THE BUSINESS NETWORK FOR OFFSHORE WIND
LEADERSHIP 100 WORK PLAN
The US Offshore wind market is dynamic—it has grown from 456 MWs in 2017 to 16,970 MWs in 2019.

This rapid growth creates both opportunities and challenges. In April 2018, Business Network for Offshore Wind Members identified a need to bring together the leaders of the offshore wind industry to discuss critical challenges associated with constructing 10GWs of offshore wind by 2030, and to develop a work plan to support continued industry growth. From this discussion, the Business Network for Offshore wind created Leadership 100 as a new initiative for discussing major issues facing the US offshore wind industry, both present and in the future.

An Industry Charter was agreed upon and used to guide the initiative. LEEDCo, chaired the Leadership 100 Steering Committee comprised of representatives from Atlantic Wind Connection, WSP, GEO SEA, JDR Cables, Ørsted, Ramboll, Seajacks, Shell, Siemens and Siemens-Gamesa. The industry-led committee developed the meeting agenda and structure.

The Leadership 100 Summit took place January 17-18th, 2019. Three priority areas emerged as the most important items to advance the industry.
1. Develop An Industry Road Map
2. Advance the Grid and Transmission Discussion
3. Launch A Public Engagement Campaign

I want to thank the Steering Committee and all the Leadership 100 participants for contributing their time and equally valuable insights, perspectives and experiences to this important dialogue. I am confident that the work plan they have set forth will help guide the industry and provide areas for collaboration.

With a robust offshore wind pipeline, industry decided it was time to begin the process of harmonizing our voices into one, very loud, strong voice and act as one to make sure all offshore wind projects are successful. At the conclusion of the meeting, participants agreed maintaining and supporting offshore wind’s own voice and an offshore wind industry work plan are both vital to the continued market growth of the offshore wind industry.

The Work Plan is a course of actions for industry and for supporting organizations like the Business Network for Offshore Wind and others, as well government to implement during a 12-18 month period. The Network will shepherd this work plan forward, including advancing activities directly and initiating and supporting partners’ efforts where activities fall outside of the Network’s scope.

It will take all of us – offshore wind supply chain companies, academics, government agencies, foundations, NGOs and others to work together to ensure we meet the challenges we face and ensure the success of the industry. I invite any company and organization interested in helping to ensure the overall success of the industry to become involved.

Liz Burdock
President and CEO, Business Network for Offshore Wind
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>A2e</td>
<td>Atmosphere to Electrons</td>
</tr>
<tr>
<td>ACPARS</td>
<td>Atlantic Coast Port Access Route Study</td>
</tr>
<tr>
<td>AWEA</td>
<td>American Wind Energy Association</td>
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<tr>
<td>BNOSW</td>
<td>Business Network for Offshore Wind</td>
</tr>
<tr>
<td>CBP</td>
<td>Customs Border Patrol</td>
</tr>
<tr>
<td>EEI</td>
<td>Edison Electric Institute</td>
</tr>
<tr>
<td>eNGO</td>
<td>Environmental Non-governmental Organization</td>
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<td>EPRI</td>
<td>Electric Power Research Institute</td>
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<tr>
<td>ESIG</td>
<td>Energy Systems Integration Group</td>
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<tr>
<td>FERC</td>
<td>Federal Energy Regulatory Commission</td>
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<td>GW</td>
<td>Gigawatts</td>
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<tr>
<td>ITC</td>
<td>Investment Tax Credit</td>
</tr>
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<td>JADE</td>
<td>meeting regarding</td>
</tr>
<tr>
<td>LCOE</td>
<td>Levelized Cost of Electricity</td>
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<td>MARI-PARS</td>
<td>Massachusetts and Rhode Island Port Access Route Study</td>
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<tr>
<td>MW</td>
<td>Megawatts</td>
</tr>
<tr>
<td>NAIcs codes</td>
<td>North American Industry Classification System codes</td>
</tr>
<tr>
<td>NARUC</td>
<td>National Association of Regulatory Utility Commissioners</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NGA</td>
<td>National Governors Association</td>
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<tr>
<td>NGO</td>
<td>Non-governmental Organization</td>
</tr>
<tr>
<td>NOIA</td>
<td>National Oceans Industry Association</td>
</tr>
<tr>
<td>NREL</td>
<td>National Renewable Energy Laboratory</td>
</tr>
<tr>
<td>NYSERDA</td>
<td>New York State Energy Research and Development Authority</td>
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<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
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<tr>
<td>OREC</td>
<td>offshore renewable energy credit</td>
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<td>Occupational Safety and Health Administration</td>
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<td>OSW</td>
<td>Offshore Wind</td>
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<tr>
<td>P3</td>
<td>Public-Private Partnership</td>
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<td>PLA</td>
<td>Project Labor Agreement</td>
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<td>PPA</td>
<td>power purchase agreement</td>
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<tr>
<td>RFP</td>
<td>Request for Proposal</td>
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<td>ROD</td>
<td>Record of Decision</td>
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<tr>
<td>RTO</td>
<td>Regional Transmission Operator</td>
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<td>The Network</td>
<td>Business Network for Offshore Wind</td>
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<td>US BOEM</td>
<td>United States Bureau of Ocean Energy Management</td>
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<td>United States Department of Energy</td>
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<td>WEA</td>
<td>Wind Energy Area</td>
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EXECUTIVE SUMMARY: LEADERSHIP 100

The Business Network for Offshore Wind (Network) gathered 85 US offshore wind supply chain leaders under a new initiative called, Leadership 100. The purpose was to explore how we can develop collaborative solutions to supply chain bottlenecks and capacity issues, advance efficient offshore wind electricity delivery and grid integration approaches, ensure efficient, consistent and clarity in the regulatory process, and to better manage environmental and human concerns. Participants included developers, turbine manufacturers, Tier 1 suppliers, and government officials.

US MARKET OVERVIEW

In January 2019, New York announced more than a three-fold increase in their commitment to support the development of offshore wind from 2,400 MW to 9,000 MW. This jolted the U.S. market with a 64% increase in market size. The global offshore wind industry is moving forward and seizing the opportunities provided by State policies from Massachusetts to Virginia, the US is on track to create a US offshore wind energy marketplace that will exceed 10GWs by 2030.

The US Offshore Wind market currently stands at 16,970 MWs and is a subset of the total US leased wind energy areas (WEA) potential generation capacity of 21,000 MWs. The market is defined as the amount of offshore wind electricity that could be supported by a state-supported financial mechanism. In the US these financial mechanisms are usually either a power purchase agreement (PPA) or an offshore renewable energy credit (OREC).

1800MWs Installed by 2023

To date, six commercial-scale projects and two demonstration projects comprise the US offshore wind project pipeline, which totals close to 1,800 MWs. These seven projects have received a state-supported financial mechanism—either a PPA or OREC. Developers emphasize that all seven projects will be constructed, installed and operating by 2023.

Activity in 2019

In May 2019, New York is expected to announce the winner(s) of its first 800 MW RFP and in July, New Jersey intends to announce the winner(s) of its 1,100 MW competitive process. These two states will add an additional 1,900 MWs to the project pipeline bringing the US offshore wind project pipeline to almost 4,000 MWs. Massachusetts will release its second RFP for at least 800 MWs no later than June 30, 2019 and so the US offshore wind market continues to grow.

