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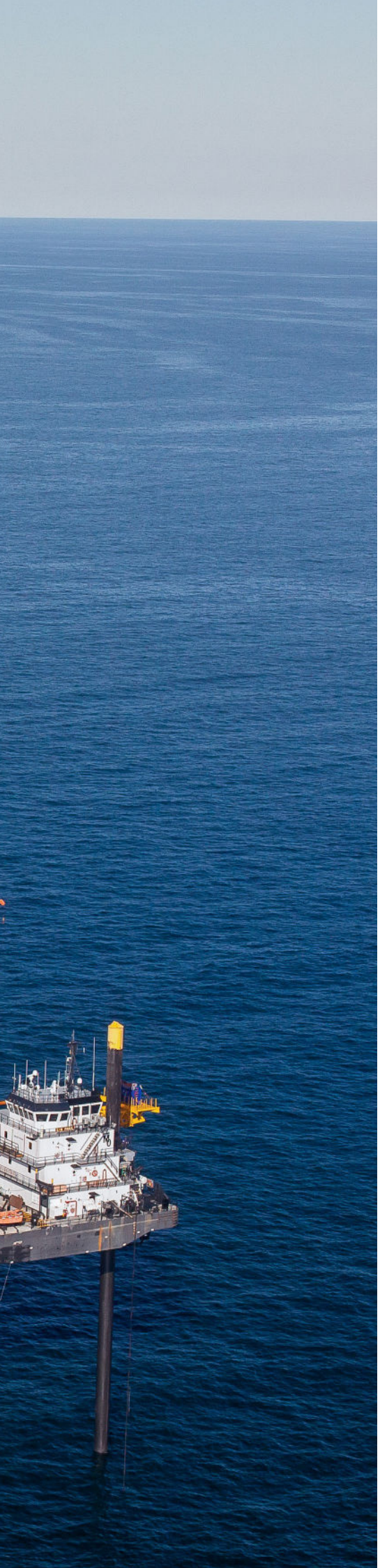


Navigating opportunities and challenges off the shores of America

The US offshore wind market is a burgeoning industry with immense potential and notable hurdles. Achieving ambitious renewable energy goals could foster massive job creation, significant capital investment, and substantial advancements in infrastructure. However, challenges such as rising costs, robust supply chains, and complex regulatory frameworks must be addressed to unlock the full potential of this renewable energy sector.

The US offshore wind market presents a unique opportunity, with unique challenges to overcome. With 29 coastal states, the country has the potential to produce more than 7,200 terawatt-hours (TWh) of electricity from offshore wind, almost double the 4,000 TWh's consumed in 2024.

In March 2023, the US Department of Energy released a summary of the its role in the nationwide effort to deploy 30 gigawatts (GW) of offshore wind energy by 2030, while setting the stage for 110 GW or more by 2050. This includes the goal of deploying 15 GW of floating wind offshore by 2035.

This strategy aligns with the United Nations goals for climate action, including a 45% reduction of emissions by 2030.

Achieving this goal would translate to more than 77,300 employed workers in jobs created by offshore wind activity, capital investments in offshore wind energy projects of more than $12 billion per year, and 5 to 10 new manufacturing plants and other infrastructure include marshaling ports, fabrication ports, and large installation vessels for a total of approximately $11 billion in total investment.

But building a new industry from the bottom up in a new market takes time and setbacks will happen.

Costs, which recently skyrocketed and caused the cancellation of a number of projects, need to come down. Supply chains need to be made more robust to support these investments. And the integration of offshore energy to the onshore grid needs development.

Nobody said the path would always be smooth.

A bumpy road

The global wind market saw a record year for installations in 2023, with 117 GW of new power capacity installed around the world.

While growth was slower in the US, this led to a restructuring of the market. This has repositioned US companies for a record breaking 2024 that is already off to a strong start.

The prime challenge was financial.

The levelized cost of energy (LCOE) of US offshore wind projects, which measure the lifetime costs of the project, was $77.30/MWh in 2021. This rose dramatically in 2023 to $114.20/MWh due to increased capital expenditures and operational expenditures, resulting in higher than anticipated financial burden driven by rising interest rates.

The offtake agreements in place did not account for this level of spend resulting in a number of contracts being renegotiated or terminated altogether.

Osted cancelled their Ocean Wind 1 and 2 projects on the east coast, while developers in New England cancelled three additional projects that would have provided power to Massachusetts and Connecticut. Further, Orsted, Equinor and bp took a combined $5 billion in write downs on projects under development as existing power sales contracts would not cover the building and financing costs.

