



# ADVANCING INVESTMENT IN OFFSHORE WIND

Business Network for Offshore Wind

## Abstract

The Business Network for Offshore Wind works to support the development and growth of the U.S. offshore wind supply chain. The Network reacts to existing offshore wind projects' challenges and preempts potential bottlenecks or risks that could threaten or delay the development of the offshore wind industry supply chain. The U.S. now has a growing pipeline of deployable offshore wind projects totaling 5-8GW, and the U.S. has scale in its demand to replace old power generation with new clean forms of electricity. The U.S. is poised to accelerate its nascent offshore wind sector to become a major national industry.

The U.S. has many advantages: the technology is proven and already exists; the market size is inherent to produce economies of scale; and offshore wind policies are emerging, both federal and some state. The building blocks are in place but finance is the important 'mortar' needed to build this industry. For this reason, in April 2018, the Network in partnership with Société Générale, assembled offshore wind experts to start taking a deeper look at the needs of the finance industry in order to learn if the case for investment into the U.S. offshore wind sector could be improved, and if so, how.

# Key Takeaways

- The U.S. offshore wind market is progressing. Sufficient federal lease areas exist to support a pipeline of early projects. The federal government is working to issue new lease areas to avoid potential future slowdowns in the industry and to accelerate its processes for the benefit of the developers owning existing lease areas.
- States are responsible for the off-take agreements. There is an opportunity to involve the finance community early in better defining the PPA mechanisms.
- The differences between the European and U.S. financing of offshore wind is European lenders are now comfortable with offshore wind technology - even new technology and debt financing can amount to 80+% of total project costs.

- Bonds are beginning to be introduced into some European offshore wind projects.
- The suite of 20-30 European lenders experienced with offshore wind, are keen to use their existing knowledge in the U.S. offshore wind market but are less familiar with the U.S. Tax equity.
- Capital markets have not replaced bank debt in the refinancing of the European projects. In contrast, the U.S. might witness earlier entry of the capital markets through institutional financings.
- A significant appeal to financing the U.S. offshore wind projects is the long (20 year) Power Purchase Agreement (PPA) term - this strengthens the revenue side.



Photo credit: Business Network for Offshore Wind

## L BUSINESS NETWORK for OFFSHORE WIND

# Financing the Growth of the U.S. Offshore Wind Industry

The U.S. now has 13 offshore wind energy lease areas in federal waters totaling 15GW in potential offshore wind energy. Over the past few months, BOEM furthered the industry's momentum by approving four site assessment plans as well as beginning the review process for a

# Comparing and Contrasting Different Forms on Capital and Financing Models

The European financing market has become comfortable with the offshore wind industry. Initially the debt to equity ratio was 50:50, but there has been a shift to more debt–in some cases reaching 80:20. European banks are willing to accept the risks associated with new technology such as

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Construction and Operation Plan (COP). BOEM intends to improve the federal review process by: simplifying marine buoys approval; reducing the length of time for geotechnical surveying results; and, allowing developers to incorporate an element of flexibility in its applications with a voluntary option to use a project 'design envelope'. BOEM continues to have commitment to U.S. offshore wind industry - noting its ongoing support with Block Island Wind Farm studies. Additionally, through a recent executive order, BOEM and its staff are accelerating the timeline in performing some of its reviews with Site Assessment Plans (SAPs) and COPs to be completed within 12 months. The upcoming 18 months will be significant for the U.S. offshore wind industry. Advances are expected for permitting the west coast and progress will be seen for the existing leased and new lease areas along the north-east coast (New York / New Jersey, and Massachusetts).

From the developer's perspective, the U.S. has experienced a slow and uncertain history but today's outlook is the most optimistic. While there remains an absence of a formal coordination between federal government permitting and state regulation for utility procurement of the offshore wind power, the industry is advancing. Private sector and developer confidence is growing, witnessed by the higher costs being paid to secure the federal lease blocks. There are variations within the state power off-take instruments, noting Maryland and New Jersey use an Offshore Renewable Energy Credit (OREC) process which has different mechanisms from other clean energy RECs such as solar. In contrast, Massachusetts and Rhode Island have direct bilateral purchase agreements, while New York is proposing a third variation. U.S. PPA pricing mechanisms are different from UK Renewables Obligation Certificates (ROCs), Feed-In Tariffs (FITs), Contract for Differences (CfDs), none of which are perfect from the developers viewpoint-an index linked pricing agreement with hedged risk, might be a preferred form.

the latest generation of larger turbines and the European transactions are witnessing 'selling down' equity moving from traditional post-Completion Date (COD) to pre-COD. Europe now has a suite of 20-30 routine offshore wind debt lenders. Generally, in Europe, in the refinancing of offshore wind farms, capital markets remain generally unavailable and the banks want to remain involved.

