## Offshore Wind US Market Potential 2nd of March 2021









2nd of March 2021

Economic Development Agency

- Presentation of the Maison de la Région Occitanie in New York by Mathilde Bernard, Executive Director
- The Potential of the Offshore Wind Industry in the USA by Chloé Lemonnier, Business Developer, from Maréal
- NYSERDA's role and goal in the Offshore Wind Industry by Adrienne Downey, Principal Engineer from NYSERDA
- Testimony about calls for tender in the USA from EQUINOR by Benoit Pantin, Project Director from Beacon Wind
- Testimony from Ocean Winds, implanted in the USA, by Anne Marie McShea, Head of Offshore Wind Business Development: NY-Mid Atlantic
- Project Elbe+ from le Pôle Mer Méditerranée by Fanny Moutin Chargée de mission international-évènementiel, Charlène Aurégan - Chargée de projets européens.
- Conclusion by Julien Ciglar from AD'OCC & Q & A



DO'OEE

## Introduction

### Mathilde Bernard - AD'OCC, Directrice de la Maison de la Région à New York

2nd of March 2021

## • • • • •

## Maison de la Région Occitanie de New York

- 3-person team
- 450 m2 space with 185 m2 adaptable showroom
- Showcasing « Sud de France » products, the Occitanie's brand.
- Access to Maison's network and facilitating understanding of the local market
- Complimentary use conference room with a capacity of up to 10 people
- 4 long term or short term shared workspaces
- 2 individual offices for long or short term use





## MLR New York missions





- Helping companies from Occitanie to export within USA and Canada
- Be a representation of the Occitanie region and brand Sud de France in North America
- Creating attractive operation for companies from Occitanie (CES in Las Vegas, Sud de France Calling, Fancy Food Show)
- Historically developing more Food, Wine and Tech, started last year to develop new industries including renewable energies





## Occitanie – United States



- The United States are the **first investors in the Occitanie region** with major groups such as Collins Aerospace, IBM and Coca Cola.
- The United States: 4<sup>th</sup> country with the most regional exportations (5,5% of total of regional exportations) and 2<sup>nd</sup> country for regional importations (12,9%).
- 1<sup>st</sup> Wind Power Farm in France was in Occitanie (Port-la-Nouvelle) just like in USA – Occitanie is a pioneer
- Port-La-Nouvelle in Occitanie will also be one of the first floating Offshore Wind Farm in France



Maison de la Région Occitanie / Pyrénées-Méditerranée à New-York Contact : Mathilde BERNARD - Executive Director – U.S. Branch Tél : +1 (646) 688-7170 E-Mail : Bernard@suddefrance-dvpt.com





OCC

## The Potential of the US Offshore Wind Market

Chloe Lemonnier-Burling - MAREAL, Business Developer

2nd of March 2021





# THE POTENTIAL OF THE U.S. OFFSHORE WIND MARKET

Chloé LEMONNIER-BURLING Business Development Manager – MAREAL

Webinar on March 2<sup>nd</sup> 2021, organised by









## - OVERVIEW OF THE COMPANY

- Mareal is an **independent structural engineering company**, founded in 2002 Part of the STAPEM Offshore group since 2016
- Specialised in the design & analysis of offshore structures (Jacket, monopile, topside, offshore substation, etc.)
- Transport and installation engineering studies, construction drawings, project management, certification, etc.
- Sectors: Marine Renewable Energies, Civil Engineering, O&G
- Certified Research Organisation by the French Ministry of Higher Education, Research and Innovation



Saint Nazaire: Detailed design of WTG monopile foundations

**GE Renewable Energy**: Monopile and jacket concept advanced design for the Haliade X 2017 - 2019

Gineering and Consulting



**XCF**: Development of a concrete semi-sub floater, adapted to 12+ MW turbines with EPCI partner







**OpenHydro**: detailed study for gravity base (Japan, Canada) 2018



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## - A WORLDWIDE EXPERIENCE OF 20 YEARS

### A wide range of knowledge built up through multiple projects, with 20 years of worldwide experience

- Missions
  - Conceptual
  - FEED
  - Detailed design
- Projects
  - Fixed and floating wind
  - Oil & Gas platforms
  - Tidal machines

#### Materials

- Steel
- Concrete
- Hybrid





## WHY OFFSHORE WIND IN THE U.S. ?





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## **KEY FACTS & NUMBERS FOR THE U.S. OFFSHORE WIND INDUSTRY**



- 11.6 GW have been awarded offtake agreements by State governments – Accounting for over 90% of forecasted build through 2026
- The States' targets amount to about 30 GW by 2035
- Areas supporting as much as 45 GW are under consideration for future leasing

