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UK signals U-turn on onshore wind

CHRISTOPHER HOPSON

he UK looks set to reboot its dormant onshore wind industry after the Conservative government signalled "a very significant shift" in policy to bring forward new onshore wind farms "in areas of the UK which want to deploy it".

"I think onshore wind is absolutely part of the future," climate and industry minister Claire Perry told a select committee hearing in Westminister. "I am working on ways with the team to see how we might bring forward onshore wind... because I agree it's an important part of the mix."

otograph | Getty

The UK onshore wind sector has been in the doldrums since 2015

when former prime minister David Cameron's coalition government slashed subsidies and imposed tough local planning controls that made it very difficult to win project approvals.

Onshore developers are not permitted to compete for contracts to generate electricity anywhere in the UK. However, the devolved governments of both Wales and Scotland support onshore wind as part of a strategy to boost business and keep energy bills low.

Perry told the committee that the Conservatives had a manifesto commitment not to allow any more large-scale onshore wind in England. However, she said she was "very aware that there are other parts of the country where there is planning



consent for, and an opportunity to provide onshore wind".

Perry said she was currently looking at whether changes could be made to the UK's Contracts for Difference (CfD) system. "The problem we have is that under the current CfD rules it's impossible to bring forward geographically specific wind farms — much as we would like to, because, I agree, onshore wind is absolutely part of the future".

The Welsh government called on Westminster to enable the most affordable energy technologies, such CONTINUED on Page 3

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BNetzA: winning onshore bids lower than the cost of production

BERND RADOWITZ

he average winning bid price at Germany's last two onshore wind auctions was lower than the current cost of wind-energy production, according to the country's federal grid agency, BNetzA.

Last month's 1GW auction saw average winning prices of €38.20/ MWh, while at an earlier tender round in August, that figure was €42.90/MWh. BNetzA says the current production price for onshore wind in Germany is €56/ MWh. Community groups, which won most of the capacity in both tenders, have four and a half years to complete winning projects, while commercial developers only have two and a half years.

There are fears within the sector that a substantial number of winning projects may never be built, particular as community groups were allowed to bid without having noise permits in place which may never be granted.

However, the exemptions for grassroots projects have been suspended for the next two onshore wind auctions next year, meaning that community groups will also have two and a half years to complete winning projects. Having less time for construction will probably increase costs as turbines generally get more efficient and cost-effective as time goes on.

For these reasons, BNetzA has set a ceiling price of €63/MWh for the 2.8GW up for grabs at the four onshore wind auctions next year. Normally, the agency would



determine ceiling prices based on the average prices at the previous three auctions — which would produce a figure of \in 50/MWh.

The BNetzA has been able to set the higher ceiling price due to a discretionary rule within Germany's Renewable Energies Act (EEG), which allows for the upper bid limit to be raised if there is an indication that a low value would endanger Germany's renewables targets.

"Through the elevation of the

ceiling price, it can be expected that there will be a good competition in the tenders in 2018. Good prices can be offered that render a viable construction of the machines," says BNetzA president Jochen Homann.

The agency had to act swiftly to avoid a collapse in the onshore wind expansion, he adds.

"Tenders can only be effective and help a continued [wind power] expansion if there are adequate offers." 🖬

Scotland and Wales to reap benefit of UK U-turn

FROM Front Page

as onshore wind and solar power, to form the majority of Wales' future energy supply.

"We believe that lowest-cost technologies, such as onshore wind and solar, present the best opportunities to manage the costs of generation to energy bills," said Lesley Griffiths, the Welsh cabinet secretary for Energy, Planning and Rural Affairs.

"A policy framework which enables the most affordable projects to continue to form the bulk of energy supply is fundamentally important to delivering our decarbonisation and prosperity goals."

Emma Pinchbeck, executive director of RenewableUK, said: "With both the Welsh and Scottish governments now publicly calling on Westminister to help them develop new projects, let's hope that a solution can be found."

WindEurope launches wind+storage database

CHRISTOPHER HOPSON

WindEurope has launched a new online database to increase industry understanding of the opportunities for co-located wind and onsite storage projects.

"We surveyed all the existing projects globally which have a wind farm with a storage system," said Daniel Fraile, senior analyst, grids and markets, at WindEurope.

