

# ***Deployment Challenges & Cost Reduction Opportunities in the U.S. Offshore Wind Sector***

An Overview

Fara Courtney

*Founding CEO*

US Offshore Wind Collaborative &  
*Strategic Policy Consultant*

# Global Offshore Wind Statistics

## *Europe:*

- 2304 offshore turbines
- 7343 MW combined capacity, fully grid connected
- 73 wind farms in 11 countries, including demonstration sites
- In the first 6 months of 2014: 233 foundations installed, 282 turbines erected in 16 offshore wind farms in Belgium, Germany and the UK

## *Asia:*

- China and Japan have aggressive targets and installed demonstration projects

## *U.S.:*

- One grid-connected floating prototype (1/8<sup>th</sup> scale – ME); one fully permitted 458 MW nameplate capacity project (MA) and 2 -30 MW permitted projects (RI & NJ)

# European vs U.S. Policy Context

## *Them*

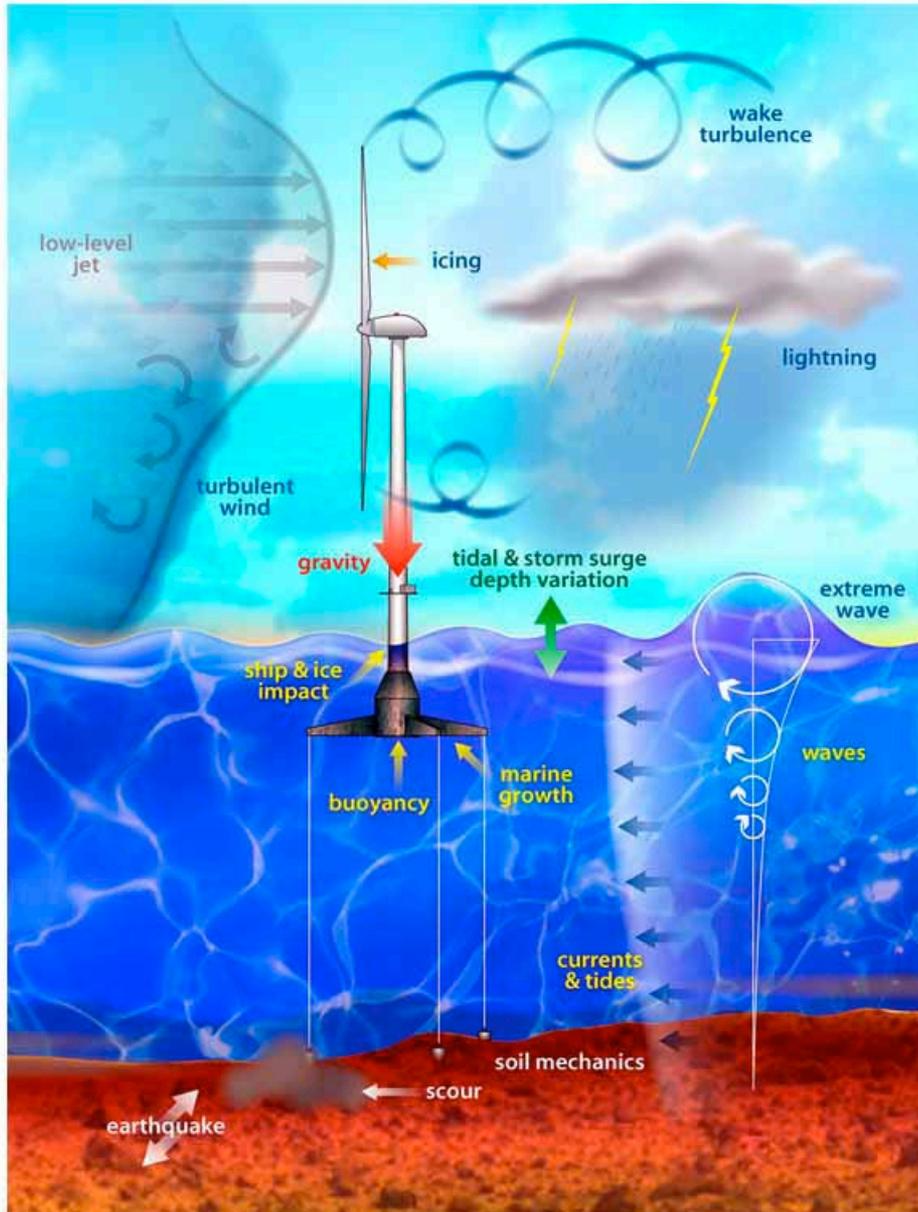
- Climate change + energy security urgency
- Mandated national & EU targets
- Heavy subsidies/ revenue guarantees
- Leasing process tied to a guaranteed market

