations are aimed at the NI Civil Service, politicians and their special advisers. But GB regulator Ofgem did not escape censure. The report said the nature of the relationship established between DETI, as the owner of the NI RHI scheme, and Ofgem, as its chosen scheme administrator, was "unsatisfactory". The inquiry concluded that "the service that Ofgem provided to DETI, as the NI RHI scheme administrator, fell below the standard that DETI could reasonably have expected". Ofgem did not share important documents with DETI – for example, the audit reports of RHI installations. Copies of these reports were not provided to DETI until many months after scheme closure.

> "Ofgem's interpretation and application of the regulations ... contributed to considerably more public money being spent

Ofgem's fraud prevention strategy contained a fundamental error, incorrectly indicating that the NI RHI scheme had the protection of tiered tariffs. Ofgem also did not properly explain to DETI interpretations that it, Ofgem, had adopted in respect of the NI RHI regulations, or the potentially unwelcome consequences of those interpretations, even if, as Ofgem maintains, its interpretations were the legally correct ones. Ofgem's approach to the concept of 'heating system' in the context of multiple boiler installations, an area in which there was significant financial exploitation of the scheme, was a critical example in this context.

The report stated: "Early in, and throughout the life of, the NI RHI scheme, Ofgem received many pieces of relevant information (particularly through its administration of the GB RHI scheme) about scheme exploitation, including from its own sub-contracted auditor. Ofgem failed to pass that important information to DETI.

"This failure of communication on the part of Ofgem deprived DETI of important opportunities to be confronted with or reminded of problems with the NI RHI scheme and to consider taking steps to remedy them."

The report expressly disagreed with Ofgem that there was no causal link between the regulator's failings and what went wrong with the scheme. "It was Ofgem's interpretation and application of the regulations to the accreditation process which it administered that contributed to considerably more public money being spent on incentives than was the original and clear policy intent.

"Having previously warned that this might occur, it is not only a failing that this was not communicated to DETI when it did happen, but also that Ofgem had not analysed the financial consequences of its interpretation of the regulations and how they were being implemented," the report concluded

An Ofgem spokesperson said the organisation welcomed the Inquiry's findings. "Since 2015 we have overhauled the way we administer RHI scheme on behalf of the Department for the Economy, addressing the issues raised. We are studying the detail of the report and will consider whether further improvements to our administration of the scheme are appropriate." NP

Investors continue trend out of coal as gas investments are set to face opposition

Environmental organisations have expressed concerns over financial support for the fossil fuel industry, which they say has been increasing since 2015, when the Paris Agreement was adopted. *Banking on Climate Change 2020*, released by Rainforest Action Network, BankTrack, Indigenous Environmental Network, Oil Change International, Reclaim Finance and the Sierra Club adds up lending and underwriting to 2,100 companies across the coal, oil and gas sectors globally over the period 2016-19. The report finds that fossil fuel financing continues to be dominated by the big US banks – JPMorgan Chase, Wells Fargo, Citi, and Bank of America – which jointly account for 30% of all fossil fuel financing.

But the report did find that 25 of the 35 global banks it considered now have policies restricting coal finance, and 15 also restrict finance to some oil and gas sectors. *Banking on Climate Change* found that 100 companies planning new coal, oil and gas extraction accessed financing of $975 billion – including a 40% increase between 2018 and 2019. However, within that group the report found an overall decline in financing for coal mining and power.

Almost all the banks profiled allow unrestricted financing for companies producing and expanding oil and gas offshore, the report said. Funding to companies with significant Arctic oil and gas reserves, and for fracked oil and gas, have both been increasing. Financing for offshore oil and gas grew most rapidly, with a leap of 134% between 2018 and 2019

In tar sands, extraction financing has fallen since 2017, though 2019 levels remain higher than 2016. Many European >

Weblinks

@ Banking on Climate Change 2020

UK HEADQUARTERED FINANCE COMPANIES' POSITION ON COAL GENERATION

Name	Role	Most recent action
Aviva	Insurer/Reinsurer	2017: Declared its support for the 2015 Paris Climate Agreement, Substantially ceased coal insurance and divested coal assets
Barclays	Bank	January 2019: Ended project financing for greenfield mining and the construction or expansion of coal-fired power stations but continues to support other fossil extraction
Development Finance Institution	Development Finance Institution	November 2013: Ended support for public financing of new coal-fired power plants overseas, 'except in rare circumstances'
European Bank for Reconstruction and Development	Multilateral Development Bank	December 2018: Ended finance for coal projects and most oil projects including in high-coal countries such as Mongolia, Poland and Kazakhstan, previously treated as an exception
HSBC Holdings	Bank	April 2018: Halted finance for new coal-fired power. Bangladesh, Indonesia and Vietnam have 'targeted and time-limited' exception
Lloyd's	Insurer	November 2017: Implemented a coal exclusion policy as part of its responsible investment strategy for the Central Fund
Lloyds Banking Group	Bank	January 2020: Announced plans to halve the amount of carbon emissions it finances through personal and business loans by 2030. Applying a 1.5°C-aligned target to its loan book
Royal Bank of Scotland (RBS)	Bank	February 2020: Announced plans to stop providing finance to coal companies, both mining and power plants, by 2030
Standard Chartered	Bank	December 2019: Ceased financing any new coal fired power stations and coal mining anywhere in the world, save where there was an existing commitment
UK Export Finance	Export Credit Agency	Excludes coal power unless with emissions below 750g CO_2/kWh. In January 2020, prime minister Boris Johnson announced an end to foreign aid for coal mines and power plants

banks have implemented policies to restrict financing for the tar sands sector.

When it comes to coal financing, the groups found that finance to the top 30 coal mining companies declined by 6% between 2016 and 2019; finance to the top 30 coal power companies shrank by 13%. In both cases, the biggest absolute drops in coal finance came from the Chinese banks. Outside Chinese finance Credit Suisse was the biggest non-Chinese funder of coal mining over the last four years but funding has been decreasing since 2017. Citi was the worst coal power funder outside China over the past four years and its amounts have declined in each of the past two years.

One bank increasing its coal funding was Bank of America, which was the eighth biggest funder of coal power in 2016-19, but almost doubled its financing between 2018 and 2019. It was the largest non-Chinese coal power funder in 2019. The report said there is a clear trend of banks strengthening their policies over time, often starting with "tepid policies" that address coal projects only.

That withdrawal from coal was also highlighted by the Institute for Energy Economics and Financial Analysis (IEEFA), in an update on commitments by "globally significant" banks and insurers. It said over 100 had announced they would divest from coal mining or coal-fired power plants (see UK institutions, table p4.

The environmental groups called for more restrictions, saying that loopholes in the coal sector must be closed, tough restrictions were needed on the Arctic and tar sands, and restrictions "must be ramped up across the rest of the oil and gas industry".

EY: COAL EXIT IS A GAS OPPORTUNITY

Banking on Climate Change suggested that financing has been heading to the gas sector, where finance for liquefied natural gas import and export terminals jumped 39% last year. Meanwhile, in an examination of the future for energy fuels – specifically oil and gas – dubbing '*Fuelling the Future*', consultant EY considered what assumptions should be made about the future role of coal, and of nuclear, and the implications. It too found a potential increase in gas usage.

EY came up with four scenarios after considering the future through three different lenses — consumer, technology and regulatory. The scenarios range from a very gradual movement from hydrocarbons to rapid adoption of renewables.

It found that there might be continuing residual growth in coal generation worldwide because it is still "the fuel of choice" in the developing world. But views of the future for in coal-fired generation suggested 1% per annum growth at most, with some showing to 4% shrinkage per year. Nuclear was unlikely to take up the slack, with most predictions clustered around growth of 1.5% per annum, as few countries could manage nuclear's financing needs.

The report suggested that gas usage could double in one scenario, and see relatively modest growth in two others. It said gas costs would fall, because the industry could benefit from digitalisation and other reduced costs. Potential "upside factors" alongside the pressure to exit from coal included rapid electrification, resistance to nuclear power, and technical and financial barriers to widespread penetration of renewables. It said, "Gas businesses have a window of opportunity to be market influencers or even market drivers rather than market takers. The competition between gas-fired power generation and renewable power generation will be about technology and financing."

MORE TRANSPARENCY FOR CLIMATE AND CARBON RISKS

The Financial Conduct Authority (FCA) has opened a consultation on how to increase transparency over the type of climate risks companies are facing, and how well they are managing the risk. The consultation, which will lead to new disclosure rules, was promised in October last year and the FCA believes it will be important in giving investors the tools to "commit their money to companies and projects that will support the transition to a low-carbon economy". Enhanced visibility of climate risks is expected to give a corresponding boost to investment in green energy and other low-carbon industries.

The FCA said: "We consider that climate-related risks and opportunities are relevant to all companies, and likely to be material for most." Its new consultation would ensure all lusted UK companies are on a path that would end in climate-related disclosures consistent with the framework developed by the Financial Stability Board's (FSB) Taskforce on Climate-related Financial Disclosures (TCFD). The TCFD framework was published in 2017 and its aim is to help investors understand which companies are most at risk, which ones are best prepared, and which are taking action.

In a chart on its objectives and how to achieve them, the FCA states: "Clarity on expectations encourages a structured dialogue within companies on matters of governance, strategy and risk, and more robust processes to support >

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@ Download EY's *Fuelling the Future* publication

climate change analysis." Market analysis, commentary, data and ratings are all better informed and an innovative ecosystem of service providers emerges.

The FCA does not propose to make disclosure mandatory at the moment. That is because some companies do not yet have the necessary data it says, but also because disclosure frameworks are still evolving. But the government set an expectation in its Green Finance Strategy that all listed issuers and large asset owners would be disclosing in accordance with the TCFD recommendations by 2022.

Companies will be expected to make disclosures and explain where they can be found in the annual report. If not, they will be expected to explain why and say where partial disclosures are made. The organisation has included 'measures of success' for its intervention. It expects to see new disclosures made and, hopefully, markets rewarding those that best manage the risk (although it accepts this is hard to measure). It will monitor whether shareholders have better access to the information and ask asset managers whether the disclosure is useful.

The consultation closes on 5 June. NP

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@ Read the FCA consultation

E.On claims using Octopus platform will cut costs by £100 million

E.On says it will have the lowest costs in the industry and will be cutting costs by £100 million annually by 2023. The costs will come from a new customer service platform to be completed in partnership with Kraken Technologies, part of Octopus Energy Group.

E.On said it would use the platform for its UK residential and SME energy retail businesses – saying the partnership "underlines E.On's long-term commitment to the UK".

The partnership will require transfer of millions of customer contracts from platforms used by E.On and by Npower customers recently acquired by E.On.