Market Development Challenges & Barriers

With large scale commercial offshore wind projects on the East Coast expected to be financed, under construction and built by 2030, there are multiple issues facing the industry. These include:

Uncertainty. Uncertainty within the supply chain still exists despite the policy announcements, goals and commitments. State and federal permitting requirements and challenges to the permitting, add a layer of uncertainty for the supply chain considering investments.

Cost Reduction. Costs and focusing on reducing costs before the industry has even gotten off the ground will discourage businesses from entering into the market. Prices reductions in Europe relied heavily on the supply chain, but the supply chain was mature. The US supply chain is in its infancy. Further, the industry faces import tariffs and quotas – at time the Investment Tax Credit (ITC) is being phased out – add complexity.

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>STATE</th>
<th>SIZE (in MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vineyard Wind</td>
<td>MA</td>
<td>800</td>
</tr>
<tr>
<td>Revolution Wind</td>
<td>RI</td>
<td>400</td>
</tr>
<tr>
<td>Revolution Wind</td>
<td>CT</td>
<td>200</td>
</tr>
<tr>
<td>South Fork</td>
<td>NY</td>
<td>150</td>
</tr>
<tr>
<td>Skip Jack</td>
<td>MD</td>
<td>120</td>
</tr>
<tr>
<td>US Wind</td>
<td>MD</td>
<td>246</td>
</tr>
<tr>
<td>Coastal Virginia Offshore Wind</td>
<td>VA</td>
<td>12</td>
</tr>
</tbody>
</table>
Resource Limitations. It is unclear if the US has enough resources to build the present and growing pipeline and if the required sufficient specialist workers exist. Ports are also limited in their capabilities which has a direct bearing on the choice, design and investment in vessels. Offshore wind is a global market and the supply chain is global. US projects along with their supply chains are competing against Asia and Europe and other emerging markets for resources.

Competition. State competition is helping to quickly develop the market. However, more state coordination and cooperation is needed. As the industry matures, companies cannot build factories and operations in every state and a better understanding of the State’s assets along with specific needs would help the industry grow so there could be a focus for each state.

The following work plan is a course of actions for industry and for supporting organizations such as the Business Network for Offshore Wind and others, as well as engaging with state and federal governments, to implement during the next 12-18 month period. It identifies the most pressing needs of the industry, and offers collaborative solutions and actions to resolve these problems. It utilizes best practices from other industries and prioritizes the initiatives.

The Network will shepherd this work plan forward, including advancing activities directly and initiating and supporting partners’ efforts where activities fall outside of the Network’s scope.

A summary of the inaugural Leadership 100 meeting discussion is included as Appendix A. The meeting agenda is included as Appendix B. During the meeting, participants identified interest in leading or participating in small group activities to drive each theme forward. Their participation is noted in Appendix C. Additional meeting materials including brief topic presentations, polling data, and a meeting summary will be available at www.offshorewindus.org/L100

The Network is eager to continue growing support and catalyzing activities in each area. We encourage experienced developers to suppliers to share best practices from other developing markets, i.e. Taiwan. Additional interest in supporting or leading components of this work plan can be directed to LizBurdock@offshorewindus.org

LEADERSHIP 100 ANNUAL INDUSTRY WORK PLAN

The Leadership 100 Annual Industry Work Plan is based on the inaugural Leadership 100 discussion (Appendix A). It is a course of action for industry, supporting organizations such as the Business Network for Offshore Wind, and government(s), to implement during the next 12-18 month period. It offers collaborative solutions, utilizes best practices, and prioritizes initiatives related to:

- Supply Chain Capacity & Bottlenecks
- Offshore Wind Electricity Delivery And Grid Integration
- Ensuring Efficiency, Consistency and Clarity in the Regulatory Process
- Managing Key Environmental & Human Use Concerns

During the discussion, three activities emerged as the most important items to advance the industry:

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1 Note: The work plan differs from the Industry Road Map.
1. Develop An Industry Road Map
2. Advance the Grid and Transmission Debate
3. Launch A Public Engagement Campaign

**PRIORITY AREA ONE: INDUSTRY ROAD MAP**

Offshore wind is a global market and much of the supply chain is international. US projects and their respective supply chains are competing against Asia and Europe and other emerging markets for resources. In the next four years, US developers are expecting to manufacture, construct and install over 4,000MWs of offshore wind. Unlike Europe and its present way of doing business, the US has unique constraints and challenges requiring new partnerships and expertise to offer customized solutions for the US market. Using the Business Network for Offshore Wind’s supply chain registry containing a list of material components and services and data collection as a starting point, the industry prioritized the development of a “Industry Roadmap Towards 10 GW Offshore Wind In The US” as the most crucial action item. The Roadmap is an industry formulated approach, which could be used for several purposes including identifying US supply chain capacity, providing information to support a regional port strategy and cooperation among states on workforce issues. It would identify assets, strengths, gaps and resource constraints by states, offer technical explanations for specific scalable solutions and provide insights on local supply chain development. The roadmap is not based on modeling or NAICs codes, but relies on industry input and data gathered. It must be done on a national basis to identify where strengths and gaps lie and highlight areas for regional cooperation. For example, there could be some integration or synergies developed between suppliers along the coastal area with land locked industrial states to support the OSW Industry needs.

The offshore wind industry roadmap requires support from developers, OEMs and suppliers to submit data and input information on project(s) size, installation facilities, grid and transmission, and vessels, etc. It should provide several build out scenarios and detail number of components needed, jobs created/supported under each scenario with a realistic time frame. It can be utilized by complementary efforts to identify gaps and identify industry priorities such as US Standards and other initiatives.

### Identified Action Items

<table>
<thead>
<tr>
<th>TASK</th>
<th>ACTION</th>
<th>PARTICIPANTS</th>
<th>TIMING</th>
<th>RESOURCES</th>
</tr>
</thead>
</table>
| I    | Develop a framework for the road map  
- Facilitate industry discussion to reach consensus on road map framework  
- Submit a proposal seeking funding from DOE/NYSERDA consortia to identify gaps and form working groups. | Network Members/NREL/DNV-GL | Immediate | Time Expertise |
| II   | Expand Supply Chain Registry Data Collection  
- Convene advisory group with OEM’s, developers, and suppliers to seek alignment and provide input into data collection fields  
- Peer review industry roadmap Framework | Network Members | Immediate | Industry Input |
| III  | Quantify 15-19GWs of offshore wind  
- Establish privacy and data usage agreements  
- Incorporate into public-facing communications including jobs, economic development, and electricity rates | Network Members, DNV-GL, NREL, US DOE | Q2 2019 | Industry input |
PRIORITY AREA TWO – GRID AND TRANSMISSION
New York’s announcement to increase its commitment of 2,400MWs to 9,000MWs of offshore wind power accelerates the need to quickly address offshore wind electricity delivery and grid integration. The North East grid should be able to accept the first 4,000MWs of power, but the capacity of the grid to go beyond 4,000 MWs is uncertain. If the problem is not addressed, the market will technically be held back from providing the megawatts hours that policy makers have called for in the offshore wind goals they have set. Communicating the risks of not acting on this issue, and determining the benefits for congestion relief & ancillary services to incentivize State officials to build the infrastructure that allows gigawatts to be placed on the grid is necessary.

