Marine Insurance Issues Seminar 2021
Unmasking Marine Insurance

Emerging Technologies
US OFFSHORE WIND
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Agenda/Outline

• What is Coming?
• Anatomy of a Wind Farm
• Windfarm Processes
  – Transportation and Installation
  – Terminal Management
  – Offshore Wind Vessels
• The Future of Offshore Wind – Floating Wind
• Risk Management
In 2021, only 7 offshore turbines exist producing 0.042 gigawatts (GW) of power.

US East Coast state mandates to buy offshore wind power developed a pipeline of 32 GW to be constructed between 2023 and 2035, powering up to 10 million homes.

11.6 GW contracted with developers requiring estimated $39 billion in capex and $1.2 billion per year in opex

Remaining 20.4 GW requires additional $70-80 billion in capex and $2-3 billion per year in opex to be contracted between now and 2035

Biden Administration has accelerated this industry’s prospects by setting the goal of 30 GW installed by 2030
Anatomy of a Wind Farm
Transportation and Installation

- Installation in two methods
  - WTIV
  - Feedering with tugs & barges
- First planned installation
  - Vineyard Wind (MA) 2023
  - Equinor and Orsted to follow
- Challenges
  - Jones Act
  - Limited amount of WTIVs, tugs, & barges
  - Cost of capital
  - Keeping up with technology
Terminal Management & Logistics

- Long term play for offshore wind (25 years)
- Leveraging existing ports, brownfield, and greenfield opportunities to support
- Strong reliance upon landside/marine logistics & local supply-chain management
- Working in conjunctions with CTVs and SOVs to provide O&M to the fields
- Emphasis on digitalization to monitor vessels/technicians and manage the efficiency of the turbines
Offshore Wind Vessels

- Crew Transfer Vessels (CTVs)
- Service Operation Vessels (SOVs)
- Construction Service Operation Vessels (CSOV)
- Scour Protection Vessels
- Cable Lay Ships
- Near shore cable lay barges
Floating Wind

- Floating wind farms are turbines mounted on structures that enable wind power to be generated in water depths where fixed foundations are not feasible
  - Increase sea areas for services
  - Reduces visual pollution
  - Better accommodations for fisherman and shipping lanes
  - Stronger and consistent winds
- Hywind (Scotland) and Windfloat Atlantic (Portugal) are the first two operational floating wind farms in the world
- 1st floating wind farm in US will be NEAV in Maine
- Developers
  - Equinor
  - Principle Power
  - Shell
  - Saipem
  - Total
- Estimated growth of floating wind after 2030
  - 2030 = 10-15 GW worldwide
  - 2040 = 100 GW worldwide
  - 2050 = 150 GW worldwide
- CAPEX for floating wind
  - 750 units projected to be online between 2025-2026;
    - Asia/Pacific $25.2 billion
    - Northern Europe $11.3 billion
    - USA-Pacific $6.2 billion
    - Southern Europe $2.4 billion
    - USA-Atlantic $300 million.
Risk Management

- The electricity grid in coastal areas simply cannot handle the enormous power generation ability that offshore wind will bring onshore; the grid was only designed to bring the small amounts of power needed by local shore communities to homes.
- Standards for maritime & landside safety in around wind turbines and terminals needs to be established.
- Limited assets could delay the start of commissioning and installation.
- Current feeder solutions, while performed in the O&G industry, are new in the offshore wind sector.
- Lack of proper infrastructure could delay development of US supply chain solutions.
Questions