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Development of Offshore Wind in the US:
Fixed vs. Floating

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This article aims to analyse the differences that are anticipated in West Coast wind developments as a result of greater water depths, as compared to the current ongoing projects being developed on the East Coast. One way to overcome the challenge on the West Coast is to utilize a new technology by way of floating mobile turbines, which have implications both from engineering and legal perspectives.

INTRODUCTION

Offshore wind energy is an essential tool in the transition towards 100% renewable energy in the United States. The U.S. government has proven itself committed to promoting offshore wind projects (OSW) in the hopes of having 30 gigawatts (GW) of offshore wind energy generating capacity installed by 2030 and 110GW of offshore wind energy generating capacity by 2050. To put this into context, total global offshore wind energy generating capacity was roughly 32GW at the end of 2020. These ambitious goals will require an increase in offshore wind projects (current projects account for slightly more than 9GW of capacity).

Current ongoing offshore wind projects are being planned and developed in locations with shallower water depths (20-50m) on the East Coast. While there are many reasons for developers to begin offshore development in these areas, one reason is that fixed-bottom foundations, which are the most proven foundation technology, are often seen as best suited for shallower water depths. However, in order to accommodate the projected uptick in offshore wind development, projects will need to be constructed in locations with deeper water depths (i.e, the West Coast and the Gulf of Maine). One way that developers plan on fully utilizing these deeper water depths is by relying on floating foundations. While still in the early stages of development, floating offshore offers the potential of accessing wind energy resources previously thought to be inaccessible.

LEGAL IMPLICATIONS

The Jones Act

The Jones Act is the colloquial name for certain sections of the Merchant Marine Act, 1920, which restrict the transportation of merchandise by water between points in the United States to qualified U.S. vessels. U.S. qualified vessels are those that are built in the U.S. and are owned and operated by U.S. citizens making them more expensive to build and operate than comparable foreign vessels. The Jones Act applies to the transportation of commercial items (subject to limited exceptions) between points in the United States. Generally, a point in the United States is any port and terminal in the U.S. and any place within three nautical miles of the U.S. coast, including an offshore wind turbine.

Is the Jones Act Relevant outside the Three Nautical Miles?