The U.S. tax tool was characterized as administratively burdensome, compounded by the recent changes in the U.S. tax code, such as changes in depreciation (going from 50% to 100%) absorbing risk related to construction and new technology. In the U.S. market, financing entities are more conservative, yet the finance community continues to expand with increasingly competitive banks and expansive lending limits suitable for the OSW industry as more projects are completed. One major difference between Europe and the U.S. is the management of transmission lines. The expert panelists noted transmission management as a key aspect of the construction and operations phases to determine early in project development.



The U.S. market benefits from low interest rates and an available renewable subsidy with relatively model cost adds to the market's appeal. The tax credit subsidy monetized through tax equity investments provides a 6%–9%, post-tax cost of capital. However the subsidy in the form of tax equity presents challenges given the longer

lead times associated with construction of offshore wind projects (18-24 months) when compared with competing renewables such as solar (often <12 months). Tax equity typically commit no more than 12 months from their funding (which occurs around the project's Placed in Service date) as their commitments are contingent on their visibility into tax liabilities, which are more transparent for their current fiscal year. However, tax equity may be able to get comfortable coming in 18 months forward.

In general, it was agreed that common to both Europe and U.S. and most likely Asia, shortfalls in financing should not default to the expectation that the project sponsor increase its equity. More likely solutions are expected in vendor debt financing (towers, blades, nacelles and EPCs) along with special institutions such as European Investment Bank (EIB) for liquidity.

# **Case Studies**

The financing of the Nordsee (Germany) and Gemini (Netherlands) projects in Europe, and Block Island in the U.S. were described and compared. In general, the European financing model is now defined, with little opportunity to introduce novel or typical North American practices on project financing or the introduction of the wider range of instruments available and capital structures employed in the U.S. market. In the European market, the only way to finance projects is through bank loans–a market that is very precedent-driven on terms–whereas the U.S. markets more broadly will employ more creative solutions. U.S. projects must find ways to bridge the gap between longer construction periods and tax equity's reluctance to provide long-dated commitments. Block Island's original financing occurred two years prior to COD, typically outside of tax equity's commitment time horizon. Société Générale advised Deepwater Wind on a creative structure that was able to provide construction financing prior to having a tax equity commitment in place. The sponsor then committed to securing tax equity mid-construction.

In Asia, particularly Taiwan, the European financial institutions are following the European developers. There is a lack of local (Taiwanese) banks with sufficient lending capacity and requisite offshore wind experience. The result is that the market is adopting European-styled financial packages structured similarly to the European model along with the European finance lenders, compared with North American styled project finance transactions.

Currently, U.S. market banks have surplus capacity for lending as they look to replace loans made to capexintensive liquefied natural gas liquefaction facilities that was strong before the downturn of that sector. Further, the capital markets are more prevalent in the U.S. than in Europe and the U.S. provides the possibility to bring in institutions for construction financing earlier than in Europe. Unlike Europe, the U.S. doesn't have national government sponsorship, protecting the developer, supply chain and financiers from risk. The Block Island project's small size allowed the developer to create its own 'wrap' by planning on a two-year installation cycle and thereby limit the risk that larger scale introduces. Deepwater Wind has taken a strategic approach on scaling up through sequential projects. The thought is that it is easier to fix

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The European financing structures are accustomed to dealing with multiple contracts and the supplier contract interfaces. However, there are some situations in the European market with signs of moving towards a single EPC contract. For example, Merkur (Germany) had only two main contracts (Turbines and Balance of Plant) due to the maturation of the industry. In contrast, the U.S. has greater concern associated with the contractor interfaces and the associated risk, preferring either a limited number of contractors (3 max.) or wrapped structures. In general, the U.S. finance industry is willing to consider multicontracting arrangements but would look to offset the risk of the contractor interfaces with a seasoned and strong construction manager.

issues on smaller projects by injecting equity, as these projects will not have an EPC wrap.

Many European offshore wind developers are unfamiliar with the U.S. tax equity. Beyond the immediate challenges, one school of thought is that penetration of offshore wind into the energy mix will be enhanced by 'storage' as defined by the PPA. Battery storage, with hedging on less expensive and higher performing replacement technology may not significantly add to the total cost versus hydro storage, but the integration of storage with offshore wind increases the number of variations in the finance structures.