New models including ground breaking and disruptive policy should be explored to expand distributive renewable energy generation and transmission capacity. An immediate first step is to define the problem and determine possible solutions. However, industry will need government(s) help to develop a consensus path forward. States and industry should enter in a constructive dialogue to discuss a coordinated transmission and grid integration strategy. By coordinating transmission, overall costs can expect to be lowered. Longer term multi-project planning can lower the risk of limiting interconnection opportunities.

Most immediately, industry recommends that the US Department of Energy update the National Offshore Wind Energy Grid Integration Study. The market has changed dramatically since the study was first published. At the present time, it would be more beneficial to have the study focus on the North East region, where the majority of the offshore wind development is occurring. New data would provide information to inform the conversation at local, state and federal level.

PRIORITY AREA THREE – PUBLIC ENGAGEMENT
Environmental and visual impacts are outcomes of offshore wind development. They have the potential to slow market momentum if they are not addressed early and proactively. In a recent study published in Energy Policy, researchers from the University of Massachusetts Amherst and the University of Rhode Island set out to examine public attitudes towards offshore wind development and found some concerning results. Offshore wind projects are often met with fierce opposition. Local stakeholders generally claim damage to landscape aesthetics, harm to wildlife, and negative impacts on recreation and fishing industries.

The public should be informed about the both the commercial benefit of OSW and how it will reduce the cost of power to the consumer. Offshore wind is a solutions based technology and developing an outreach campaign should focus on positive impacts to the environment as well as reduced power cost compared to other competitive energy solutions being presented. It is important to make sure that the optics for the US consumer includes the creation of jobs that are being displaced as a result of the old energy production and that these jobs can help build a future.

The positive story is easier to make around individual projects, but industry is moving to scale. With many more structures going into the water, now is the time to establish a proactive public engagement initiative.

Industry has a short window of opportunity to engage to resolve real concerns. Other industries have created marketing campaigns to show the public that they have a positive image. The offshore wind industry should build a marketing campaign for a diverse set of audiences. The campaign should outline the narrative about the positive benefits of the offshore wind while also offering counterpoints to the existing negative public opinion. The importance of a marketing campaign cannot be overstated enough: industry must move quickly to support a national marketing campaign to gain greater and wider acceptance of offshore wind.

Early engagement with seaside communities is vital. Education systems are an ideal channel for disseminating explanations about offshore wind. Children and young students are open to learning about offshore wind. Industry can educate this generation and the next by sup-
## Identified Action Items

<table>
<thead>
<tr>
<th>TASK</th>
<th>ACTION</th>
<th>PARTICIPANTS</th>
<th>TIMING</th>
<th>RESOURCES</th>
</tr>
</thead>
</table>
| I    | Request US DOE National Offshore Wind Energy Grid Integration Study be updated  
• Send industry letter to US DOE  
• Convene in-person meeting to discuss study scoping | Business Network Grid and Transmission Working Group                       | Immediate   | Support from OEMs, developers and suppliers |
| II   | Develop letter describing transmission coordination required          | Network Grid and Transmission working group                                   |             |                                  |
| III  | Educate stakeholders on coordinating transmission needs               | US BOEM, US DOE, States, Utilities, Developers, Grid Operators, (FERC?), Danish Embassy, NGA | Q2 2019     |                                  |
| IV   | • Convene FERC, DOE, BOEM, and States meeting                          | Q1 2020 Q2 2019                                                            |             |                                  |
| V    | • Develop a strategy for convening multi-state initiative to focus on grid and transmission  
• Incorporate lessons from Europe                                    |                                                                            |             |                                  |
| VI   | Establish Transmission Maintenance Collaborative                        | Work with NARUC and EEI                                                      | Q4 2019     |                                  |
| VII  | Develop scenarios for how transmission/interconnection will work if they are separate tasks |                                                                            |             |                                  |
| VIII | Research & development for offshore RTO  
• Research may include host capacity concept, meshed long haul backbone scenarios, and global OSW transmission standards, data framework, and analytics  
• Industry request to Federal government for funding  
• Document lessons learned from Europe  
• Characterize OSW generation benefits for congestion relief and ancillary services | Universities, DOE, EEI                                                   |             | Funding                         |
porting offshore wind curriculum, training and youth education program partnerships. By educating students we can educate the entire community.

ADDITIONAL AREAS OF INTEREST
The group discussion identified additional areas of interest beyond the three priorities outlined above. The Network and Leadership 100 participants may choose to refine these topics and catalyze action through small work group discussions, or activities may be included in future Annual Work Plans.

IMPLEMENTATION AND FUNDING
This Work Plan is a course of action for industry and for supporting organizations such as the Business Network for Offshore Wind and others, as well as governments to implement during the next 12-18 month period. The Network will shepherd this Work Plan forward, including advancing activities directly and initiating and supporting partners’ efforts where activities fall outside of the Network’s scope.

Many actions detailed in the work plan can be undertaken by industry working in collaboration. However, some items require addition external partners with specific expertise, regulatory changes, advocacy and funding. Industry will engage with AWEA and NOIA and seek assistance for them to lobby to revise Title 11 and to extend beyond the 5-year return on investment window. Additional organizations with expertise in grid and transmission issues should be brought into the broader conversation and keep the issue at the forefront. The Network will facilitate making them aware of these issues. For example, Edison
Electric Institute, ESIC, EPRI, and academics institutions should research ideas such as an offshore Regional Transmission Operator (RTO), meshed with long-haul backbone scenarios, and host capacity concepts as potential long-term solutions.

Within each section, funding will be required to help industry address challenges. Consensus was reached that the public engagement campaign should be funded from Network Membership, foundations, federal partners, related industry, crowdfunding, etc.

The Network Grid and Transmission technical Working group composed of members and supported with staff will be reconvened and paid for by Business Network Member dues. The Network will also use membership funding and operating revenue to expand the Network supply chain registry; develop industry talking points, launch a public engagement website and solicit bids from public relations firms for an offshore wind industry Public Engagement Campaign.

This two year work plan is highly dependent on volunteer industry participation. Given these limitations, technical committees composed of members and others will need to be formed to assist with completing the work plan. Each committee will be expected to organize itself, augment and enhance the work plan and deliverables outlined below, as well as determine funding for activities. Committees will be provide reports to the Leadership Advisory committee every six months starting in June 2019.