Changing customer service platforms has previously been a troublesome process for energy utilities. To do it, E.On will establish a new subsidiary, E.ONnext, which will use the Kraken Technologies platform and help develop it further.

Npower's former residential and commercial customers will migrate to the new platform from spring 2020, with E.On UK's residential and commercial customers following from 2021. E.On said it was relying on Kraken Technologies' expertise to help ensure the success of the migrations and a smooth customer experience.

E.On UK announced a package of measures to restructure its UK business in late 2019. Now it says the E.ONnext platform will, "bring about a clear turnaround in the business's operating performance". In the long term, it said, the partnership would allow E.On UK to achieve a "cost-leading market position in the UK energy landscape". The new platform would be future-proof and able to provide customers with "an easy to understand, transparent and personalised customer service".

E.On expects combined pre-tax earnings of at least £100 million in 2022. That is expected to be improved by more than £50 million in 2023 and more than £100 million beyond 2023 compared with the previous plan, it said. E.On expects to generate positive free cash flow from 2023 onward.

Octopus Energy describes its Kraken system as a cloud-based energy platform for interacting with both consumers (via the web, mobile and smart-meters) and the industry (including data flows, consumption forecasting, trading on the wholesale market).

As well as underpinning Octopus Energy's own supply customers, Octopus signed an agreement with Good Energy to use the platform in late 2019.

The company is staffing up to continue the platform development and told potential applicants that "the UK energy market is complicated, outdated and process-heavy – there's an awful lot of domain modelling that we need to get right". It added: "With the advent of smart meters, we'll soon be processing millions of meter readings a day. We need the right technology in place to handle this smoothly as well as feeding data into a machine learning pipeline that models and predicts consumption."

Karsten Wildberger, COO and member of the board of management of E.ON SE, said: "In November we announced that we would successfully reposition our business in the UK and counter the difficult market conditions. The formation of E.ONnext is the key step in achieving this goal quickly and to the benefit of our customers in the UK." NP

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CARBON

Is EU on target?

The European Commission wants feedback on whether it should move to a more ambitious interim target for reducing carbon emissions – a key step on the route to a net zero economy by 2050.

The Commission is considering raising the 2030 target so that instead of a 40% reduction in carbon emissions, compared with 1990 levels, emissions are reduced by 50% or 55% – with the more stretching target clearly preferred by the Commission.

In an impact assessment, the Commission acknowledged that a new target would have an impact on all sectors of the economy, but said that unless the bloc moved faster in the coming decade, it would need to eliminate more than half of its 1990 economy-wide emissions in only two decades after 2030 to achieve climate neutrality by 2050. It said: "This is a much faster reduction in annual emissions than has been achieved so far and thus a greater transition challenge than in the prior four decades."

New analysis will assess the impact of a revised target across the economy, including "the extent to which and how the various pieces of climate, energy and transport legislation, including issues related to taxation, revenue recycling and the carbon border mechanism, could be revised in a coherent manner to achieve the higher ambition responsibly". That analysis will form the basis of new legislation to achieve the targets.

The analysis noted that higher targets would require more investment to be shifted towards sustainable options.

There would be higher capital costs in the short term – and that investment cost is likely to hit customers – but in the longer term energy costs would be lower. A higher target would also accelerate growth in some industries, such as renewables, and shrinkage in others, such as fossil fuel and that would have ripple effects across the economy.

However, it said that shifting to renewables would also improve the bloc's energy supply security by reducing fossil fuel imports.

The EC wants feedback on its proposed roadmap by 15 April.

A full consultation on the proposed target is planned in Q2 and the aim is that the Commission will adopt the new target late this year.

COVID-19

Tender retimed

Covid-19 has delayed plans to award leases for new fleet offshore wind farms.

The Crown Estate, which owns the sea bed, said it expects that invitation to tender stage one will open in the week of 30 March. It has also extended the submission period by three weeks. The company is intended to "allow additional time and flexibility for bidders, while ensuring we can minimise disruption to the overall programme timeline".

It did not rule out further delays, saying it would continue to monitor wider national and international situation closely and provide further updates where necessary: "In the event any further adjustments to the programme are required, we will provide as much advanced notice to bidders as possible."

The original 18-week ITT stage one process was due to open in February 2020 and close in June. In that phase The Crown Estate will assesses the financial and technical robustness of projects submitted by pre-qualified bidders. Projects that pass will be 'eligible bidders with eligible projects' that can take part in the ITT stage two bidding process. Under the planned schedule this will be a one to four week process in September.

In leasing Round 4, bidders will be seeking leases to develop at least 7GW of new projects. There are four bidding areas: Dogger Bank; Southern North Sea, the Wash and East Anglia; the South East; and North Wales, Irish Sea and northern Anglesey.

Customer promise

The energy industry and the government have agreed measures to protect the domestic energy supply of those in need during the Covid-19 disruption.

Up to four million customers with pre-payment meters who may not be able to add credit can speak to their supplier about options to keep them supplied. This could include nominating a third party for credit top ups, having a discretionary fund added to their credit, or being sent a pre-loaded top-up card so that their supply is not interrupted.

Ofgem recommends consumers leave the meter box unlocked if they need someone else to top up the meter. Smart meter customers should be able to top up remotely.

Any energy customer in financial distress will be supported by their supplier. This could include debt repayments and bill payments being reassessed, reduced or paused where necessary.

Disconnection of credit meters will be completely suspended. >

STORAGE

Battery merger

UK-based RedT energy and US-based Avalon Battery Corporation are to merge with the aim of becoming a world leader in vanadium flow batteries.The new company will be known as Invinity Energy Systems (Invinity).

Vanadium flow batteries supply heavy-duty, stationary energy storage, and may be coupled with industrial scale solar generation for distributed, low-carbon energy projects.

The company believes applications with heavy daily use are well-suited to flow battery technology, which it says could become a £3.5 billion market by 2028.

Larry Zulch, to be chief executive of Invinity, said: "This gives us the platform to compete head-to-head against incumbent lithium-ion giants, and in so doing prove that our robust, safe, non-degrading energy storage solutions are the best solution for delivering the world's ambitious decarbonisation targets.

Invinity's flow batteries store energy in a non-flammable, liquid electrolyte, held in tanks within a self-contained module. Flow batteries do not degrade with use like conventional batteries and have a 20-25 year lifetime.

SUPPLY

Robin Hood needs rescue

Nottingham Council is considering the future of Robin Hood Energy and opposition councillors say the supplier's losses are "unsustainable" and closing the company should be among the options considered, reports Nottinghamshire Live.

The company is also a supplier under 'white label' agreements for other local authority customers, with brands including Leccy for Liverpool Council, Ram Energy for Derby Council and Angel Energy for Islington Council in London.

The company says it has helped lift people out of fuel poverty but opponents say the company exposes the council – which had to make an emergency loan to the company last year – to too much risk.

Two companies lost

Small suppliers Gnergy and Better Energy have ceased trading.

Nottingham-based Better Energy was one of nine companies in breach of the requirement to be Data Communications Company (DCC) users. It gave up its supply licence in February and went into administration on 13 March. >

NEWS IN BRIEF

Fred Olsen Windcarrier is upgrading one of its Gusto 9000 jack-up vessels with a new crane capable of installing foundations and all known next generation offshore wind turbines. Upon delivery in 2022, the 1,600t leg encircling crane will be the highest in the market.

Puredrive Energy has launched a virtual power plant for business and domestic consumers. It will monitor grid energy and provide grid services upon request from network operators and energy suppliers, generating revenue for the owner.

Macquarie has announced an agreement with So Energy Trading to support the business's rollout of Smets2 smart meters. In partnership with Morrison Data Services, Macquarie will provide an end-to-end service solution to provide, install and fund smart gas and electricity meters.

Foresight Group and Belltown Power have formed a joint venture to develop Belltown's pipeline of onshore wind energy projects across the UK under the existing Belltown brand. They aim to deliver more than 300MW from sites predominantly in Scotland and Wales. The projects will be developed on a merchant-only, PPA or CfD-supported basis.

SP Energy Networks has partnered with CGI to assist in delivery of its Smart Data Integration Fabric project. The project will provide a multi-purpose and reusable digital master model of the network, combining existing geospatial, connectivity, asset and telemetry data to create a platform on which SP Energy Networks can build a digital strategy, including the move towards data openness set out by the Energy Data Task Force.

Tidal energy project MeyGen has won a £1.545 million grant from the Scottish government's Saltire Tidal Energy Challenge Fund. It will be used to design, procure, install, connect and commission a subsea hub and associated subsea connection infrastructure. This is said to be a key enabler for future array phases, as it should deliver cost reductions in power production by connecting multiple turbines to a single export cable. MeyGen's project company will award a £2.4 million engineering, procurement and construction contract to SIMEC Atlantis Energy for delivery and later this year.

Greencoat Renewables has begun an expansion into mainland Europe. It has acquired three operating wind assets in France from John Laing Group for €30.3 million. The portfolio comes with 16-year, long-term fixed-rate project finance and has an overall net enterprise value of €95 million, the company said. Following the acquisition, Greencoat Renewables' total installed capacity base will rise to 528.1MW.

Gnergy was set up in 2013. Last year it failed to make its Renewables Obligation payments.

Tariff retained

Energy customers on pre-payment meters are still on a raw deal for energy supply because technical barriers continue to constrain competition and choice, according to Ofgem.

A Competition and Markets Authority review last year also found that the conditions of competition in the prepayment segments had not improved materially since the introduction of a price cap for such customers in 2017 and their levels of overall market engagement were still low.

The regulator has decided that such customers will continue to require protection after their current price cap arrangements finish at the end of 2020 and it has given stakeholders just a month to respond to an initial consultation on how to take it forward.

Rather than maintaining a dedicated tariff cap for pre-payment customers, Ofgem proposes to combine it with the default tariff cap.

The regulator has already aligned the methodology for setting the two caps, but it says it would have to set the cap at a different level for pre-payment customers.

ScottishPower under scrutiny

Ofgem says it is "disappointed with the lack of progress" at ScottishPower in sending regular detailed reporting of a range of complaint metrics to the regulator, significantly speeding up complaint resolutions, and reducing the number of complaints to consumer bodies.

Ofgem has opened a compliance case into ScottishPower's complaints procedures, saying it was concerned about the poor outcomes experienced by customers.

The regulator said: "We have been increasingly concerned about the volume of ScottishPower's referrals to consumer bodies. We have seen slow complaint resolution times leading to customer dissatisfaction and have been concerned with the lack of ability to identify, understand and resolve the root causes of known issues to prevent further similar complaints."

The regulator has begun investigating whether the supplier meets regulatory requirements even though it said it "has been working closely with ScottishPower on these issues … asking them to set and achieve clear improvement targets." It highlighted lack of progress, although Ofgem said it was "confident that our intervention has resulted in more focus being placed on improving this area."