"These are all operational, planned, contracted and announced projects with onsite storage including batteries, flywheels, pumped hydro, and power-to-gas storage," he told *Recharge*.

The database is designed to look at the booming market for these types of joint projects. "We have come up with a number of recommendations on how to improve the regulatory framework governing these projects."

Fraile said the data includes wind farms and storage devices that share the same grid connection. "The only exception was pumped hydro projects, which you don't have on site.

"We are becoming increasingly aware of the importance of these types of storage projects and the different services they can provide.

"We have looked into the possibility for a wind farm operator to store energy and deliver it later when prices are higher, at providing ancillary services, frequency response, congestion management, reactive power, and black-start capabilities."

The data shows there is 167GW of storage globally, with only 388MW, or less than 1%, are co-located wind and storage schemes (operational and planned).

Fraile said it's important for the industry to contribute with their own projects by filling in a form on the database. The online database can be found at www.windeurope.org. 🖬

3

KARL-ERIK STROMSTA

017 is an "inflection point" for 4MW turbines in the European onshore wind market, with these larger machines now set to begin stealing ever more market share, before rendering the long-dominant 2MW platform a "niche product" by the early 2020s, MAKE Consulting told WindEurope 2017 yesterday.

As recently as 2011, turbines rated at 2MW or lower utterly dominated the European market, accounting for 90% of all onshore installations, Shashi Barla, a technology consultant at MAKE, told the "Onshore wind: where do we go next?" session.

But these smaller machines have steadily lost ground to the 3MW platform in recent years, as European developers push into lower-wind sites and turbine manufacturers look to tap economies of scale.

For the first time in 2017, 3MW-plus machines are on track to supplant their smaller predecessors as Europe's mostpopular model, grabbing a roughly two-thirds market share, up from a more or less even split last year, MAKE says.

The ascension of 3MW turbines underscores the intense innovation and competitive pressure that still fuels the mature European onshore wind sector.

And the winds of change continue to howl. Several years ago, turbine OEMs began to prepare the market for the



MAKE: 4MW turbines will be the new onshore workhorses

introduction of 4MW machines, and the past year has seen a rash of product announcements, with at least eight OEMs now offering such turbines, from GE to China's Goldwind.

The market's take-up of 4MW machines should more or less follow the same trajectory as it did with 3MW machines, Barla said. By the mid-2020s, "4MW will be the mainstream technology going forward", he explained.

The adoption of larger turbines would happen even faster but for several factors, panelists told the session.

One is the undeniable costefficiencies enjoyed by the incumbent technology platform, with Europe's wind supply chain requiring several years to gear up for the industrial-scale production of larger machines. Also, "harsh and restrictive" permitting in many countries holds back the push for ever-taller turbines with longer rotor blades, says Paris Lappas, head of product strategy at Nordex Acciona Wind Power, which recently launched its first 4MW-class turbine.

"We see markets where it takes, six, seven, eight years until a turbine is permitted, like in France," Lappas says. 🖬

European utilities softening towards technology-specific tenders

KARL-ERIK STROMSTA

Europe's major utilities admit they've grown more accepting of technology-specific support mechanisms, as many of them happily take advantage of Europe's blossoming offshore wind market, WindEurope 2017 heard yesterday.

Just a few years ago, Eurelectric, the industry group representing Europe's utilities, took a "very hard line" in pushing for a technologyneutral approach to fostering power-generation development, noted Pierre Tardieu, chief policy officer for WindEurope.

Had EU member states been forced to stick with that approach, "we never would have seen the development that we've seen in offshore wind and the significant cost reduction over the past couple years — one of the key success stories for our industry", Tardieu said.

But utilities' insistence on technology neutrality has softened, Eurelectric secretary-general Kristian Ruby acknowledged yesterday. "I think we have evolved a bit," he said. "We're still firmly in favour of the idea of competition between technologies. But we also believe in being pragmatic.

"To put it a little bit sharply, if you acknowledge the existence of our North Sea [offshore wind] resource and you want to reap that, it doesn't make sense to call the solar guys when you want to set up some projects. So we have to be pragmatic."

That said, Eurelectric remains insistent that all technologies, even

the carbon-free ones, must be "exposed to competition from the outside", Ruby said.

"Right now the most interesting thing happening in the market, in my view, are these mixed projects... where people mix solar panels, batteries and wind, and gain very, very high capacity factors."

