Offshore wind industry update & VA Supply Chain Partnership Directory

VOWDA Board Meeting
Henrico Country Public Library
January 10, 2020
Andy Geissbuehler
US East Coast OSW market forecast to 2035

- State driven offshore wind targets exceed 26 GW by 2035
- Additional commitments anticipated, increasing the 2035 forecast to >30 GW
- East Coast offtake agreements expected to reach 6.5 GW* in 2019

* NOT including the largest development in the US (Dominion’s 2.64 GW in VA)

- 15 BOEM lease areas auctions:
  - 8 Northern lease areas ~16 GW
  - 7 Southern lease areas ~12 GW
- Next lease auction in 2020 (NY)

Source: NREL, U.S. Department of Energy
US East Coast OSW market forecast to 2035

East Coast project volume

- CAPEX for East Coast offshore windfarms expected to approach ~100 B by 2035
- Infrastructure and supply chain investments will provide additional volume
US East Coast OSW market forecast to 2035

East Coast supply chain load

<table>
<thead>
<tr>
<th>State policy</th>
<th>2035 East Coast Forecast [MW]</th>
<th>expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>9000</td>
<td>9000</td>
</tr>
<tr>
<td>NJ</td>
<td>7500</td>
<td>7500</td>
</tr>
<tr>
<td>MA</td>
<td>3200</td>
<td>3200</td>
</tr>
<tr>
<td>NC</td>
<td>2400</td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>2600</td>
<td>2612</td>
</tr>
<tr>
<td>CT</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>MD</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td>RI</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>DE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>multiple States est.</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25,900</td>
<td>30,312</td>
</tr>
</tbody>
</table>

Potential for >30 GW by 2035

Estimated expenditure for East Coast projects 2020 - 2024

Source: BVG Associates and RRI

© BVG Associates 2020
Anticipated new BOEM lease area auctions

- BOEM committed to collaborate with States to advance lease auctions, progress impacted by resources and the Vineyard Wind permitting delays.

- Anticipated auctions (timeline estimated):
  - New York (NY): Q3/Q4 2020 (4 lease areas in NY Bight)
  - California (CA): 2021 (assume 2 GW, potential >> 10 GW)
  - Carolinas (NC / SC): 2021/22 (assume 4 GW)
  - New Jersey (NJ): 2021/22 (assume 3 GW, potential higher TBD)
  - Gulf of Maine (MA/NH/ME): 2022/23 (assume 4 GW, potential higher TBD)
  - Virginia (VA): What is in VA’s best interest?
Further lease area potential in VA, NC and SC

Mid Atlantic Geography
Anticipated US Offshore Windfarm costs for 2022
BVG Associates for Clean Energy States Alliance

Primary local scope opportunities:

- Turbine foundations
- Substation (onshore and offshore)
- Blades & towers
- Component staging
- Windfarm installation
- R&D
- Windfarm O&M
Virginia's Offshore Wind Supply Chain and Service Industry Opportunity

BVGA also created the Virginia Offshore Wind Supply Chain Resource Network Directory, which connects offshore wind developers, wind turbine suppliers and other prime contractors with Virginia professional services, manufacturers, equipment and material suppliers and other general service providers relative to all phases of an offshore wind project. Supply chain prospects are encouraged to promote their services by adding their information to the Virginia Offshore Wind Supply Chain New Supplier Form.

“The Commonwealth’s lead-by-example effort to align businesses interested in offshore wind with an industry at the early stages of development is the most important step in enabling the East Coast offshore wind build-out. A timely supply chain entry will equip Virginia with the skills and infrastructure needed to participate in this major industry growth opportunity.”

— Department of Mines, Minerals and Energy Director John Warren
Enable and grow Virginia’s offshore wind business opportunity through partnerships, infrastructure and workforce development.
Please enter information about you and your company so we can match you with potential partners.

**Company name**

**Website**

**First name**

**Last name**

**Job title**

**Work phone**

**Street address**

**Suite, Fl, Apt**

**Email address**

**City**

**State**

**Country**

**COMPANY BROCHURE**

**W-9**

Upload your W-9 form by dragging a file onto the field to the right.

**MBE/WBE/SDBE STATUS**

- MBE
- WBE
- SDBE

Upload current certification by dragging a file onto the field to the right.

**Short company bio**

**Organization type**

**Sector**

**# of employees**

**Certifications**

- ISO 9001:2015 (Quality Management Systems)
- ISO 14001:2015 (Environmental Management Systems)
- OSHA 1910.138 or OSHA 1910.119 Safety Management Systems
- APQP for Wind Training
- None
## Supply Chain Categories - SERVICES

Select either SERVICES or PRODUCTS/MATERIALS above, then click on a category below to see all the companies under that category.

### TURNKEY PROJECT (DESIGN / PROCUREMENT / CONSTRUCTION / INSTALLATION)

<table>
<thead>
<tr>
<th>Category</th>
<th>Companies</th>
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</thead>
<tbody>
<tr>
<td>Wind Power Plants</td>
<td>22</td>
</tr>
<tr>
<td>Marine &amp; Underground Cable Systems</td>
<td>9</td>
</tr>
<tr>
<td>Fiber Cable Systems</td>
<td>4</td>
</tr>
<tr>
<td>Other Modules / Units</td>
<td>4</td>
</tr>
</tbody>
</table>

### BUILDING & CONSTRUCTION WORKS

<table>
<thead>
<tr>
<th>Category</th>
<th>Companies</th>
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</thead>
<tbody>
<tr>
<td>Reservoir Construction Works</td>
<td>7</td>
</tr>
<tr>
<td>Pier / Port Construction Works</td>
<td>18</td>
</tr>
<tr>
<td>Road / Bridge Construction Works</td>
<td>19</td>
</tr>
<tr>
<td>Piling / Boring</td>
<td>34</td>
</tr>
<tr>
<td>Tunnelling Construction Works</td>
<td>6</td>
</tr>
<tr>
<td>General Buildings / Offices</td>
<td>5</td>
</tr>
<tr>
<td>Utility Construction</td>
<td>41</td>
</tr>
<tr>
<td>Embankments / Earth Banks Construction Works</td>
<td>11</td>
</tr>
<tr>
<td>Ground Work / Leveling Works</td>
<td>8</td>
</tr>
<tr>
<td>Cable &amp; Pipeline Trenches Construction Works</td>
<td>30</td>
</tr>
<tr>
<td>Other Building &amp; Construction Works</td>
<td>8</td>
</tr>
</tbody>
</table>

### WATER / SEWAGE CONSTRUCTION WORKS

<table>
<thead>
<tr>
<th>Category</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Rehabilitation</td>
<td>4</td>
</tr>
<tr>
<td>Pipe Lining (Trenchless Sewer Repairs)</td>
<td>2</td>
</tr>
<tr>
<td>Guided Drilling</td>
<td>4</td>
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</table>
Collaboration benefits for all stakeholders:

- Connect industry needs with a broad network of goods and service providers
- Provide an updated baseline of available resources
- Establish a regional offshore wind peer network
- Provide industry specific follow-up and address questions of new partners signing up
- National database efficiencies while still providing a Virginia specific platform