- The **potential** of American offshore wind energy is **2,000 GW**, meaning twice the country's current electricity consumption
- 2 operational projects, for a total of 42 MW
  - Block Island, 30 MW Rhode Island
  - Coastal Virginia Offshore Wind (CVOW), 12 MW Virginia
- 25 27 GW of offshore wind capacity will be added in the US within this decade



## **U.S.** OFFSHORE WIND INDUSTRY STRUCTURE





**OTHER PLAYERS INVOLVED** 

### **UNIVERSITIES & RESEARCH CENTERS**











Wind-Energy Science, Technology, and Research Industry/University Cooperative Research Center









VAREAL







## **U.S.** OFFSHORE WIND ENERGY LOCATIONS



Source : Business Network for Offshore Wind | January 2019

#### AL OFFSHORE STRUCTURAL ENGINEERING

## **BOEM'S PROJECTS ALLOCATION PROCESS AND TIMELINE**



Source : BOEM | January 2020

## **AMERICAN OFFSHORE WIND MARKET CHARACTERISTICS**



Source : Business Network for Offshore Wind | October 2020

- **Power grid**: Transmission systems were not designed to handle large amounts of power being transmitted from offshore
- US authorities structures: Navigating between levels of authority

- Jones Act: Requires goods shipped between US ports to be transported on ships that are built, owned, and operated by US citizens or permanent residents
- Installation constraints: The monopiles systems used on 90% of the facilities in Europe are not as well suited for the United States
- Buy American Act: Importance of local partnerships

#### Levels of authority in the US

	Executive	Legislative	Judiciary
Federal	President	Congress	Federal Courts
State	Governor	State Legislature	State Courts
Local	City manager	City Council	Municipal Courts





## THANK YOU FOR YOUR ATTENTION

Chloé LEMONNIER-BURLING Business Development Manager – MAREAL <u>chloe.lemonnier-burling@mareal.eu</u> ; (+33) 7.60.89.97.28

Webinar on March 2<sup>nd</sup> 2021, organised by









Agence de Développement Économique



## NYSERDA (New York State Energy Research and Development Authority)'s role and goal in the Offshore Wind Industry

Adrienne Downey NYSERDA, Principal Engineer for Offshore Wind





# Testimony about calls for tender in the USA from EQUINOR

Benoit Pantin - EQUINOR, Project Director - Beacon Wind



## equinor SHAPING THE FUTURE OF ENERGY

**Benoit Pantin** Beacon Wind – Project Director



## equinor

## Driven by purpose, inspired by vision, guided by values

**Our purpose** Turning natural resources into energy for

people and progress for society

**Our vision** Shaping the future of energy

**Our values** Open, courageous, collaborative and caring

**Our strategy** Always safe, high value, low carbon



### Equinor's offshore wind clusters



## The U.S. Offshore Wind Opportunity



	Renewable Goals	Offshore Wind Goals (MW)	Awarded Offtake (MW)	Scheduled Offtake (MW)	Total Offtake (MW)
Massachusetts	35% by 2030	3,200	1,600	0	1,600
Rhode Island	100% by 2030	unspecified	430	600	1,030
Connecticut	48% by 2030	2,300	1,108	0	1,108
New York	70% by 2030	9,000	1,826	2,500	4326
New Jersey	50% by 2030	7,500	1,100	6,400	7,500
Maryland	50% by 2030	1,568	368	1,200	1,568
Virginia	30% by 2030	5,212	12	0	12
TOTAL (MW)		28,780			17,144





## Understanding the market as a developer/supplier

"on the ground": over a decade of local presence, experience in past projects, collaborating with governments and policy makers, supply chain engagement...

