SAMBAS Consulting LLC

Advisory Board

Maine Offshore Wind Research Consortium

Spotlight on Floating Offshore Wind Substructure Technology & Currently Funded Research

April 3, 2024

A Few Guidelines for Today

Advisory Board Members

- Practice common rules-of-the road: Please raise your hand, share the floor and respect differences of opinion.
- Please use video (if you can) and use hand-raise function (*9 on phone). We'll try to be sure we pause periodically to make sure you can participate fully but shout out if you need to or put ideas in the Chat.

Observers

- Thank you for joining, we are glad you are here. We'll answer Advisory Board questions first but try to make sure we leave time for additional questions as well.
- Please keep video off and so we can focus discussion on the Advisory Board members.
- *Mute unless speaking please (*6 on phone to unmute)*

Meeting Objectives

- Provide insight into Gulf of Maine-relevant floating offshore wind substructure technology
- Consider the decision-making process developers undertake when choosing technology
- Provide an overview of projects awarded through Research Consortium RFP#1

Meeting Agenda

2:00	**Welcome & Introductions** – *Terry Alexander, Co-Chair; Katy Bland, Maine Sea Grant*
2:05	**Presentation: Floating Offshore Wind Substructure Technology –** *Walt Musial, National Renewable Energy Laboratory*
2:45	**Q&A on Floating Offshore Wind Substructure Technology**
3:15	**Project Overview (RFP#1 Topic: Exploring Co-existence) -** *Environmental Resources Management, Gulf of Maine Research Institute*
3:35	**Project Overview (RFP#1 Topic: Socioeconomic Data Inventory) -** *Karp Strategies, Colby College*
3:55	**Wrap Up and Next Steps**
4:00	**Adjourn**

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Floating Offshore Wind Technology

for the Gulf of Maine

Walt Musial |Offshore Wind Chief Engineer| National Renewable Energy Laboratory

April 3, 2024

How does a wind turbine work?

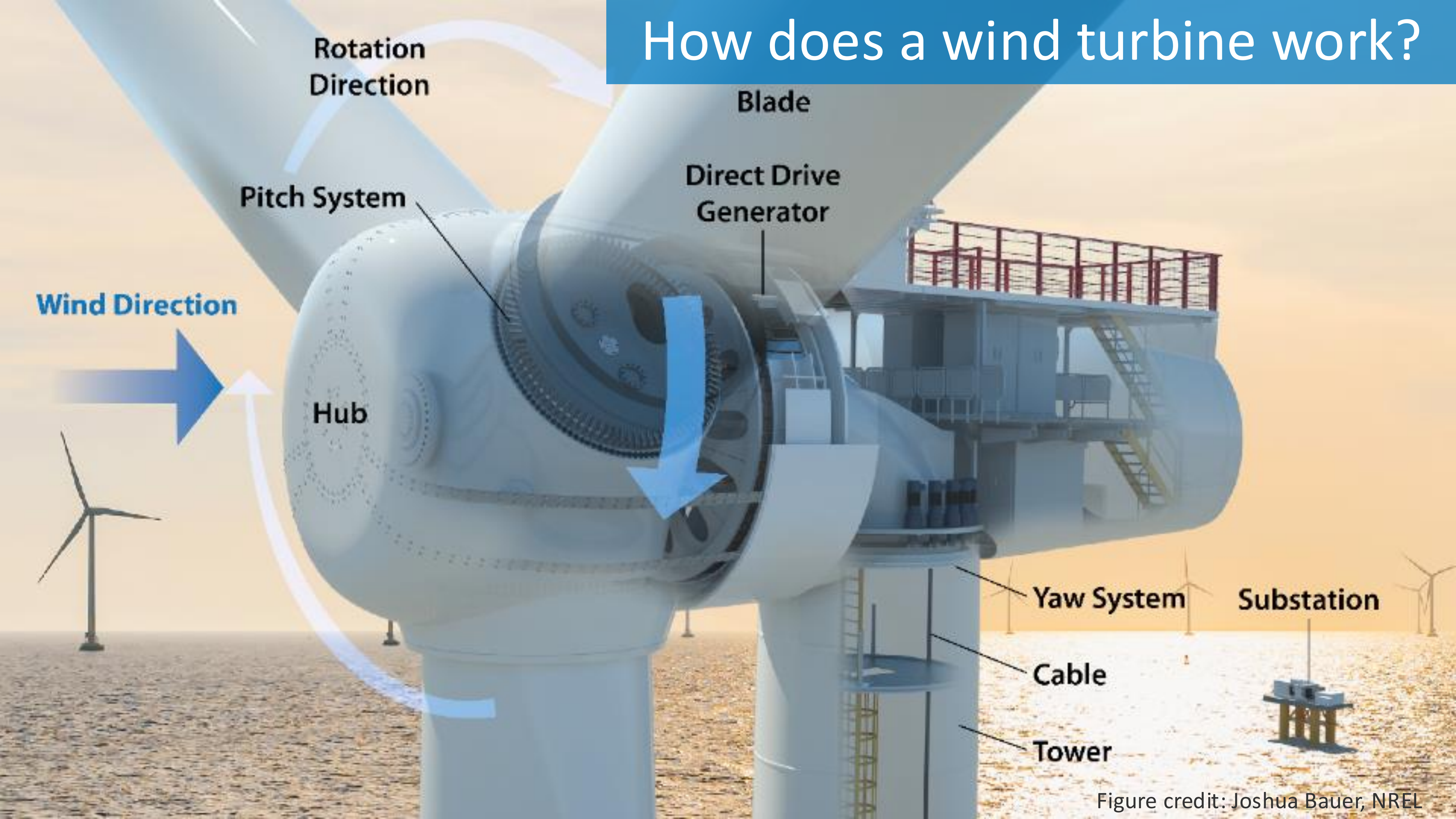


Figure credit: Joshua Bauer, NREL

Offshore Wind is Starting a New 15-MW Scale Technology Platform

GE 12-MW Wind Turbine Nacelle

107-meter Blade for GE 12-MW Wind Turbine

Photos Courtesy of GE

- GE Upgraded the 12.0 MW (220-meter rotor) turbine to 14-MW – Replacing with GE Vernova 15.5 MW “Workhorse”
- Vestas V236-15 MW produced its first power near the end of 2022
- Siemens Gamesa’s 14-236 DD prototype came online in early 2023

One 14-MW Haliade-X can supply the equivalent energy used by 9,700 Maine households