If ScottishPower's performance does not improve the regulator said it will consider taking further steps, including possible enforcement action.

PEOPLE

National Grid ESO has appointed Roisin Quinn as chief engineer. This new role makes sure there is significant focus on engineering at a senior level. As Head of National Control, Quinn is also responsible for the ESO's Electricity National Control Centre.

Anesco has appointed energy sector specialist Mark Futyan as chief executive, part of a longstanding succession plan for Kevin Mouatt, who stepped down at the end of March. Mouatt will continue to support the business in a non-executive capacity.

Legal business DWF has appointed Darren Walsh as a senior partner in the energy team. He specialises in low carbon and renewable energy projects.

Paul Massara joins Juan Pablo Cerda and Laurent Segalen on the board of directors of Zeigo, a high-tech platform that connects supply and demand for renewable energy

Centrica has replaced both its chief executive and chairman. Finance director Chris O'Shea is interim chief executive. Scott Wheway, who has been on Centrica's board since 2016 and is chairman of insurer Axa UK, has replaced Charles Berry as chair. Berry had been on medical leave. The search for a permanent chief executive to replace Iain Conn continues.

Eurelectric has appointed Henning Häder as policy director. He was previously in the association's department for Energy Policy, Climate and Sustainability.

EVS

Westminster target: 1000

Motorists currently believe there are only 100 to 200 electric vehicle charging points in London and almost a third believe there are no EV charging points near their home or workplace, according to Westminster City Council, Siemens and Ubitricity.

They have highlighted the number of charging points available in Westminster by renaming the borough's Sutherland Avenue – which now has 24 lamp post charging points – 'Electric Avenue W9'.

Neighbouring roads are due to have lamp columns converted in the coming weeks.

Westminster claims it has more EV points than any UK local authority, including 296

lamp column charge points. There are plans to reach a thousand charge points across Westminster City Council within the next year, as it claims twice the number of locally registered EVs than any other inner London borough, and the most among all the other London boroughs.

The launch follows research conducted by Siemens showing 36% of British motorists planned to buy a hybrid or electric vehicle as their next car, with 40% saying that a lack of charging points stopped them from doing so sooner. Across the capital Siemens says it has joined Ubitricity to complete more than 1,300 installations, funded from the Go Ultra Low Cities Scheme.

First 'Electric Forecourt'

Gridserve has begun construction of an 'Electric Forecourt' near Braintree, Essex.

The project was granted an electricity generation licence in March. It will have capacity to charge 24 electric vehicles at once, with chargers rated at 350kW that allow a vehicle to be charged in 20-30 minutes. The company says it hopes to speed that up as battery technologies mature.

Construction at the 2.5 acre site adjacent to Great Notley, just off the A131, is supported by a £4.86 million grant from Innovate UK. The site has links to Stansted Airport, Chelmsford, Colchester and the M11.

While vehicles charge, drivers will have access to a range of facilities including a coffee shop, convenience supermarket, and airport-style lounge with high-speed internet and meeting rooms.

The facility will also function as an education centre for electric vehicles and sustainable energy, which will help people to understand, test drive, and secure vehicles that are most suitable for them.

Gridserve says this will be the first of a £1 billion programme to build more than 100 Electric Forecourt sites on busy routes and near powerful grid connections close to towns, cities and major transport hubs.

It aims to have a UK-wide network operational within five years, and says it is in discussions with a number of local authorities around the UK and expects to have "several more sites in construction and many more into planning by the end of this year".

Pod Point at Tesco

Pod Point is to supply, operate and maintain hundreds of EV charging points at Tesco stores. The expansion will be supported with a loan from Triodos Bank UK and funding from Volkswagen.

The debt facility will support installation of EV charge points at 600 Tesco stores. The new points will include 7kW media chargers capable of displaying advertising on a screen, from which customers will be able to charge for free. Some sites will also have 50kW rapid chargers priced in line with market rates.

EDF recently acquired a majority stake in Pod Point, as part of a newly formed joint venture with Legal & General Capital. Pod Point announced its partnership with Tesco and Volkswagen in 2018, creating a new, sponsorship-based business model for EV charging.

Philip Bazin, head of the environment team at Triodos Bank UK, said: "Given our focus on sustainable and responsible finance, it is fundamental to Triodos to support projects, such as charging infrastructure for electric vehicles, which help us transition to a low-carbon, clean future. The transport sector now has the highest greenhouse gas emissions of any industry in the UK, with passenger car road transport accounting for over 50% of these emissions."

Erik Fairbairn, Pod Point chief executive and founder, said: "We are witnessing a pivotal moment for the UK's rapidly expanding public charging network."

Fast and slow

Good Energy and EV charging network specialists Engenie have formed a partnership to support new business opportunities in the electric vehicle market.

Data from Zap-Map, the app partly owned by Good Energy, shows that the number of public charge point locations grew by 57% in 2019 to top 11,000. And National Grid estimates that there could be up to 11 million electric vehicles on UK roads by 2030.

Engenie is on target to install 2,000 rapid chargers in the UK by 2024, supported by a recent £35 million funding round. Good Energy has a strong focus on fast AC charging with its new One Point service.

The two companies say combining these two offerings will enable businesses, commercial landlords and local authorities to benefit from a blend of rapid DC charging and slower AC charging to match a mixture of parking durations and associated charging requirements, rather than adopting a one size fits all approach.

The partnership will offer different funding and ownership options. The new agreement also establishes an offer for Good Energy customers to benefit from using Engenie's public charging network at a discounted rate.

MEETINGS

@ The Future Energy System: Balancing Complexity and Flexibility
Cranfield University
Cranfield
1 April – POSTPONED
NEW DATE to be advised

@ Maintaining Civil Infrastructure Conference 2020
CIRIA
Manchester
2 April – POSTPONED
Contact Hanifa.qamar@ciria.org for updates

@ Floating Offshore Wind Turbines 2020.
Marseille
21-23 April - POSTPONED
NEW DATE 7-9 September

@ HVDC interconnector projects – technical challenges in delivery and implementation
IET
Brighton
22 April

@ Energyst Event / EV Event
Silverstone
22-23 April – POSTPONED
NEW DATE 27-28 October

@ Improving domestic energy efficiency in England – policy targets, tackling barriers, retrofitting, and innovation in funding and technology
WEETF
ONLINE
23 April

@ Modernising and Decarbonising Energy in the UK Forum
Westminster Insight
London
29 April POSTPONED
NEW DATE to be advised

@ Energy Transition 2.0 Europe 2020
Climate Action
London
29 April

@ Innovation in the UK natural gas sector – developing a whole-system approach, deploying alternative sources, and the sector's role in meeting net-zero emissions by 2050
WEETF
ONLINE
30 April

CONSULTATIONS CLOSING

Ofgem consultation
@ Electricity Network Access and Forward-Looking Charging Review: Open Letter on our shortlisted policy options
Closes 6 April

Ofgem consultation
@ Protecting energy customers with pre-payment meters
Closes 8 April

DG ENER consultation
@ The priorities for the development of network codes and guidelines for the period 2020-2023 for electricity and for 2020 for gas
Closes 14 April

MARK DICKINSON

Companies must step towards net zero by 2023

TPI Inspired Energy has seen a new enthusiasm for low carbon options from the major energy buyers it serves. They have to act soon to get a grip on net zero, says chief executive Mark Dickinson – and to deal with other new issues like volatility

Third party intermediary Inspired Energy lays claim to being the biggest TPI in the UK. When I meet its chief executive, Mark Dickinson, I first ask about progress in introducing regulation to an industry that has sometimes been described as the "wild west".

He says concerns at Ofgem and the Competition and Markets Authority (CMA) have been focused on the SME market, and especially micro-businesses, "where effectively it is price comparison". Some TPIs "used the price asymmetry to maximise the spread between the market and the customer, rather than giving a good value price comparison service".

> "What we have seen in the last 12 to 18 months is purpose on net zero that is starting to shape the agenda for businesses

But he says large corporate customers are expert buyers and "you are responding to a large company after a professional bid process and offering data and high-level consulting and advisory. Over the years I have seen examples of bad behaviour there, but you can have a contractual association and a negotiation about warranties."

Dickinson says it will always be better to be regulated by a regulator – "if Ofgem has the capacity to handle it". Oversight by a third party, "takes away all the issues about self interest or conflicts of interest". But he wants any oversight to cover both sides of the market so he thinks self-regulation is most likely: "If you think about what we need to do as an industry, first of all you need to make sure of the right behaviours within TPIs and suppliers – because every bad contract done by a TPI is accepted by a supplier. So for me there is a need for self-regulation process to involve suppliers as well."

He says it should be not-for-profit, because "our biggest concern about what has happened in the past is that people who have been doing regulation have been trying to make a profit out of it". As for consequences of bad behaviour, he suggests, Ofgem could include it in the supply licence so a supplier could not work with a TPI that was not in compliance. He says: "The industry has to adopt standards that are more like the insurance market."

ACTIVE CUSTOMERS?

If Dickinson's customers are expert buyers, are they also active market participants, for example, offering demand-side response?

Dickinson segments his customers: 'Energy intensive' are interested in flexible options, optimisation and on-site generation. 'Estate intensive' have 100 locations or more (in the private or public sector, which have differing requirements) – "You'd be amazed how many businesses in the UK don't know how many properties they have so we keep track of them opening and closing sites … checking all the energy invoices and the data," he says, adding that the average error is about 6% and "it is an assurance process", both for energy buying and other compliance. Finally, 'midmarket' customers "want to be assured that they paid the right amount of money and that they are compliant".

When I ask whether any had taken on energy efficiency and DSR, he says there was not much "pull" >

IS THERE AN IT GAP?

When I discuss active customers and new charging regimes with Mark Dickinson I ask whether incumbent IT systems are the biggest barrier. Dickinson describes the energy industry's IT as "shocking".

He adds: "I think energy is the biggest laggard in terms of IT if you compare it to telecoms or insurance – where they have moved on, energy hasn't."

Legacy issues go back as far as the initial privatisation, "where they were using DOS-based systems and they thought it would be a good idea to get data typed in by temporary labour that really didn't care".

Dickinson says energy companies "are always dealing with a lot of technical debt", which makes it hard for a TPI as well. "We have a capex programme of about £2.5 million a year into technology, because ultimately energy is just a data management business … we spend a lot of time developing new things to increase the level of insight we can give at the meter point," he says.