APPENDIX A: MEETING SUMMARY
The Business Network for Offshore Wind launched Leadership 100, a new initiative for discussing major issues facing the US offshore wind industry now and in the future. On January 17-18, 2019, 85 US offshore wind supply chain leaders including developers, turbine manufacturers and Tier 1 suppliers representing the many facets and perspectives of the supply chain, and government officials met to discuss critical challenges in constructing

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**Identified Action Items**

<table>
<thead>
<tr>
<th>STRATEGIC THEMES</th>
<th>ACTION AREAS</th>
</tr>
</thead>
</table>
| Workforce Development          | • Advance regional labor union coordination  
• Labor mapping and union capacities  
• Develop a standard PLA  
• Comment on Interagency health and safety guidelines |
| Port Infrastructure & Vessels   | • Update from the JADE meeting regarding subsea cables  
• Develop a P3 model for infrastructure  
• Establish Working group for vessel financing, expediting vessel development  
• Clarification/ruling by CBP on gray areas under the Jones Act |
| Regulatory                     | • Provide leasing goals synthesis to BOEM  
• Predicting/modeling regulatory “risk” – process mapping  
• Create a space to share regulatory challenges among developers  
• Assess the cost / benefits of regulated project requirements (e.g., paint)  
• Regional / National Maritime Use Plan  
• Assess potential impacts on lease pricing  
• Document best practices on contracts (timelines, price change windows, etc.)  
• Corporate PPAs |
| Environment and Other          | • Identify key research gaps, and challenges to filling them  
• Briefing on ACPARS; track work on MARI-PARS re: transit lanes  
• Establish Working Group on noise impacts, clarifying limits, mitigations |
10GWs of offshore wind by 2030. The group’s diversity created a dynamic, cross-cutting discussion and led to an outline of an industry annual work plan, which is industry’s response to the most pressing industry needs. The 2016 National Offshore Wind Strategy along with other documents, were used as references to start the discussion and set a clear direction for the Annual Work Plan.

Participants
Attendance at meeting was limited to C-Level and Senior Executives. A Member of the Network Board of Directors chairs Leadership 100 and a Steering Committee has been formed from Network Membership to guide agenda development and meeting structure.

Agenda
To inform the development of the meeting agenda (included as Appendix B), participants were polled prior to the meeting and results identified priority issues for discussion, including:

- Interstate Coordination On Grid, Local Content, Ports, Permitting/Regulatory, etc.
- Project Coordination (Getting Beyond Project-By-Project Thinking)
- Policies For Market Growth & Competition
- Quantifying And Communicating The Benefits Of Offshore Wind
- Electricity And Grid Integration Transmission

INDUSTRY CHALLENGES AND BARRIERS
Throughout the meeting, participants heard brief presentations on challenge and barrier topic areas from subject matter experts. After brief presentations, the group participated in facilitated discussion seeking to expand on each topic area and identify the widest range of possible activities to support industry. Sli.do was used to engage the audience in real time polls to rank the importance of issues and to collect insights anonymously.

The following is a synopsis of the discussion organized by the meeting agenda.

CHALLENGES & BARRIERS PART 1: 10GWS BY 2030: SUPPLY CHAIN CAPACITY & BOTTLENECKS
Topics:
- Port Infrastructure
- US Business Development and Growth
- Workforce Development

Presenters:
- Jay Borkland, Sr. Engineering Manager- Lloyd’s Register / Tufts University Fellow
- Jason Folsom, National Director of Sales, US – MHI Vestas
- Scott Jensen, Director, Rhode Island Department of Labor and Training
The US offshore wind market is maturing rapidly, compared to the long growth period Europe experienced. As a result, port infrastructure is a major issue, which will be crucial for driving a regional approach for the industry. The existing port infrastructure in the United States is outdated and insufficient for offshore wind. First, offshore wind requires additional capacity and space for project lay down areas and assembly as well as access to the key side.

Port development is beginning to occur that will support the OSW industry but the OSW industry needs to provide input. Ports come in many shapes and sizes with multiple needs to prepare for OSW. This requires a sharing of information and level of transparency. Part of the issue is making a business case for such significant investments to make sure they are used for more than OSW. A business case has been made when a port is developed as a multipurpose facility that will encourage longevity and a strong revenue stream. There are examples where the port is being developed for more than one industry given it a better business case for investment.

Industry recommends that port infrastructure should and ultimately will be distributed between states, meaning States will have different port infrastructure to support a different part of the project and some states may not have offshore wind ports at all.

Early action is key; industry needs time to figure out the details related to port infrastructure and inherently logistics. Industry and the States need to start determining the best solution to accommodate offshore wind port infrastructure now to stay ahead of the project pipeline.

The supply chain in the US is – although very enthusiastic and diverse – still in its infant stage with a lot of good intentions but little or no experience and know-how. Moving very fast and building several projects simultaneously, will prevent the industry from growing organically and learning as it moves forward.

Projects will be delayed or could even go wrong and be scuttled, which will lead to a decreased confidence from the public and give ground to opponents to shift back to nuclear and fossil fuels or expand natural gas.

Bottlenecks will occur, along with setbacks, if the U.S. does not inventory what it can do well and focus on these few things. State competition needs to be resolved and a recognition that not everything can and should be built in the US is also required.
Overall, there is confusion within the States about the labor, skills, and training needed to prepare for the offshore wind industry. Industry is also confused on where to go and access training. The US Workforce development system is daunting. See Figure 1.

Often local education systems, such as community colleges and trade schools, provide training programs including those specific for offshore wind. The States need to be more involved in those training programs to help industry connect with and provide insights to the local educators. The education systems are difficult to navigate but establishing a State program focused on coordination between industry and education, the system can be streamlined. Companies would identify workforce needs and coordinate with the State and educators to develop workforce

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**US Offshore Wind Project Timeline**

<table>
<thead>
<tr>
<th>MW</th>
<th>Pre-Bid Planning</th>
<th>Site Control</th>
<th>Permitting [SAP]</th>
<th>Off-Take Agreement</th>
<th>Permitting [COP]</th>
<th>Approved</th>
<th>Financial Close</th>
<th>Operating</th>
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Figure 1
development solutions. Industry must work with public entities to establish offshore wind specific training programs. A best practice model is Real Jobs Rhode Island.

**Local Supply Chain Identification**

Many offshore wind components can be purchased from US suppliers. A supply chain for components must be identified in the US to ensure developers and OEMs obtain information about local suppliers. The Business Network for Offshore Wind Supply Chain Registry provides a database of information including potential local suppliers of goods, labor, or resources applicable to offshore wind. It offers an existing mechanism for collecting and organizing data required to help identify local companies down to the zip code. The registry is intended to be a national database with accurate descriptions of the companies’ specialty and qualifications. It has been used to seed local databases within states such as Maryland, Virginia and New York.

**Industry Road Map**

Using the Business Network for Offshore Wind’s supply chain registry and data collection as a starting point, industry would like a “roadmap towards 10 GW Offshore Wind in the US” to be developed. This would be an industry-formulated approach, which could be used for several purposes including alignment of industry with some central recommendations. It would offer technical explanation for specific scalable solutions and provide insights on local supply chain development. It will require support from OEMs, developers and suppliers to provide their input.

The data collected by developers is considered private information due to competition. To overcome this barrier, a comprehensive dataset collected by a third party source would allow data from specific projects to be categorized anonymously to be useful for other members of industry and to solicit positive public feedback. This is a similar model used by RenewableUK. Although the data gaps are extensive, only portions of the data need to be quantified to successfully illustrate the viable industry in the United States. Outwardly, data should highlight positive information that the public is interested, including jobs, economic development, and electricity rates. For internal project development, industry members may request access to additional data points related to project costs and turbine productivity.