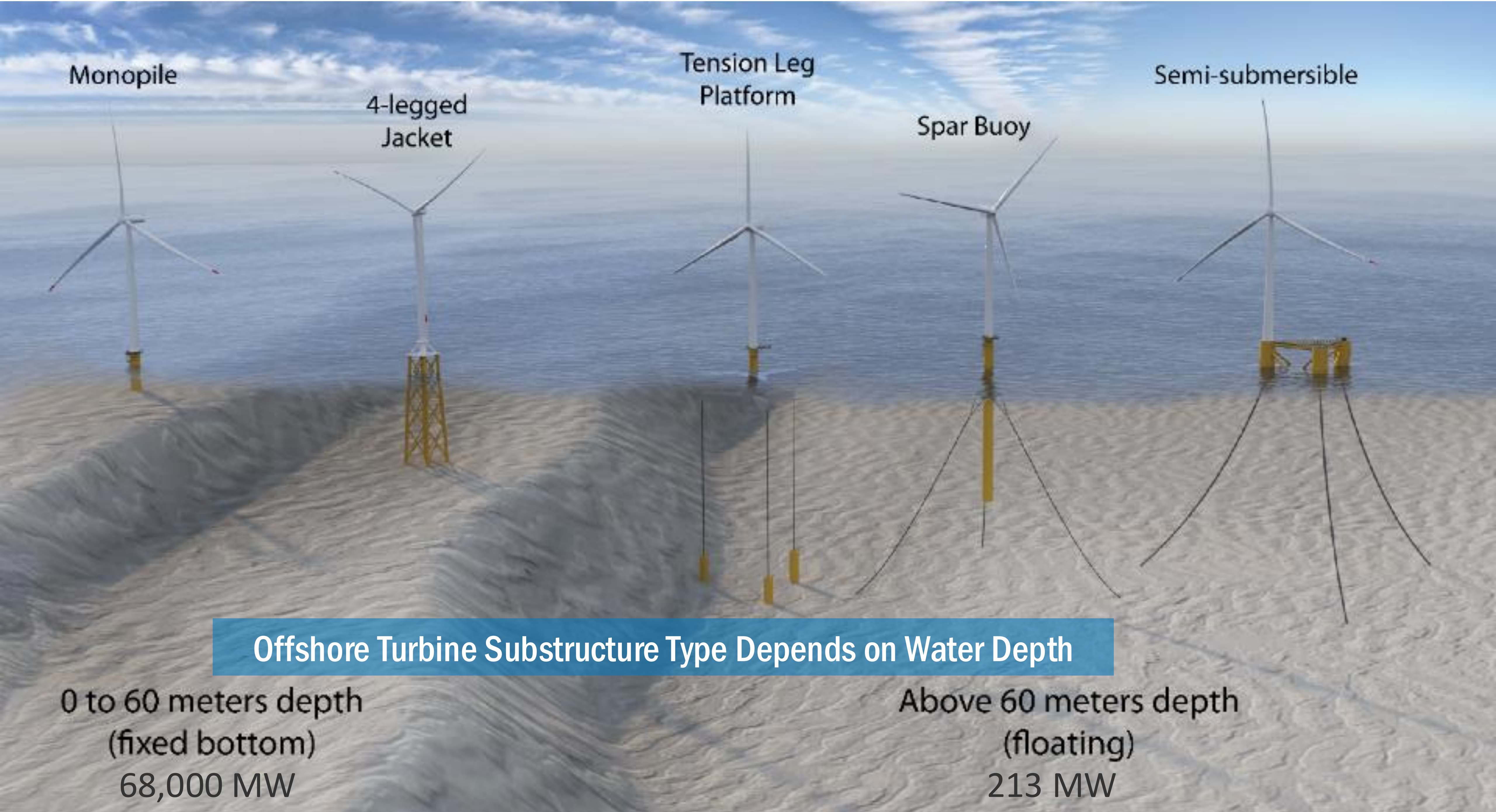
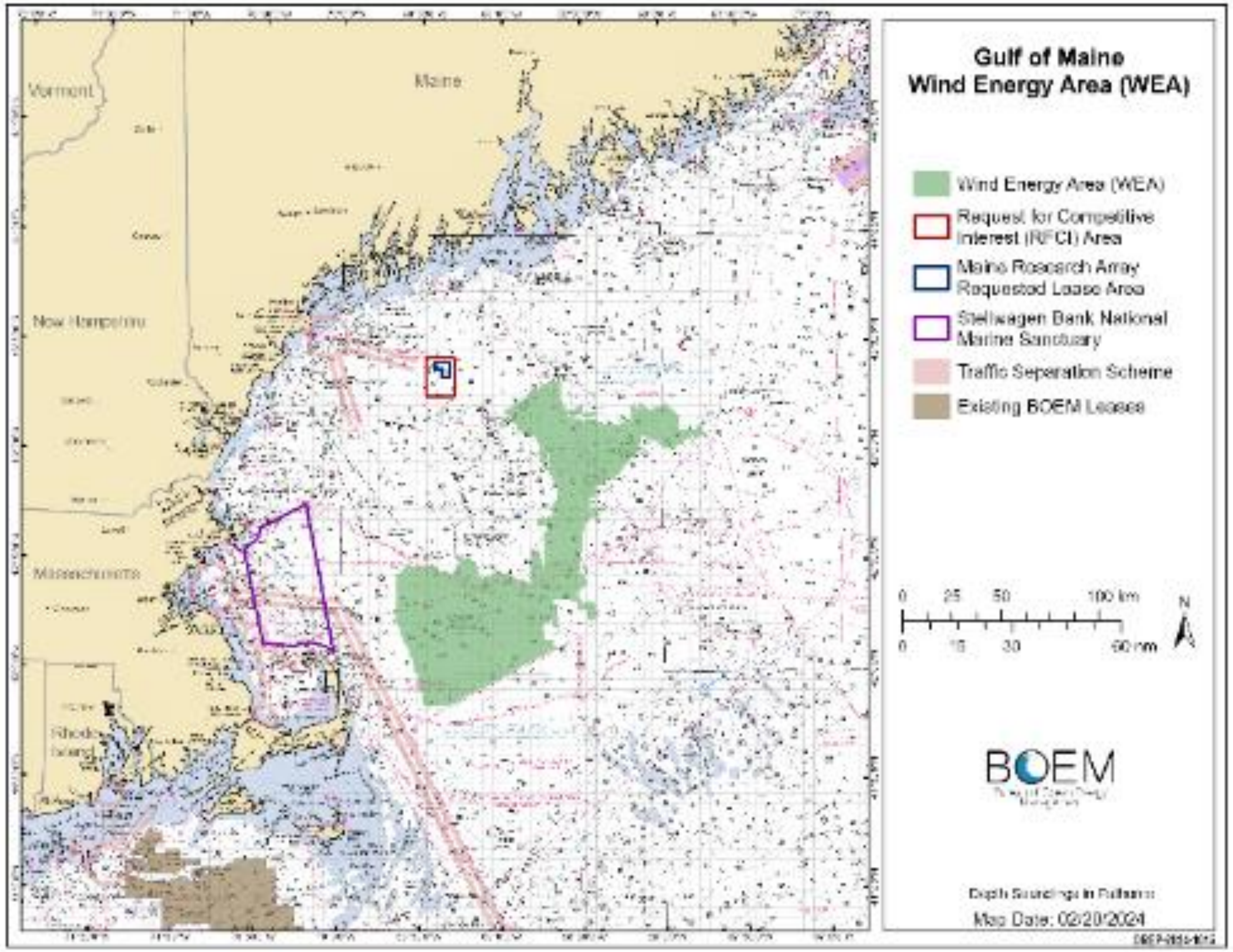