### > US specificities:

- Federal process: lease and permitting
- $\circ$   $\,$  Made in USA  $\,$
- Political swings

### > State-driven:

- $\circ~$  Offtake auction calendar
- $\circ$  Auction criteria
- $\circ$  Electrical grids
- Port infrastructure



### • Awarded by NYSERDA in 2019

- Awarded capacity: 816 MW
- Turbines to be assembled at South Brooklyn Marine Terminal
- Foundations: Gravity-Based (Concrete) manufactured in New York state
- Operations and Maintenance (O&M) base in south Brooklyn
- Proposed onshore substation: south Brooklyn
- Next generation turbines
- Water depth: 65-100 ft
- Commercial Operations Date: mid-2020s

## Empire Wind 1







## New Award: Empire Wind 2, Beacon Wind 1



- 2500 MW of renewable power = 1.3 million homes
- \$47 million in workforce development, innovation and community benefits
- \$25 million to support regional monitoring of wildlife and key commercial fish stocks
- 5,200 total direct jobs supported by both projects
- Combined output \$8.9 billion, \$4.5 billion in value added





## equinor

## Empire Wind 2 Key Facts

- 1,260 MW project
- Power delivered directly to Nassau County on Long Island at the Barrett Substation
- Commercial Operation Date: late 2027
- Continued use of Gravity-Based Foundations fabricated in New York



## Beacon Wind 1 Key Facts

- 1,230 MW project
- Power delivered into Astoria substation in Queens
- Building the world's longest offshore wind HVDC export cable
- Commercial Operation Date: 2028



- Staging facility for Empire Wind and Beacon Wind
- Assembly for broader New York OSW industry
- One of largest dedicated OSW port facilities in U.S. (73 acres)
- Over \$250 million in investment, from New York State, NYCEDC, and private funds
- 1,000 short-term jobs by 2028, 200 long-term jobs
- Community engagement center will be established adjacent to SBMT to support education and outreach for the South Brooklyn community

## SBMT: Staging and Assembly







### SBMT: Long-term O&M Hub



- Equinor's East coast
   Operations & Maintenance
   (O&M) Hub
- Base for Empire Wind and Beacon Wind
- Supported by "service operations vessels" which house workers for two-week shifts. Vessels return to base every two weeks for crew change, refueling, and reprovisioning



## Empire Wind's "Gravity-Based Structure" (GBS) Foundations

- Empire Wind previously announced that it will create significant new infrastructure and supply chain opportunities for New York along with new, long-term jobs including manufacturing "Gravity-Based Structure" (GBS) foundations in New York.
- The GBS manufacturing process itself is expected to create more than 1,000 direct jobs and nearly 4,000 indirect jobs in New York.



### Port of Albany: Key Facts



- First offshore wind tower manufacturing facility in U.S.
- Partnering with Port of Albany, and suppliers Marmen, Inc. and Welcon A/S
- Produce components for Empire Wind and Beacon Wind
- Over \$350 million in investment, including grants from New York State
- 500 short-term jobs, 300 longterm jobs, in operation in 2023



- Continued collaboration and planning with NY Offshore Wind Training Institute, Farmingdale State College, and SUNY Maritime College
- Ongoing collaboration with NY labor unions to identify and fill any potential skills gaps for assembly ports
- Focus on "just transition" with recruitment for permanent O&M workers in the communities surrounding each project's interconnection point
- Ongoing analysis of current US certification and how they correspond to Global Wind Organization certifications to ease workforce transition

## Workforce development







### Auction challenges summary

- Significant commitments
- Project de-risking
- Local content strategy
- Permitting timeline



## SHAPING THE FUTURE OF ENERGY

Thank you for your attention

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# Testimony from Ocean Winds, implanted in the USA

Anne- Marie McShea - Head of Offshore Wind Business Development: NY-Mid Atlantic





## GROW WITH THE WIND

L'Agence AD'OCC, et la Maison de la Région Occitanie à New York "Le potentiel du marché de l'Eolien en Mer aux Etats-Unis" le mardi 2 mars de 16h à 17h



Ocean Winds (OW) is the result of a Joint Venture between two of the biggest players in Energy:

Engie, French multinational energy and services company and global leader of zero-carbon transition and EDPR, global leader in the renewable energy sector and the world's fourth-largest wind energy producer....

born to lead the **Offshore Wind Energy Business** while being strongly committed to the principles of sustainability and responsible offshore wind development.

#### **41**W Ocean Winds, March 2, 2021

Scope	Sole investment vehicle for offshore wind for both companies.
Ownership	• 50% ENGIE – 50% EDPR
Projects	<ul> <li>Parties to contribute stakes in existing projects ("Initial Assets") as well as early stage opportunities ("Pipelin details on following slides</li> </ul>
Growth targets	<ul> <li>2025 targets: 5-7GW under construction/operation + 5-10GW under advanced development</li> </ul>
Governance	Joint control. BoD with 6 members (3 appointed by each partner)
Organization	<ul> <li>Fully integrated team under mixed-team approach. CEO and COO for the 1st 3Y term appointed by EDPR and EN respectively. For the subsequent 3Y term, ENGIE will propose the CEO and EDPR will appoint the new COO headquarters in Madrid.</li> </ul>

Ocean Winds (OW) is the sole investment vehicle for offshore wind in both companies.