The Roadmap will provide a better understanding of specific needs per component in the coming years to build 10GW plus offshore wind. Further is will indicate components and services that can be sourced in the US along with indicators for investment decisions, for planning purposes. Data on number of foundations, transition pieces, nacelles, blades, towers, vessels, etc. should be collected and then a quantifiable analysis of the jobs created and supported should be determined. In essence, the industry needs to quantify the 15-19GW project pipeline into data. The information needs to be shared with stakeholders and States so they can identify and select the areas where they have the skills (natural assets). It will help industry identify the jobs that will emerge, and the skills needed by trained workers to avoid delays and confusion. Industry can refer to Euro-
pean experience to allow for a more transparent labor training and job process. The Roadmap will help identify areas for coordinating labor efforts by articulating the industry needs from local workforce and identifying collaborative funding opportunities. It should advance regional labor union coordination by mapping labor requirements and union capacities. It should document best practices for long term workforce development (apprenticeships / training programs) and ensure workforce development and training activities minimize risk of safety issues.

Roadmap data can be utilized to make accurate work flow and investment decisions such as a regional port strategy. It can also be used to influence public opinion and inform and verify industry commitments to policy makers. It can be utilized by complementary efforts to identify gaps and identify industry priorities.

**Summary of Discussion**

The rapid growth of the US offshore market and state offshore wind policy goals require addressing the multi-layered grid and transmission issue immediately. A project-by-project approach to grid connection is necessary to get the first turbine(s) in the water. However, once the first few projects are constructed and connected to the grid, it will be difficult to reach the policy goals set forth by states without a coordinated grid approach. New York’s announcement to increase State’s commitment of 2,400MWs to 9,000 MWs of offshore wind power presents an opportunity to mobilize around grid and transmission issues.

To onboard offshore wind, grid operations need to be reconfigured. Offshore wind transmission is only one aspect of the grid. The electricity grid is expansive and complex. Other energy sources, including traditional electricity generators and renewable energy, must coexist in the grid. Across the country, the influx of solar electricity required grid adjustments. Offshore wind requires a similar adjustment to the grid, which could be considered in conjunction with solar.

Industry needs to be proactive in approaching the grid to prepare for the integration of new energy. This is going to require dramatic change and disruptive policy. For example:

- Grid transmission is often viewed as a responsibility of the developer, yet transmission is a standalone industry and can be tasked to highly experienced companies. By decoupling transmission, the transmission of generated offshore wind electricity can be accomplished in an effective manner by companies who have connections with utilities. A roadmap for how transmission/interconnection will work if they are separated is needed to advance this idea and to provide information as to whether or not in future funding programs transmission should receive separate funding and benefits. New policy will need to break down existing barriers and move transmission away from subsidy power price as quickly as possible. A former funding program
for transmission required bundled transmission for a project to qualify for funding.

- Connecting each offshore wind project directly to the grid is an unlikely plan. Offshore wind transmission to shore should be coordinated. By coordinating transmission, overall costs are lowered. Projects located farther from shore will benefit from lower transmission costs if there is a connection point to a transmission line from an existing project. Coordinated transmission will increase competition—new and experienced developers will be able to enter the market, projects located farther to shore will be competitive with those close to shore, small projects can compete with large projects. The logistics of connecting to the onshore grid can be alleviated if there are a few designated connection sites.

- Multipurpose transmission is a potential solution. Industry could coordinate an offshore grid to accommodate the influx of energy. The offshore grid would then be connected directly to high usage areas where the load could be distributed quickly to consumers. Addressing issues of grid connection from a broader perspective can push the US in front of Europe.

In all likelihood, industry will not be able to come to consensus on a path forward—government will have to take an active role. The grid is a regulatory question; therefore, State and federal agencies should lead on this issue. Industry suggested that The Department of Energy support further research into grid and transmission issues. One immediate action item is to have industry write a letter requesting that the US DOE National Offshore Wind Energy Grid Integration Study be updated—https://www.energy.gov/eere/downloads/national-offshore-wind-energy-grid-interconnection-study-nowegis. The letter should detail what has changed since the study was written and the research analytical questions that should be addressed. In addition, a letter to US DOE should be written requesting that the agency reconvene the multi-state initiative to focus on grid and transmission; and incorporate lessons from Europe. It was also suggested that an action item would be to request a coordination meeting US DOE, BOEM, and FERC to discussion transmission coordination and an offshore RTO.

Participants felt that this topic was too important to leave entirely to research and the Federal government to resolve. A working group should be organized to work with States to explore solutions. If the problem is not addressed, the market will technically not be capable of providing the megawatts hours that policy makers have called for in the offshore wind goals they have set. Communicating the risks of not acting on this issue, and determining the benefits for congestion relief & ancillary services to incentivize State officials to build the infrastructure that allows gigawatts to be placed on the grid is necessary.

More education and outreach to state government is needed so they can better understand why this is important and plan appropriately. Education at all staff levels is required to ensure continuity on the issue through administration changes. Before that can happen, States need to be better educated and a lot of outreach via industry is required. Working together, industry and government need to discuss planning for a grid connection from a macroeconomic point of view; coordinated grid connection points and structure (location, type, environment, offshore grid); prioritize grid needs geographically with focus on major load centers; cost allocation; legacy of non-connected offshore wind farms; connecting multiple OSW farms and mesh grids.
US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS – PART 3

Topics Discussed:

- Ensuring Efficiency, Consistency and Clarity in the Regulatory Process

Presenters:

- Ross Tyler, Executive Vice President – Business Network for Offshore Wind
- Elisabeth-Anne Treseder, Senior Policy Advisor – Ørsted
- Lorry Wagner, President – Lake Erie Energy Development Corporation (LEEDCo)

The regulatory discussion began with an overview of the both the state and federal consenting process. It provided a few observations. First, the BOEM leasing process should be better aligned with State off-takes policies. Second, each state has its own of agency approvals and more energy projects in the US get denied permits than get approved. Third, it is unclear if State solicitations are achieving State job creation goals because solicitations vary from State to State.

Industry would like to see a consistent and steady federal leasing auction schedule. Discussion centered around asking BOEM to develop a leasing plan to reduce the risk of uncertainty. There was opposition to this idea because a plan requires time and effort to develop and update. It takes staff capacity away from leasing WEAs. Requesting BOEM set a leasing goal would provide a greater ability for the agency to meet industry needs.

Since the first Federal lease sale of an offshore wind energy area (WEA), the price tag associated with the lease auction has increased dramatically. At the end of 2018, BOEM auctioned three Massachusetts WEA for $405M USD, the highest price to date. The proceeds from the WEA lease auction are currently directed to the US Treasury general fund, some of which is allocated to the budget for BOEM operations, but for the most part there is little funding being directed back into the development of the industry. Rather than allow these proceeds to be used in other government operations, the funds could be redirected back to the States. This action item requires a legislative change and models exists for such a program (Land and Water Conservation Fund, GOMESA [legislated in 2006 to allow revenue sharing with oil producing states in the Gulf of Mexico], https://www.boem.gov/Revenue-Sharing/, HR 6665). It was decided to investigate and pursue this action item further.

The Trump Administration’s Executive Order 13807 reforms the National Environmental Policy Act (NEPA). The executive order established the “One Federal Decision” policy, which provides that major infrastructure projects should have a single lead federal agency, a single record of decision (ROD), and that all authorizations for construction of major infrastructure projects should be completed within 90 days. The executive order defines “major” projects as those “for which multiple authorizations by federal agencies will be required to proceed with construction.” Industry should take advantage of this policy to help reduce the development time line. Industry should assess the permitting process and craft consistent messages (talking points) to keep the regulatory process moving.