Figure credit: Joshua Bauer, NREL

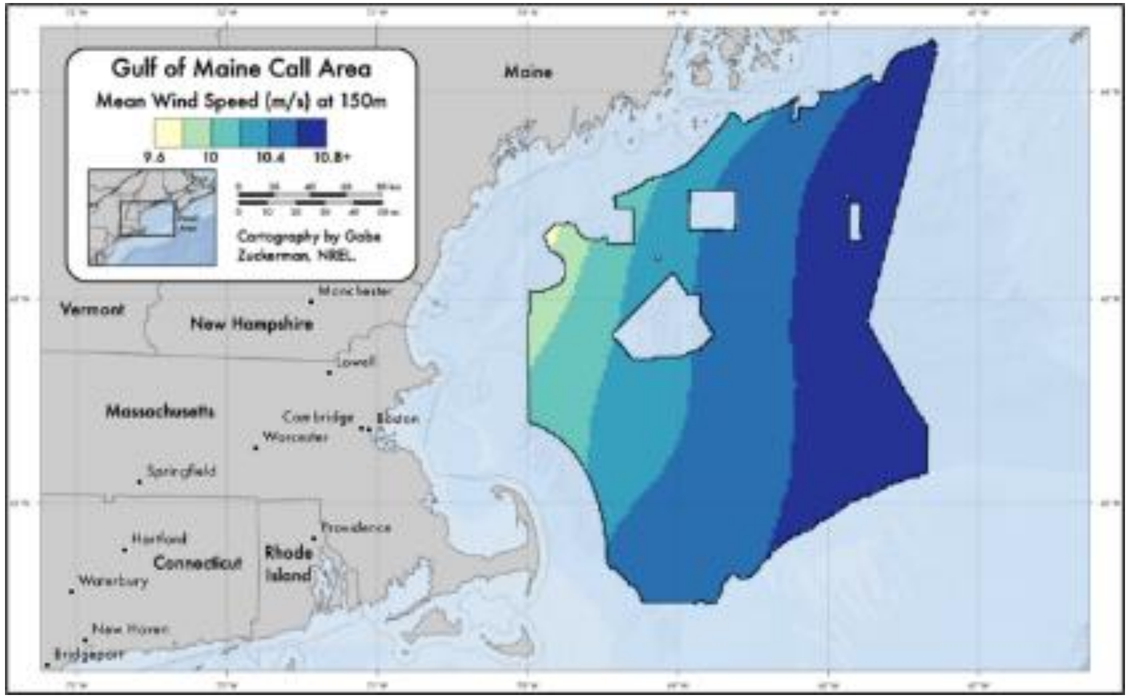
Gulf of Maine Wind Energy Area

- On March 15, 2024, BOEM designated the Final Wind Energy Area (WEA) in the Gulf of Maine.
- The Final WEA is about 2 million acres, an 80% reduction from the original Call Area.
- The Final WEA has the potential to support 32 GW of offshore wind capacity.
- WEA capacity exceeds current state goals:
  - 10 GW for Massachusetts
  - 3 GW for Maine.
- The excess capacity will allow BOEM to consider additional deconfliction and allows for future rounds of leasing.
- ISO-NE planning targets are for 18 GW.



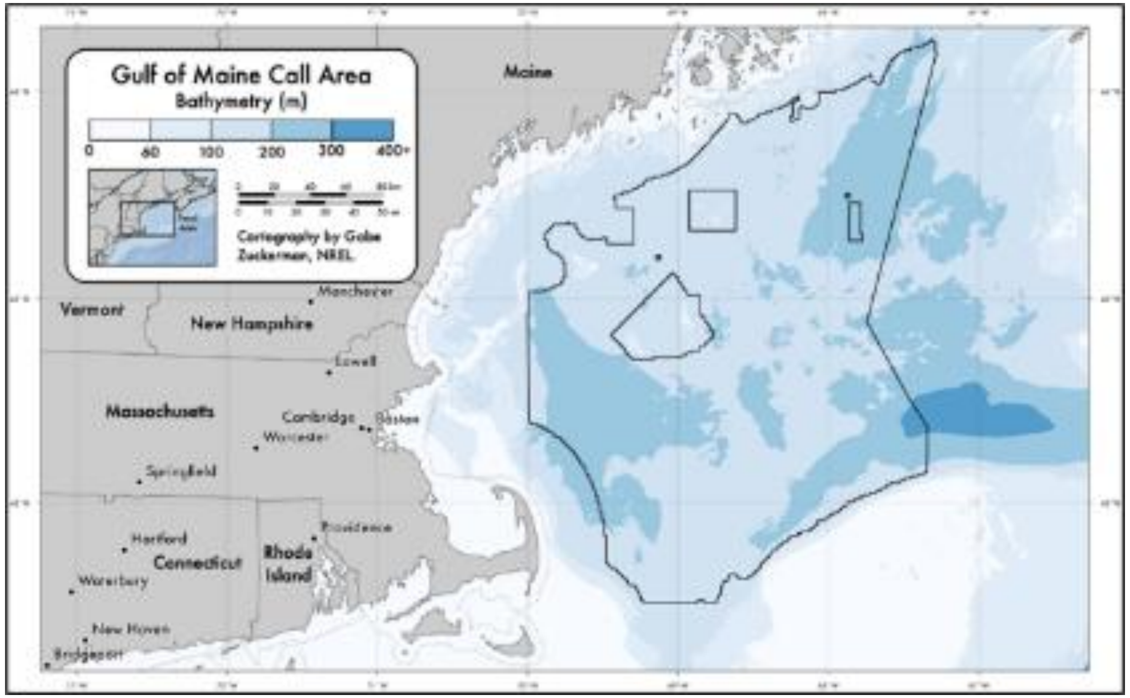
Gulf of Maine Wind Speeds and Water Depths

Average Annual Wind Speeds



Average wind speeds in the Gulf of Maine WEA are estimated at a 150-meter (m) elevation between 9.8 m/s and 10.6 m/s.
Image from NREL

Water Depths



Water depths in the Gulf of Maine WEA are between 150-m and 300-m
Image from NREL

