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US OFFSHORE WIND SCRAMBLES TO RE-ESTABLISH GROWTH IN 2024

Project stakeholders are looking to bounce back from disruptive cost increases and delays and re-establish investor confidence in the nascent offshore wind sector.



After a promising start, global macroeconomic challenges have blown President Joe Biden’s offshore wind ambitions off course.

East Coast state mandates, offtake agreements and ambitious federal targets pointed toward strong offshore wind growth but soaring costs and inflation rates since the coronavirus pandemic have disrupted progress.

A combination of rapid cost increases and supply chain bottlenecks since offtake deals were signed has prompted developers to halt project plans and write down billions of dollars of investments, endangering state and federal offshore wind targets.

A wave of projects scheduled to be installed in 2025-2028 has been particularly impacted, threatening investments in a U.S. supply chain needed to support sustainable growth. The 2022 Inflation Reduction Act

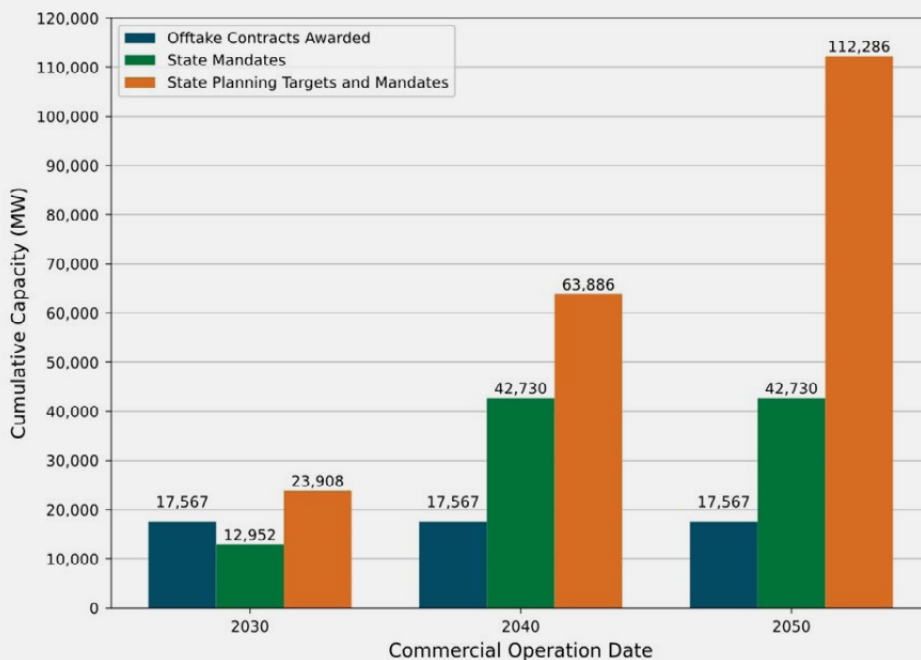
provides substantial tax incentives for offshore wind investments but suppliers require a long pipeline of projects to commit funds.

States have acted fast to get development on track and 2024 will be a crucial year for the U.S. offshore wind sector as state authorities roll out a flurry of [new offtake auctions](#).

The auctions will take into account cost swings and many developers are planning to rebid their projects. Developers are recalibrating costs and interest rates remain high, raising the prospect of higher prices for end-users.

Inflation has fallen from post-pandemic highs but costs will not return to pre-2021 levels for at least three years, John Murray, senior wind analyst at S&P Global Commodity Insights, told Reuters Events.

US OFFSHORE WIND STATE PLANNING GOALS, OFFTAKE CONTRACTS



Source: Department of Energy’s 2023 Offshore Wind Market Report, August 2023.

President Biden set a highly ambitious target of 30 GW of offshore wind by 2030 and the 2024 presidential election poses additional risks to this goal.

The Biden administration is streamlining regulation to accelerate offshore wind approvals, work which risks being undermined if a Republican president takes office.

PROJECT SETBACKS

Developers are seeking new electricity prices on at [least ten](#) East Coast offshore wind projects after sharp rises in global costs and interest rates since the coronavirus pandemic.

State regulators have rejected requests for price increases, prompting developers to cancel contracts and prepare to rebid their projects in upcoming auctions.