Ideas for predicting regulatory risk to help industry be more proactive included creating a space where developers could share experience and developing a permitting data structure with predictive analytics built into the structure.

In the North East Region, labor unions play a very important role for all construction projects. Offshore wind is not the only marine project being constructed in the North East. For example, the Northeast Gateway Deepwater Port includes an offshore pipeline located 13 miles from shore in Massachusetts Bay. Marine construction projects require specialized workers, many of which travel from other regions of the country, specifically the Gulf of Mexico, to work on the projects. Approximately 75-80% of specialized project labor comes from other regions and 20% of the labor is from the local union. The use of a standard Project Labor Agreements could help distinguish and balance the union and non-union tasks of a project. A Project Labor Agreement (PLA) is a pre-hire
collective bargaining agreement with one or more labor organizations that establishes the terms and conditions of employment for a specific construction project.

As offshore wind expands and more projects enter the construction pipeline, scale will be the largest contributing factor to the amount of union labor that is utilized. The Unions will need to prepare to handle large, frequent, and overlapping construction jobs.

Port infrastructure and vessels are expensive and risky investments. For a company to invest in the construction of a Jones Act compliant vessel, the project pipeline must be confirmed, and projects must be prepared to utilize the vessel. Any vessel built for the US industry must be utilized consistently. It would not be cost effective for the industry to build a vessel that isn’t used in numerous consecutive projects. A low risk financing method is needed for industry to commit to new infrastructure, new vessels, and new technology. A P3 offshore wind infrastructure model should be developed by learning from Europe P3s and related U.S. Industry P3s. Industry should leverage opportunity zone funds to reduce real costs for developing ports, factories, etc.

**Recommended Action Items:**
- Hear an update from the JADE meeting re: subsea cables; what is and isn’t allowed under the Jones Act.
- Create a working group for vessel financing, expediting vessel development.

**US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS – PART 4**

**Topics Discussed:**
- Managing Environmental and Human Use Concerns

**Presenters:**
- Jan Klaasen, Business Unit Manager, GeoSea USA
- Elisabeth-Anne Treseder, Senior Policy Advisor – Ørsted

Environmental and visual impacts are outcomes of offshore wind development. They have the potential to slow market momentum if they are not addressed early and proactively. The positive story is easier to make around individual projects, but industry is moving to scale. Environmental groups are supportive, but they are nervous about scale. With many more structures going into the water, the time is now to establish a proactive public engagement initiative. Industry has a short window of opportunity to control the narrative and be the source of information.

Other industries have created marketing campaigns to show the public that they have a positive image. The offshore wind industry should build a marketing campaign for a diverse set of audiences. The campaign should outline the narrative about the positive benefits of the offshore wind while also offering counterpoints to the existing negative public opinion. Information about tourism and other data from Europe could be referenced to persuade public perception.

It must be a long-term campaign to support the growth of the industry. It will include a media kit and talking points addressing common challenges for all industry representatives to utilize when answering questions from the press. It should identify influencers and champions and collaborate across related industries (financing, solar, transportation). Marketing offshore wind to all facets of the community requires broad marketing techniques: television, commercials, social media, product placement in movies, virtual reality techniques, coordinated public appearances. Participants asked the Network to create a proposal for the campaign to see if there would be interest in Members funding the work.
Additional funding could be acquired from foundations involved in renewable energy and federal partners.

Industry needs a baseline on environmental resources. A database needs to be established or a partnership with an existing environmental initiative to capture data from monitoring is needed. A more concerted effort of capturing data on the positive environmental benefits of offshore wind and sharing that with public is required. For example, recent surveys indicate that marine life within the wind farms is growing explosively. Future wind farms will not only generate power, but also food and clean water. This type of information should be used the marketing campaign.

Early engagement with seaside communities is vital. The public is afraid of the unknown, meaning the potential visual impact is off-putting since its existence is questionable. Developers have generated renditions of project views from shore, which show the minimal visual impacts of offshore wind turbines. Despite numerous efforts to disperse negative opinion around visual impacts, industry representatives have not been successful in generating a positive connotation around offshore wind along the shoreline. Education systems are an ideal channel for spreading the word about offshore wind. A number of academic offshore wind project exist including the KidWind, DOE collegiate wind competitions, and university research laboratories. Children and young students are open to learning about offshore wind. Industry can educate the next generation by supporting offshore wind curriculum, training and youth education program partnerships. By educating students we can educate the entire community. Industry (business representatives) should make an effort to go to local schools and conduct offshore wind workshop.

**INDUSTRY INNOVATION: REDUCING COSTS & RISKS**
Dynamic thought leaders will provide insights, and the industry comes together to collaborate on innovative, real-world solutions to our top challenges.
forward, including the U.S. Offshore Wind Consortium Roadmap. The offshore wind industry faces a number of technical issues including Jones Act compliance, mitigating strategies for competing marine industries, grid integration, and the potential for an offshore grid. Walt is the Chair of the AWEA Offshore Subcommittee a subset of the Wind Standards Technical Committee. Industry members participating working groups to write recommended practices for use by US regulatory.

Health and Safety are paramount concerns within the industry. There needs to be an understanding that work being done on offshore wind construction is different and qualified people should be doing it every single time. Jurisdictional issues need to be worked out between BOEM, BSEE, OSHA, and US Coast Guard. To help reduce risk warranty standards should be clarified.

Offshore Wind Energy Lead at the Wind Energy Technologies Office aims to reduce the cost of offshore wind by supporting technology research and development, reduce market barriers to deployment, and reduce grid integration impacts. The office supports the industry through partnerships with research labs, federal agencies, and stakeholders as well as offering competitive awards. Industry has the opportunity to work with research labs at universities to address immediate concerns without the limitations of policy. A national perspective is important when discussing research opportunities. There is a need for federal funding especially at the academic level, which needs to be addressed in order to move forward. Areas for joint industry research include logistics; grid expansion; reducing LCOE; data; and business models. The industry should do more outreach to business schools and law schools.

**INDUSTRY OPPORTUNITIES: GOING BEYOND 10 GWS**

Seize the opportunities that innovations now provide to advance the offshore wind. Along with supporters of our industry, explore offshore technology trends and discuss what’s coming and how it will impact you, your customers, and operations.

**Presenters:**
- Peter Brun, Global Offshore Wind Segment Leader – DNVGL
- Alana Duerr, Offshore Wind Lead – U.S. Department of Energy
- Joel Whitman, Principal – Whitman Consulting Group Inc.

Offshore wind is driven by improvements in technology, high wind loads, and proximity to load centers. The US market is a first mover in the global offshore wind market and is expected to grow rapidly over the next couple decades, but the industry must coordinate before competing for more markets around the world. Additionally, floating offshore wind technology will expand the offshore wind potential.

In its current state, industry is limited by the constraints created by industry leaders. To overcome the barriers to today’s thinking, industry must diversify its thinking by empowering youth of all backgrounds, races, genders, and majors. The issues industry is facing can be solved with unique thoughts and new solutions.

