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Centrica to test blockchain in local energy market trial

Centrica is to test the use of blockchain to enable peer-to-peer trading between households and businesses as part of its £19 million local energy market trial in Cornwall.

Transactions will be carried out through LO3 Energy's new Exergy platform.

Blockchain is a distributed, digital ledger, which allows two parties to conduct secure, verifiable transactions without the involvement of a middle-man, such as a bank. The technology underpins cryptocurrencies such as Bitcoin and Ethereum and could facilitate superfast switching between suppliers.

"The proliferation of digital technologies is having a significant impact on the energy industry, allowing us to find new and better ways of delivering energy and services to our customers," said Centrica Business chief executive Mark Hanafin. "This is an exciting opportunity for us to test blockchain technology beyond the theoretical and put it into practice, developing innovative new solutions that will empower consumers".

Centrica Innovation invested in LO3 Energy last year as part of a £100 million programme to identify, incubate and accelerate new technologies. LO3 Energy chief executive Lawrence Orsini said: "Exergy is designed to empower new prosumers while enabling traditional industry players to shift business models and find their place in the energy market of the future."

Centrica launched its local energy market trial in December 2016 to test the potential for distributed generation and storage to provide flexibility to the power grid in the South West of England.

Participants have been given free smart technology upgrades and energy storage units. Around 100 homes and businesses have now signed up and Centrica is aiming to bring on another 50. The blockchain trial will involve 200 participants, many of whom are also taking part in the local energy market trial.

Utility Week

<http://www.utilityweek.co.uk>

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Germany plans 6.6 GW of grid reserve for 2019-2020 and 2020-2021

The German Federal Network Agency (Bundesnetzagentur or BNetzA) has confirmed the latest requirements for the strategic grid reserve ("capacity reserve"), which is expected to amount 6,600 MW during the next two winters (2019-2020 and 2020-2021). This amount is 3,800 MW lower compared with the 2018-2019 requirement, which stood at 10,400 MW but higher than the 2016-2017 winter (5,400 MW). A bottleneck management procedure between the German and Austrian market areas will start on 1 October 2018 and will reduce exports from Germany to Austria to the technically possible extent.

The grid reserve was set by the Netzreserveverordnung (NetzResV) law, which stipulates that the German power transmission system operators (TSOs) have to set aside a certain amount of reserve power plant capacity necessary for future grid stabilisation using redispatch during winter.

Enerdata

<http://www.enerdata.net>



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National Grid leads UK frequency control project

Six energy companies and two universities are working with Britain's system operator National Grid to help find new ways to stabilize the country's transmission system as the nation's energy becomes greener and fossil fuels are phased out.

News of the collaboration comes a week after the UK was powered without coal for a record three days in a row, instead using power generated from gas, nuclear, wind and solar.

National Grid has found that as more renewable sources come into the system and larger, inertia-rich, generators such as coal-fired power stations drop out, maintaining the system frequency response at 50 Hz – a license requirement - has become more challenging.

The companies involved in the Enhanced Frequency Control Capability (EFCC) project are UK demand response based aggregator Flexitricity, solar firm Belectric, Centrica, Orsted, Siemens, GE Grid Solutions, and the universities of Manchester and Strathclyde.

The project recently developed a new monitoring and control system to manage an increasingly green grid. This new system will help maintain system stability during peaks in supply and demand, drive savings for consumers.

Earlier this month the project was shortlisted at the British Renewable Energy Awards on behalf of National Grid for a company that has developed an outstanding project.

Belectric will provide response from its PV plants and storage facilities. It will contribute knowledge and practical solutions to realise the project's goals concerning battery- and PV-based frequency regulation, virtual inertia, and collaboration of different response providers.

Centrica will play a dual role in the project, providing response from both large-scale generation at Langage and South Humber Bank combined cycle gas turbines and Lincs and Lynn or Inner Dowsing windfarms.

Orsted and Siemens are concentrating on wind turbine trials to demonstrate the capability of a wind farm to provide fast, initiated frequency response and the associated costs of doing so.

Flexitricity has recruited customers from industrial and commercial sectors for a demand side response trial as part of the project, which will also call upon other industry players and academics to explore new ways to stabilize the transmission system as energy becomes greener,

The long-term project will assist with the development of new commercial services for rapid frequency response - the first level of back-up for dealing with differences in supply and demand - across the energy market.