"Essentially, you're creating projects with firm capacity based on renewables. If we lock ourselves too much into technology corridors, there's a risk that we forego innovation."

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Enhanced Asset Management Strategies - With margins being increasingly squeezed, listen to mature asset management approaches that will enable your wind farms to realise their full potential.

Data exploitation – In the age of Big Data, learn how to effectively gather, analyze and use the information coming from your assets that will unlock previously hidden savings and boost overall portfolio profitability.

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ZF shifts gears with new modular gearboxes

UROPE

Transmission specialist ZF has unveiled the first of two new modular gearbox platforms, dubbed Shift, for the rapidly upscaling turbine market. The first platform, a high-speed design for onshore machines as large as 4MW, will be able to handle torque ranges from 2,100-3,000 kiloNewton-metres (kNm), with the follow-on platform able to shoulder 3,500-4,900kNm in turbines with 5MW-plus nameplates.

The concept is designed with gear unit outer dimensions "identical across the full torque range" to eliminate the need for major drive-train and nacelle re-designs during a turbine's lifetime, said Jan Willem Ruinemans, head of ZF's wind power business.

"ZF has bundled the experience in high-torque applications and reliable wind gearbox technology to create a new wind gearbox platform to cover the dynamics of the wind market and reduce time-to-market significantly."

Serial deliveries have started to customers in Europe and Asia.

DNV GL boots up wind farm digital twin tool

DNV GL has launched an online digital twin tool called WindGemini for wind farm operations.

Designed to provide wind farm owners with metrics and analysis for operational conditions and performance, the software creates digital copies of turbines, updated in real time with in-field data.

WindGemini, developed based on the analysis of more than 50GW of global wind plants, can highlight fatigue of the main structural components; predict drivetrain failures; identify shifts in turbine power curves for correction; and monitor structural integrity linked to rotor imbalance and foundation degradation.

New online marketplace for operational wind data

Totaro & Associates has started up a content aggregation and licensing platform for asset owners, OEMs, component suppliers and data analytics companies angling to sharpen insight into wind farm performance data.

IntelStor EDS is designed as an online marketplace matching companies with data to offer with others interested in licensing operational asset data. Those companies that open up their data archives will receive a royalty for any information monetised.



Offshore wind 'key' to energy transition

ANAMARIA DEDULEASA

he cost-effective development of offshore wind is "key" to helping Europe meet its clean-energy targets, according to a topranking European Commission (EC) civil servant.

"Offshore wind in Europe has been a success, considering the jobs and investments that we have seen and the future potential," Christopher Jones, the EC's deputy director-general for energy, told the North Sea Energy Forum session at WindEurope 2017.

"But let's have no illusions about this. Without the development of offshore wind we will not meet our targets. To meet our ambitions, we also have to go further offshore and countries will need to work together.

"There is not enough room in the North Sea to build all the megawatts we need. This means we will also have to start building more efficiently."

Sandor Gaastra, director-general for energy at the Dutch ministry of economic affairs, pointed out that the Netherlands is planning to build a further 7GW of offshore wind over the next decade, but added: "More ambition is needed to meet the targets set under the Paris Agreement.

"We can't hit these targets alone, we need governments, industry and non-governmental organisations to work together."

Estonia: subsidy-free wind by 2025

BERND RADOWITZ

Both onshore and offshore wind could be built without subsidies in Estonia by 2025, the country's deputy secretary for energy, Ando Leppiman, tells *Recharge*.

"I'm pretty sure we are going to see by 2025 very competitive market players," he says, pointing to the trajectory of wholesale electricity prices and winning auction bids.

"I'm very optimistic that [wind

farms] will come into the market even without any subsidies in Estonia — and elsewhere as well."

The Baltic nation is looking for potential partners to get wind projects part-financed by other EU member states in return for a statistical transfer of renewable capacity towards those countries' 2020 targets, he says. Estonia is also looking for other ways to get offshore projects financed, such as power-purchase agreements with large consumers. \square

Is zero-subsidy the new normal?

BERND RADOWITZ

ero-subsidy projects will not necessarily become the new normal in offshore wind, Siemens Gamesa's offshore wind chief executive tells *Recharge*.