Yet by January of this year, Orsted and bp restructured their existing partnership and agreed to independently pursue projects, with bp taking full control of Beacon Wind, and Equinor taking control of Empire Wind. This new solicitation allows the companies to re-offer their planned projects at higher prices and exit their old contracts, with new contracts including adjustment for inflation.

Existing market

The US wind market is currently being driven by development on the East Coast. There are three areas currently operational.

Block Island Wind Farm off the coast of Rhode Island is operated by Orsted and was the first installation in the country, becoming operational in 2016. Featuring five 6 MW turbines, the field powers all of Block Island at just 10% utilization, exporting the remainder to the mainland.

South Fork Wind Farm, also operated by Orsted, came online in March of this year and is the first commercial-scale installation in the US. The twelve 11 MW turbines are now working to power 70,000 homes in New York state.

The Vinyard Wind project 13-nautical miles southwest of Martha's Vineyard, Massachusetts, is currently being constructed by Avangrid. This will comprise sixty-two 13 MW turbines and is expected to complete this year.

And finally, further south is the Coastal Virginia Offshore Wind farm, operated by Dominion Energy. With two turbines currently operational the field has another 176 under development, with completion slated for 2026. It will be the largest offshore wind project in the nation with 2.6 GW of capacity powering 900,000 homes.

Coming up next

Bureau of Offshore Energy Management (BOEM) currently has 10 offshore lease areas in various states of approval on the East coast, with four that have received operations approval. This includes the aforementioned continuation of the Coastal Virginia Offshore Wind farm.

The Sunrise Wind and Empire Wind 1 projects will deliver power to New York state in 2025 and 2027 respectively.

Revolution Wind will see 64 turbines installed which will provide power to Rhode Island and Connecticut.

These projects are all moving forward now. As the market continues to mature the deliveries will start coming faster and faster.

Looking forward

Coastal area lease sales and the Exclusive Economic Zone approvals are managed by BOEM.

The Bureau has held four offshore wind lease auctions, which have brought in almost $5.5 billion in high bids, including a record-breaking sale offshore New York and New Jersey and the first-ever sales offshore the Pacific and Gulf of Mexico coasts.

While the Gulf Coast lease auction only saw a single block purchased by RWE, there are meetings this month to discuss a potential second round. With four lease areas situated offshore Texas and Louisiana it is anticipated that the area will eventually pick up.

The west coast lease sales brought in competitive bids from five companies totalling $757.1 million, which exceeds the first round of bidding on the east coast.

California has a goal of 25GW by 2045. These will be floating wind farms as the water gets deeper much sooner. This will require additional infrastructure, a greater workforce, and a larger vessel fleet so it is unlikely we will see any steel in the water on the west coast for a number of years.