I ask whether the large suppliers' old billing engines can cope with new initiatives such as half hourly settlement and he says it is a challenge. "They will tend to put in a fix and that is where you get into more 'technical debt' and another set of challenges. The problem at the moment is too big for your average supplier and there is too much to change. It is interesting that some of them are now starting more agile brands," he says, addingat Inspired Energy, "we will keep running a process and build a new one alongside".

I ask whether it is TPIs that are cushioning the effect of poor IT. Dickinson says: "It is strange that we have an industry that checks an industry, but that is where we are."

He adds: "Often when you dig into data it is 20% objective, 40% estimates, 40% extrapolated. There is no reliability. It should be 70% objective, 15% estimated, 15% extrapolated. But it's not just about fixing the data – you have to have the bridge to how you fix it, and when you get the data in, how you get version control. There is complexity that the industry has not dealt with. Billing systems really need a much better architecture."

He says the best step the industry could take would be to open up data. That includes meter points and usage data. "The CMA says Ecoes [Electricity Central Online Enquiry Service] data [on meter points] should be made available to TPIs at the request of the customer but … three years after the CMA came out with it the access to data is very poor. If you improved that you would fix a lot of the problems."

Secondly, if the customer had a right to their data flows, "that would be the biggest improvement and the biggest driver for change because small companies could come in where major suppliers have 'pressure points". The CMA was limited just to SME markets whereas large customers need access to their data. "The easiest way would be to ensure that companies who were set up out of the monopolies should make the data available," Dickinson says.

He does not propose to stop those companies from offering enriched data services as a commercial service, but says it should be available – on a regulated basis. "I'm happy to pay the cost – to companies whose data it is," he says.

and until recently most businesses would rather invest in expansion than energy saving. They might use some free cashflow but "the return on capital for the energy project has to compete quite hard with things that are closer to the core business".

For companies that might take up the idea, an extra reason was security of supply, which Dickinson says is one reason why companies tend to invest in on-site generation rather than reducing use.

> People are massively underestimating the price of volatility

Inspired Energy and its specialist subsidiaries do provide energy management services, however. "Once you are an advisor to a company on the buy side of the equation you quickly become an advisor on the supply side. That's where we applied optimisation services," Dickinson says. The company moves from validating consumption to managing it, optimising customer use and alerting the customer to areas of energy waste or inefficiency, comparing usage across the company sites.

From there, it will also move into active management, demand-side response and on-site generation – if it gets customer approval. Dickinson reiterates that there are some brilliant things being done but the consumer isn't there. For example: "We have consumers who could use their stock flexibility. There is such a lot of intrinsic flexibility in companies' portfolios, but getting people to use it is hard. They will say they don't want to damage the core business. You need a stimulus," he says.

That may be government action or it may be the market. Much of the basis on which customers are charged for their power is currently under review, but when I ask Dickinson which is the most important change, he says it is price volatility. That has "generally been mispriced in the past" and suppliers absorbed the cost, so "people are massively underestimating the price of volatility".

He continues: "DSR isn't happening because the pain isn't big enough at the moment. Suppliers have always protected the customer from the >

true cost of imbalance. The closer that gets to the point of consumption and if people bear the consequences around consumption that will help us solve the [DSR] equation.

"The next phase won't be about what generation we have, it will be about how the consumer uses it."

> We have probably seen a threefold increase in inquiries

NET ZERO AND ESG ARE CHANGING THE GAME

Customers may still be slow to be active but recent months have seen a major change in their approach to the low carbon agenda.

Dickinson says: "What we have seen in only the last 12 to 18 months is increasing purpose on net zero that is starting to shape the agenda for businesses." That is because it is directly linked to ESG (environmental, social and governance) investment metrics.

Dickinson's view is that green progress has been slowed over fears about the cost to consumers. But investors are seldom concerned about that. He says investors "outsource their wealth management and their investment, and now they have started outsourcing their social conscience and the way that is done is through the ESG index."

> To get access to capital, to orders, to be a chosen supplier, they will have to do their part in the ESG environment

Now, if businesses want capital, they have to have good scores on an ESG index to attract investors. And the index covers the supply chain too, "so if you look at my 2800 customers, corporate businesses, they are all in that supply chain somewhere," says Dickinson.

He adds that the new Streamlined Energy and Carbon Reporting regime, which requires many UK companies to include carbon in financial reports, should feed into that.

> The sense of urgency has accelerated

"It is interesting how quickly the sense of urgency has accelerated," he says, adding that with ESG and net zero, "we start to see a framework and a consistent way that people can know they can make a difference and it gives them access to funds".

Dickinson says that spend on energy is the largest part of the environmental section of the ESG 'wheel'... when it comes to getting attention from investors "it is a lever that can be pulled".

He talks about urgency because he thinks companies have to take action to get at least half way to net zero – the relatively easy part – in the next 10 years. "There is a risk for the first 10 years: if you don't deploy your capital in the next three years there is not enough time for the returns to come through. You have to think about the time it takes to build something."

Across his customers "we have probably seen a threefold increase in inquiries. Three or four years ago it was all about price. Now we are more focused on what we can do to reduce consumption and carbon. It's not at an inflexion point but it is heading that way."

And he has more evidence: "Originally we had three people working on optimisation services. Now we have 100 and the reality is that it is not enough. Whereas in the past we would say it was a good idea, now we have customers saying 'we want to do this'."

He believes several stimuli are combining: "The transformation we will see in the next two-three years will be giving it a lot more pull from businesses – driven by the fact that for them to get access to capital, to orders, to be a chosen supplier, they will have to do their part in the ESG environment. It's a very nice alignment." NP

IS HEAT ON THE MENU?

Discussing the options available for a company such as Inspired Energy to optimise its customers' energy use, we discuss progress on green heat supply. It raises a couple of interesting issues.

First, to improve efficiency, Dickinson says: "We may have to expand [gas use] before we contract it," because the most common route is a switch to combined heat and power – generally gas-fuelled. The second is how easy new heat options are for customers to take to their board. Although all energy efficiency solutions are site-specific, changes in the power side are becoming familiar and new solutions for lighting, refrigeration etc can now access extensive operational data, as can CHP.

"In terms of large-scale replacement of gas, it is not clear to me at the moment what that solution is," Dickinson says, as there is relatively little in the way of packaged, standardised data on previous projects. "If more people asking me for those [data] models, we will go through the process." He adds that with regard to his 300 optimisation experts, "as customer demand expands into heating we will deploy them there".

What is not clear is how we can build up the virtuous circle: a customer demand for green heat options that will result in standard solutions and see costs fall.

Who regulates the regulators?

Regulation is often seen a stifling innovation. And questions arise regularly over whether sector-specific regulators, while maintaining expertise, can also hold back the 'whole-system' approaches needed for net zero. Janet Wood looks at current attempts to update the regulatory framework

Will Ofgem exist in 2030? That was one of the questions that *New Power* is asking this year around the power industry and how it might look in a decade. It is clear that the regulatory model that encompasses Ofgem, and its fellow regulators in water and telecoms, is under strain. It was described as "increasingly facing new challenges that it was not designed to address", by the National Infrastructure Commission (NIC) in a report published in October last year.

The NIC's was one of several investigations into the UK's industry regulators that are still playing out and may have fundamental implications for the regulators. Sector regulation looks set to remain – but it will increasingly be affected by other bodies intended to reduce costs or facilitate innovation. And it will have to accommodate more competition and a more place-based approach.

NIC's report follows a request by the government in October 2018 to review the regulation of the UK's energy, telecoms and water industries "to ensure the necessary levels of investment and innovation, while ensuring these critical services are kept affordable". The NIC said regulation had to adapt to face the coming challenges of achieving net zero, adapting to changing weather patterns, and increasing digitalisation. The system must be strengthened and updated, and public and political confidence in it must be improved.

The NIC's report was a response to a consultation that received 84 responses. Responses to the consultation generally thought that sector regulation still had a role to play. Many said that regulation was too prescriptive in some areas, that the relationship between government and regulators is not clear and that a more holistic approach to decision making is required. But NIC said there was no clear consensus on the most important changes which need to be made over the next 30 years.

Recommendations made by the Commission include:

- The UK Regulators Network should be given a stronger leadership role
- Ofcom, Ofgem and Ofwat should have new duties on net zero and improving resilience
- Government should set out a long-term strategic vision for each of the regulated sectors, through strategic policy statements within the first year of each Parliament
- Most major strategic investments should be removed from the price control processes and opened to competition to support innovation Regulators should be able to prevent companies from engaging in price discrimination that does not provide an overall benefit to consumers

WHAT'S NEW

The government's response to the NIC report is still to be seen. But it has already taken action on innovation. As the NIC started work on report, the Department for Business, Energy & Industrial Strategy (BEIS) had already published its own policy paper – *Regulation for the Fourth Industrial Revolution*.

That kicked off with Beis's statement: "We need a more agile approach to regulation, that supports innovation while protecting citizens and the environment." >

Its origins are back in 2018, when, responding to concerns from the Council for Science and Technology, then business secretary Greg Clarke announced that he had asked UK Research & Innovation, the Government Office for Science and the Better Regulation Executive to work together on a "strategic horizon-scanning function that will support and challenge regulators".

> "Beis wants to engage the public in how innovation is regulated

October that year saw the first meeting of a Ministerial Working Group on Future Regulation – a commitment in the Industrial Strategy – responsible for ensuring the government can shape the right regulatory environment to put the UK at the forefront of future industries.

In *Regulation for the Fourth Industrial Revolution*, BEIS said it wanted to support and stimulate new products, services and business models, and provide "greater space for experimentation". While upholding safeguards, it wants to "engage the public in how innovation is regulated". And it wants to evolve the framework while maintaining the "stable, proportionate regulatory approach the UK is rightly known for".

The system may be stable but, as BEIS noted, "only 29% of businesses believe that the government's approach to regulation facilitates innovative products and services being efficiently brought to market".

THE VIEW FROM 2030

To mark the start of the 2020s, in January *New Power Report* asked how the industry would look from 2030.

Look out for further articles on these questions:

PREVIOUSLY:

WILLL THERE BE ANY PETROL STATIONS IN 2030?
@ Join the discussion online

COMING UP:

WHAT'S IN THE POWER STACK?

WILL A KWH BE WORTHLESS?

WILL DNOS/DSOS BE GROWING?