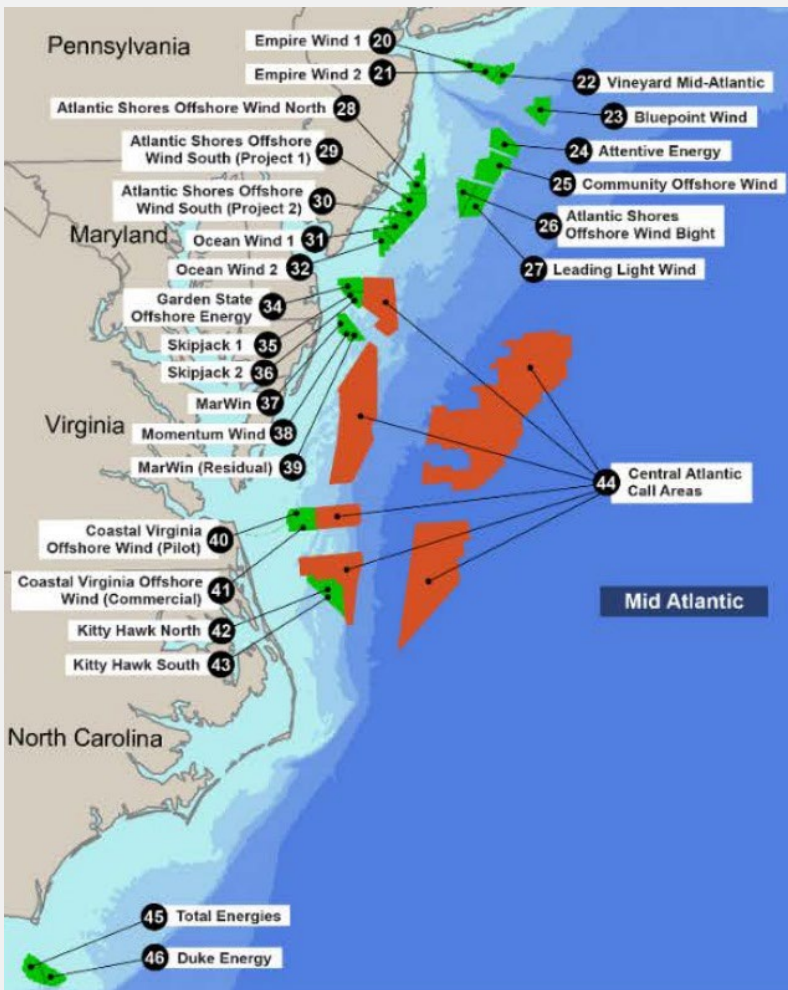
Orsted, the world’s largest offshore wind developer, halted development of its 2.2 GW Ocean Wind 1 and 2 projects in

New Jersey on November 1, citing higher costs and vessel shortages.

The Danish firm announced impairments on the projects could reach \$5.58 billion and the future of the projects is uncertain.

CEO Mads Nipper said that Orsted’s early-stage investment in Ocean Wind 1 was “without a doubt...the wrong decision” and suggested it would wait longer before committing investment in future.

OFFSHORE WIND PROJECTS IN US MID ATLANTIC



Source: Department of Energy’s 2023 Offshore Wind Market Report, August 2023.

Oil and gas groups BP and Equinor wrote down the value of their Beacon, Empire 1 and Empire 2 offshore wind projects in New York by \$540 million and \$300 million respectively. The projects have a combined capacity of 3.3 GW and the New York state regulator had refused their request for a 54% power price rise, arguing it was not in the interest of ratepayers.

Equinor CFO Torgrim Reitan said the company may still proceed with the projects if higher prices can be achieved.

Iberdrola subsidiary Avangrid terminated PPAs on its 804 MW Park City project offshore Connecticut in October and its 1.2 GW Commonwealth Wind project in Massachusetts in July. The company agreed to pay Massachusetts power distribution companies \$48 million to cancel the PPAs for Commonwealth Wind.

"It is clear the best path forward for Park City Wind is in the termination of the PPAs and a rebid of the project," Avangrid said in a statement.

Shell and Ocean Winds have also terminated PPAs for their 1.2 GW SouthCoast Wind project in Massachusetts and both companies plan to rebid their projects.