The US fleet

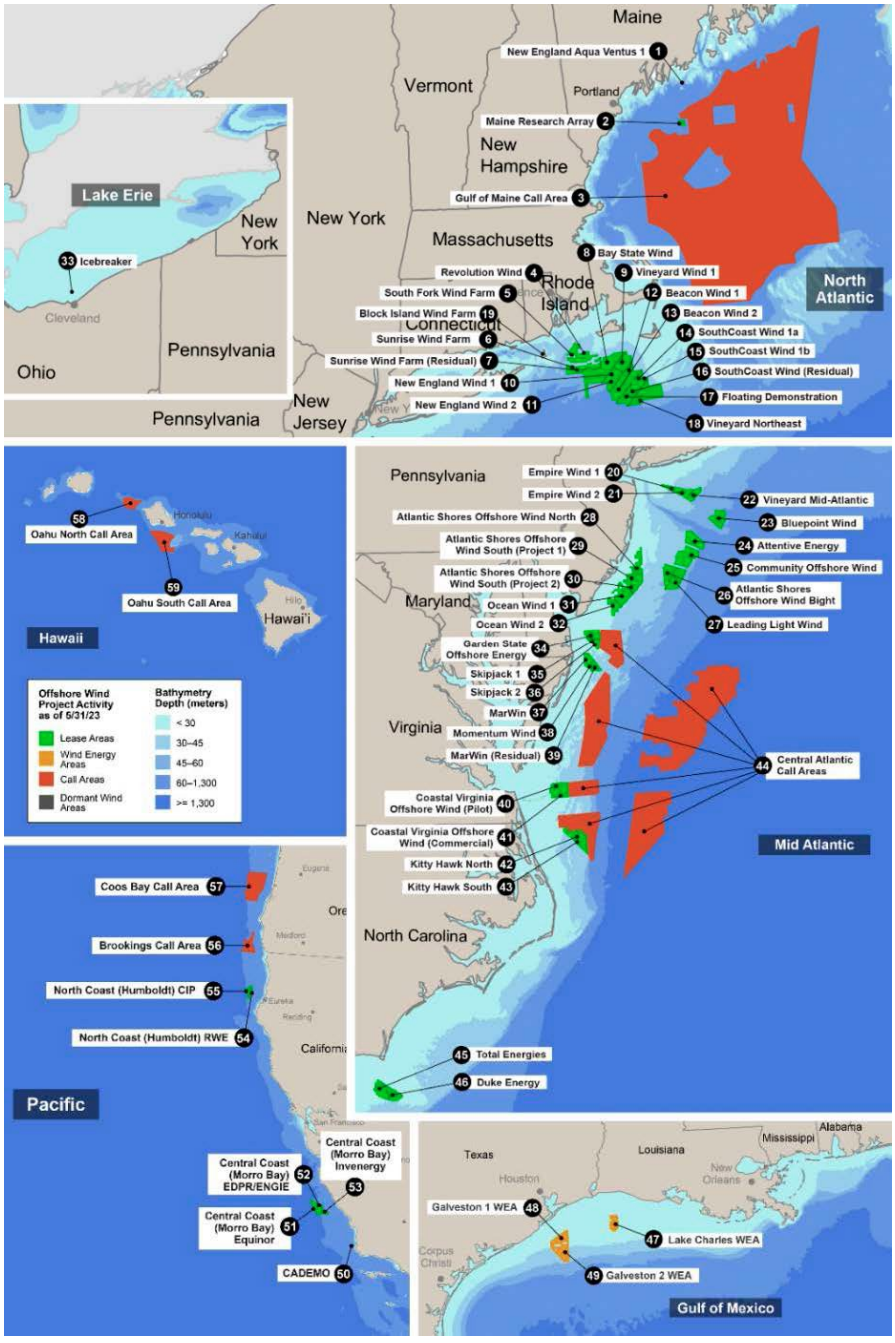
No conversation about the US market would be complete without touching on the Jones Act.

Officially known as the Merchant Marine Act of 1920, the Jones Act is a federal law that regulates maritime commerce in US waters and between US ports. It is a cabotage law grounded in maritime precedent, and is similar to that as practiced 91 UN member states representing 80% of the world's coastline.

The main talking point as relates to the US wind market is that goods transported between US ports must be carried on ships that are built, owned, and operated by US citizens or permanent residents. This means monopiles, generators, and turbine blades must move between locations on a US flagged vessel. And if there is no such vessel available?

We build them.

Dominion Energy currently has a WTIV under construction in Brownsville, Texas. Scheduled for completion in 2025, this will



To meet the country's 2030 goals in the next six years will require more. Of everything. Ships. Supply chains. Power infrastructure. Manufacturing. Laydown yards. Research and development. And the trained personnel that do the work at every single stage of development.

be the first Jones Act compliant vessel of its kind, and will be an asset in achieving the country's renewable energy goals.

Edison Chouest Offshore also has some vessels under construction. The ECO Chouest is a modern Service Operations Vessel (SOV) currently under construction in Louisiana. Simultaneously, an industry first mini crew transfer vessel (CTV) designed to support the SOV is under construction and scheduled for completion around the same time.

While steadily progressing towards self-sufficiency, ship building also takes time. To fill the gap until sufficient vessels are available the next step in delivering to the U.S. market is the 'feeder vessel' concept.

Edison Chouest again recently signed a deal with Maersk Supply Service to construct two specialized feeder barges to support the Maersk Supply Service installation vessel, expected to be delivered in 2025. Specifically designed to support the feeder concept this is a shining example of how to work effectively within the regulatory framework in US waters.

This will ultimately allow for foreign installation vessels to work in US waters in the short term, to help develop the infrastructure needed in the long term.

Moving forward

To meet the country's 2030 goals in the next six years will require more. Of everything. Ships. Supply chains. Power infrastructure. Manufacturing. Laydown yards. Research and development. And the trained personnel that do the work at every single stage of development.

It's an opportunity of massive proportions that will create tens of thousands of new jobs every year, while advancing global climate goals by reducing total emissions output.

Getting it done will take cooperation between all stakeholders, from regulatory all the way down to the boots on deck in the field. Engineering and innovation are needed. Targeted education for the next generation responsible for continuing this work into the future.

The current challenges are good problems to have. Because the result will be good for the environment and good for the economy. That's good business.

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