Supporting the full portfolio of projects globally and in the US,

and supporting the full scope of technologies including fixed bottom and floating offshore wind projects.

Our goal is to advance the responsible development of offshore wind in the US across markets in the East Coast and in California.





• **Safety First, Safety Always.** We are committed to treating our people, community, and environment with care.



• Innovation and Industry Development. We expect innovation will continue to drive the rapid decline in the cost of wind energy and aim to be a leader in this industry.



## MAYFLOWER WIND

Backed by two global energy companies, Ocean Winds and Shell with deep experience in working alongside communities to manage the complexities of offshore and onshore energy development projects.

- The 'least-cost pathway' to decarbonization.
- Up to 1600 MWs of capacity, enough power for **over half a million homes and businesses.**
- Eliminate over 2 million metric tons of GHGs annually.
- Ratepayers will **save over \$2 billion** over the life of the project.
- Host Community Agreement w Falmouth, MA supports locally driven initiatives, such as coastal resiliency, energy efficiency, and other Town determined priorities.
- **Commitment to 75% of all operations and maintenance jobs** being local to ensure community benefits.
- Commitment to provide **\$5 million** over 10 years to the Cape Light Compact JPE to optimize local energy usage and reduce electric bills for low income households.
- Extensive environmental and wildlife studies to ensure the responsible development of offshore wind resources.

## **About Mayflower Wind**

- Lease: OCS-A 0521
- Area: 127,000 acres (520 km<sup>2</sup>)
- Average wind speed at 135m: 10.1 m/s
- Distance to shore: 53-65 miles (85-105 km)
- **Potential:** over 1,600 MW, depending on technology
- Lease Acquisition: December 2018
- Contracts: October 2019 Massachusetts awarded Mayflower a 20 yr term contract for 804 MW (approved by the MA Department of Public Utilities on November 5, 2020)
- **Price:** \$77.76 /MWh later reduced to \$70.26 /MWh due to change in ITC and Mayflower's promise to rebate this value of federal tax credits written into the contracts with National Grid, Eversource, and Unitil.\*
- Federal Permits: SAP Approval: May 2020 COP Submittal: February 2021

\*Source: <u>https://mayflowerwind.com/mayflower-wind-low-cost-energy-price-anticipated-to-go-even-</u> lower-due-to-unique-commitment-to-pass-cost-savings-of-federal-tax-credits-to-customers/



#### Total MA Lease Area: 742,978 acres

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## **New York Bight Opportunity for OW**

- Leadership and commitment to Climate Action and market transformation lead by New York State and NYSERDA.
- Total regional commitment to **16.5 GW of Offshore Wind** capacity by **2035**, representing over 50% of total market.
- Over 730,000 acres of potential <u>new</u> lease area supporting the largest regional offshore wind hub on the East Coast.
- **First regional supply chain for offshore wind** including foundations, towers, nacelles, blades, cables and more.
- Major contributor and driver to an estimated \$42 billion in US offshore wind turbine manufacturing and related supply chain activities by 2035.
- **Strong Labor Union and community engagement** including training, skills development and green jobs.
- Increased competition to drive down offshore wind costs.



Total NY Bight Wind Energy Area: 793,862 acres

Hudson North & South Wind Energy Area: 730,000 acres (2958 km<sup>2</sup>) Distance to shore: 21nm - > 45 nm (nearest shore pt) Average wind speed: Avg 9-10m/s at 120m

**Potential:** over 9,000 MW, depending on technology and power density factors

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## **New York Bight Opportunity for OW**

US East Coast States 30 GW offshore wind capacity by 2035\* 11.6 GW contracted to date\*\*

NY Bight (NY/NJ) NY Bight (NY/NJ) 16.5 GW by 2035 or over 50% of total demand5.4 GW contracted to date or 50% of total contracts

## New York Bight Offshore Wind Supply Chain is KEY to the growth of US East Coast markets but will require new BOEM lease areas to meet demand.