As yet, no developers have announced they plan to exit the market and the success of these stalled projects will depend much on changes to pricing mechanisms expected in state power auctions scheduled for 2024.

Keen to reignite deployment, New York, Connecticut, Massachusetts and New Jersey have committed to include adjustments to electricity prices in future bid processes to reflect changes in interest rates, inflation and supply chain costs between the submittal of bids and the final approval of projects.

Massachusetts has an offshore wind target of 5.6 GW by 2027, Connecticut of 2 GW by 2030, New York 9 GW by 2035, and New Jersey 11 GW by 2040 and the states all plan to allocate new contracts over the next 12 months.



Image: REUTERS/Stephane Mahe

STATES RESPOND

State authorities have acted fast to adapt future power auctions and address the price risks for developers.

In October, New York introduced inflation adjustments in auction mechanisms and allocated provisional offtake agreements to three offshore wind projects for a total capacity of 4.4 GW.

The details of the inflation mechanism will be released once contract negotiations are complete, a spokesperson for the New York State Energy Research and Development Authority (NYSERDA) told Reuters Events.

New York launched another new tender on November 30. Final proposals are due by January 25 and the winning bids will be announced the following month, the office of Governor Kathy Hochul said.

Meanwhile, Connecticut has opened a solicitation for 2 GW, New Jersey will seek another 1.2 GW in Q2 2024 and Massachusetts plans to procure as much as 3.6 GW by June 2024.

Some project requirements may have changed since original bids were submitted but developers are expected to submit similar-sized projects featuring large turbines to ensure they benefit from economies of scale, Fred Zalcman, Director of the New York Offshore Wind Alliance told Reuters Events.

“This allows developers to spread the fixed costs of projects over more generation capacity,” he said.

U.S. East Coast developers will also have the option to make combined bids that cover Connecticut, Massachusetts and Rhode Island, following a recent agreement by the

states. This commitment to 6 GW through a multi-state procurement process could allow developers to maximise economies of scale.

One “underappreciated risk” is that rising prices could lead to state authorities awarding less capacity than expected, or no capacity if they deem the bids to be too high, as the costs would be passed on to ratepayers, Timothy Fox, Vice President at consultants Clearview Energy, told Reuters Events.

Access to inflation mechanisms in the upcoming auctions will help de-risk projects and could allow them to offer lower strike prices than otherwise, Zalcman noted.

A lot will depend on the details of the auction mechanisms. In November, the UK government [hiked the price cap](#) for offshore wind in its latest auction round by 66% to 73 pounds/MWh after a lower price cap in the previous round resulted in no bids.

Interest rates remain persistently high in the U.S. and Europe, creating further challenges for offshore wind developers dependent on long-term financing arrangements.

“Absent interest rate decline, developers may focus their efforts to those projects that appear most viable and likely to return a sufficient profit,” Fox warned.

New York state government has asked the Biden administration to lower the cost of financing via the Department of Energy’s (DOE) Loan Programs Office for large-scale renewables but is yet to receive a formal response.



ONGOING PROJECTS

Developers are moving ahead with more advanced projects that have been less impacted by recent rising prices.

In September, Avangrid and Copenhagen Infrastructure Partners started installing turbines on their 806 MW Vineyard Wind 1 project off the coast of Massachusetts, the first large offshore wind farm in U.S. waters.