Regulatory Process for Offshore Wind in the United States

Figure from BOEM/BSEE
https://www.bsee.gov/about-bsee/renewable-energy

Bureau of Ocean Energy Management

Bureau of Safety and Environmental Enforcement

Offshore Wind Leasing Process – Key Decision Points and Timelines

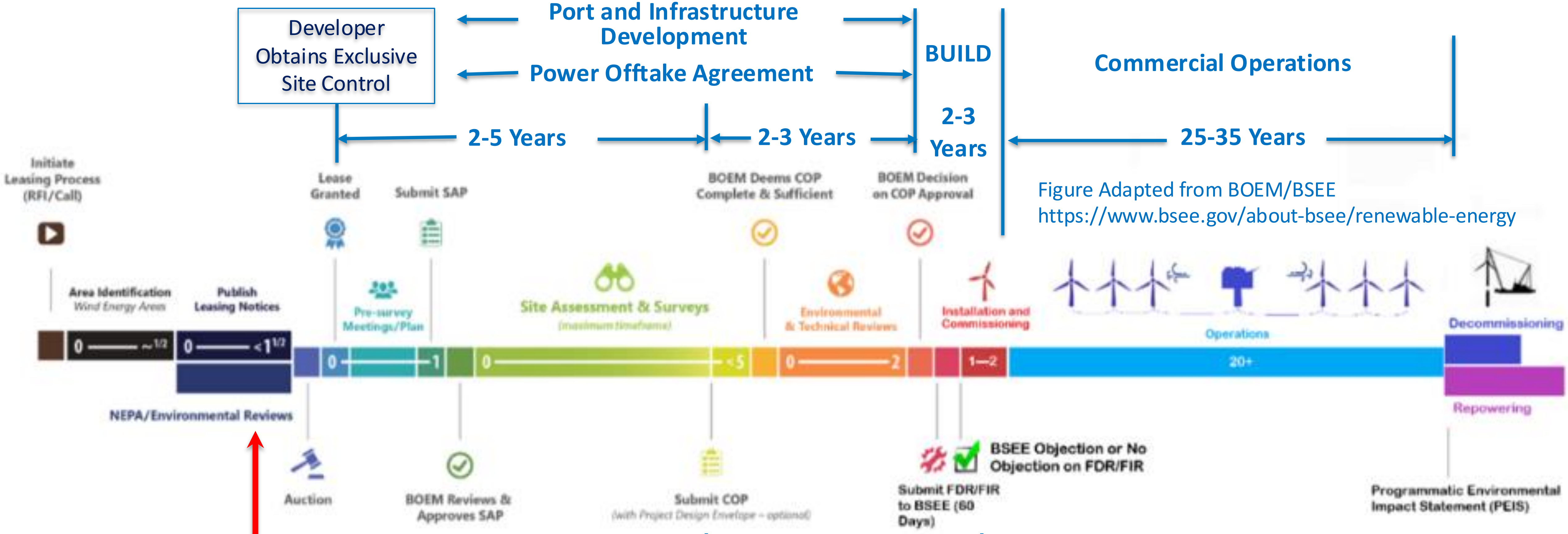


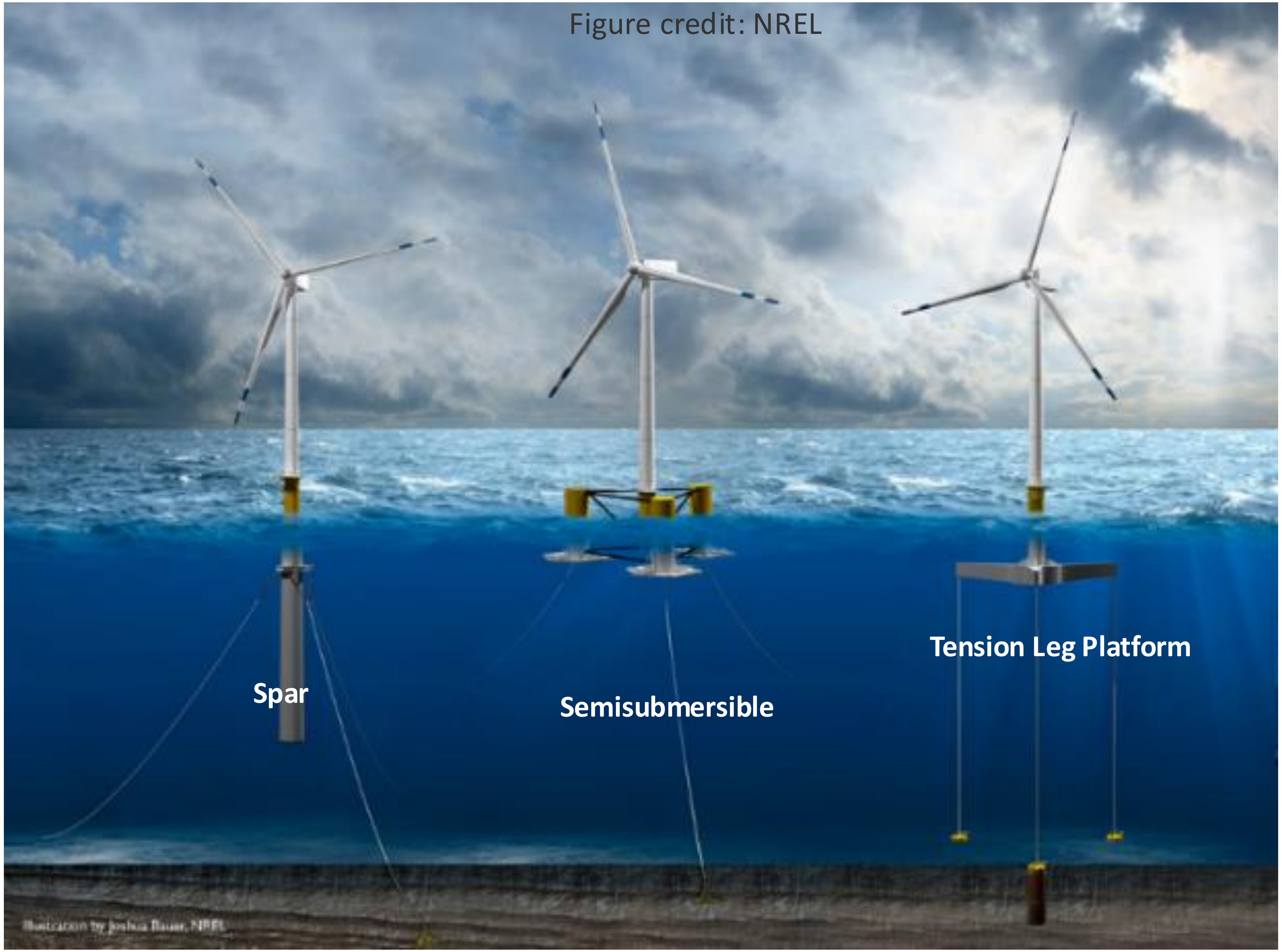
Figure Adapted from BOEM/BSEE
https://www.bsee.gov/about-bsee/renewable-energy

Gulf of Maine Leasing Process as of April 3, 2024

Construction and Operations Plan (COP) and Power Offtake contract lock in key variables like turbine size, turbine layout, projects size, foundation type, Safety Management System

FIR/FDR: Final design and installation details –: turbine type, anchor type and exact locations, installation plan. Power offtake agreement is needed to obtain financing