# Equity Investment Opportunities

European drive for low carbon energy generation was the main thrust for equity investment in offshore wind. In general, there is plenty of equity capital available for the U.S. offshore wind market but only a small group willing to invest without permitting and without a solid offshore wind model. Vagueness in the length of time for permitting and associated haziness of a revenue model detracts from equity appeal. Other factors include the diminishing production tax credits. But also there is a need to ramp up the supply chain. The primary risk is the unknown around the cost of the power and the length of time to bring the offshore wind farms onstream. If this period is not shortened, there is a risk that future rises in interest rates make them uncompetitive and non-viable. Other factors are the social elements and the need for greater public acceptance among citizens and fisheries. As the ITC benefits drop down, the size of tax equity investments are likely to become smaller which will have greater impact on the larger projects. Looking forward, it is likely that the early U.S. offshore wind market will be backed by European equity with offshore wind industry knowledge to have a better measure of the risks. Other risks include possible litigation from visual and environmental impacts. Equity investors have a baseline approach of asset ownership through the development life-stage and then to sell down. Development equity investors seek either established operating portfolios or experienced teams without the portfolio assets. Equity sources can be found within the OEMs and the construction contractors. Some banks providing debt prefer the contractor to have a level of equity during the construction phase.



## Debt Financing

The diminishing U.S. tax credit benefits are going to impact the debt lenders' view of the structures. After the first few U.S. offshore wind projects that advance over the next 12-18 months and that are able take some degree of advantage of the tax credits, the transactional structures could resemble more of the European model. The hope is that the U.S. supply chain will develop sufficiently to bring cost benefits comparable to the diminishing tax credits. Initial U.S. projects are most likely to secure their debt from banks rather than the capital markets. Beyond the initial projects, future debt funding may originate from infrastructure debt funds. The traditional U.S. PPA with 20year long-term contracts aligns with long-term debt financing and this could usher in the institutional debt financiers. Debt lenders will want to see conservatism in the first few projects with a limited number of contracts and experienced construction managers with reasonable levels of contingencies for delays and construction overruns. While there is quiet recognition that there is residual value in the tail beyond the tenor of the debt, having the potential to relax some debt sizing, general thinking is that in the U.S. debt lenders will rigidly adhere to the structure and not go beyond the PPA. Upcoming initial U.S. projects are likely to benefit with low interest debt financing as there is oversupply compounded by European banks seeking to enter the U.S. market. It is unlikely debt financing will leverage much more than 75%.

# **Conclusion and Next Steps**

It is clear that the U.S. offshore wind market is poised to accelerate but the unknown is at what speed. Most of the essential elements are in place for a successful advancement of the sector. Expansion of the demand for offshore wind energy is still required in order to unleash the full potential of the U.S. offshore wind supply chain. There is some expectation that the potential of a strong domestic efficient supply chain could replace the financial benefits of the existing Investment tax credits. In order to advance the sector, the finance community needs enhanced involvement going forward, especially in the structures of the power purchase agreements; and the structure of the contracts between the developer and the EPC contractor and contractors. Financial confidence in European offshore wind has displaced much of the early 'risk' - the U.S. offshore wind stakeholders need to work together to transfer this confidence to U.S. capital markets to bring in new instruments like bonds in order to lower the cost of capital. The lowering capital costs will accelerate offshore wind beyond acceptance to one expected in many coastal states' future clean energy mixes.



The Roundtable Discussion was held April 3, 2018 in New York City. More than 50 people attended. It was hosted and coorganized by the Business Network for Offshore Wind in partnership with Société Générale.



Image source: times-energy.org http://sumo.ly/5MVJ

# About the Network

The Business Network for Offshore Wind is a 501(c)(3) nonprofit organization solely focused on the development of the U.S. offshore wind industry and advancement of its supply chain. We are not a trade association of many voices; we are one leading voice for the offshore wind business community. We bring together developers, policymakers, academia, global experts and more than 150 member businesses for critical discussions and unprecedented networking opportunities.

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# About Société Générale

Société Générale is one of the largest European financial services groups in the business. Based on a diversified universal banking model, the Group marries financial solidity with a strategy for sustainable growth, and aims to be the reference for relationship banking, recognized for being the leader in quality, commitment of its teams, lasting relationships with its clients and maintaining high standards in performance. Société Générale has been playing a vital role in the economy for 150 years. With over 154,000 employees, based in 76 countries, we work with our extensive network of clients throughout the world on a daily basis and offer advice and services to individual, corporate and institutional customers.

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