Virginia Offshore Wind

Presentation to:

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Ron Ritter

Virginia Offshore Wind Coalition
Off-Shore Wind Opportunity

Overview

What?
- U.S. Government: Virginia is the most optimal location for Offshore Wind (OSW) development on the Atlantic Coast

Why?
- Mid-Atlantic OSW capital investments ~ $34-66B
- Excludes OSW lifecycle support: support vessel construction/maintenance; tower and turbine maintenance

Where?
- Mid-Atlantic Offshore Wind (OSW) presents an opportunity to “re-shape” the Hampton Roads Marine Industry to cope with DoD/DoN instability

When?
- OSW economic viability is “tenuous” – political and/or legislative support is required

Who?

How?
What?

Energy Generation Potential of Virginia’s Offshore Wind Energy Area

- 3 Giga-watt wind field potential located on 175 square miles
  - Enough electrical energy to power over 700,000 homes or all of Hampton Roads
- Virginia Cape: highest wind utilization factors on East Coast
- Supply chain possibilities squarely in Virginia/Hampton Roads economic portfolio
- Jobs creation: Northern Europe wind industry increased regional marine industry employment 400%
Why Virginia?

- Virginia’s strong marine industry faces uncertain future given DoD drawdown

- OSW: An opportunity to shift to “adjacent markets” with existing skill sets

- Virginia is a net importer of electricity – OSW represents a renewable power source that broadens Virginia’s power generation portfolio, and reduces power import tariffs paid by consumers.

Among U.S. states, Virginia is 2nd largest importer of electricity (California is 1st)

In 2011, Virginia’s total electricity demand was 111.6 million MWh, of which 40% was imported from outside the state

Over the past 11 years, Virginia’s electricity imports have doubled from 22.4 million MWh in 2001 to 44.6 million MWh in 2011

3,000 MW of offshore wind development in Virginia’s WEA can generate 10.1 million MWh per year, cutting imports by 23%
Goal: position Virginia to be the Mid-Atlantic OSW manufacturing and service center.

Where? Mid-Atlantic “Wind Energy Area” (WEA)

The BOEM offshore Wind Energy Areas off NJ, DE, MD, and VA have 17,100 megawatts of total potential installed capacity, which represents a direct capital investment of $34-66 billion.
Unlike other states, the Virginia WEA has been fully vetted by key stakeholders: FAA, NASA, DoD, DoE, DoT (USCG), DoI, Virginia Port Authority, Environmental Groups, etc.

This clearance permitted the Department of Interior commercial lease auction of WEA to Dominion Resources on 4 Sept 2013.
**Virginia Wind Energy Area Scope & Notional Schedule**

**VOWTAP**
- DoE VOWTAP Down-select
- DR RFP & Down-select
- VA SCC Rate payer cost recovery approval
- Install & connect 2-6MW ATD Turbines

- **2013**
- **2014**
- **2015**
- **2016**
- **2017**
- **2018**

**5 AUG**
- VOWTAP RFI

**19 AUG**
- VOWTAP I-Day

**30 AUG**
- VOWTAP RFI submitted

**Virginia Commercial OSW Development – Dominion Resources**
- Commercial OSW will install 200-250 turbines
- Commercial OSW will be rate-payer financed

- **4 SEP**
  - VA WEA auction
- Field Surveys
- EIS

- **2013**
- **2014**
- **2015**
- **2016**
- **2017**
- **2018**
- **2019**
- **2020**
- **2021**

- **Phase I tower manufacture & installation**
  - (500-600 MW)

- First Power Delivery

**Key Points**
- VOWTAP is DoE funded
- 3 regions down-selected from 7 to execute 3-$47M projects to install 2 prototype turbines
- Virginia consortium led by Dominion Resources and DMME
Example of Port Infrastructure for OSW

Tower fab area

Tower staging area
How?

- Commercial-scale OSW is more expensive than “base power” delivery costs
  - OSW potentially adds a few cents to the existing rate structure (per kwh)
- **MD and NJ have surveyed rate-payers; large majorities agreed to pay some rate escalation to get renewable**
  - Virginia rate-payers protected by Virginia State Corporation Commission (VSCC)
- So how does this play? Quid-pro-quo:
  - Dominion gets approval from VSCC to bring OSW power onto grid if…
  - Dominion uses *Virginia-based companies (and employees)* to fabricate, install, connect, service & maintain wind power systems
    - And thereby preserve Virginia local economic activity and employment levels impacted by DoD drawdown

  “Green” alone will not sell OSW in Virginia…
  Green + energy security + **job preservation** will sell OSW in Virginia

- Dominion Resources/OSW becomes a *political play through the VSCC*, which can be influenced by the Virginia General Assembly

  Virginia political and legislative support is needed to make OSW viable
## Offshore Wind – meeting the challenges

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<tr>
<th>Challenges</th>
<th>Opportunities</th>
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<td>• Expanding natural gas base power may reduce prevailing rate structure</td>
<td>➢ History: natural gas will not always be cheap&lt;br&gt;➢ Congress may extend renewable energy investment and production tax credits&lt;br&gt;➢ New EPA emission standards on coal–fired power plants</td>
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<td>• Threats to Virginia–based OSW Supply chain from GoM oil &amp; gas supplier base</td>
<td>➢ Dominion recognizes (political) importance of using Virginia businesses to feed OSW supply chain&lt;br&gt;➢ State funding for port infrastructure improvements&lt;br&gt;➢ Governor–elect McAuliffe has expressed support for OSW</td>
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<td>• Other East Coast states are investing in fabrication and maintenance hubs</td>
<td>➢ VSRA and VMA are engaged&lt;br&gt;➢ SCA and other national organizations engaged</td>
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<td>• AWEA Conference: Northeast OSW developer efforts to bootleg around Jones Act</td>
<td>➢ Virginia companies enter into “OEM factory rep” agreements with manufacturers for maintenance work</td>
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Virginia’s Value Proposition for the Offshore Wind Power Industry is Compelling

Premier Maritime Community on East Coast
- Largest Industrial military complex in U.S.
- Largest capacity for shipbuilding & repair on East Coast

Infrastructure In Place
- Natural harbor with 50 ft channel depth
- No height restrictions in harbor
- Abundant and cost-effective lay-down space
- Central Mid-Atlantic location
- Direct access to rail
- High voltage transmission infrastructure close to shore and fully operational

Ready Workforce
- Over 200 companies employ more than 44,000 linked to the supply chain
- 13,000 trained personnel exit Virginia military bases each year
Offshore Wind…

- OSW presents a future growth engine opportunity for Virginia
  - Virginia regional economic structure is well-positioned to capture the Mid-Atlantic OSW Market

- Virginia OSW “economics” need political and legislative support to bring wind power onto the grid

- Slight increases in rate structures will be offset by job preservation, energy security and environmental stewardship

- VOWDA – web site  http://wind.jmu.edu/offshore/VOWDA

- VOW Coalition – web site  www.vawindcoalition.com

...it’s on Virginia’s Horizon