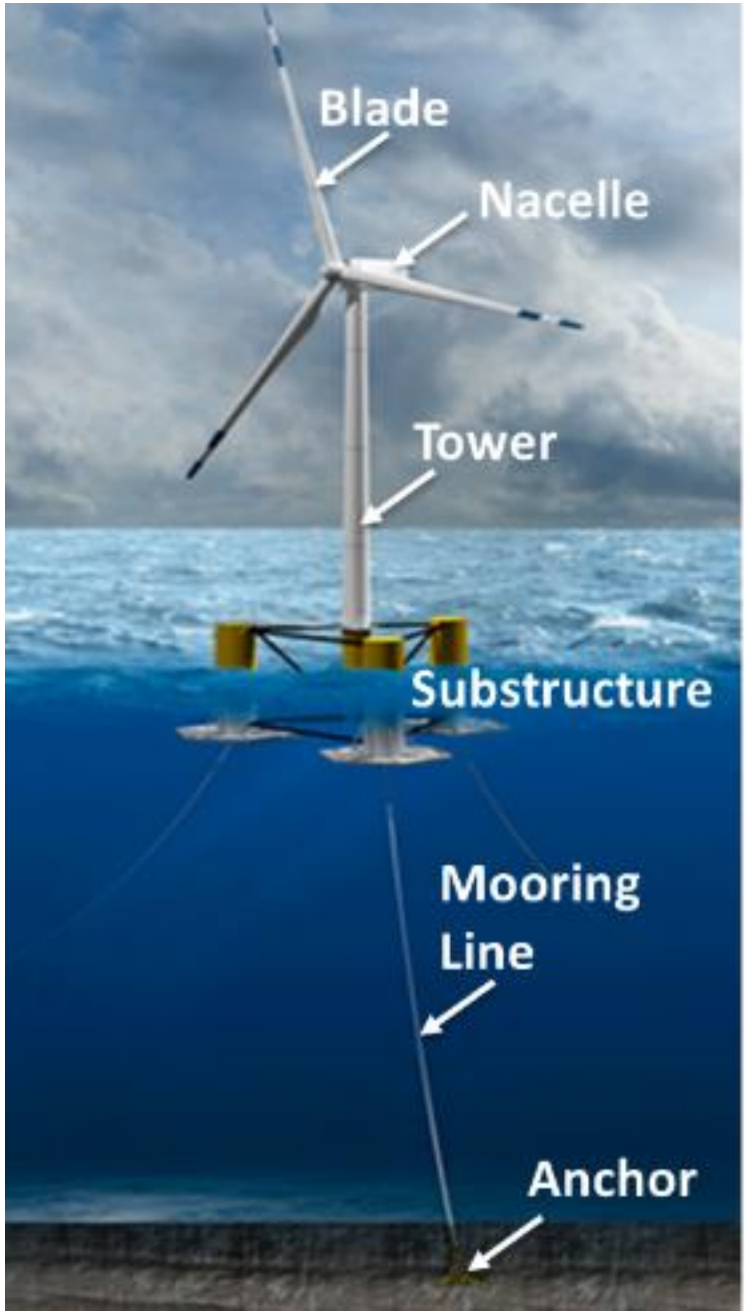
Basic Floating Platform Types



Parts of a Floating Offshore Wind Turbine

Floating wind turbines look similar to *fixed-bottom offshore wind turbines* from the surface but are supported by buoyant substructures* moored to the seabed.

*The floating wind turbine *support structure* is comprised of the tower, substructure, mooring lines, and anchors



Parts of a Floating Offshore Wind Turbine

Characteristics of Semi-submersible Floating Platforms

Semisubmersible: Achieves static stability by distributing buoyancy widely at the water plane

- Advantages:
    - Stable during assembly and tow out
    - Low draft provides highest accessibility to conventional ports
    - Most operating experience (PPI)
- Challenges:
    - Higher exposure to waves
    - Heavier - more structure above the waterline
    - Dependence on foreign steel
    - Industrialized mass production
- Mitigations
    - Concrete designs

European Floating Wind Projects – Semi-submersible

Kincardine 47.5-MW Floating Wind Plant (Scotland 2022)

Five Vestas 9.5-MW Wind Turbines

25-MW WindFloat Atlantic (Portugal 2019)

Three Vestas 8.4-MW Wind Turbines

Characteristics of Spar Buoy Floating Platforms

Spar Buoy: Achieves stability through ballast (weight) installed below its main buoyancy tank.

- Advantages:
  - Simplicity
  - Very stable during operation and without mooring lines
  - Demonstrated in North Sea (Equinor)
- Challenges:
  - Deep drafts limit port access and siting options.
  - Industrialized mass production
- Mitigations
  - Hybrid solutions that allow quayside assembly and commissioning with deployable ballast weight (Stiesdal Offshore Wind)
  - Tilting concepts

European Floating Wind Projects – Spar Examples

Hywind-2 30-MW Floating Wind Plant (Peterhead Scotland 2017)

Five Siemens 6.0-MW Wind Turbines

TetraSpar 3.6-MW Floating Offshore Wind (Norway 2021)

Siemens 3.6-MW Wind Turbine

Characteristics of TLP Floating Platforms

Tension-leg platform (TLP): Achieves static stability through mooring line tension with a submerged buoyancy tank.

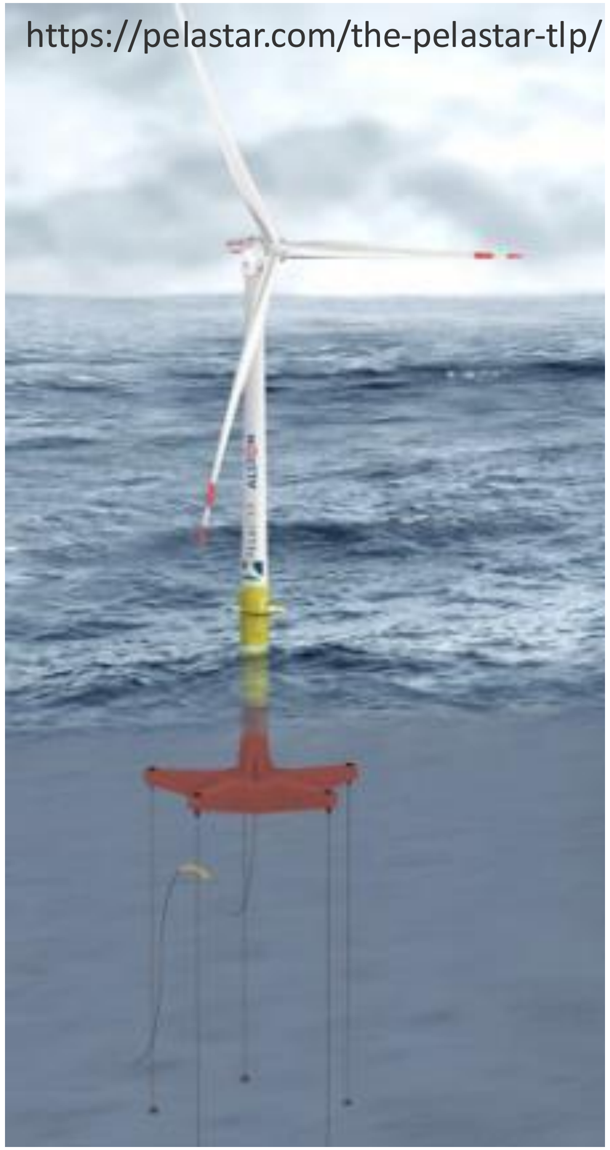
- Advantages:
  - Very stable during operation
  - Smallest footprint on the seabed
  - Light weight substructures
- Challenges:
  - Unstable during assembly without additional buoyancy
  - High load vertical moorings (expensive)
  - Some dependence on foreign steel
  - No operating experience in offshore wind energy
  - Industrialized mass production
- Mitigations
  - Hybrid designs that allow stable assembly at quayside.
  - Concrete designs