Flexitricity founder and chief strategy officer Alastair Martin said: "With energy becoming increasingly decentralized and greener, it is crucial that industry players work together to help the grid evolve as we shape the future of UK energy. The new landscape brings with it a range of opportunities for energy users to fully maximize their assets to not



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only generate revenue, but contribute to the creation of a more flexible, secure and fairer system.”

Lilian Macleod, EFCC Project Manager from National Grid, added: “The EFCC project will provide greater visibility of the grid system performance by using real time data. By working together with industry partners we can lead the transition to a new energy future. Not only will this help to deliver greater value to consumers by running the system more efficiently, it will also evolve and future proof the grid.”

GE Power: “Through the EFCC project, we are demonstrating a flexible approach to rapid frequency response so that a wide range of diverse technologies can participate in managing the frequency.

“The control system combines the responses to provide the grid with a fast and highly stable frequency control response. Applying our knowledge of system stability and experience with wide area control technology, we have been able to work with the EFCC consortium to demonstrate a control approach that can derive value from the various diverse technologies represented.”

PEI

<http://www.powerengineeringint.com>

2 May 2018

Grid Operators Have Sufficient ‘Blackstart’ Capability, Study Says

Operators of the nation’s power grid have sufficient capability to quickly restore their systems using “blackstart” resources in the event of widespread outages, according to a new report by staff at the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC).

The study is a follow-up to a 2016 joint FERC-NERC-Regional Entity staff review that assessed the plans of utilities for restoration and recovery of the bulk power system following a widespread outage or blackout. That review identified for further study issues dealing with availability of blackstart resources – generating facilities that can be started without support from the grid or that are designed to remain energized without connection to the rest of the grid. These blackstart resources are critical to maintaining the reliability and resilience of the nation’s transmission grid.

The study evaluated blackstart resources and planning by nine utilities registered with NERC and notes that while some utilities have seen a fall in the availability of blackstart resources due to retirement of blackstart-capable units over the past decade, they have identified sufficient blackstart resources in their system restoration plans, and have developed comprehensive strategies for mitigating against future loss of any additional blackstart resources.

The joint study team also found that some of the utilities have expanded testing of blackstart capability, including testing energization of the next-start generating units. These utilities have gained valuable knowledge used to modify, update and improve their system restoration plans. The utilities also used the knowledge gained to update and improve their existing steady state and dynamic models supporting their system restoration plans, as well as their system restoration drills.

Today’s study also makes recommendations for industry-wide consideration regarding practices, procedures and methodologies aimed at improving system restoration overall, and blackstart capability planning and testing in particular. These



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recommendations include approaches to addressing single fuel-use constraints, validation of system models and expanded testing of system restoration plans.

All recommendations in the study are for voluntary consideration only. Registered entities are not subject to mandatory compliance with the recommendations, separate and apart from any obligations of the mandatory and enforceable Reliability Standards.

FERC
<http://www.ferc.gov>

2 May 2018

Post-Brexit UK constraints in EU energy market focus on power: EC

Brexit will force UK firms to exit EU day-ahead and intraday power market coupling projects once the UK becomes a non-EU country, the European Commission said in a notice intended to prepare firms for the legal changes coming.

UK firms will also be excluded from EU platforms for forward power capacity allocation and balancing, and will have to register with an EU national regulator to trade in the EU gas and power markets, the EC said.

Power market coupling and the EU platforms are initiatives designed to enable more efficient -- and therefore lower cost -- trading across the EU's national borders.

The implication is that UK firms will face higher costs in trading power across borders to EU countries once legally excluded from these projects.

UK firms will also have to pay an explicit transmission system use fee for all scheduled power imports and exports on interconnectors with the EU once the UK leaves, unless otherwise agreed.

This is because the EU's inter-transmission system operator compensation mechanism for hosting cross-border flows will no longer apply.

These extra costs may make planned electricity links to the UK less profitable without removing the business case to build them, given that UK power prices are higher than its EU neighbors.

Developers are going ahead with the 1 GW NEMO link with Belgium, planned online in 2019, and the 1 GW IFA2 link with France, planned online in 2020.

Meanwhile in March the UK's National Grid and Denmark's Energinet delayed the final investment decision on their joint 1.4 GW Viking Link, citing uncertainty about UK planning consents.

This means the link is unlikely to come online at the end of 2022 as originally planned, they said.

Both companies have said they see a strong business case for the Viking Link, even after Brexit, as it gives UK customers access to cheap hydropower.

UK WANTS EU RULES TILL END-2020

The EC's notice does not include any new information or surprises for those familiar with EU energy market legislation.