"I just reflect what I hear from customers here [at WindEurope 2017], and I don't get a clear signal that it [zero subsidy] will be the new normal," says Andreas Nauen.

"For me, it is more important that the opportunities for offshore overall are now seen by everyone very positively," he said, regardless of whether there is a low subsidy or none at all.

"Offshore is now competitive. We deliver electricity at a very competitive price and this will make sure that we will have much more offshore in the future than we had in the past."

The next test for the sector will come at a zero-subsidy auction

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turbine orders from clients in

"We are negotiating very heavily

for one very early project. We see

interest for projects to be installed

in 2020 and 2021," Nauen says,

declining to reveal the name of

Taiwan, says Nauen.

potential clients.

in December for the 700MW Hollandse Kust South 1 & 2 zone off the Netherlands.

Nauen says he can't tell whether there will be bidders at the Dutch tender. "Some say there will be no-one, some say there will be a handful."

Siemens Gamesa sees

Jungle Ai and Smart Turbine Management have each won a €7,000 prize in the first-ever wind-energy hackathon, held by WindEurope and European sustainable energy innovation outfit InnoEnergy.

Hackathon

DARIUS SNIECKUS

winners hailed

The teams developed their ideas using EnOS, a smart, open, scalable platform hatched by Chinese new energy company Envision, the technical partner of the Hack The Wind, supported by Portuguese utility EDP.

"It has been a fantastic experience to see how fast the ideas progress," said InnoEnergy's Emilien Simonot.

Two other Hackathon teams, TRM System and Vento, shared a €5,000 prize for their "technical achievements or potential to convert [their idea] into an actual business in the future". □

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HIGHLIGHTS OF THE DAY

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09:30 - 10:45 Orange opportunities for Remote sensing in resource Predicting fatigue and lifetime Wind energy and aviation green growth: Dutch onshore of operating wind assets (civil and military) assessment and offshore developments ROOM: EMERALD ROOM: G105 ROOM: G107 ROOM: G103 11:30 - 12:45 The future of resource Offshore wind outside the EU Wind and the electrification of Using data to optimise assessment: latest advances - new business opportunities? performance transport and open discussion ROOM: G103 ROOM: G105 ROOM: G107 ROOM: EMERALD OPEN TO ALL PARTICIPANTS 14:00 - 15:15 Offshore logistics & Central and Eastern Europe: maintenance: innovative Wind and the electrification of Floating offshore wind can they rise from the ashes? techniques and insights from heating ROOM: EMERALD ROOM: G103 ROOM: G107 the oil & gas industry ROOM: G105 OPEN TO ALL PARTICIPANTS 15:45 - 17:00

power-to-gas

ROOM: G107

Onshore wind: doing business Extreme weather conditions: Using wind for hydrogen and in Russia, the Middle East and challenges for wind power North Africa production ROOM: G103 ROOM: G105 OPEN TO ALL PARTICIPANTS

See the full programme online at: windeurope.org/confex2017/conference/programme

SIDE EVENTS



POSTER SESSION AND POSTER AWARD CEREMONY When: Thursday 30 November 2017, 10:45 – 11:30 Where: Poster Area – Top of hall 2

The poster session will be at 10:45 followed by the Poster Awards Ceremony with some morning refreshments. Don't miss your chance to meet the poster presenters face to face and discuss their findings.



DEMOWIND WFCT When: 30 November 2017, 9:30 – 13:00 Where: D203, Elicium 2nd floor



INNOVATIONS FOR LCOE REDUCTION IN OFFSHORE WIND ENERGY

When: 30 November 2017, 9:00 – 13:30 Where: Amtrium 2 – ground floor



NORTH SEA WIND POWER HUB CONSULTATION SESSION When: 30 November 2017, 10:00 – 14:00 Where: D403, Elicium – 4th floor



G+ SAFE BY DESIGN WORKSHOP When: 30 November 2017, 9:30 – 16:00 Where: D204, Elicium 2nd floor



WIND ENERGY MATCHMAKING When: 29 November 2017, 10:00 – 17:30 Where: RAI Amsterdam. In the Amtrium next to Hall 1



WIND ENERGY AND AVIATION WORKSHOP

When: 30 November 2017, 11:00 – 17:00 Where: G109 – 1st floor, conference area

Visit the WindEurope stand (2C32) to find out more about WindEurope's future events and how to become a member.