## *US*

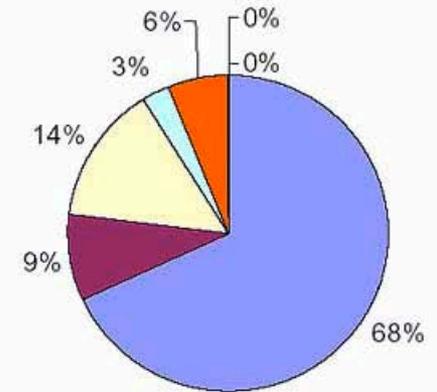
- Climate change ambivalence; new sources of domestic fossil fuel
- No National Renewable Energy Policy; states driving market development
- Inconsistent, short-term policy support
- disconnect between the leasing process (site control) and the market

# Offshore vs. Land-Based Wind

- New sector = higher cost of development = higher cost of electricity
- Policy & regulatory context (e.g. all development on public lands)
- Maritime dimension
- Resource characteristics
- Infrastructure needs
- Cost Drivers / opportunities for innovation

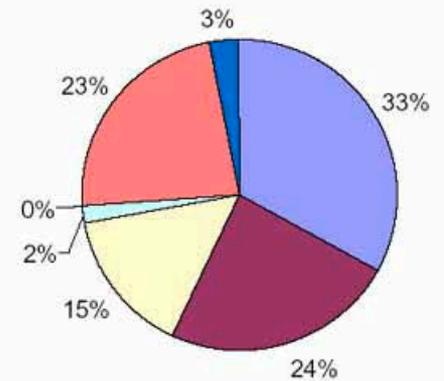


### Onshore



- Turbine
- Foundation
- Grid connection
- Management
- Roads & buildings
- O&M
- Decommissioning

### Offshore



# Launch Phase Challenges

## *(5+ years)*

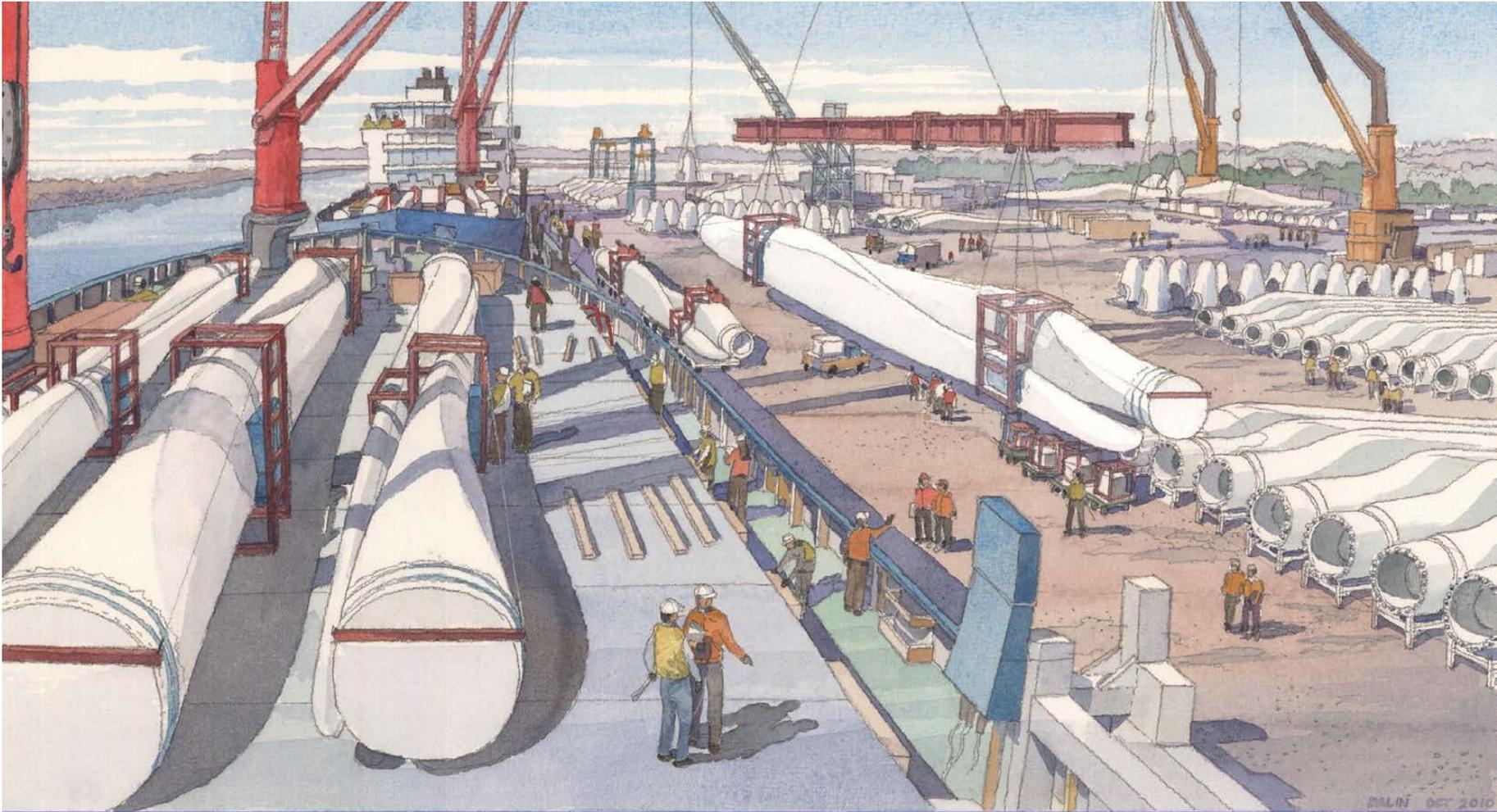
- Testing new leasing and permitting regime
- Testing state market mechanisms & incentive
- Developing shore side-infrastructure
- Transferring & adapting European experience /building domestic capacities
- Initiating the supply chain
- Doing it right and building industry confidence