SEND COMMENTS TO JANET.WOOD@NEWPOWER.INFO

Outcomes from *Regulation for the Fourth Industrial Revolution* include:

- A new Regulatory Horizon Council to advise government on rules and regulations that may need to change to keep pace with technology
- A digital Regulation Navigator to help businesses find their way through the regulatory landscape and bring their ideas to market. The government has still to consult on this body, but it may encompass links between local authorities and may also have a role in ensuring that regulators' rules or processes do not constrain innovation, ensuring that regulators review, clarify and potentially amend their approach
- A review of the Regulators' Pioneer Fund – a £10 million fund supporting innovative regulator-led projects, testing new technology. The fund's two-year pilot phase finishes this year; in future its remit may be expanded to local authorities
- A partnership with the World Economic Forum to shape global rules on innovative products and services

TIME FOR CHANGE

A research paper, published by BEIS in January this year (*Regulator approaches to facilitate, support and enable innovation*), highlighted why new regulation had to be different from old. It said new capabilities, products and services emerging in areas like big data and AI resulted in "new products or services erode sectoral boundaries, scale extremely quickly and allow vast numbers of actors the ability to do things they have not been able to do in the past". That description will be familiar to anyone watching the progress of new consumer goods in the power sector, such as domestic PV or batteries – and sound a warning for the potential disruption from smart meters.

The paper highlighted five approaches that were thought to help regulators deal with innovation. The first was a dedicated innovation team that would help new businesses deal with the regulator and ensure innovation aligns with existing regulations or regulatory expectations, but would also gather intelligence to support regulatory reform. The second approach, supporting experimentation and testing, chimes with the regulatory 'sandboxes' launched by Ofgem and central bodies, and would be closely aligned with the third, streamlining regulatory approvals.

To those three the report added international collaboration, and a directed 'regulatory challenge' process intended to stimulate change on a specific issue and to "use business-led innovation as an alternative way to meet regulatory objectives and respond to key risks or market failures."

In practice, the report admitted that it was difficult >

to find evidence of the effect (positive or negative) of these five regulatory approaches. It said there was "limited attempts by regulators to record relevant data related to possible impacts" (a general concern: the Competition and Markets Authority has recently announced plans to develop metrics that will put competition and competitiveness on a more evidential basis).

> The Regulators' Pioneer Fund could help build an evidence base for regulatory change

Nevertheless, the report said those approaches raised business confidence, because: they allowed the regulator to build knowledge and expertise around the needs of innovators, the types of innovations emerging and their potential impacts; improved the quality of regulators' service to innovative businesses; and generally increased interaction between regulator and innovative businesses.

The report said the Regulators' Pioneer Fund could help build an evidence base for regulatory change to see whether such measures were successful in GB.

The most recent outcome from these discussions is the Regulatory Horizon Council. A BEIS body, it will be chaired by Cathryn Ross, group regulatory affairs director at BT and with past roles at the Office of Rail Regulation, Ofwat and the Competition Commission. Its role is:

- Advising government on regulatory reform
- Identifying priorities for greater public engagement on regulation of innovation
- Working with innovators, businesses, academics and regulators to scan the business horizon for technological innovation and trends, building on existing work and data across government
- Delivering a regular report with recommendations on priorities for regulatory reform

The council will receive data from specialist advice services so it can provide advice on where regulatory change or additional investment may be needed to enable innovation to thrive

The council's recommendations will be considered by the Ministerial Working Group on Future Regulation. Announcing Ross's appointment, business minister Nadhim Zahawi said: "We already have a thriving tech sector, worth £184 billion to the economy every year, and this council will help supercharge this sector through more agile regulations."

There are other new bodies. The *Regulation for the Fourth Industrial Revolution* also set out plans for a Centre for Data Ethics and Innovation, "the authoritative source of advice to government on the governance of data and AI". That body's tight focus is intended to be complementary to the Regulatory Horizons Council, which looks across the economy.

The new bodies will mean the sector regulators, instead of standing alone, will increasingly be a focal point for a web of bodies advising on specific issues who can constrain or expand regulators' actions, in some cases to ensure they are consistent with other bodies.

At the same time, regulators will see some actions, and perhaps responsibilities, passed to cross-sector bodies such as the UK Regulators Network or local or regional authorities. We have still to see the form that change might take.

Slimmed down, more agile and better informed? That is the aim. It remains to be seen whether a new, complex regulatory structure can deliver. NP

Wind of change blows through CfDs

The government is set to re-open the door for onshore wind and PV in the next Contract for Difference allocation round. And it proposes to kick-start floating wind. Janet Wood took at look at the proposals

Onshore wind and grid-scale PV is needed to meet the UK's net zero target and should be supported in the Contracts for Difference allocation, the government has conceded.

In a new consultation on changes to the scheme, BEIS said: "There is a risk that if we were to rely on merchant deployment of these technologies alone at this point in time, we may not see the rate and scale of new projects needed in the near-term to support decarbonisation of the power sector and meet the net zero commitment at low cost." The government plans to hold the next allocation round in 2021 and will extend the delivery years to 2030.

Among other important changes, the consultation proposes to reinstate onshore wind and PV in the CfD 'Pot 1' for established technologies. And it asked for views on creating a 'Pot 3' for fixed offshore wind, as it argues that the dramatic fall in offshore wind prices means it is no longer appropriate to include it in 'Pot 3' for less established technologies. Creating a dedicated Pot could reduce costs for consumers, according to the impact assessment, because in that case offshore wind bids would not be 'pulled up' by more expensive technologies.

It proposes to maintain the previous cap on phased offshore wind projects at 1,500MW "to strike a balance between economies of scale and facilitating new entrants to the market".

Floating offshore wind would remain in Pot 2, classified as a separate technology with a distinct administrative strike price.

FLOATING WIND

BEIS says that there are limitations – environmental, radar interference, conflicting uses – on how much fixed offshore wind can be deployed and says "it is likely that the commercial deployment of floating offshore wind will be needed sooner than previously anticipated and at greater levels, particularly during the 2030s".

It also sees opportunities for floating offshore wind as a useful power source for deep-water oil and gas fields and, importantly, as a UK export. It says, "this could create export opportunities for the UK should floating wind deploy in countries which have limited shallow water sites (for example Japan and west coast USA)".

Floating wind would have its own administrative strike price (the maximum strike price a project of a particular technology type in a given delivery year can receive during an allocation round, set by BEIS). The government suggests floating wind might undercut the price of undercut advanced conversion technologies (ACTs, which have also so far been the technology that fails most often to meet its delivery milestones after winning contracts) and some remote island wind. If this happened it would have air quality benefits and reduce customer costs.

BEIS notes that there are diversity benefits for the UK system, because floating wind opens up new offshore areas where the wind patterns are different. >

However, it is not clear whether one energy vector under discussion – to generate hydrogen on site at floating wind farms – would be supported by the requirement for plant to be electrically connected to a substation.

BEIS has decided to exclude biomass conversions from the allocation. It argues that this has been described as a transitional technology for several years and in any case all conversion contracts end in 2027. It notes that biomass conversions can participate in the Capacity Market.

Among other proposals in the wide-ranging consultation, BEIS wants to expand the supply chain requirement (which requires a proportion of UK content) to encompass all technologies and apply it to projects smaller than 300MW (the current threshold). It seeks input on how the Supply Chain Plan policy can be strengthened to ensure it remains fit for purpose It also wants to tighten up on the requirement for a decommissioning plan, which has to be submitted with the CfD bid and is intended to protect taxpayers from the cost of government becoming the "decommissioner of last resort", for costs estimated at £1.28-3.64 billion for plant in operation or under construction by the end of 2017.

BEIS says many plans have required "a number of revisions" before they are acceptable and it wants to improve their quality. In addition, requirements for decommissioning provisions are devolved to consenting authorities in Scotland and Wales, and in Scotland the requirement to make financial provision is also devolved. BEIS wants input on how to ensure that liability is covered.

Among technical changes, BEIS is considering changing from a 'hard' to a 'soft' capacity cap, that can be applied to maximise value for money – for example if a large project breaches the cap but would result in a lower price than excluding it in favour of smaller, more expensive, projects that do not breach the cap. It is considering offering further-dated delivery years – as far ahead as 2030 – but also proposes greater penalties for non-delivery.

Proposals around power export include ceasing payments when power prices are negative (which currently applies after six hours) – intended to incentivise operators to generate when it is beneficial to the system. BEIS said: "CfD generators being insulated from wholesale market signals on the value of their generated power offers greater certainty for investors but limits the incentives for generators to export power in accordance with the needs of the system," and asked for evidence on how it would affect the system. It is also looking again at how co-located storage is treated. NP

BID PRICE ASSUMPTIONS AND LEVELISED COST (LCOE) EQUIVALENTS ASSUMED

Technology	Base price assumptions, £/MWh		Scenario variations		
	Bid price	LCOE equivalent	Approach	Bid price (£/MWh)	LCOE equivalent (£/MWh)
Solar PV	33	37	Additional solar PV capacity bids in at a higher price and is displaced by cheaper biomass conversions	47	46
Onshore wind	34	38	Additional onshore wind capacity bids in at a higher price and is displaced by cheaper biomass conversions	46	47
Biomass conversions	84	84	A low bid price makes this competitive with onshore wind and solar PV	45	45
Offshore wind	45	46	NA	NA	NA
ACT	83	68	NA	NA	NA
Floating offshore wind	144	124	Bids low to be competitive with ACT and RIW	60	58
Remote island wind	61	58	Expensive RIW is displaced by slightly lower cost floating offshore wind		

In the alternate scenario, floating offshore wind is assumed to bid competitively and therefore displaces more expensive ACT and remote island wind. This leads to lower overall generation costs. Source: BEIS

Capacity is not enough

Building the generating capacity needed to reach the UK's target of net zero carbon emissions by 2050 is ambitious. Developing the market mechanisms to manage volatility and the network that will transport the power generated to where it can be used is still more ambitious, according to consultancy LCP

The UK needs to step up the speed at which it builds new generating capacity to meet our net zero targets. Over the past five years the average build rate for new capacity has been 2-3GW. The trend has been upwards, with the average closer to 3GW in the past couple of years – but it has to take a big step up to get close to the capacity we need to meet our target.

Between now and 2050 nearly every power station will have been decommissioned or undergone refurbishment. This has been happening since we first started producing electricity but moving to net zero means steep increases in the amount of installed capacity compared with the current system.

Currently our installed capacity is about 100GW. By 2050 the Climate Change Committee (CCC) estimates (in its Net Zero 'Further Ambition' scenario), that we would need around 360GW, requiring an installation rate of 12GW per year at a cost of £11 billion annually (with a cost to reach net zero at approximately £340 billion).