9

6GW wind-solar project in Australia to power Indonesia

Vestas among partners backing Asian Renewable Energy Hub, which would feed electricity via a long-distance subsea cable

DARIUS SNIECKUS

group of global renewable energy players including developers WP Energy Asia, InterContinental Energy and OEM Vestas plans to build a 6GW hybrid wind and solar plant in Western Australia that would feed power via a long-distance subsea trunkline to Indonesia.

The Asian Renewable Energy Hub (AREH) project, three years in development, aims to provide cost-competitive electricity to meet the Southeast Asian island nation's power demand and renewables targets, while addressing energy security challenges.

AREH, targeting switch-on by 2025, is also expected to create a new source of skilled, high-tech jobs in Indonesia as well as spurring growth of a local supply chain.

"Wind and solar energy, working together, have enormous potential to supply reliable and competitively priced renewable energy across regions," said Alexander Hewitt, managing director of CWP Energy Asia.

"Given the increasing ability to move energy over long distances, the AREH is a compelling proposition for Indonesia – not only for supplying the energy, but for the economic benefits that come with establishing manufacturing facilities in Indonesia."

The \$10bn first phase of the project, which is anchored on a site in the East Pilbara region with "outstanding wind and solar resources", would be expanded as a staged development to later supply renewable energy to "other countries" in Southeast Asia.

"The most important step in developing a project is finding the best site," said Alexander Tancock, managing director of InterContinental Energy. "We spent two years investigating the entire northwest coast of Australia, and found this incredible location.

"[The site] has a unique geography and topography that gives it far higher wind and solar resources than the average in that area.

"And those resources are



perfectly complementary, with lots of sun during the daytime and high wind speeds in the morning, evening and night. That is why we can deliver such competitively priced power to Indonesia."

Clive Turton, president of Vestas Asia Pacific, added: "As renewable energy becomes cost-competitive with fossil fuels, it becomes more and more attractive both as source of electricity and as a source of jobs and investment.

"The AREH can compete over the long-term as a cost-effective means of supplying energy. It can also provide the foundation for a strong Indonesian renewable energy technology manufacturing hub, driving investment, job creation and a local value-added supply chain."

Onshore and offshore development studies for the AREH are now underway, following finalisation of the investor consortium, and engagement of the governments of Indonesia, Australia and Denmark.

Italian cable-maker Prysmian and Danish offshore installation contractor Swire, which assisted with project feasibility work, are in harness to handle laying of the subsea export line between Australia and Indonesia.

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Wind hits 10% supply milestone in Brazil

ALEXANDRE SPATUZZA

razilian wind reached a milestone supply level of 10% of total national power demand in this year's windy season, thanks to a growing installed base and high capacity factors that cemented its place in the South American country's energy mix.

That figure confirms wind as the third most important technology for power supply - behind hydro and thermal power plants, which account for 60% and 24% respectively — especially in the Northeast region, where a fouryear drought has depleted hydro reservoirs. "You can safely say that without

wind power, the Northeast region would have been facing a serious power shortage," says Roberto D'Araújo, owner of Rio de Janeirobased independent power sector

consultancy CRM. With 12.5GW of capacity at the end of October, wind power accounted for about 8% of Brazil's total capacity, but supplied 11% of the total power during the month. In September, wind supplied just under 10% of country's total power, with a capacity of 12.3GW.

In the Northeast, where more than 70% of country's wind turbines are turning, the source supplied 50% of

local power in recent months.

Hvdro reservoirs in the Northeast are below 10% of their total capacities and in the Southeast where most of Brazil's hydroelectric power plants are located -

capacities are around 20% below. So wind has filled the gap wind and played a key role in injecting

power into Brazil's 135,000km national grid, taking on part of the supply from thermoelectric power plants, which are now reaching their limit of supply capacity at around 24%.

This has brought down total power supply from hydro plants to under 50% of total supply in October, even though they account for 61% of total capacity. In the past, hydro supplied up to 80% of total capacity, with fossilfuel thermal plants making up most of the rest.

Without wind power, the Northeast region would have been facing a serious power shortage

> According to Brazil's wind power association, ABEEólica, the results were due to the high capacity and availability factors of the 6,000 or so operating turbines — of 60% and more than 95% respectively — as well as the constant winds in the Northeast.