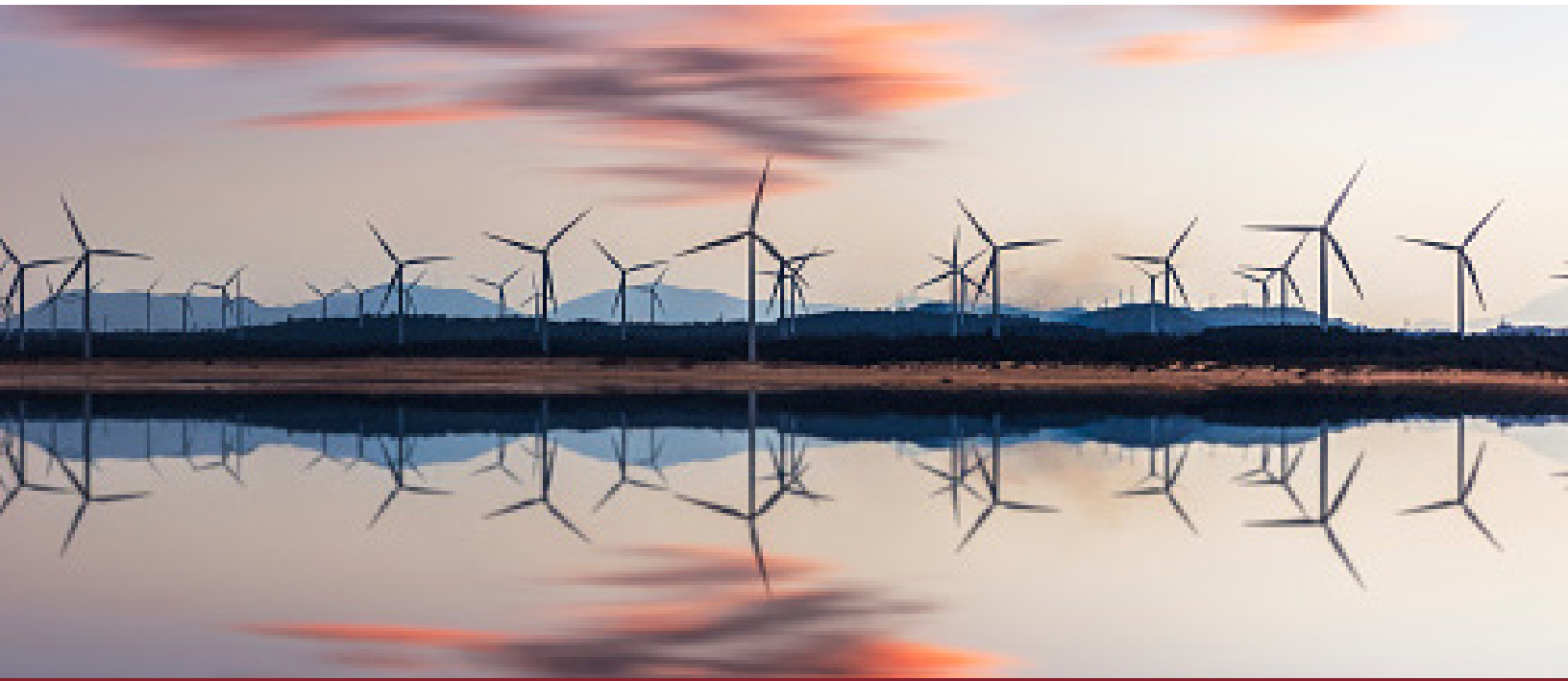
The application of the Jones Act extends outside of the three-nautical-mile limit by virtue of the Outer Continental Shelf Lands Act (OCSLA). Although OCSLA does not explicitly mention the Jones Act, it extends the laws and federal jurisdiction of the United States to the subsoil and seabed of the outer continental shelf. Under OCSLA, a point outside the three-mile limit is anything permanently or temporarily attached to the seabed on the U.S. outer continental shelf that is erected thereon for the purpose of exploring for, developing, or producing resources. The concept of "resources" under OCSLA was generally considered to be applicable to oil and gas resources, but it was previously unclear whether it extended to other types of energy resources. The 2020 National Defense Authorization Act provided some clarity on this issue because it amended OCSLA by adding language specifying that it applies to "non-mineral energy resources" and "energy" leases (as opposed to only mineral ones). Hence, while the meaning of "resources" is still being interpreted, OCSLA now likely applies to many forms of offshore wind farm installations and potentially, floating wind turbines.

INSTALLATION METHODS

Fixed-Bottom Foundations

Unsurprisingly, OSW projects require a lot of vessels. Most projects on the East Coast are projected to utilize more than twenty vessels, with some estimates being closer to fifty. While the wind turbine installation vessels (WTIVs) are pivotal elements of successful development, many different types of vessels are required for a project's success, including, but not limited to:

- Feeder barges
- Installation
- Tugboats
- Service Operation Vessel (SOV)
- Cable installation
- Survey
- Crew Transfer (CTV)
- Supply
- Heavy Lift & Jack-up
- Spotter
- Inspection



For fixed-bottom projects, there are three likely ways foundations will be installed:

1. *The European Model:* With Europe being the birthplace of OSW, many new markets have used their experience to model their own developmental process. In terms of construction, this means the reliance on large jack-up vessels, which need to be used during construction. However, there are currently no US-flagged jack-up vessels that are capable of handling the scope of current OSW projects.
2. *1st Generation US Model:* Due to the mentioned restrictions on the availability of the jack-up vessels, early US offshore wind development plans to rely on a new installation methodology. This methodology utilizes a combination of both EU jack-up vessels and US feeder barges during construction.
3. *US adapts EU Model:* One solution to mitigating the Jones Act constraints is to construct Jones Act compliant jack-up vessels in the US. This solution is the path that Dominion Energy has chosen to pursue, as they have announced the beginning of construction of their "Charybdis." The Charybdis will be one of the largest jack-up vessels in the world and is estimated to cost over $500 million.

