US Offshore Wind: Status Update
US Offshore Wind: “#BrightSpots”

▶ **RI: Deepwater Wind - Block Island Project:** All major permits secured, construction has started for the 30MW (5 @ 6MW) offshore project in RI state waters.

▶ **VA: Dominion Resources – VOWTAP Project:** Dominion received a $47mm DoE grant to support the development of the VOWTAP Project (2 @ 6MW) demo project. The Site Assessment Plan (SAP) has been submitted to BOEM and VA regulatory filings will occur in 2015.

▶ **OR & HI: Principal Power – WindFloat Project:** Principal Power received a $47mm DoE grant to develop a 30 MW (5 @ 6MW) floating offshore wind farm in Coos Bay, OR. Alpha Energy is seeking a lease in HI for an 800MW project.

▶ **OH: LEEDCo – Icebreaker Project:** DoE awards LEEDCo $2.8mm to design a wind turbine foundation system to be used in LEEDCo’s proposed six-turbine (6 @ 3MW) offshore demonstration project in Lake Erie.

▶ **ME: Univ of ME – Aqua Ventus:** DoE grants $3mm to a UoME offshore floating test turbine wind project near Monhegan Island.
MA: Cape Wind: National Grid and NSTAR have terminated their PPAs with Cape Wind. Cape Wind rejects the termination and has initiated litigation.

NJ: Fishermen’s Energy received a $47mm DoE grant so support the development of a 5MW demonstration project offshore of Atlantic City, NJ. Fishermen’s Energy is appealing the NJ BPU rejection of the project due to cost concerns.

DE: NRG Bluewater: The power contract between NRG Bluewater and DelMarVa Power was voided 12/11. NRG Bluewater retains lease for 96,000 acres offshore DE.

MD: US Wind Inc.: A subsidiary of Rexina, an Italian energy and construction company, leased 80,000 acres @ $109/acre.

MA: BOEM awarded leases for 2 parcels off the coast of New England @ $1.50/acre.

NC: BOEM released an Environmental Assessment supporting the potential lease sale for 300,000 acres.

GA: BOEM issued its Environmental Assessment regarding a Southern Co. Interim Policy lease application for an offshore site in Savannah and Tybee Island, GA.
Recent Developments in Offshore Wind

► Abigail Ross Hopper appointed Director of the Bureau of Ocean Energy Management (BOEM) at the Dept of Interior:
  - Previously Energy Advisor to Gov. O’Malley in MD
  - Jim Bennett appointed Chief of the Office of Renewable Energy

► Lease sale held offshore MA Wind Energy Area:
  - RES Americas was the auction winner
  - Recently partnered with Dong Energy (Danish Utility)

► US Wind lease for the MD Wind Energy Area is in effect

► Three offshore wind power sites will be approved for lease in North Carolina in 2016.

► European offshore wind – Dong Energy recently announced a $3 billion “Dutch Green Energy Project”

► Deepwater Wind closed its financing and has started construction.
2,304 turbines/7,343 MW (July 1, 2014)

12 projects under construction (3,000 MW)

Non-recourse debt finance of $2.5 billion – $3.0 billion per year (2011 – 2014)
Opportunities for the US O&G Sector: Deepwater Wind

DEEPWATER WIND OVERVIEW

- Focused on serving high-priced, transmission constrained markets.

- The Block Island Wind Farm is a demonstration scale project which is the first in a pipeline of larger projects.

- Deepwater is backed by affiliates of the D. E. Shaw group and First Wind Holdings (now Sun Edison).
Opportunities for the US O&G Sector: Block Island Wind Farm

BIWF Location
- 3 nm SE of Block Island
- 16 nm south of mainland Rhode Island
- In state-designated Renewable Energy Zone

BIWF Components
- Five 6 MW direct drive wind turbines
- Jacket foundations in 75-90' of water
- Power delivered to Block Island via submarine AC export cable (shown in picture as green line)

Block Island Transmission System (BITS)
- Bi-directional AC cable connecting Block Island to the mainland (shown in picture as yellow line)
- National Grid will build, own and operate BITS
- Cost of BITS will be recovered by National Grid under existing tariff
Block Island Wind Farm: Jacket Foundation Fabrication Scope

- Jacket foundation fabrication awarded to Gulf Island Fabricators in Houma, LA, one of the most experienced offshore fabricators in the world
- Jacket Fabrication has started and is on schedule for the load-out of the first structures on June 27, 2015
- The foundations have been designed by Keystone Engineering with ABS as the CVA. The design is based on piling through the legs
  - Simple, proven with thousands of similar structures in operation
  - Pile driving occurs above water and reduces impact on marine mammals
  - Minimal grouting
- Pictures of the BIWF foundation under construction can be found on the next 2 slides
Block Island Wind Farm: Jacket Foundation Fabrication Scope
Block Island Wind Farm: Jacket Foundation Fabrication Scope
Block Island Wind Farm: Jacket Foundation Installation Scope

Lift of the 400 ton jacket
Block Island Wind Farm: Jacket Foundation Installation Scope

Lift of the 360 ton deck
There are some “#BrightSpots” in the industry:

- Deepwater, Dominion, and Principal Power are all moving forward;
- LeedCo and the Univ of ME have received grant funding and are making progress;
- Existing projects are at a critical point: Cape Wind, Fishermen’s Energy, NRG Bluewater;
- New areas of potential activity stemming from BOEM lease sales in MA, MD, NC, GA.

Accelerating the growth of offshore wind in the US requires a commitment to projects that will spur the development of a US based supply chain.

Turbine transportation & installation jack-up vessels currently present the biggest challenge to support the development of the US offshore wind industry.

- The lack of a US offshore wind market will limit the market’s willingness to investment in the deployment of US flagged ships
- The near term needs for specialized vessels will be met with vessels from the European market.
- Near term projects will contract with European vessels and solve the Jones-Act issue by direct transport from Europe or a US flagged turbine transportation jack-up vessels
- Mobilization from Europe to the NE Atlantic is comparable to mobilization from the GoM