It reiterates that these changes will apply from March 30, 2019 -- the date the UK stops being an EU country -- unless otherwise agreed in a formal withdrawal agreement.



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The UK and EU27 have provisionally agreed that EU rules will still apply to the UK until the end of 2020, but this will only be confirmed when the withdrawal agreement as a whole is finalized. That is likely to be later this year, if the talks go well.

Some points in the EC's notice have little immediate relevance in practice. These include the point that UK-owned nominated electricity market operators, known as NEMOs, will not be allowed to offer market coupling services in the EU once the UK leaves.

The two NEMOs in Britain are EPEX Spot and Nord Pool, both owned by EU companies, while Northern Ireland's NEMO, SONI, is owned by Ireland's Eirgrid.

S&P Global Platts
<http://www.platts.com>

4 May 2018

Gas to lead power mix as coal is phased out

The role of gas in the UK's future power mix is set to rise to more than 50 per cent in under 10 years, according to BMI Research of ratings agency Fitch Group.

In its industry trend analysis this week on the outlook for the sector, BMI said gas-fired generation would account for 52 per cent of power by 2027, up from last year's figure of 45 per cent. The prediction is based on delays to new nuclear capacity, the closure of ageing coal plants and a rebound in gas power plant economics.

It also found that renewable energy's share in the mix will gradually increase, as the UK maintains its position as global leader in offshore wind deployment.

Other forecasts include that the contribution of coal will erode entirely over the next 10-year period, in line with the government's pledge to shut all coal facilities by 2025 – a view backed by its implementation plan for phase-out published in January – and April's announcement that the UK had set a new record by not using coal for 55 hours.

Despite the government's efforts to expand the nuclear sector, most notably through the development of Hinkley Point C, the proportion of nuclear power is also expected to fall within the next decade to just under 10 per cent in 2027, from around 20 per cent currently.

This view, said BMI Research, was supported by news in April that quality control failings had been found at EDF's Flamanville nuclear plant, which could delay Hinkley Point C's construction as it uses the same nuclear reactor prototype.

BMI's report also predicts that:

- Non-hydro renewables capacity will increase by an annual average of 3.9 per cent between 2018 and 2027, to reach nearly 57GW, primarily driven by the offshore wind sector, which remains an "investment bright spot" due to continued government support.
- Growth in onshore wind and solar power will slow as the sector moves away from subsidy schemes towards the CfD mechanism.
- Potential is growing for unsubsidised solar projects in the UK.
- Electricity consumption will remain flat over the next 10 years, with annual average growth of 0.3 per cent between 2018 and 2027.



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Added to this, improved political stability – helped by a lower risk of a fresh leadership challenge, snap election or second referendum in the short term – reduces uncertainty for the energy sector and the chances of a sharp fall in spending.

Utility Week

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4 May 2018

ISO-NE cost recovery proposal opens new front in fuel security debate

Dive Brief:

- ISO-New England on Tuesday asked the Federal Energy Regulatory Commission for a waiver from its market rules so it can keep two units of the Mystic Generating Station, a gas plant near Boston, online beyond 2022.
- ISO-NE said enacting cost recovery for the 1,700 MW of generation is necessary because the units' retirement would likely mean the closure of an adjacent liquified natural gas (LNG) import facility the grid operator says is essential for "fuel security." The waiver is needed because current rules do not allow cost recovery for such risks.
- Critics said approving the waiver could set a dangerous precedent of granting cost recovery for plants based on their fuel supplies, rather than the usual rationale of power system reliability, and called into question ISO-NE's assessment of fuel security, which they say is unnecessarily pessimistic.

Dive Insight:

ISO-NE's Tuesday waiver filing is unprecedented in the history of U.S. wholesale power markets. Typically, grid operators ask for cost recovery — commonly known as reliability-must-run designations — due to direct threats to power reliability stemming from a potential retirement, such as transmission constraints or generation shortfalls.

ISO-NE's filing is different. The grid operator doesn't envision direct reliability threats due to Mystic's closure, but is concerned that the Everett Marine Terminal, a neighboring LNG import hub, will close if the plant goes offline.

The LNG terminal is the sole source of fuel for Mystic units 8 and 9, and can also contribute 435 million cubic feet of gas per day to New England pipelines and gas utilities. Exelon, which owns the Mystic plant, is in the process of acquiring the terminal from ENGIE North America.