# Port Facilities



- Large lay-out area for staging
- Deep water
- Overhead clearance
- Proximity to anticipated project sites (regional)
- O & M provides opportunities for smaller ports

# States Are Investing



DALN OCT 2010

New Bedford Marine Commerce Terminal

# Special Use Vessels



- Limited protected, shallow-water sites
- More economical to assemble turbines onshore
- Vessel costs: \$200,000M - \$350,000M
- Jones Act

# Projected First Project Installations

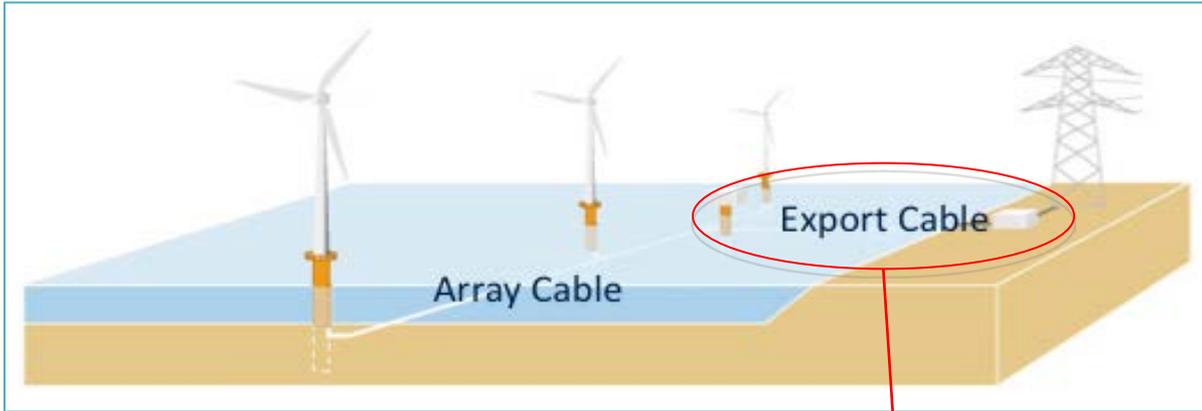


Cape Wind: RD McDonald  
*Weeks Marine, NJ USA*

Block Island/Deepwater  
Wind: *Fred Olsen*  
*Windcarrier, Norway*



# Export/Interconnect Vessel Spread



- Fully equipped spread:

- **NOTE:** for HVDC projects a Burial/ROV vessel is used (this represents an est. 70% of the future market)

Main Lay Vessel



Personnel Transfer Vessel



Guard Boat



# Looking Ahead: Anticipate Opportunities to Drive Down Costs

*Offshore Wind Cost Reduction Task Force (UK)  
Targeting a 20% cost reduction by 2020:*

- Reduce supply chain bottlenecks
- Collaborative Technology Development (including floating foundations)
- Planning & Permitting efficiencies
- New contracting and finance structures
- Grid & transmission planning
- Long-term policy stability

# *The Future Awaits...*