Figure credit: NREL

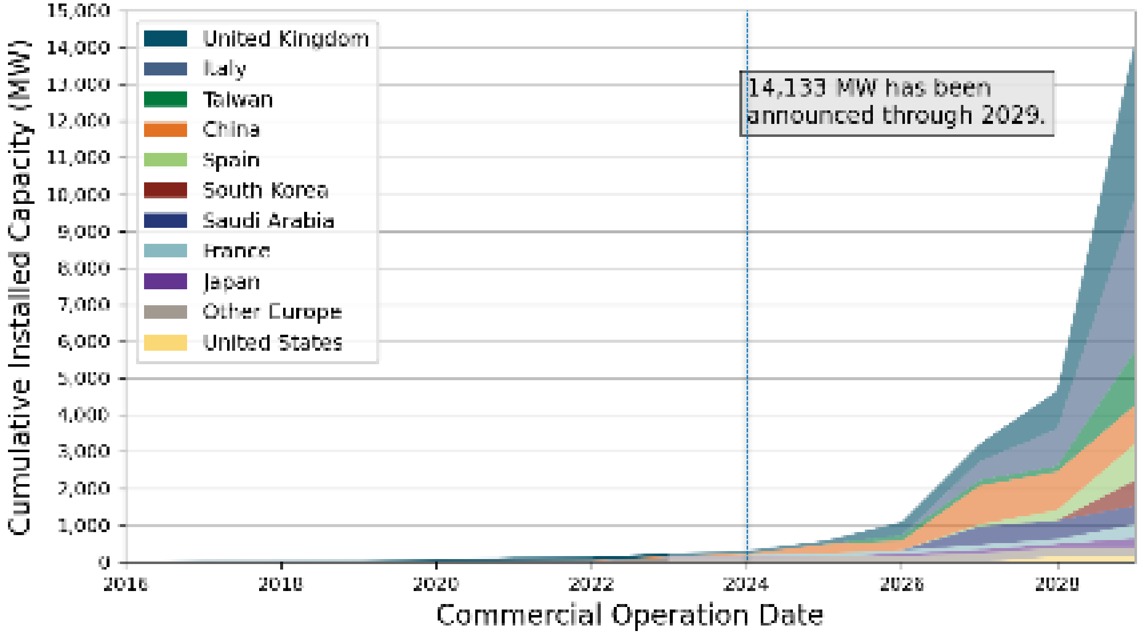
Tension Leg Platforms

- Tension Leg Platforms have not yet been demonstrated for offshore wind.
- SBM Tension Leg Platform was developed for the Provence Grand Large floating offshore wind farm. When completed it will provide 24 MW of power to the French grid. Turbines were installed in October 2023 (left image).
- Glosten's Pelestar, Seattle, WA has advanced over the past decade (right image).
- Many other TLP designs have been proposed.

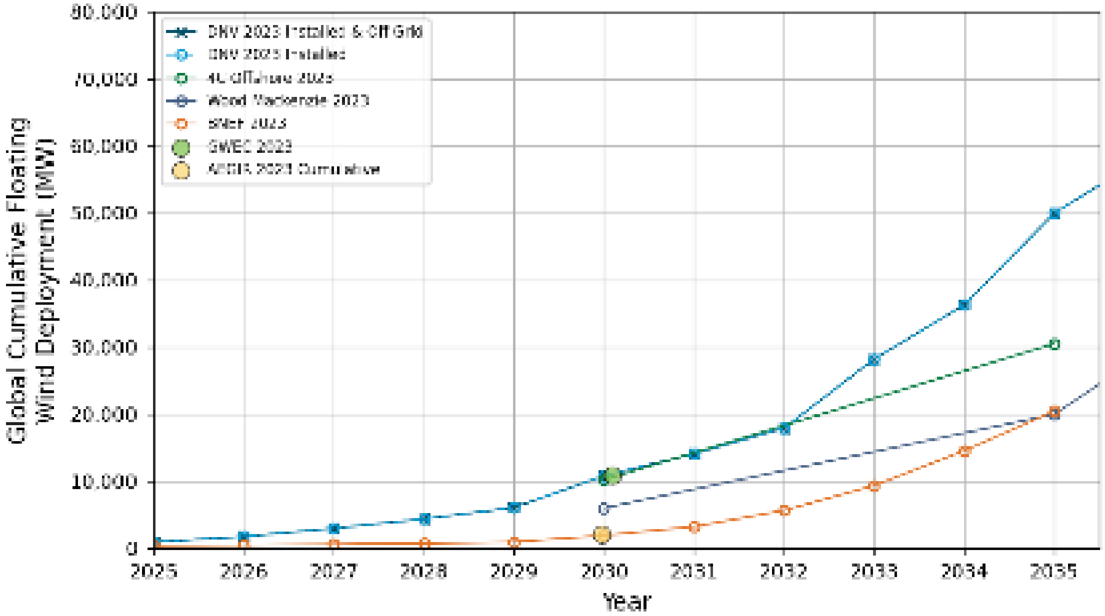

SBM TLP Provence Grand Large floating wind farm – expected 2024.


https://pelastar.com/the-pelastar-tlp/

World-wide Floating Wind Energy Market Projections



Projections based on developer announcements

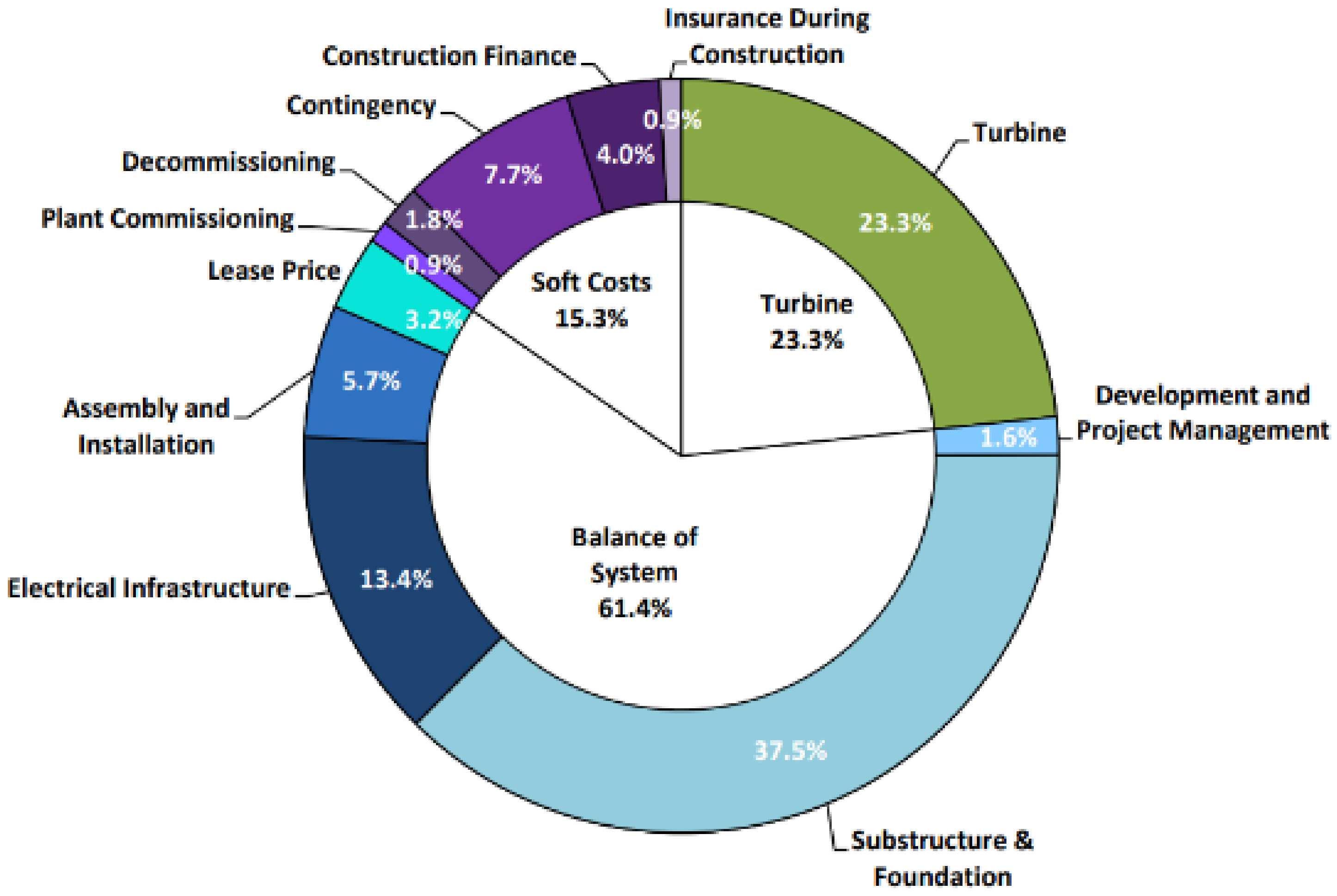


Projections based on industry expert forecasts

Figures from NREL

- Over 68,000 MW of fixed bottom offshore wind is operating but only 213 MW floating.
- World-wide commercial expansion of floating wind expected to begin about 2026.
- Over 14,133-MW of announced projects by 2029.
- Industry forecasts predict lower deployment – about 10 GW by 2030.
- Full-scale commercial development is necessary to drive costs down.

