DOMINION OFFSHORE WIND

DOE selected 7 projects for initial engineering and environmental surveys
- $4 million per project

In 2014, DOE will select 3 projects for final design and construction
- $47 million per project
- Project operations date by 2017

Goals of the Advanced Technology Demonstration Project
- Install innovative offshore wind systems in U.S. waters in the most rapid and responsible manner possible.
- Expedite deployment of innovative offshore wind energy systems with a credible potential for lowering the levelized cost of energy (LCOE) below the local "hurdle" price.
Innovative Project
Pathway to Commercial Development

- Two 6 MW Haliade 150 Alstom turbines on innovative foundations

- Located in federal waters, close to the Wind Energy Area
  - Will inform commercial development

- Comprehensive testing and data collection plan to lower future costs and deployment timelines
**Turbine Key for lowering Cost of Energy**

**Alstom HALIADE™: new paradigm for offshore**
- LM 73.5-m GloBlade one of the largest in world.
- Optimum Energy Production to Nacelle Weight Ratio.

Advanced Turbine Controls
- Individual blade pitch control strategies.
- Platform to test feed-forward controls, LIDAR.

**Alstom PureTorque™ and Permanent Magnet Direct Drive (PMDD) system**
- Bending loads transmitted safely to tower.
- Robust drivetrain improves availability and reduces cost.
Innovative Foundation Installation Experience

Innovative substructures derived from offshore oil & gas experience have emerged from Carbon Trust Offshore Wind Accelerator and been successfully installed as offshore wind met masts in Europe.

**Twisted Jacket**
Keystone Engineering, Louisiana

**Titan Jack-Up**
Offshore Wind Power Systems of Texas

- **Gulf of Mexico Oil & Gas Platform**
  Installed 19-Sep-2011
- **UK Round 3 North Sea Met Mast**
- **Cantilevered Jack-Up Oil & Gas Drilling Rig**
- **E.ON Baltic Sea Met Mast “Emma”**
  Installed 28-Mar-2012
1. DOE Selection of VOWTAP for 50% Front-End Engineering & Design (FEED)
2. DOE Down-Selection of 3 Projects Nationwide to Proceed with 100% FEED and Construction
3. Commissioning
BOEM moving forward with commercial leasing process.

Eight companies expressed interest in response to the Call for Information and Nominations.


Dominion expects the auction will occur in Q2/Q3 2013.

BOEM planning to lease entire Wind Energy Area to one bidder using an ascending clock auction.
North Carolina Offshore Wind

- Kitty Hawk offshore Call Area 7 times larger than Virginia Wind Energy Area
- Boundary begins 6 miles from the shore
- 34 nautical miles wide at its longest point
- 45 nautical miles tall
- Area is approximately 355,248 hectares.

- BOEM issued a Call for Information and Nominations (Call) on December 13th, 2012
- Indications of interest due to BOEM January 28th, 2013
Vessel Traffic
Virginia Offshore Wind Technology Advancement Project
Proven Team & Innovative Concept

Dominion
KBR
ALSTOM
DMME
NREL
VirginiaTech
Newport News Shipbuilding