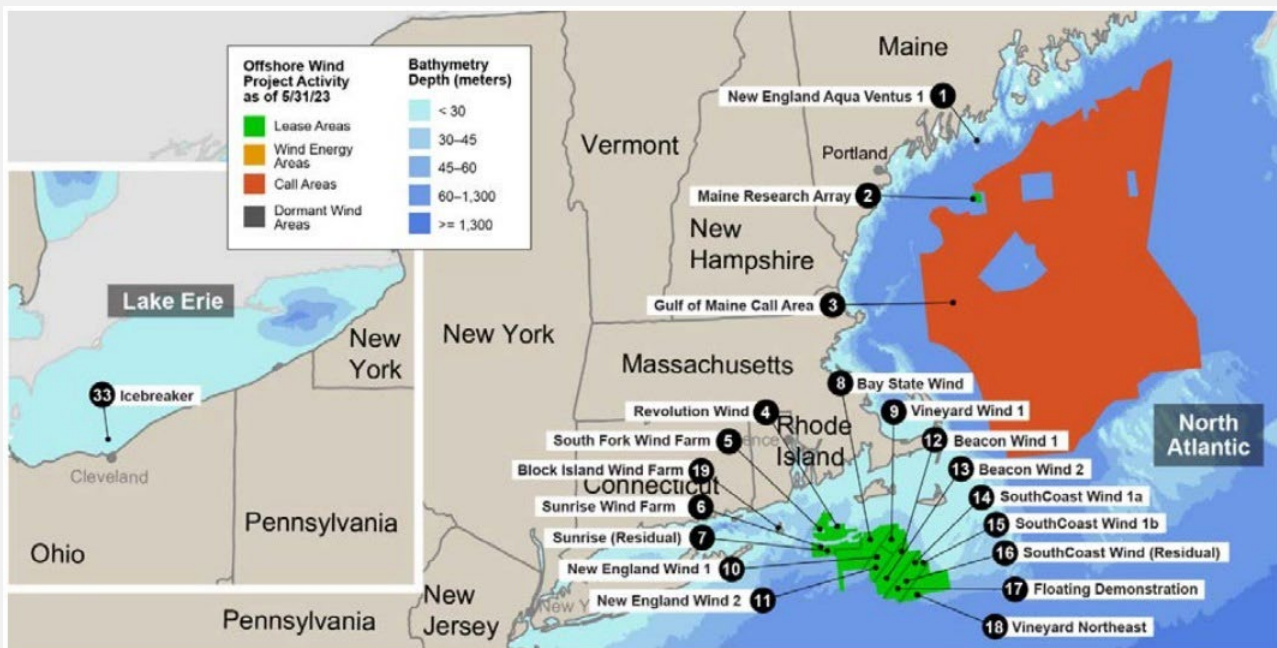
Construction is also continuing on Orsted and Eversource's

132 MW South Fork Wind array, which is due for completion in early 2024.

Vineyard Wind 1 reached financial closure in September 2021, followed by South Fork in February 2022.

Elsewhere, Orsted and Eversource took the final investment decision (FID) on their 704 MW Revolution Wind project in October which will supply 400MW to Rhode Island and 304 MW to Connecticut from 2025.

OFFSHORE WIND PROJECTS IN US NORTH ATLANTIC



Source: Department of Energy's 2023 Offshore Wind Market Report, August 2023.

Dominion Energy's 2.6 GW Coastal Virginia Offshore Wind (CVOW) project is also proceeding after U.S. regulators approved project construction in early November. The project benefits from regulated utility price mechanisms rather than commercial power purchase agreements (PPAs), with power output scheduled to start in 2026.

Dominion also mitigated risks by concluding supply agreements by November 2021, including a turbine supply

agreement with Siemens Gamesa, offshore substation agreements with Bladt and Semco, and agreements on balance of plant and subsea cables with DEME Offshore and Prysmian, Dominion Energy spokesperson Jeremy Slayton told Reuters Events.

Earlier in 2021, Dominion Energy raised its cost estimate for the project by \$2 billion to \$9.8 billion, citing rising commodity costs and revisions to onshore transmission designs.

INFLATION REDUCTION ACT

Substantial tax incentives in the Inflation Reduction Act should help alleviate some of the cost risks but developers are awaiting final guidelines to remove uncertainty.

The act provides a 20% investment tax credit (ITC) for offshore wind projects that begin construction before 2025 plus another 10% for those that meet apprenticeship and wage requirements. Alternatively, offshore wind projects can opt for a production tax credit (PTC) amount of \$26/MWh for the first ten years of operation.

Developers can receive a further 10% tax credit for sourcing more than 20% of project costs from U.S.-based suppliers and another 10% tax credit for locating facilities in fossil-fuel-dependent “energy communities,” meaning some projects could gain tax credits of 50% of project costs in total.

The inflation act also offers a 10% tax credit for domestic offshore wind manufacturers, including vessels as well as components. The Treasury and the IRS are yet to issue detailed guidance on the credit structures and New York has asked for updated guidance to be issued as soon as possible.

[Transmission costs](#) are another important risk for developers. In November, the Treasury Department clarified that transmission components would count towards domestic content.

The suite of tax credits has the potential “to dramatically improve project economics” but it depends on the final guidance from the IRS, Zalzman said.