Cost Breakdown of a Floating Offshore Wind System

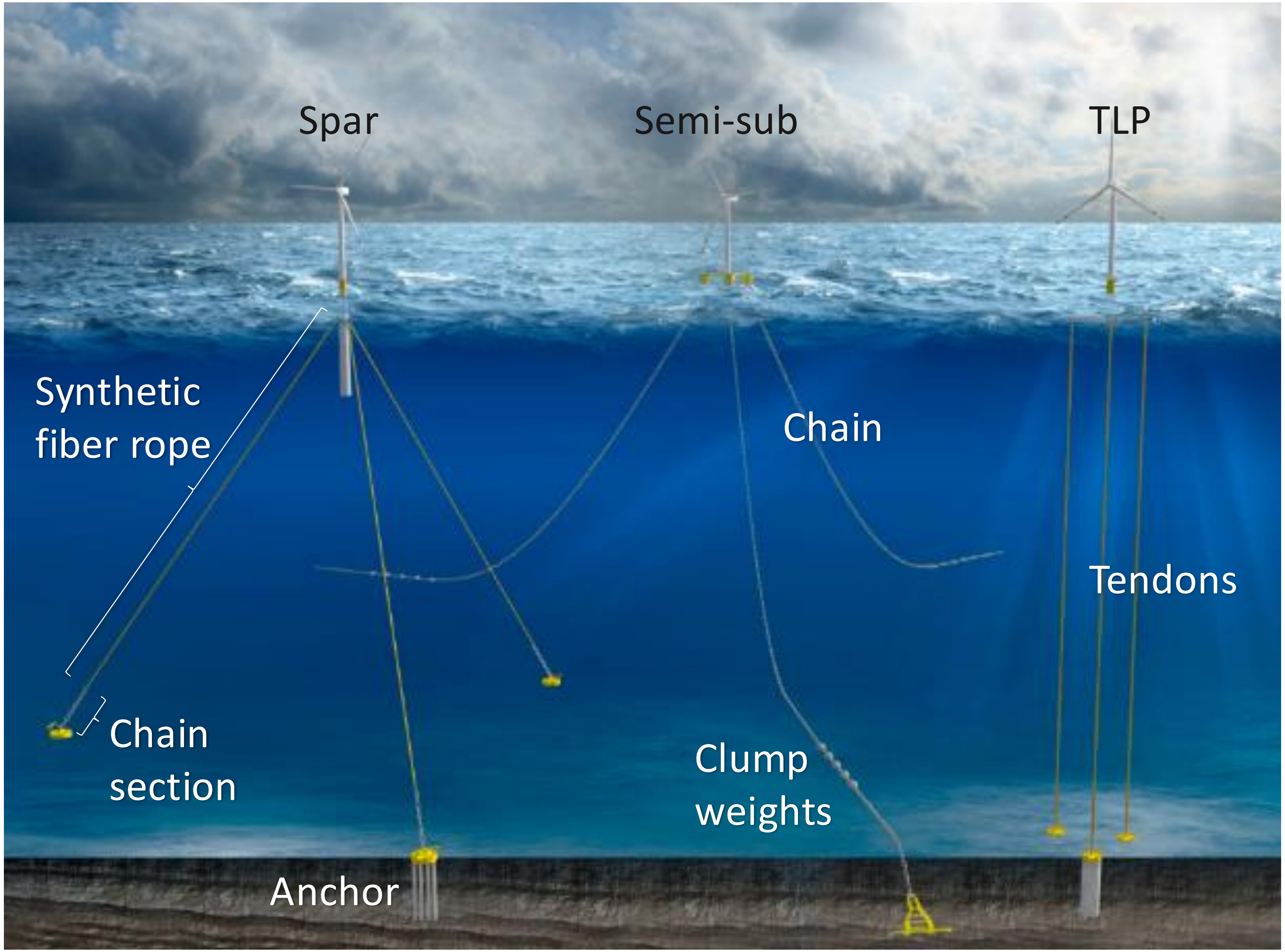


Floating Offshore Wind Capital Cost Breakdown

- The turbine cost is about 23.3% of total capital cost.
- Substructure and foundation cost is about 37.5%.
- Electrical infrastructure cost is about 13.4%.
- Assembly and installation cost is about 5.7%.
- Soft costs are about 15.3%
- Other costs are about 4.8%

Stehly, Tyler, and Patrick Duffy. 2022. *2021 Cost of Wind Energy Review*. Golden, CO: National Renewable Energy Laboratory. https://www.nrel.gov/docs/fy23osti/84774.pdf