"Brazil's wind turbine fleet is

relatively young, averaging three years. Our oldest wind farm now has just reached 10 years," says ABEEólica's executive president Élbia Gannoum.

Brazil is reaching the end of its windy season - which stretches from August to December when the southern winds reach Brazil's Northeast. As the rainy season starts in the country's Southeast, helping to replenish reservoirs, wind supply is likely to decline as capacity factors drop some 20 to 30 percentage points.

But with 4.9GW of new wind farms under construction, the technology is expected to remain essential even outside the windy season.

"You can no longer think about Brazil's power system without wind. Brazil no longer has a hydro-thermal power supply system, it's a diversified one, and wind becomes more important especially with so much change in rainfall regimes," says Gannoum. 🗈



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Benjamin Franklin

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KARL-ERIK STROMSTA

he US may draw significant offshore wind supply-chain investment sooner than many in the industry expect, says developer Ørsted's president for North America.

"I think everybody recognises that as a supplier, getting in first is probably a good thing — that's what people are looking at right now," Thomas Brostrøm tells *Recharge*.

"With New York and Massachusetts and Maryland and a couple of other states coming in now, you can suddenly see the kind of volume that would attract a supply chain and make the business case for them," he says.

"My feeling is you'll see something happen soon.

"In the first wave, you'll see investment going into port infrastructure and probably vessels. The second wave will look at the other parts of an offshore wind farm."

Offshore developers in the nascent US market face the tricky task of delivering cost-competitive projects, which will unlock the market to further development, while at the same time bringing politically important jobs to coastal communities.

GE holds the early lead in the US market, having shipped turbines from France for Deepwater Wind's 30MW Block Island project. MHI Vestas recently pushed into the US for the first time, linking with Clemson University to test its V164 9.5MW drivetrain in South Carolina.

The good news, Brostrøm says, is that jobs-hungry states and offshore developers have an "aligned interest" when it comes to a local supply chain. "[Developers] want the supply chain to sit here, because shipping components over the Atlantic Ocean comes at a cost".

When Ørsted (formerly known as Dong Energy) bought its first US offshore zone in 2015 off Massachusetts, few would have predicted that just two years later the market would have advanced as far as it has — including Ørsted itself. The whirlwind of progress over the past 18 months, including legislation backing



US offshore wind supply chain is 'coming soon', says Ørsted

offshore wind in Massachusetts and a multi-gigawatt target in New York, "probably caught us a little off guard", Brostrøm admits.

"Coming in with a business development mindset, you believe you're going to make everything

work. But in hindsight, I don't think we could have hoped for more. Our timing was absolutely right." Ørsted plans to

bid capacity from its Bay State zone into Massachusetts' first offshore tender, with bids

due in December and the winners to be revealed in spring 2018.

Ørsted also has its "eyes set" on New York, which is targeting 2.4GW of offshore wind by 2030. "New York is a very key market simply because of the [demand] load, and we'd like to take part," Brostrøm says.

Meanwhile, the prospects for

the 1GW lease area off New Jersey that Ørsted acquired in 2016 have brightened spectacularly following the election two weeks ago of pro-renewables Democrat Phil Murphy, who will replace outgoing Republican Chris

I think everybody recognises that, as a supplier, getting in first is probably a good thing

Christie as governor in early 2018.

Murphy has pledged to deploy 3.5GW of offshore wind off New Jersey's coast by 2030, saying he wants to transform the densely populated state in to the "California of the East Coast".

Even in the best-case scenario, projects in Massachusetts, New York and New Jersey would not get built until sometime in the early 2020s. But Ørsted is partnering with utility Dominion Energy on its permitted 12MW pilot project off Virginia, which is due on line by the end of 2020 — a prelude to the development of Dominion's more-than-2GW Virginia zone.

Ørsted also recently struck an agreement with developer NaiKun that could see it building Canada's first offshore wind farm, off British Columbia.

"We're involved in a lot of projects now [in North America], and we want to be able to follow through," Brostrøm says. "But we have a fairly big appetite."

"That's one of the benefits of having such a clear focus on offshore wind, and being able to invest so much — if the right opportunity comes along, we can act on it."

Going forward, he says, "we're not excluding anything". ⊡

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