Wind Energy Technologies Office’s is conducting studies and market analysis using a 15Mw turbine. The A2e (Atmosphere to Electrons) research is being considered for offshore use to optimize offshore operations and reduce uncertainty, likely resulting in improved project financing. Ideas for moving the industry forward included form a strategic partnership with storage; requesting major companies use their venture funds to invest in innovation; and engage in a dialogue with corporate PPAs.

**ADVANCING A WORK PLAN**

At the conclusion of the meeting, participants agreed maintaining and supporting offshore wind’s own voice and an offshore wind industry work plan is vital to the continued market growth of the offshore wind industry.

This two year work plan is highly dependent on volunteer industry participation. Given these limitations, funding will need to be identified to advance the majority of the action items.
The Network Grid and Transmission technical Working group composed of members and supported with staff will be reconvened and paid for by Business Network Member dues. The Network will also use membership funding and operating revenue to expand the Network supply chain registry; develop industry talking points, launch a public engagement website and solicit bids from public relations firms for an offshore wind industry Public Engagement Campaign.

Industry can elect to form other committees to assist with completing the work plan. Each committee will be expected to organize itself, augment and enhance the work plan and deliverables outlined below, as well as determine funding for activities. Committees will be provide reports to the Leadership Advisory committee every six months starting in June 2019.
Appendix B: Inaugural Leadership 100 Meeting Agenda

AGENDA

WEDNESDAY, JANUARY 16TH

5:30—6:00 PM  RECEPTION (CASCADES DECK)

6:00—8:00 PM  DINNER—STARTING DISCUSSIONS ON OFFSHORE WIND WORKPLAN (AMERICAN GATOR CLUB)
Build a dialogue among industry executive leadership over a reception and dinner and hear a briefing on survey results and get prepared for following day’s discussions.
Special Speaker: Walter Cruickshank, Acting Director, Bureau of Ocean Energy Management (BOEM)

THURSDAY, JANUARY 17TH

7:30—8:00 AM  MEET & GREET BREAKFAST (ARBOR BALLROOM DECK)
Connect with like-minded executives

8:00—8:15 AM  INAUGURAL LEADERSHIP 100 SUMMIT OPENING REMARKS—ONE MISSION. ONE GOAL. ONE TEAM.
The Network’s President and CEO, Liz Burdock will begin this inaugural Leadership 100 Summit, an exclusive, senior-level event that focuses on the offshore wind supply chain. She’ll describe the vision, goals and objectives of the event to develop an agreed upon annual industry workplan.
Liz Burdock, President/CEO—Business Network for Offshore Wind
Jason Gershowitz, Facilitator—Kearns & West

8:15—9:45 AM  US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS—PART 1
The industry top experts outline the major challenges and barriers the offshore wind industry faces today.
10GWs by 2030: Supply Chain Capacity & Bottlenecks
Jay Borkland, Sr. Engineering Manager—Lloyd's Register / Tufts University Fellow
Jason Folsom, National Director of Sales, US—MHI Vestas
Scott Jensen, Director, Rhode Island Department of Labor and Training

9:45—10:15 AM  COFFEE CONNECTIONS (ARBOR BALLROOM DECK)
Enhance business relationships and expand your network.

10:15—11:45 AM  US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS—PART 2
Grid Connection and Access
Chris Wissmann, Managing Director—New Power Ventures, LLC
Kent Herzog, Competitive Transmission Manager—Burns & McDonnell

11:45—12:30 PM  LUNCH WITH LEADERS (ARBOR BALLROOM DECK)
Brining together the brightest minds in offshore wind

12:30—2:00 PM  US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS—PART 3
Ensuring Efficiency, Consistency and Clarity in the Regulatory Process
Ross Tyler, Executive Vice President—Business Network for Offshore Wind
Elisabeth-Anne Treseder, Senior Policy Advisor—Ørsted
Larry Wagner, President—Lake Erie Energy Development Corporation (LEEDCo)

2:00—2:15 PM  COFFEE CONNECTIONS (ARBOR BALLROOM DECK)

2:15—3:45 PM  US OFFSHORE WIND MARKET DEVELOPMENT CHALLENGES & BARRIERS—PART 4
Managing Key Environmental & Human Use Concerns
Joh Klassen, Business Unit Manager—GeoSea USA
Elisabeth-Anne Treseder, Senior Policy Advisor—Ørsted

3:45—4:00 PM  COFFEE CONNECTIONS (ARBOR BALLROOM DECK)
Appendix B: Inaugural Leadership 100 Meeting Agenda (con’t.)

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| 4:00—5:30 PM | EXPLORE SOLUTIONS FOR THE INDUSTRY FUTURE  
The facilitator will summarize the industry’s major challenges and solutions discussed in previous sessions. Join interactive discussions to address top-of-mind supply chain needs and pave the way for future success. Jason Gershowitz, Facilitator—Kearns & West |
| 5:30—6:30 PM | BUSINESS CONNECTIONS (ARBOR BALLROOM DECK)  
The Networking never stops. Continue your discussions at Leaders’ Reception. |
| 7:00 PM     | OPTIONAL DINNER GATHERING  
Make deals happen with dinner on your own, or join us.  
If you’d like to join us for a dinner at a nearby restaurant, please sign up at the registration table by 3:00 pm. |

FRIDAY, JANUARY 18TH

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| 7:30—8:00 AM | BUSINESS BREAKFAST (ARBOR BALLROOM DECK)  
Keep last night’s conversations moving with more business over breakfast. |
| 8:00—9:00 AM | INDUSTRY INNOVATION: REDUCING COSTS & RISKS  
Dynamic thought leaders will provide insights, and the industry comes together to collaborate on innovative, real-world solutions to our top challenges.  
Walt Musial, Principal Engineer & Manager of OSW—National Renewable Energy Laboratory (NREL)  
Alana Duerr, Offshore Wind Lead—US Department of Energy  
Fara Courtney, Strategic Advisor—POWER-US |
| 9:00—10:00 AM | INDUSTRY OPPORTUNITIES: GOING BEYOND 10GWs  
Seize the opportunities that innovations now provide to advance the offshore wind. Along with supporters of our industry, explore offshore technology trends and discuss what’s coming and how it will impact you, your customers, and operations.  
Peter Brun, Global Offshore Wind Segment Leader—DNVGL  
Alana Duerr, Offshore Wind Lead—US Department of Energy  
Joel Whitman, Principal—Whitman Consulting Group Inc. |
| 10:00—10:15 AM | COFFEE CONNECTIONS (ARBOR BALLROOM DECK) |
| 10:15—11:15 AM | PATH FORWARD—ADDRESSING HOT TOPICS  
Join forces to develop an industry workplan and action plans to advance the U.S. offshore wind industry.  
Liz Burdock, President/CEO—Business Network for Offshore Wind  
Jason Gershowitz, Facilitator—Kearns & West |
| 11:15—11:30 AM | CLOSING REMARKS  
Walk away enlightened, energized and encouraged to put the plan to work in your organization, and to strengthen your role as leaders across the industry.  
Kevin Pearce, Grid Access Business Development—Siemens Energy Management/ Board President |
| 11:30 AM     | ADJOURN |
| 1:00 PM      | GOLF TOURNAMENT—GO FOR THE GREENS  
Wind down from the summit with a beautiful afternoon of golf at the prestigious PGA Stadium Golf Course. Make the best of last business networking opportunity.  
Box lunch will be provided for all golfers |

