

NewEnergyUpdate

How can US-based suppliers transition into offshore wind?

A white paper in association with

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Acknowledgements

This white paper was put together with insights from the following industry experts:



Jim Bennett
Chief of the Office of Renewable Energy Programs
Bureau of Ocean Energy Management



Alejandro de Hoz Garcia Bellido
Vice President, US Offshore Wind
Avangrid Renewables



Stephen Pike
Chief Executive Officer
Massachusetts Clean Energy Center

Executive summary

The development of an offshore wind industry in the US represents a major step forward in the nation's transition towards cleaner, more abundant sources of energy. For many stakeholders, though, an almost equally important benefit is that an offshore wind buildout offers the opportunity to create an industrial base that can deliver jobs and prosperity at state and national level. And many US companies are waiting to get on board.

With supply chain matters featuring prominently on the agenda at the June 2018 US Offshore Wind conference and exhibition in Boston, this white paper aims to look at the opportunities and challenges facing companies that want to transition into offshore wind.

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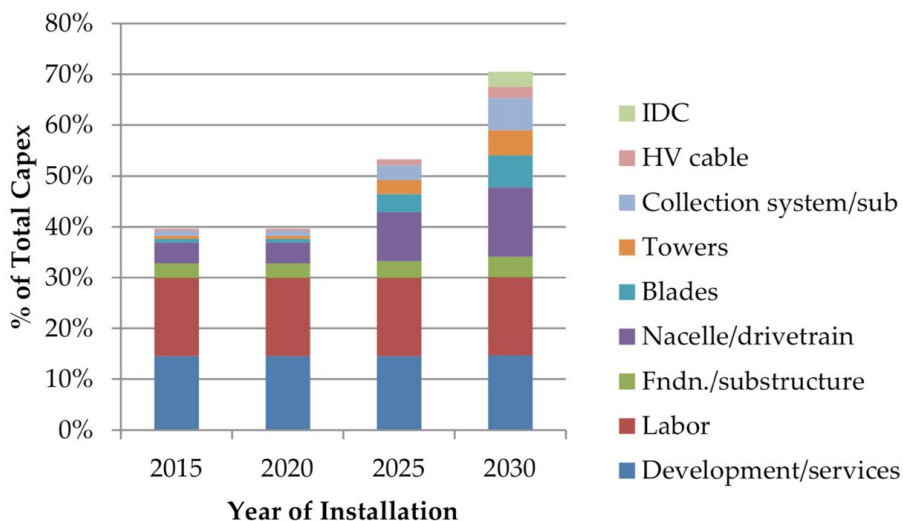
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The opportunity ahead

Quite apart from the clean energy benefits of developing offshore wind, the US Department of Energy (DoE) estimates the sector could deliver \$440m in annual lease payments to the Treasury and approximately \$680m in yearly property tax receipts.¹ Importantly, the DoE also estimates offshore wind could support approximately 160,000 jobs in coastal regions and around the country.² Offshore wind thus represents a major opportunity for US businesses with transferable skills and experience.

Perhaps the most obvious example is with companies that already operate in the energy sector offshore, namely within the oil and gas sector. However, the opportunity in fact encompasses a wide range of players, according to Stephen Pike, chief executive officer of the Massachusetts Clean Energy Center. "It's beyond just oil and gas," he says.

"There's a general interest and willingness to explore the industry."



Average US offshore wind domestic content in a moderate-growth scenario, estimated in 2013. Source: DoE/Navigant.

The experience so far

Even with just one commercial project in operation so far, which was equipped with turbines shipped directly from Europe, the US offshore wind industry is already seeing significant involvement from local players. The Block Island project commissioned by Deepwater Wind in December 2016 had steel jacket foundations made by Gulf Island Fabrication, a Louisiana-based supplier.

Fabrication work on components of the substructures was performed by Specialty Diving Services of Rhode Island, and foundation installation fell to a joint venture formed by Weeks Marine of New Jersey and Manson Construction of Seattle. Other contractors included Massachusetts-based Tech Environmental, Californian consulting firm Tetra Tech and Texas marine warranty surveyor LOC Group. Finally, the Rhode Island Fast Ferry was awarded a 20-year crew transfer contract for the wind farm.³

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The challenges facing US players

Despite the high level of engagement between US companies and potential offshore wind farm developers, most observers agree that transitioning into the industry is unlikely to be a straightforward affair. The most obvious challenge is that the newness of the US offshore wind market means putative supply chain players come with scant experience.

Developers are largely sidestepping this problem by relying on imported European expertise; of a total 14 GW of projects across 20 operational, in-development and proposed US offshore wind farms, almost 11 GW has non-US ownership.⁴ And even in companies that have apparently transferable skills, such as those in oil and gas, a certain amount of adaptation may be needed.

Oil and gas firms, for example, tend to work on single, large projects, while offshore wind demands mass-manufacturing techniques for optimum cost reduction. "The oil and gas industry thinks there is a lot of possibilities, but that's not to say it's immediately transferable," opines Jim Bennett, chief of the Office of Renewable Energy Programs at the US Bureau of Ocean Energy Management.

The evolution of the market

Experts believe that for early projects US suppliers will tend to work alongside more experienced European partners, assuming there is a clear pipeline of work to make the investment worthwhile. "Partnerships between US and European companies will be successful if there is a volume and visibility that guarantees competition with a reasonable market share," says Alejandro de Hoz, vice president of US offshore wind at Avangrid Renewables.

The role of authorities

Given offshore wind's potential for employment and wealth creation, there is a significant and growing commitment to the industry from federal and state authorities. States such as New York and Massachusetts are taking steps to court offshore wind development through planning measures and infrastructure investment.

A good example of this is the work being carried out by Massachusetts to position the New Bedford Marine Commerce Terminal as the East Coast port of choice for offshore wind farm operations. Massachusetts is also working to engage with local supply chain partners, says Pike.

"One of the products that has come out of the supply chain convening that occurred last year is a directory of companies," he says, "something that folks in Europe can refer to as they start to explore operations in the US."

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The foundations example

While some of the more complex offshore wind components, such as nacelles, are unlikely to be made locally until there is a significant, guaranteed pipeline of projects to justify local manufacturing investments, foundations represent an immediate opportunity. Block Island's foundations were made using US oil and gas experience and eschewed a European preference for monopiles.

And with upcoming East Coast projects there is ongoing debate over whether monopiles, which are likely to be chosen by European developers, will win out over jacket designs, which can be built using native oil and gas construction experience. The opportunity for US supply chain innovation could extend further when it comes to floating turbines, since knowledge of foundation design is still evolving in this area.

"When the technology comes along, it's going to open up all kinds of possibilities across the West Coast," says Bennett.



Offshore wind substructures (from left): monopile, jacket, twisted jacket, semisubmersible, tension leg platform and spar. Source: DoE.

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Outlook and conclusions

Research carried out in 2013 predicts that the most favorable near-term domestic supply chain opportunities in US offshore wind would be in power converters and transformers, blade materials, towers, and foundations and substructures.⁵ This analysis seems largely accurate still in 2018, but the speed and extent with which US suppliers will be attracted to offshore wind depends to a large extent on the size and dependability of contracts.

“For the US to create the supply chain, the key is to provide the necessary visibility and volume,” says de Hoz. “If the supply chain [participants] believe in a volume justifying the high investments required to be cost effective, they will go for it.”

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