

Virtual Tour CESA Offshore Wind Transmission



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Ørsted Offshore: Global overview

25+ years of experience and unparalleled track record

The global leader in offshore wind

- › **7.6 GW** installed capacity
- › **2.3 GW** under construction
- › **1,500+** turbines spinning
- › **28** offshore wind farms in operation

The world's first

Vindeby, 1991
5 MW



America's first

Block Island Wind Farm, 2016
30 MW



The world's largest

Hornsea 1, 2020
1.2 GW



Overview



- Offshore wind represents the dawning of a new industry in the U.S.
- It has huge potential to achieve both economic and environmental goals
- Transmission challenges exist today, and may grow as the industry matures
- States and the federal government can set the stage for success

Key Challenges



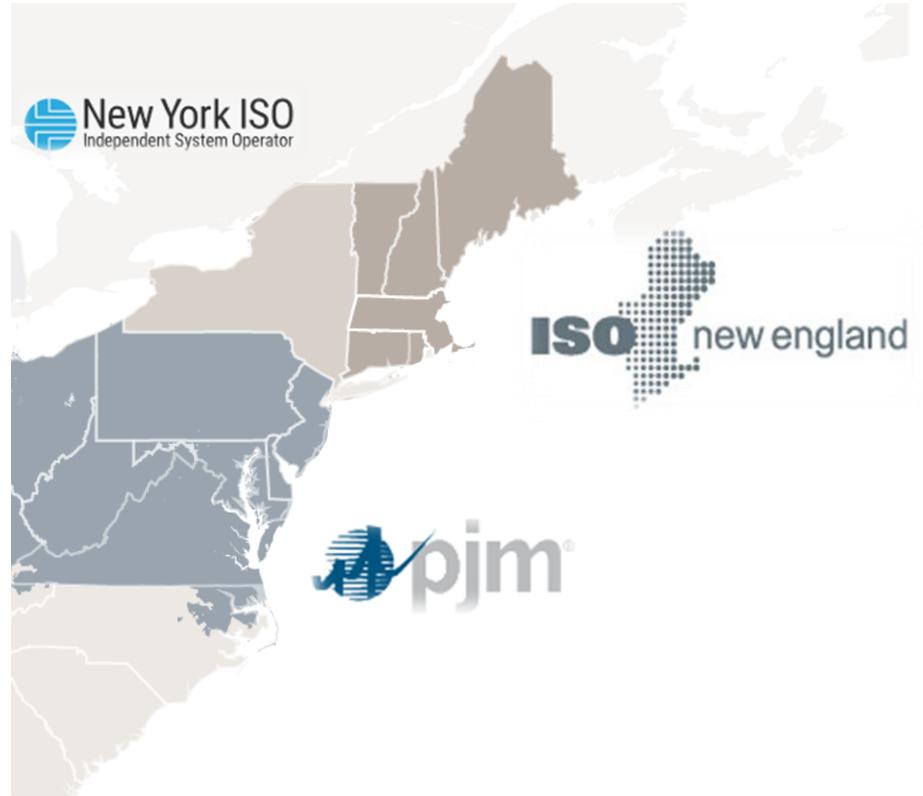
Key challenge: Finding electrical space to come ashore

- Power grid along the U.S. East Coast not designed to take large amounts of power from offshore
- Injecting offshore wind power can result in:
 - Congestion on transmission lines
 - Curtailment of clean power production



Key challenge: Finding electrical space to come ashore & wholesale markets

- Independent System Operators manage new generator interconnection process to maintain reliability
 - Slow and uncertain process
 - Projects moving in and out of queue result in delays and changing interconnection cost estimates
- Growing conflicts between wholesale market design and state energy policies



Solutions & Opportunities



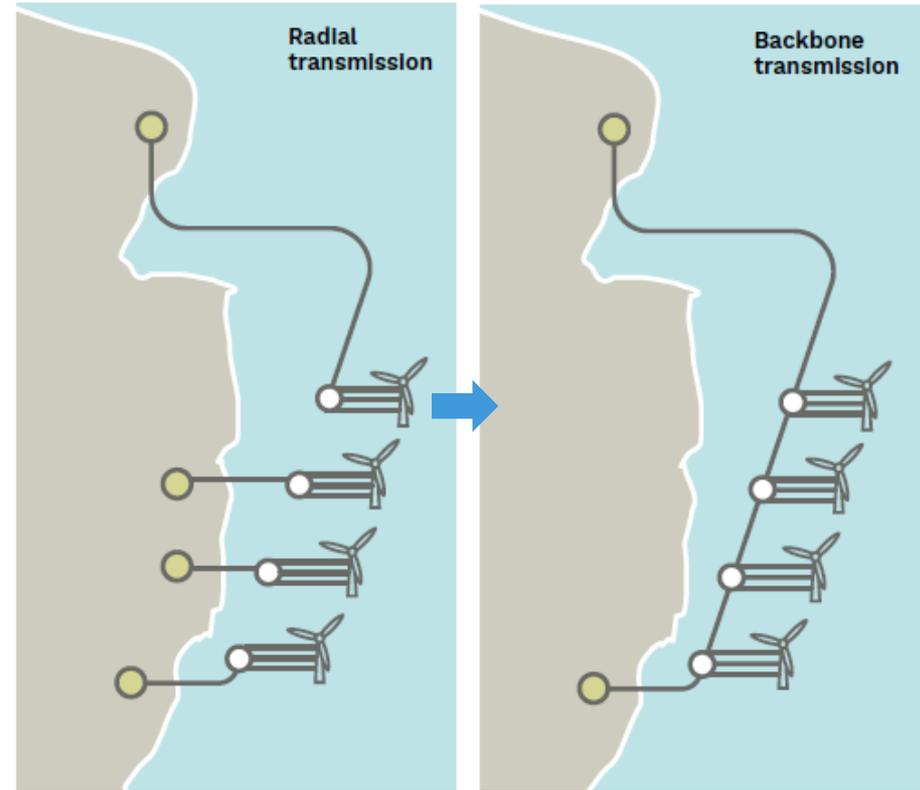
Solutions & opportunities: Large-scale onshore power grid upgrades



- States should lead efforts to ensure the transmission grid is strong enough to support their offshore wind generation goals
 - Innovative cost sharing tools already exist (FERC Order 1000 Public Policy Transmission)
 - Some states, like NY, have been using this process to upgrade transmission to meet public policy goals

Solutions & opportunities: Large-scale offshore power grid upgrades

- As space at points of interconnection become more limited, states should consider options for backbone transmission
- In order to avoid costly miscues that plagued the first European attempts the following will need to be addressed:
 - Develop revenue and risk allocation mechanisms to protect offshore wind developers from lost revenue in the event of backbone failures
 - Site backbone in locations that accommodate geographically diverse lease areas
 - Develop interconnection standards that can be factored into project design and cost in advance of project bids



Solutions & opportunities: Update wholesale market rules

- States should work together to ensure wholesale markets work for them
- Potential market reforms to help state's meet their clean energy goals include:
 - Streamlining and fast-tracking interconnection review process for public policy generation and transmission projects
 - New cost allocation schemes for offshore wind interconnection upgrade costs
 - Revised interconnection queue and study processes to ensure timely studies and project deadlines

Conclusion

- The solutions to the offshore wind challenges are not simple
- It will take time and there will be growing pains along the way
- The time is now to start this journey so we can help the states reach their critically important clean energy goals
- Ørsted can be a valuable partner for the government as we chart a new energy course together

Thank you

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