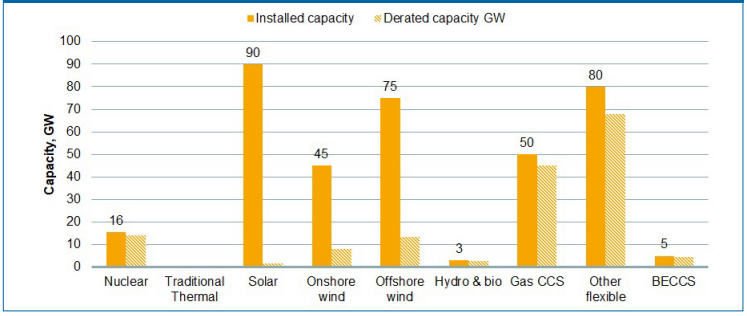
An alternative scenario, from National Grid ESO, suggests we will need less capacity – about 270GW. That brings the necessary installation rate to 9GW per year, at a cost of £10 billion annually and a total of £300 billion. Even though the CCC's scenario relies on electrification much more than National Grid's the capacity that needs to be built under both scenarios is still significant.

That's not the full story, however.

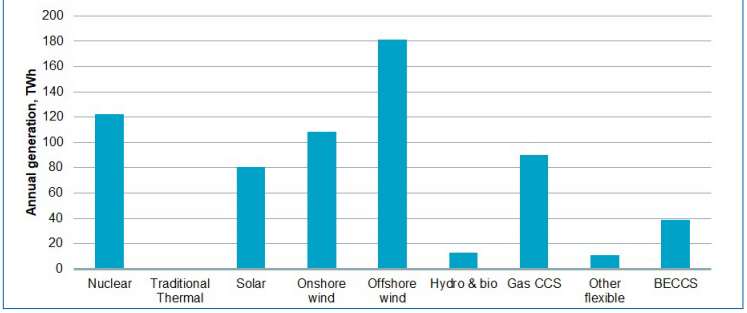
We need to think about the availability of that capacity, both how often it operates compared with when we need most power and whether it is flexible enough to respond to short-term changes. The CCC scenario may have 360GW,of installed capacity, but this is not all expected to generate at the same time. Sometimes significant amounts of renewables will be generating at the same time, but when the weather conditions don't allow renewables to operate (when it is dark or the wind is low, or both) other firm capacity will need to be used to meet demand.

The chart left shows the how much power (as opposed to capacity) is likely to be produced by >

POSSIBLE CAPACITY MIX IN 2050



POSSIBLE GENERATION MIX IN 2050



each technology. When each type of technology is 'de-rated' to reflect its availability, that 360GW provides 160GW to meet peak demands in the scenario. Renewables might produce over half of the power we use, with CCS (attached to a gas-fired station) and nuclear making up the majority of the other generation.

> Renewables might produce over half of our power

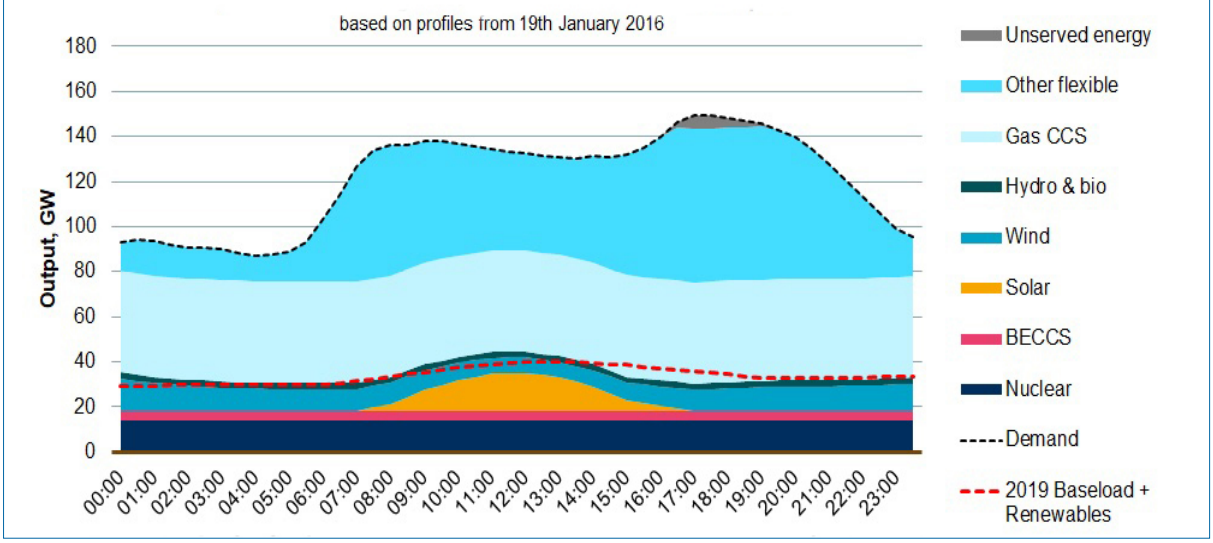
NEW MARKET MECHANISMS NEEDED

Large increases in solar, wind, CCS and other flexible capacity will be needed to meet the demand levels in the CCC's net-zero scenario. Other pathways to decarbonise are less reliant on electrification, but they would require separate infrastructure such as carbon capture units, networks for carbon and hydrogen, carbon storage or heat networks. It is clear that by 2050 the system will have much more supply capability. It will also have much greater demand, as consumers switch to electric mobility and heating. The demand profile under the CCC's Further Ambition scenario has peak demand of about 150GW due to heavy electrification. How can we match supply to demand at least cost?

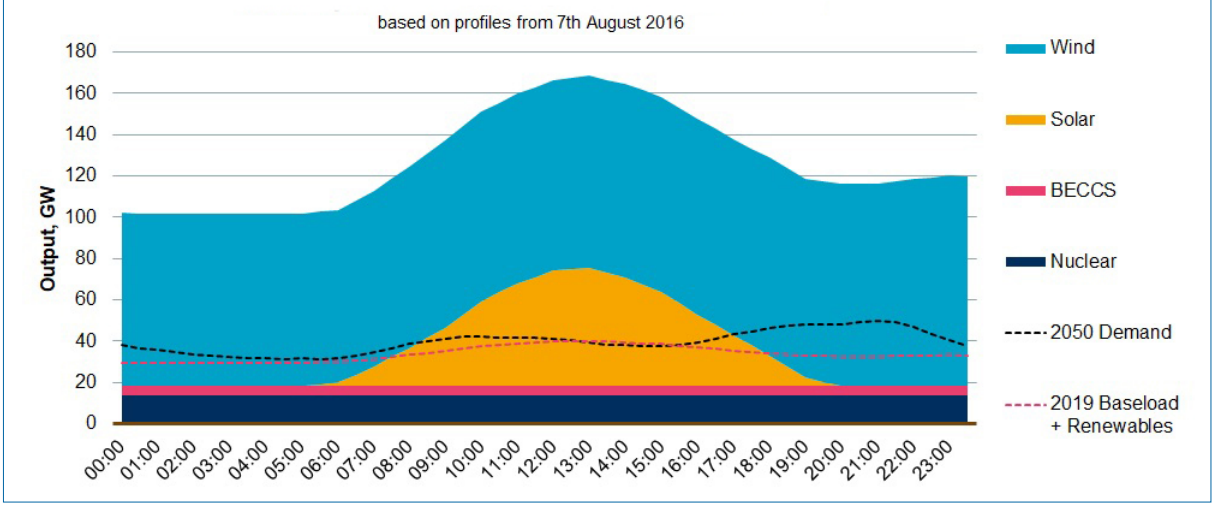
By 2019, we were already seeing occasions of low demand and high renewable output, when there was excess low carbon generation without enough demand to use all the power. As a result, some generating units had to be curtailed. By 2050 this problem will be much bigger. At times, more than 120GW of renewables will have to be curtailed.

In contrast, there will be times of high demand and low renewable output. In 2019 the majority of demand was still met by thermal power stations. By 2050, traditional thermal will not be able to operate on the system and will have to be replaced by technologies such as gas with CCS, or other flexible generation which could be made up of gas (ie >

2050 DAY: HIGH DEMAND, LOW RENEWABLES



2050 DAY: LOW DEMAND, HIGH RENEWABLES



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hydrogen) peaking plant, batteries and other technologies.

The question for every technology is whether it will be rewarded by the market, either for the energy it generates or for other services. Current market mechanisms are not doing this – and neither are they facilitating the transition to net zero.

As the composition of our power supply changes, so does the way it acts in the market and the price each technology can achieve. In previous decades, the power sector often relied on plant that may have high fuel costs (which could often be passed on to customers) but was relatively cheap to build, giving companies a relatively low bar in terms of making an investment decision. The new world will be one of generation where most costs are in capital expenditure, with low variable (per MWh) cost because the fuel (wind or sun) comes free of charge.

> "Modelling net zero we see periods of weeks where the wholesale price is negative

Now, with lots of weather-driven power plant, merchant projects that do not have power purchase agreements that stabilise prices agreements are likely to experience 'price cannibalisation' in some periods. The times they can generate coincide with similar plants, so at those times there is excess power and prices are low.

The plant may have Capacity Market payments for a period, although it is worth noting that CM payments have been as low as £0.77/kW. That provides little support for any technology, especially one that is severely de-rated and has to accept lower payments, as happens with most renewables.

An electricity system where the majority of generation comes from variable renewables means markets are likely to change in shape and size in the future. There will be a price for carbon, which currently gives renewable energy a pricing edge over fossil generation. But by 2050 that will have little impact, as there will be very little carbon-emitting plant on the system.

As for plant that has traditionally provided flexibility, although there is a lot on the 2050 system it only provides 2% of the power, so that for most of the time, under current arrangements that capacity is earning little revenue.

When modelling net zero we see periods of weeks where the wholesale price is negative. We already have a range of market mechanisms designed to reward different technologies and it is likely that new market mechanisms will be needed in the future as traditional markets become less relevant or become unusable. Market structure needs to change to properly value other services (flexibility, inertia, response services, capacity) which could provide much more revenue for capacity in the future.

MANAGING DELIVERY: NEW LINES NEEDED

Transmission build is primarily driven now by the installation of this large-scale new renewable capacity. Location for the renewables is not determined by ease of transporting the power to areas of use and hence another mismatch arises. In recent years, there has been a huge investment in wind in Scotland, for example, but the transmission links that would carry the power to major markets in England are under-sized. Scottish generators have not been able to export power. In response, a new 'bootstrap' HVDC link has been built linking the Scottish and England/Wales grids on the west coast. That is just the start.

In its Network Options Assessment (NOA) for 2020, National Grid ESO found that four new HVDC bootstraps and four new overhead lines would be required to meet the projected renewable buildout to 2040. But to meet the net zero targets for renewable generation this would have to increase to 10 new HVDC cables and additional onshore lines to support them (although in practice the current network infrastructure is already around eight years behind what is needed to efficiently operate the system today).

We will not be able to continue building HVDC bootstraps to meet our network needs. Apart from the cost – Building the amount of HVDC bootstraps and overhead power lines needed to meet capacities set out in the CCC's Net Zero scenario would cost £30-40 billion and finding the space to locate this network infrastructure would be extremely difficult. Transmission lines are often slow to get development consent.