The tax credits should “result in billions of dollars of savings for [Dominion Energy] customers,” Slayton said.



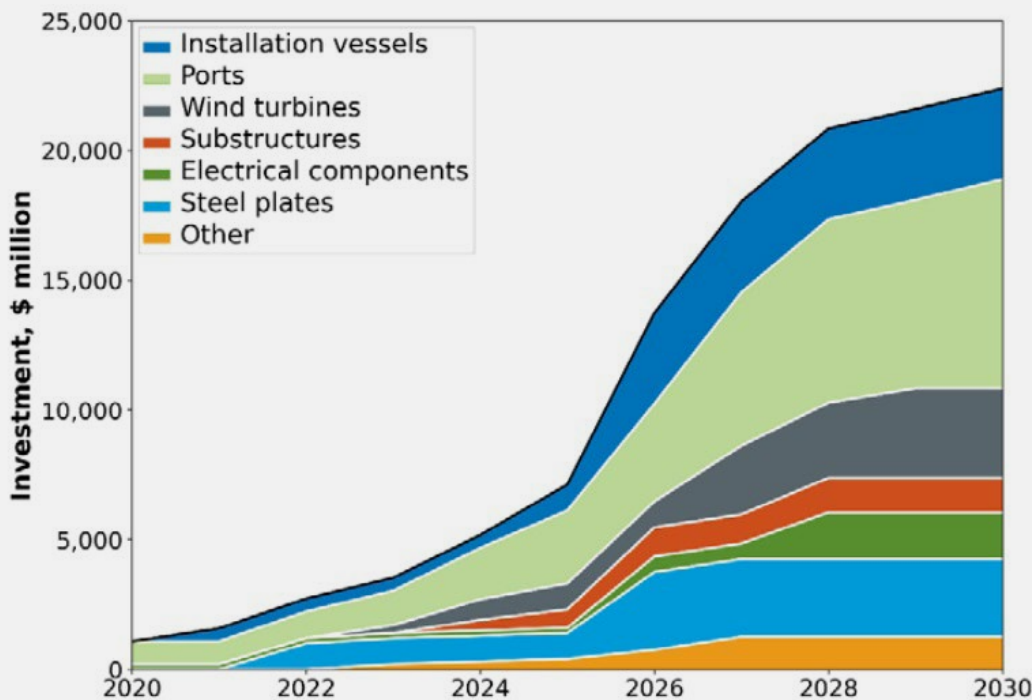
BUILDING A SUPPLY CHAIN

Even if developers rebid and eventually proceed, the delays will have knock-on effects along the nascent U.S. supply chain.

The inflation act has boosted the business case for supply

chain investments but turbine suppliers need orders before committing finances to new manufacturing facilities and developers are not concluding turbine orders until they have secured economically viable offtake agreements, Murray noted.

INVESTMENTS NEEDED TO BUILD A US OFFSHORE WIND SUPPLY CHAIN



Source: U.S. National Renewable Energy Laboratory's Offshore Wind Supply Chain Road Map, January 2023.