If Mystic 8 and 9 were to retire, the import facility would likely enter an "economic death spiral" and close, ISO-NE said in its filing, because it would have to share its operating costs across a smaller customer base. If that happens, ISO-NE said its recent fuel security analysis and retirement studies for Mystic point to the risk for blackouts in the winter months.

"[R]etirement of Mystic 8 & 9 would cause the ISO to deplete 10-minute operating reserves (a violation of mandatory reliability criteria) on numerous occasions and, further, to instigate load shedding — rolling blackouts — during the New England winters of 2022-2023 and 2023-2024," the ISO wrote.

Critics say the fuel security study that underpins that assessment is unnecessarily conservative. After the ISO filed that report at FERC, 14 members of the Northeast Power Pool (NEPOOL), a group of market participants, asked the grid operator to adjust its



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reference case scenario, which they said presents an unrealistic view of future grid conditions.

The ISO did not change its filed report, but a smaller group of stakeholders commissioned Synapse Energy Economics, a Boston-based consulting firm, to publish results of other scenarios. They differ markedly from the ISO's assumptions, made without stakeholder input, said David Ismay, senior staff attorney at the Conservation Law Foundation, one of the groups behind the report.

"The most likely scenario for 2024 to 2025 is the following: we meet our [renewable portfolio standards], we import some clean energy from Canada, we have a few hundred megawatts of offshore wind online," Ismay said. "[The ISO] said 'we're not going to correct our report ... but we'll run the other scenarios for you' and what's really striking is how very different the subsequent analysis is that we requested from them."

While the ISO report envisions rolling blackouts in 19 of 23 scenarios, the Synapse report includes only one scenario where the ISO would have to institute Operating Procedure 4, which happens when there is insufficient generation to meet demand.

"Now the chickens are coming home to roost and they are using this overly pessimistic model as justification" for a cost recovery proposal, Ismay said.

Regardless of the analysis, other critics say ISO-NE is out of bounds with its cost recovery request based on fuel security.

"This has nothing to do with the original purpose of reliability-must-run agreements which was to address local market power due to a generator's unique ability to provide a local reliability service," said Rob Gramlich, an energy consultant and former advisor to Republican FERC Chair Pat Wood III. "A hundred resource alternatives could exist that FERC would have to decide are all non-viable before it could reasonably confer this cost-of-service payment," Gramlich wrote via email. "That is, if it had a policy on fuel security, which it does not."

FERC could be moving toward such a policy, however. The commission's grid resilience docket, opened after regulators rejected a Department of Energy plant subsidy proposal in January, will likely assess fuel supply as some aspect of system resilience. The PJM Interconnection, another grid operator, last week announced an initiative to reward "fuel secure" generators with higher capacity market payments, calling it an aspect of grid resilience.

If FERC does approve the ISO-NE request, environmentalists worry it could set a dangerous precedent for large uneconomic plants to receive cost recovery based on fuel attributes, rather than reliability impacts — a similar model to the DOE proposal FERC unanimously rejected.

Utility Dive
<http://www.utilitydive.com>

4 May 2018

SENER targets 50% clean energy share in power mix by 2034

Mexico's Secretariat of Energy (SENER) expects the country to generate at least 50% of its power production using clean energy sources by 2034, citing the current growth rate of its renewable power production and the effectiveness of the current government policies and market mechanism.



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The government has implemented clean energy certificate requirements and long-term electricity auctions to support its energy sector reforms. Under Mexico's energy transition law, the government targets a clean energy share in Mexico's power production of 37.7% by 2030 and 50% by 2050: the 2030 target may be reached as soon as 2024 and the 2050 target in 2034.

Enerdata

<http://www.enerdata.net>

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EDF commissions 200 MW phase of 800 MW Dewa III solar project

EDF has commissioned the first phase (200 MW) of the 800 MW DEWA III solar power plant in the United Arab Emirates (UAE), which is part of the giant US\$14bn Mohammed bin Rashid Al Maktoum solar park, which targets 5 GW in total capacity by 2030. EDF partnered Abu Dhabi's Masdar and the Dubai Electricity & Water Authority (DEWA) on the DEWA III project, which was awarded at a competitive price of US\$2.99c/kWh. The second and third phases of the project (300 MW each) are scheduled for commissioning in 2019 and 2020, respectively.

The giant solar park project will be the world's largest single-site solar plant based on the independent power producer model upon completion, and is a key initiative under the Dubai Clean Energy Strategy 2050 which targets a 75% renewable energy share in Dubai's energy mix by 2050.

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<http://www.enerdata.net>