Instead, we need new approaches to building the network capacity required to get renewable energy to its customers. That could involve flexibility contracts for network reinforcement deferment and smart technologies allowing time of use charging/demand shifting could have a large role to play in reducing these costs. To start, National Grid ESO is experimenting with a constraint management pathfinder transmission system which aims to develop a long-term commercial product to manage network constraints. It wants to reduce excess power in Scotland, north of the transmission system's so-called 'B6 boundary'. It wants to provide (inject) more power in a region across the UK from central Wales across a swathe of the Midlands to the East coast between the Humber and the Wash (between B8 and B9).

It has already published a Request for Information and expects to publish a tender soon. NP

The New Power Leader

JANET WOOD EDITOR, NEW POWER

Time to reform planning – and much more

The government's decision not to challenge the High Court's ruling on Heathrow expansion has set off a quiet bomb in our planning system. The High Court agreed that the secretary of state should have taken into account the government's target, signed into law last year, to achieve 'net zero' carbon emissions by 2050.

That decision was seized on by environmental lawyers Client Earth. The firm has now sought a judicial review of the decision to award development consent to Drax Power for new gas-fired power plants. Client Earth argues that the National Planning Policy Statements, which date back a decade or more, are out of date and out of step with our new legally binding targets. Among other failings, Client Earth says, statements that assume new power assets are of use and have a presumption in favour are out of date.

That's not the only failing of the current system. Others would argue that a presumption in favour of new power assets should be restored – if it is in favour of onshore wind, which has been unfairly discouraged from being awarded consent. The recent decision by government that onshore wind and PV can bid for Contracts for Difference, because they offer cheap, green power, shows how inconsistent it is to exclude them.

TAKE YOUR CHOICE BUT MAKE IT NET ZERO

You can argue over exactly which forms of power are the least intrusive on the landscape and the greenest.

We are likely to have an interesting battle over the government's plan, announced in the Budget, to provide some form of support for a power plant with carbon capture. That is seen as necessary to develop the CCS technology that will be required by industry. Other technologies will be welcomed or dismissed by one group or another – steam reforming to produce hydrogen, for example, or gas-fuelled combined heat and power.

The important point is that Client Earth is absolutely correct that our current planning statements – underpinned as they are by assumption that we will reduce, but not exclude, carbon emissions – are no longer applicable. The push for net zero will require fundamental change in our power system and the old fundamentals are gone. The planning policy statements under which we are taking decisions must be updated.

NOT JUST INFRASTRUCTURE

In fact, I would suggest we should go much further.

As the new Future Energy Scenarios produced by National Grid ESO make clear – among many other signs – the drive to net zero will require some wholesale societal change. Our built environment, our transport, our food and farming, our foreign policy – all these will be transformed.

We should revisit planning policy immediately. And while we are revisiting other policies and frameworks as a result of Brexit, and probably following on from the coronavirus emergency, we should take the opportunity to lay the necessary groundwork for a net zero society. Government is already considering whether our infrastructure regulatory framework is ready for net zero. That questions should be asked consistently across the economy when setting up new bodies.

The fact is that the assumptions we have made about a lot of our activities no longer hold true when our carbon budget becomes as important as our financial budget (and perhaps the two become interchangeable). NP

Assurance and insurance: what is the best balance for handling market risk?

The costs of energy supplier failures have been largely 'mutualised' among other suppliers, including the cost of failures in paying Renewables Obligation, Capacity Market and FIT dues. Is that the best remedy for the industry and for consumers? Gemserv's Trevor Hutchings recaps the debate

Today's governance arrangements are not sufficiently aligned to address market risk. And when there is failure, the mechanisms for dealing with liabilities are inconsistent and exclude new market participants.

These conclusions arose in a roundtable co-hosted by Gemserv and Laura Sandys, which brought together experts in energy, assurance and insurance, as part of the debate on modernising energy industry governance.

Among the signs that reform is gaining momentum are a suite of new proposals, among them reforms of supplier licensing, the supplier of last resort framework and energy industry codes. Yet there is one issue of fundamental importance which has not enjoyed enough prominence: risk. What risks is the governance regime seeking to address? Who bears those risks, to what extent should they be mitigated, and who should pay when they materialise?

We explored the potential benefits of moving to a market assurance model, where risk is actively assessed and mitigated. The measures would include hard levers – such as regulation, licensing and codes – but they would be targeted only at addressing fundamental risks to the market, such as customer protection and network resilience. They would be used in combination with more soft levers – reputational drivers, voluntary standards, principles and transparency – all aimed at driving up performance. This would reduce the regulatory burden overall and it would provide for the best performers to differentiate themselves from the rest of the pack, allowing commercial and competitive pressures to properly take hold.

> "No matter where the bar is set for market assurance there will still be failures

No matter where the bar is set for market assurance there will still be failures – and rightly so, if we are to encourage innovation and competition. So what is the insurance? Who bears the costs of failure? Existing arrangements vary widely. In electricity settlement credit cover is guaranteed by suppliers lodging upfront cash, letters of credit or an approved insurance product. In contrast, liabilities for non-payment in measures like the Renewables Obligation (RO) are dealt with after the event, by mutualising the costs across other suppliers in the market.

Some organisations left out of pocket because of others' failures are not included in these compensation arrangements. The Energy Ombudsman Service, for example, has suffered from costs not covered when companies go bust – all the more important, as its complaints workload for a company tends to increase as companies hit bumps in the road.

Arrangements in the gas market and energy networks are different again.

LONG AND SHORT TERM OPTIONS

Might we consolidate these arrangements to bring greater clarity and efficiencies and to reduce their impact as a barrier to market entry? Possibly, but the scale of the problem has not yet been properly assessed. A lifecycle analysis of a new entrant supplier, existing supplier and failed supplier to assess the burdens they face might be a first step.

Other industries deal with risk and liabilities, of course. Some use commercial insurance or surety products, in some cases via a market-wide scheme into which participants pay premiums. In one example, a 'captive' fund is set up into which market participants pay a premium via levy to cover liabilities. This is similar in effect to mutualisation, but has two distinct differences: premiums are paid upfront, which helps with financial planning; and the premium can be aligned to the level of risk a player represents to the market. The fund may in fact become revenue generating, at least with interest accrued, therefore lowering costs to industry over time.

It is clearly important to learn more about these models – including the extent to which variations of them are already used in some parts of the energy market.

>

While long-term solutions are under investigation, there are things that could be done now to reduce exposure when a supplier goes under – for example, reducing settlement periods and increasing the frequency of charging of the RO.

There is debate. Some consider that making changes to the current arrangements could make the position worse. But clearly there has to be evidence-based modernisation of the current governance arrangements if we are to achieve net zero. A shift towards a market assurance model with better insurance arrangements should be considered as BEIS and Ofgem take forward their programme of reform.

Trevor Hutchings
Director, strategy and communications
Gemserv

Innovation in networks: why funding is key

Anna Ferguson says innovation funding has brought gains for the network industry and for consumers. How can we continue make sure innovation comes from beyond and between networks, instead of being in silos?

In January, the National Audit Office released a report outlining the essential steps for our electricity networks to transform to a low-carbon, low-cost energy system, under Ofgem's regulation.

Ofgem has been at the forefront of encouraging and incentivising innovation within the RIIO regulatory framework (Regulation = Incentives + Innovation + Outputs) via the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) funding mechanisms, and previously through the Low Carbon Networks Fund (LCNF).

Innovation in the electricity networks has, over a number of years, become an integral part of the regulatory regime. It is a key focus for stakeholders in the sector including manufacturers, equipment providers, service providers, consultancies and customer focus groups, and there have been numerous achievements. These include UKPN's Leighton Buzzard battery storage project, which was the largest electricity storage facility in Europe (2014); the first-of-its-kind active network management scheme on Orkney in SSE's network, which remains a landmark project (2009); and DSO projects such as Transition, Fusion, and EFFS (collaborative projects between SP Energy Networks, SSEN and WPD).

Without innovation funding, these projects may not have got off the ground.

Due to the nature of innovation, it is difficult to justify the requirement for funding as part of the price control framework. Projects may or may not be successful and hence a different vehicle is needed to encourage innovative thinking and also some risk taking, which overall leads to returns and benefits for network customers.

Many of the ideas themselves come from non-DNO stakeholders, with third parties being encouraged to provide them with the incentive of participation in – and hence funding from – the innovation projects.

This has certainly been true for WSP, where we instigated the idea for Scottish Power's LV Engine and have worked on the project. More recently, we have won two projects through the ESO's innovation competition, on low frequency demand disconnection (LFDD) and active network management co-ordination between DNOs and the TSO. The network companies and their customers have benefited by gaining access to third party ideas and expertise, which would be less available without the incentive mechanisms.

UTILITY-WIDE

Historically there has been limited funding in the UK's water utilities and consequently the water networks have seen limited innovation. However, at the end of 2019 Ofwat announced a new £200 million innovation fund and it seems to be looking to the electricity sector as an example of success.

What about gas? Within the gas sector, there is an innovation allowance with the same governance structures as the electricity innovation allowance, but the level of funding is significantly lower. The level of funding reflects the amount of activity in terms of innovation projects for each sector: only one gas NIC project was awarded in 2019, compared with two electricity NIC projects in the same period. >

Since innovation funding was made available to the electricity networks, there has been huge activity in this space and many successes in network development. Active network management and battery storage are examples, with both schemes originally developed through innovation funding but now business as usual.

One of the issues with innovation funding is that it is specific to particular sectors – for example, Ofgem funding is focused on the electricity networks. While the network priorities have included whole system modelling and multi-vector systems in recent years, as the funding 'pots' are separate for gas and electricity, there are fewer opportunities to truly look at opportunities across sectors than is the case with other innovation funding that is more general in nature and less focussed to a specific sector.

For example, water companies are currently looking at opportunities for flexibility in energy as they are high energy users. With the new innovation funding being announced in the water sector, it will be interesting to understand the focus areas for the water regulator as they emerge.

Innovation funding is allowing companies such as WSP to deliver on projects and ideas that have a direct impact on the creation of more low-carbon energy systems – key to success in achieving the UK's 2050 net zero targets.

Anna Ferguson
Power systems director
WSP

Decarbonisation is the future

Extracts from Rt Hon Alok Sharma MP, secretary of state at BEIS, in his first speech as COP26 president designate at the UN

"Decarbonisation is the future, with huge opportunities for those who are willing to act now. And, of course, this transition must be fair and inclusive, leaving no one behind. We all know that the current commitments made under the Paris Agreement fall far short of what is required.