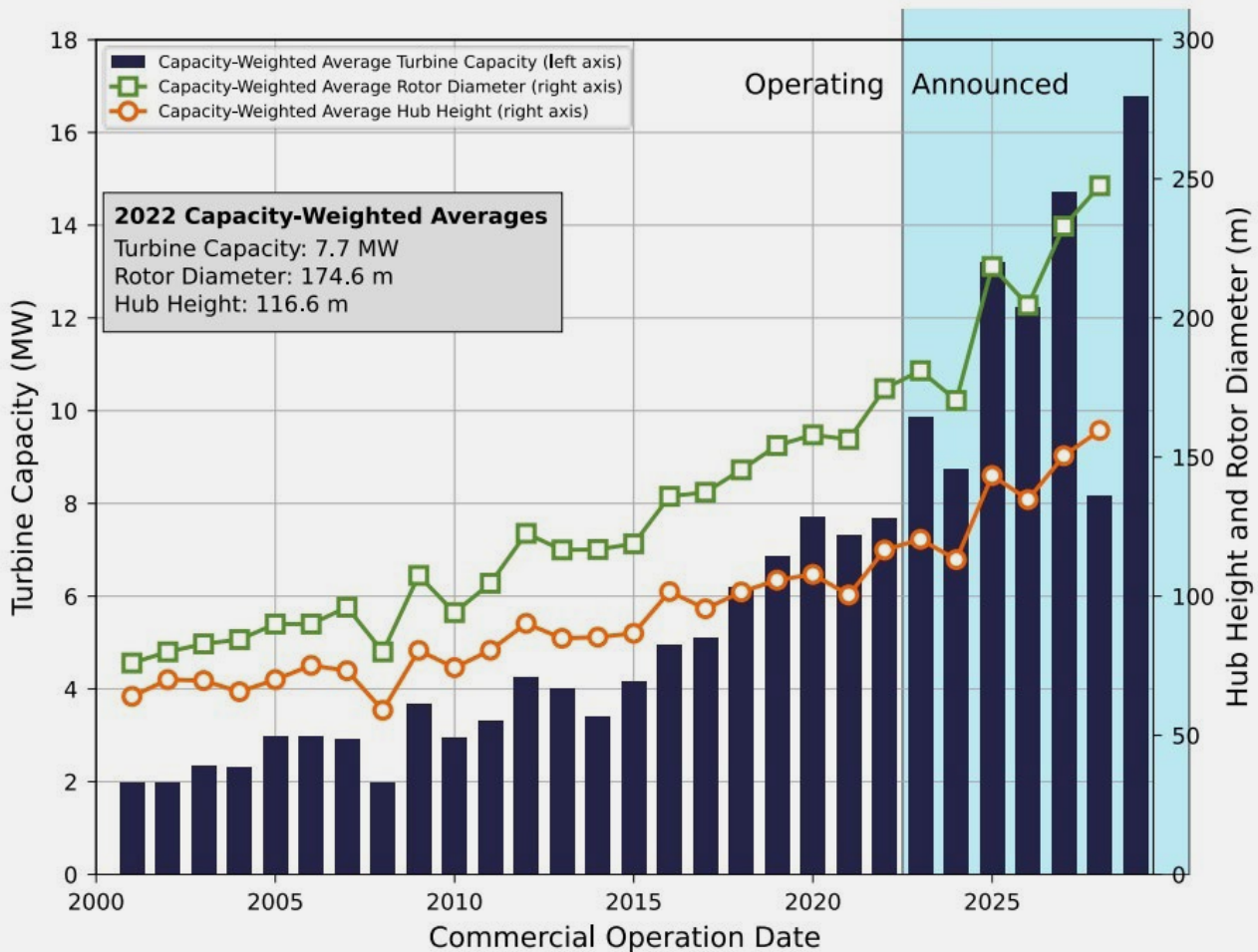
There are still large gaps in the U.S. supply chain, including in ports, foundations, towers, nacelles, blades and [specialized vessels](#).

In November, Siemens Gamesa cancelled its plan to build its first U.S. offshore wind blade factory in Virginia and said it would now supply blades to Dominion's Virginia project from its factories in Europe. Siemens Energy is reviewing Siemens Gamesa's global activities due to large losses at the company.

Developers of the first large U.S. projects are sourcing most vessels and equipment from Europe and this will remain the case until more substantial investments are made in a U.S. offshore wind supply chain.

Developers are seeking larger turbines to minimise costs but the industry does not have enough vessels, ports and cranes capable of handling newer turbines over 15 MW capacity, Murray said. Globally, there are just ten vessels in operation or under construction that can install such large turbines with most limited to 8 to 10 MW.

GLOBAL OFFSHORE WIND TURBINE CAPACITIES



Source: Department of Energy’s 2023 Offshore Wind Market Report, August 2023.

There is progress on some parts of the supply chain, buoyed by early commitments from developers. For instance, EWW American Offshore Structures in Paulsboro, New Jersey has begun supplying U.S.-made monopiles, “a crucial step forward” for developers trying to qualify for domestic content bonus tax credits, Murray said.

Elsewhere, Revolution Wind developers Orsted and Eversource helped to establish a foundation component factory at ProvPort, Rhode Island and invested \$100 million in a heavy-lift marine terminal in New London, Connecticut for turbine staging and assembly. The companies are already using the facility for the South Fork Wind project.