Figure 1

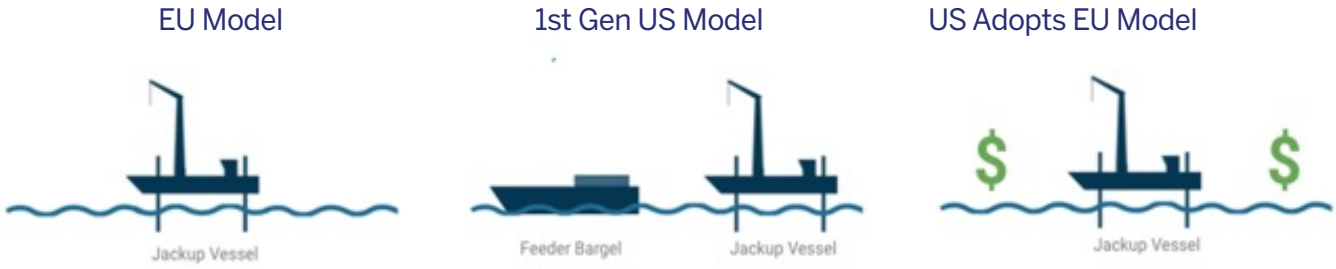


Figure 1 shows the varying installation methodologies that can be used on an OSW project.

Fixed-Bottom Foundations

While the United States currently has no floating offshore wind projects, both the West Coast and the Gulf of Maine are considered the likeliest candidates for near-term floating project candidates. Floating is best suited for these areas for a variety of reasons, but largely due to water depth, with floating being better utilized for deeper waters. Unlike with fixed-bottom foundations, floating foundations will not require a jack up vessel for installation but will instead be tugged out. Tugging out assembled turbines, rather than performing construction at sea may greatly impact installation campaign durations, changing port requirements and vessel logistics. Since floating foundation are anchored to the ground with mooring lines, rather than piled into the group like monopile foundations, the installation process emits significantly less noise. This reduction decreases several environmental risks, specifically to the marine mammals.

Figure 2

New Considerations with Floating OSW

One open question regarding a floating wind turbine is whether such a structure is a "vessel" under applicable maritime law and whether it is necessary or even possible to be registered as such. As an analogy, a mobile offshore drilling unit (used in the exploration of oil and gas) is registered and regulated as a vessel in various jurisdictions, even though it is not a mode of transportation and thereby would not be considered a vessel in the traditional sense of the word. It appears that at least one classification society is able to "class" floating wind turbines, which in turn has allowed some vessel flag jurisdictions (including the Republic of the Marshall Islands and Norway) to register them.

The implications of a structure being characterized as a vessel are numerous, including regulatory, environmental and tax law implications. However, perhaps one notable and significant consequence is that in connection with the financing of such a structure, a vessel mortgage may be recorded to perfect the financier's security interest. Depending on the structure of the financing, a vessel mortgage would provide better clarity in the perfection status of the financier's security interest than, for example, a UCC financing statement which is generally used to perfect a security interest in equipment. It would be anticipated that clarity in the financier's security interest may lead to additional financing alternatives for the construction of the offshore mobile units (and other offshore wind structures).

As the technology and specifications of floating wind turbines are further refined, and the industry evolves and matures, market practice will develop, but it is encouraging to see that industry participants and flag registries have already taken the necessary steps to provide for a framework where floating wind turbines could be mortgaged in a way that is familiar to the financier.

CONCLUSION

The West Coast is an important and necessary location to increase U.S. offshore wind capacity. While an evolving technology, the floating mobile turbine may be an essential tool to overcome the challenges surrounding the West Coast geography. The project sponsors and other involved parties will need to monitor the technological and legal developments to ensure success of the projects.

FURTHER INFORMATION

We at Lautec and Seward & Kissel welcome any questions about this article and the offshore wind farm

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