\* State Offshore Wind Commitments to date (MA, RI, CT, NY, NJ, MD, VA)
\*\* State Solicitations (Round 1 thru 3) (MA, RI, CT, NY, NJ, MD and VA)

OW Ocean Winds, March 2, 2021

## **New York Bight Opportunity for OW**

A Wood MacKenzie Study (August 2020) found additional lease areas in the New York Bight and other regions would facilitate an estimated total investment in the offshore wind industry of \$17 billion by 2025, advancing to \$108 billion by 2030 and jumping to \$166 billion by 2035. **From now until 2035, the report anticipates capital investments nationally of \$42 billion in turbine manufacture and related supply chain activities, \$107 billion to the construction industry and \$8 billion for the transportation industry and related port development. And all this investment and activity will create family-sustaining jobs – lots of them. The study estimates about 80,000 direct and indirect jobs annually though 2035. \*\*** 

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Source: NYOWA <u>https://www.nyowa.org/nyowa-blog/2020/8/5/wood-mackenzie-offshore-wind-study-a-promising-look-to-the-future</u>. Economic Impact of New Federal Offshore Wind Lease Auctions, Wood MacKenzie, (August 2020) commissioned by four industry groups: the American Wind Energy Association, the National Ocean Industries Association, the New York Offshore Wind Alliance and the University of Delaware's Special Initiative on Offshore Wind.

OW Ocean Winds, March 2, 2021

### More information...



OW

#### www.oceanwinds.com

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## The project Elbe+, Pôle Mer Méditerranée

Fanny Moutin - Chargée de mission international évènementiel ; Charlène Aurégan -Chargée de projets européens





## ELBE ALLIANCE

## ELBE+ Project presentation

March 2<sup>nd</sup>, 2021



Co-funded by the COSME programme of the European Union This DELIVERABLE is part of the project ELBE which has received funding from the European Union's COSME Programme (2014-2020)



## Sea Business & Innovation Cluster

PÔLE

Ambition: To contribute to the sustainable development of the maritime and coastal economy and create jobs.

### **Key figures**

467	2 Regions			
certified Projects granted M€ 1178 R&D Investment	Sud Provence Alpes Côte d'Azur & Occitanie			
344 certified Projects	438			
M€ 793,80 Budget	members			
M€ 360	219 SMEs	80 lse		
public funding	77 Academic	62 Ecosystem		





## WHAT IS ELBE ALLIANCE ?

ELBE Alliance is funded by ELBE+ project by the EC. The project aims to contribute positioning Europe as the world technological and industrial leader in Blue Energy.

















### TARGET MARKETS OF ELBE+



European Strategic Cluster Partnership in Blue Energy











## ELBE+ Alliance OBJECTIVES

- New Value Chain
- To consolidate a true trans-regional European New Value Chain.
- To foster clusters & SMEs mutual knowledge, high-level trans-regional cooperation and partnership building among key leading Blue Energy regions in Europe.
- To **position SMEs** into trans-European consortiums

- Market reports elaboration
- Organisation of direct missions, reverse missions and networking events
- To sign **Cooperation Agreements** with relevant international associations and clusters in third countries.

- Long-term sustainability
- To strengthen the ESCP-4i by consolidating a common identity and developing joint promotional activities.
- To learn from successful and unsuccessful experiences from other partnerships.
- To continuously update the internationalisation strategy.
- To define a financial strategy that guarantees the sustainability of the alliance.

European Strategic Cluster Partnership in Blue Energ











## **Opportunities for blue energy stakeholders**

7 Customized Market Reports

2 Exploratory Trips to Emerging Markets

6 Direct and Reverse Missions

3 European Networking Events

**5** Cooperation Agreements













## **OFFSHORE WIND INTERNATIONAL ACTIVITIES**

**USA** 



Locations and expected dates



- Direct mission with European companies to the IPF (August 2021).
- Direct mission with European companies to the West Coast of the US (October 2021). FOW
- Incoming mission to Europe from USA key players delegation about offshore wind (March 2022).

OFESHORE VÄST

#### Events main contents

- Presentations of European companies and organizations
- Participation at international events
- B2B Meetings
- Visit to singular infrastructures or organisations
- Meetings with key players of the target markets
- Tailor-made market reports

GCE NODE







## **EUROPEAN NETWORKING EVENTS**

Three workshops will be organised to establish new collaboration opportunities among European companies in Blue Energy sector

#### Locations and expected dates





OFFSHORE VÄST

#### Events main contents

- Presentations of European and international leading companies and organizations
- B2B Meetings
- Visit to singular infrastructures or organisations
- International markets presentation
- Analysis of international markets and collaboration opportunities
- Information about Blue Energy collaboration support programs













## Contact us

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## Conclusion





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# THANKS

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