"… we must go further to limit warming to well below 2 degrees while pursuing efforts to achieve 1.5 degrees. So, we want all countries to submit more ambitious Nationally Determined Contributions, committing to further cuts in carbon emissions by 2030, with all nations committing to reaching net zero emissions as soon as possible. I want to re-emphasise; this shift must be fair. The people most affected by climate change are those who have contributed the least and have the fewest resources to adapt. Developed countries must honour their commitments. Including meeting the 100-billion-dollar goal for climate finance … Ahead of the Summit the UK, with our partner Italy, will work not just with nations, but also cities, regions, companies, the multilateral development banks, the development finance institutions and, very importantly, civil society in all its various forms.

"… Seizing the massive opportunities of cheaper renewables and storage. In the last few years, we have seen how alliances like 'Powering Past Coal' can drive momentum. In the UK the proportion of energy generated from coal has fallen from 40% in 2012 to 5% in 2018. We all need to invest in the innovation , which will help us accelerate the transition to clean energy. But we also need to help empower developing countries to leapfrog the polluting options of the past and embrace the clean energy of the future.

"… accelerating the move to zero-carbon road transport. By 2040, over half of new car sales worldwide are projected to be electric. Yet to meet the Paris goals, this needs to happen faster. By working together, countries and industry can bring forward the date when zero-emissions vehicles will not only be cleaner, but also cheaper, than petrol and diesel.

"… this is not about the UK pointing the finger, we know we also need to do more ourselves.

"… Every major systemic bank, the world's largest insurers, its biggest pension funds and top asset managers are backing the Taskforce for Climate-Related Financial Disclosures. And this has been highlighted to me during the meetings I have had with leading financial organisations. Achieving net zero will require a whole economy transition. We have the opportunity to turn climate change into a growth opportunity for the global economy. In the UK, we have grown our economy by 75% since 1990 while cutting emissions by 43%, showing green growth is absolutely possible … I have faith that working together with all of you in a collaborative manner, we will make the right choices." NP

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.

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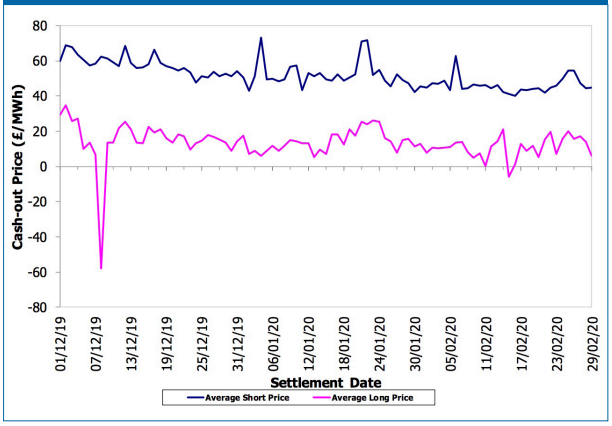
SYSTEM PRICES (LONG SYSTEM), £/MWH

	Min	Max	Median	Mean	St Dev
February 2020	-66.25	45.00	12.66	10.84	12.13
January 2020	-11.21	40.00	13.11	14.11	9.44
December 2019	-88.00	40.24	17.10	14.33	18.67
November 2019	-25.00	46.31	27.30	25.19	10.74

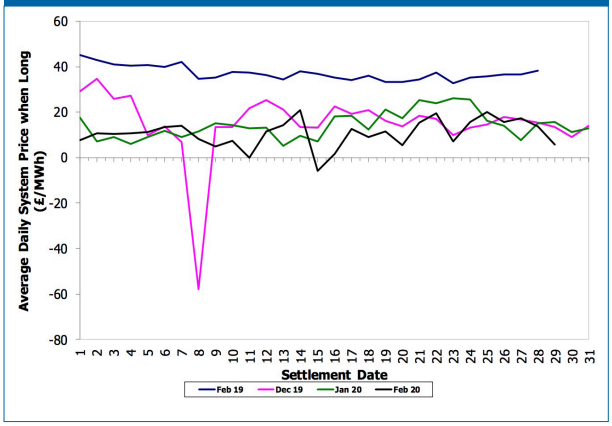
SYSTEM PRICES (SHORT SYSTEM), £/MWH

	Min	Max	Median	Mean	St Dev
February 2020	4.15	120.00	45.00	46.06	8.99
January 2020	17.39	150.00	50.00	51.94	13.39
December 2019	5.99	160.00	56.00	57.74	12.32
November 2019	0.00	142.53	57.50	60.32	14.10

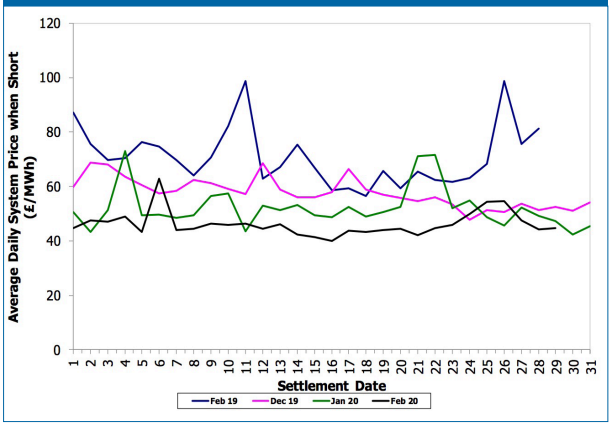
DAILY AVERAGE SYSTEM PRICES, £/MWH



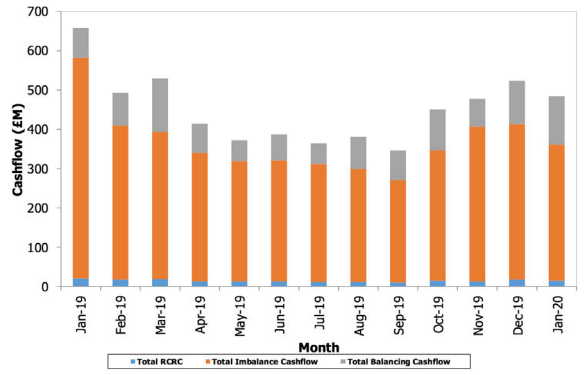
AVERAGE LONG SYSTEM PRICE PER SETTLEMENT DAY, £/MWH



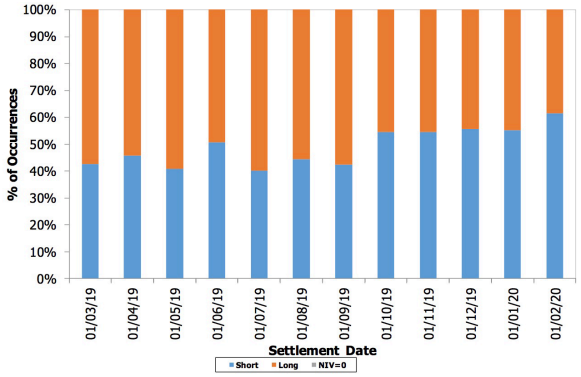
AVERAGE SHORT SYSTEM PRICE PER SETTLEMENT DAY, £/MWH



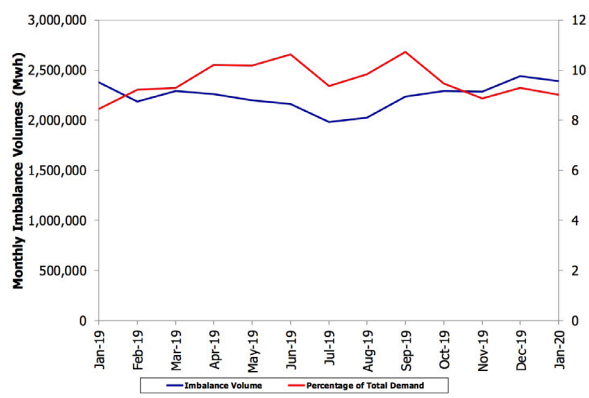
CASHFLOWS IN THE SETTLEMENT SYSTEM



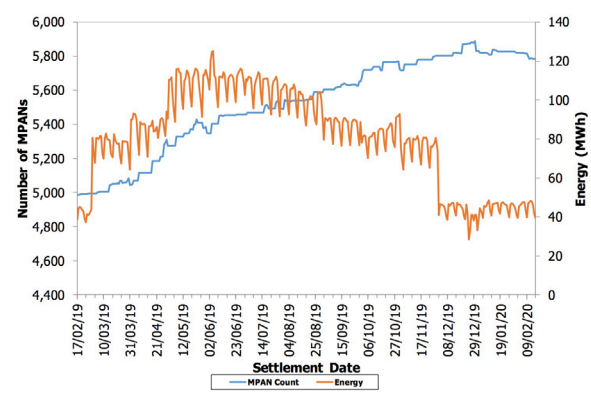
LONG V SHORT SYSTEM OVER PAST YEAR



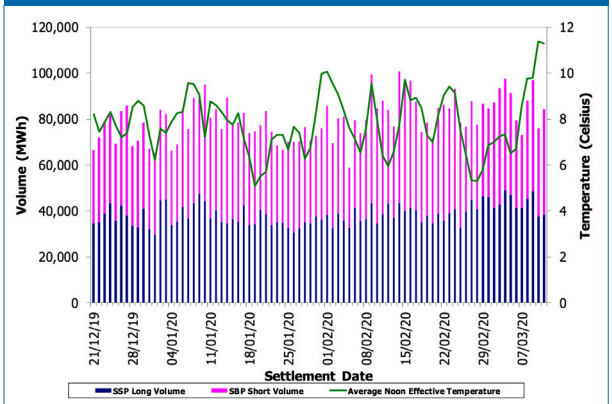
MONTHLY IMBALANCE VOLUMES



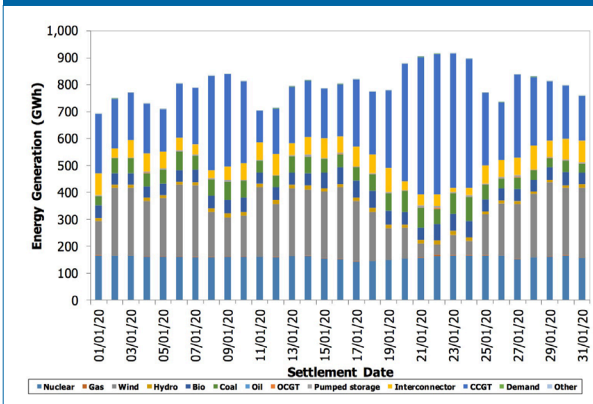
MICROGENERATION METERS AND ENERGY EXPORTED



DAILY IMBALANCE VOLUMES



DAILY GENERATION BY FUEL TYPE



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New Power

Issue 134 April 2020
ISSN 2040-5839
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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.

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