THANK YOU FOR JOINING US AT THIS INAUGURAL LEADERSHIP SUMMIT AND SETTING A COURSE FOR THE US OFFSHORE WIND INDUSTRY.
Appendix C: Potential Leadership 100
Workgroups and Noted Participant Interest

Who wants to be involved in Labor/Workforce?
• Arcon Welding Equipment, LLC – Katarina Ennerfelt
• DEME Offshore – Sid Florey
• Kinetic Solutions LLC – Vick Kumar
• National Renewable Energy Laboratory – Walt Musial
• Rhode Island Department of Labor and Training – Laura Hastings

Who wants to be involved in Infrastructure & Vessels?
• Atkins – Una Brosnan
• Bechtel Power Corporation – Mazhar Haq
• Boskalis – Robb Erickson
• COWI North America – John Chapman
• DNV GL
• Fred. Olsen Windcarrier – Ketil Arvesen
• GeoSea – Jan Klaassen
• Global Marine
• Jan De Nul Group – Norman Skillen
• Kinetic Solutions LLC – Vick Kumar
• Lloyd’s Register – Jay Borkland
• National Renewable Energy Laboratory – Walt Musial
• Royal IHC – Stefan Lettink
• Sif Group BV
• Womble Bond Dickinson – Joe Tirone

Who wants to be involved in Transmission & Grid?
• Atlantic Wind Connection – Markian Melnyk
• DEME Offshore – Wicher Renier
• DNV GL – Alana Duerr
• Global Marine
• National Renewable Energy Laboratory – Walt Musial
• Normandeau Associates
• PJM Connection – Steve Herling
• SNC Lavalin – Girish Behal
• Womble Bond Dickinson – Belton Zeigler

Who wants to be involved in Industry Roadmap?
• A + Wind Solutions – Alexander Thillerup – On local supply chain development (OEM)
• Arcon Welding Equipment, LLC – Katarina Ennerfelt
• Atkins – Una Brosnan
• Bechtel Power Corporation – Mazhar Haq
• Cathie Associates
• COWI North America – John Chapman
• DNV GL
• Fred. Olsen Windcarrier – Ketil Arvesen
• GeoSea – Jan Klaassen
• Kinetic Solutions LLC – Vick Kumar
• Kleinschmidt Group – Kim Fitzgibbons
• LEEDCo – Lorry Wagner
• National Renewable Energy Laboratory – Walt Musial
• PJM Connection – Steve Herling
• Ramboll – Tim Fisher
• RCAM TECHNOLOGIES - Jason Cotrell
• Sif Group BV
• US Department of Energy – Alana Duerr
• Womble Bond Dickinson – Belton Zeigler

Who wants to be involved in Regulatory?
• DEME Offshore – Zachary Lix
• DNV GL
• Kleinschmidt Group – Kim Fitzgibbons
• Lloyd’s Register - Carolyn Heeps
• National Renewable Energy Laboratory – Walt Musial
• Normandeau Associates
• Womble Bond Dickinson – Belton Zeigler

Who wants to be involved in Communications & Education?
• Kinetic Solutions LLC – Vick Kumar
• Kleinschmidt Group – Kim Fitzgibbons
• Lloyd’s Register – Jay Borkland
• MHI Vestas Offshore Wind – Jason Folsom
• National Renewable Energy Laboratory – Walt Musial
• Normandeau Associates
• Rhode Island Department of Labor and Training – Laura Hastings

Who wants to be involved in Financing & Legislation?
• Atlantic Wind Connection – Markian Melnyk
• DEME Offshore – Sid Florey
• Kinetic Solutions LLC – Vick Kumar
• LEEDCo – Lorry Wagner
• MHI Vestas Offshore Wind – Jason Folsom
• National Renewable Energy Laboratory – Walt Musial
• Womble Bond Dickinson – Joe Tirone

Who wants to be involved in Environment & Other?
• Cathie Associates
• DNV GL
• GeoSea – Jan Klaassen
• LEEDCo – Lorry Wagner
• National Renewable Energy Laboratory – Walt Musial
• Normandeau Associates
• Rhode Island Department of Labor and Training – Laura Hastings
Appendix D: Leadership 100 Charter

Setting the Scene
Offshore wind projects contend with a hostile marine environment and are more costly to plan, finance, manufacture, install, commission, connect to the grid, operate, and decommission than onshore wind projects. The diffusion of offshore wind from onshore wind is important as the industry’s growth is more likely to be affected by different issues and potential supply chain bottlenecks – bottlenecks such as shortages of vessels, trained personnel, and port infrastructure.

With 8GW of offshore wind expected to be financed, under construction and built in the U.S. by 2030, there are multiple issues facing the industry requiring strategies and thoughtful actions. A cohesive discussion among the U.S. offshore wind supply chain is needed to focus on identifying the most pressing industry needs (i.e. workforce development, training, finance, R&D, grid and transmission, market development and public awareness), and required responses to ensure the continued growth and positive development of this emerging U.S. offshore wind energy industry.

Objectives
• Identify and discuss important initiatives of the industry to advance the U.S. offshore wind sector and its associated supply chain
• Develop solutions and industry responses to the most pressing industry needs
• Utilize and Review the 2016 National Offshore Wind Strategy and prioritize the initiatives with allocation of actions needed to solidify and to grow the U.S. offshore wind sector
• Set a clear direction for the year with an Annual Work Plan - a course of actions for industry and a subset for the Business Network for Offshore Wind to implement during the calendar year

Attendance
Attendance is open to developers, OEMs and Tier 1 suppliers by invitation, application approval from the Leadership 100 Chair and Committee, or membership in the Business Network. Attendance at meetings is limited to C-Level and Senior Executives. Leadership 100 is chaired by a Member of the Network Board of Directors and an organizing committee will be comprised of Business Network Members.

Work Scope
1. Assemble the leaders of the offshore wind industry
2. Identify important initiatives of the industry to advance the U.S. offshore wind sector and its associated supply chain
3. Organize and develop an in-person annual meeting agenda, which will drive the annual work plan including “Opportunity & Update”, “Market Challenges & Barriers”, “Industry Needs & Innovation” by Senior figures in the U.S. Offshore Wind Development
4. Identify most pressing needs of the industry and engage in collaborative discussions of industry related topics
5. Utilize best practices from other industries and invite outside subject experts as guest speakers to explore new approaches
6. Determine sources and levels of funding for any identified actions
7. Prioritize the initiatives with allocation of actions needed to solidify and to grow the U.S. offshore wind sector including appropriate industry strategies and actions from 2016 National Offshore Wind Strategy—may also include requests to government, Joint Industry Partnerships with Academia
8. Develop an agreed upon annual work plan including assigning responsibilities within the Leadership 100 and the Business Network for Offshore Wind to implement actions
9. Report results of the actions to the group quarterly (via electronic communication and at the IPF) and in person annually at the yearly meeting

www.offshorewindus.org
### Appendix E: Leadership 100 Participants

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<th>Company Name</th>
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### Appendix E: Leadership 100 Participants (con’t.)

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