States have provided some financial support. New York’s 2022 budget contains \$500 million for investment in offshore wind ports and manufacturing. GE Vernova’s nacelle plant and LM Wind Power’s blade facility will receive \$300 million between them.

In September, nine east coast states and four federal agencies signed a MoU to “help expand manufacturing facilities, port capabilities, workforce development and other key supply chain elements in a coordinated and sustainable way,” the White House said in a statement.

Developers are also using existing U.S. offshore manufacturing facilities, such as Kiewit Offshore Services,

which is supplying the offshore substation for Vineyard Wind 1 and Kepple AmFELS shipyard, which is building the Charybdis wind turbine installation vessel (WTIV) for Dominion. Both are located in Texas.

Charybdis will be the very first Jones Act-compliant WTIV and the U.S. needs more commitments to new installation vessels to minimise costs and accommodate the upcoming wave of offshore wind projects.

The American Bureau of Shipping estimates up to six vessels

may be required to install 30 GW by 2030 and it takes around 3 to 5 years to build a new vessel.

The federal Jones Act requires developers to use American-made vessels to transport anything into and out of U.S. ports, including foundations, towers or turbine equipment. Earlier projects such as Vineyard Wind 1 and South Fork Wind are having to use barges to transport equipment between U.S. ports and foreign flagged WTIVs anchored offshore.

This “is more expensive and higher risk than the usual global installation process”, said Murray.

Ongoing projects are helping to cultivate a domestic offshore wind supply chain. For instance, Dominion Energy’s 2.6 GW project in Virginia is driving supply chain development in the Hampton Roads area with investors including:

- Portsmouth Marine Terminal: Dominion Energy has a lease for staging and pre-assembly of foundations, transition pieces and wind turbines.
- Skanska USA: selected by the Port of Virginia to upgrade the staging and marshalling areas of Portsmouth Marine Terminal.
- Lambert’s Point Docks: \$100 million investment to
- create an offshore wind and defence industry hub.
- Rose Holm Manufacturing Facility: \$1.5 million investment in Henrico County to establish the first manufacturer of threaded bolts for offshore wind in the U.S.
- Viking Life-Saving Equipment: operating in Norfolk to support safety needs for the U.S. offshore wind industry.
- Thayer Mahan: will provide high resolution seabed surveys, noise mitigation and other services to the Mid-Atlantic from Virginia Beach.



Image: REUTERS/Fabian Bimmer

REGULATION

The Biden administration aims to complete environmental reviews of at least 16 offshore wind projects by 2025 and is introducing a range of [regulatory changes](#) to accelerate approvals.

The federal permitting process remains “lengthy, costly and uncertain,” partly because multiple federal agencies have jurisdiction over offshore wind, Zalcman said.

Permitting an offshore wind project can take up to five years and developers are seeking shorter permitting times so they can lock in project costs sooner, Murray said.

The Bureau of Ocean Energy Management (BOEM) has set out plans to streamline survey processes and increase design flexibility for offshore wind projects and has yet to issue a final rule.

Four notable changes to regulation in the BOEM plans:

1. The release of a five-year lease schedule every two years to provide developers earlier visibility of lease opportunities.
2. Flexible use of design envelopes as standard, allowing a range of component parameters.
3. Staged funding options for decommissioning, rather than full payment upfront, to lower upfront capital costs for developers.
4. Coordinated offshore transmission requirements in lease sales.

“We think the BOEM could issue a final rule that encourages, but may not mandate, shared transmission solutions,” Fox said.

BOEM’s ability to complete environmental reviews in a timely and predictable fashion could be affected by the outcome of the 2024 federal election, Fox warned.

The Biden administration has backed the offshore wind industry but a future Republican-led administration “would likely reallocate BOEM resources in a manner that prioritizes other resources” such as offshore oil and gas, he said.

For example, the Trump administration streamlined some offshore oil and gas regulations to support hydrocarbon investments and raised concerns over the impact of offshore wind on shipping and the fishing industry. This prompted the BOEM to delay the environmental impact assessment (EIA) of the Vineyard Wind 1 project while it studied the maritime implications. The completed EIA was eventually published after Trump left office.

A Republican win in 2024 could severely impact the pace of approvals, Fox said.

“We would not rule out the reviews even slowing to a de facto ‘pause’, he said.

--Neil Ford