Floating Wind Mooring Systems

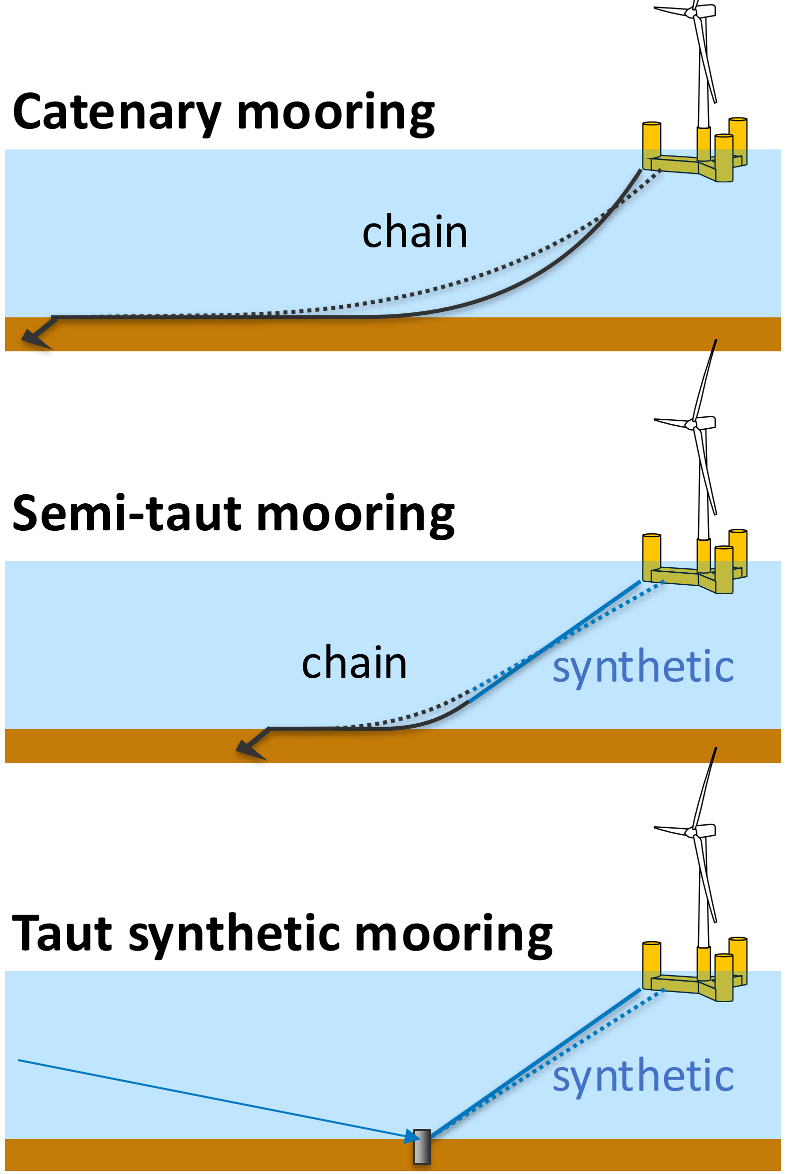


Adapting Mooring Systems for Co-existence with Fishing

Reducing Anchor Footprints

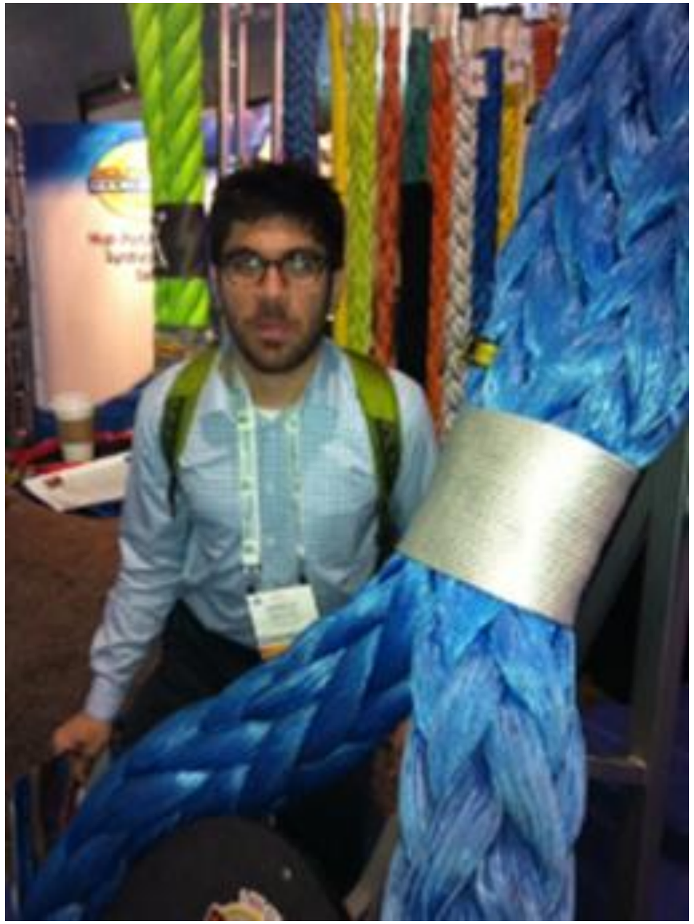
Line on seabed allows drag embedment anchors

Uplift at anchor requires suction piles or similar

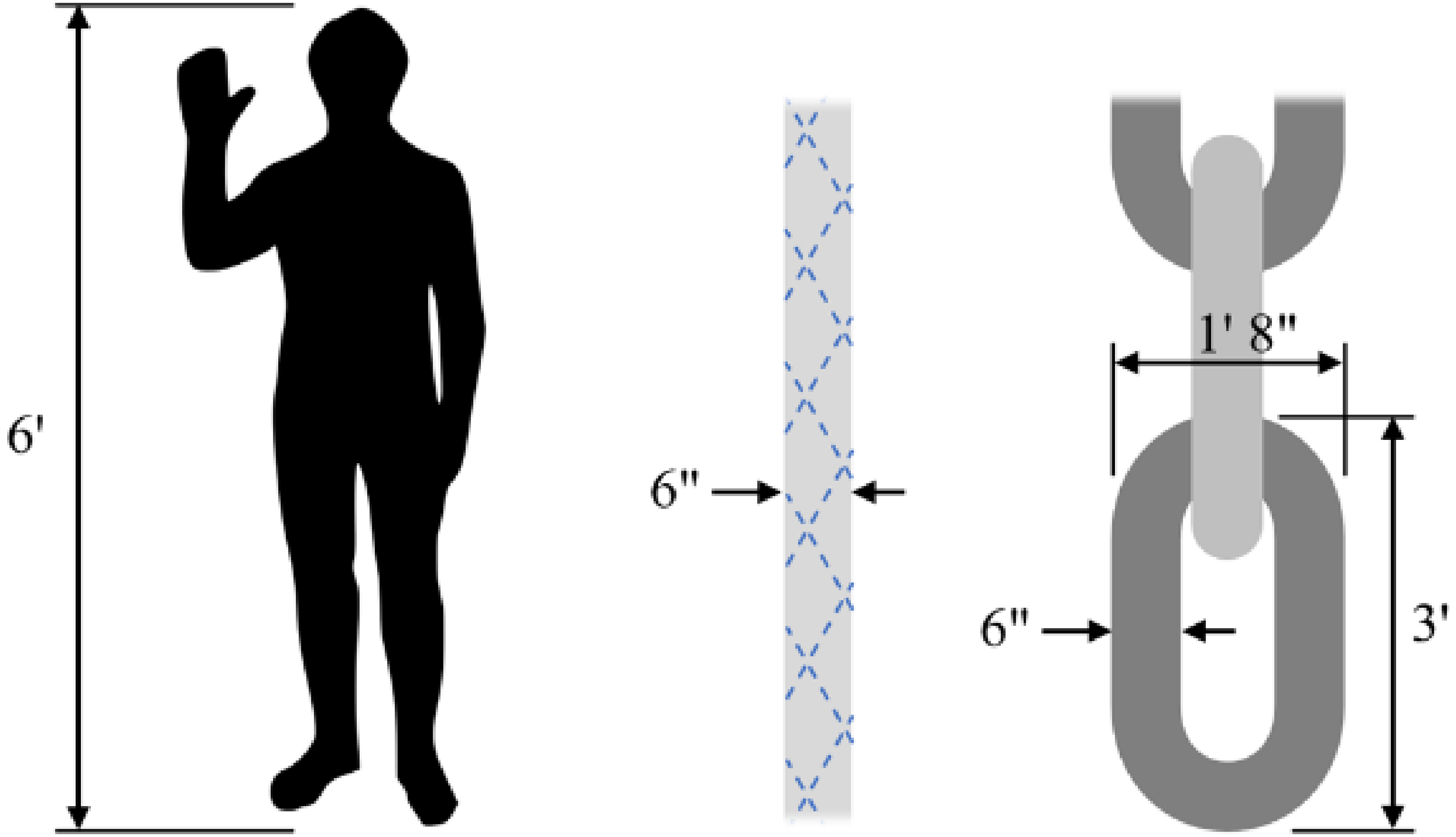


- **Catenary moorings** have the largest footprint but are the simplest.
- **Semi-taut moorings** significantly reduce the anchor distance from the turbine without changing anchor types or substructure design.
- **Taut moorings** reduce the anchor circle by more than 50% but require vertical load anchors and more complex design changes.

Mooring Lines Materials are Heavy and Thick



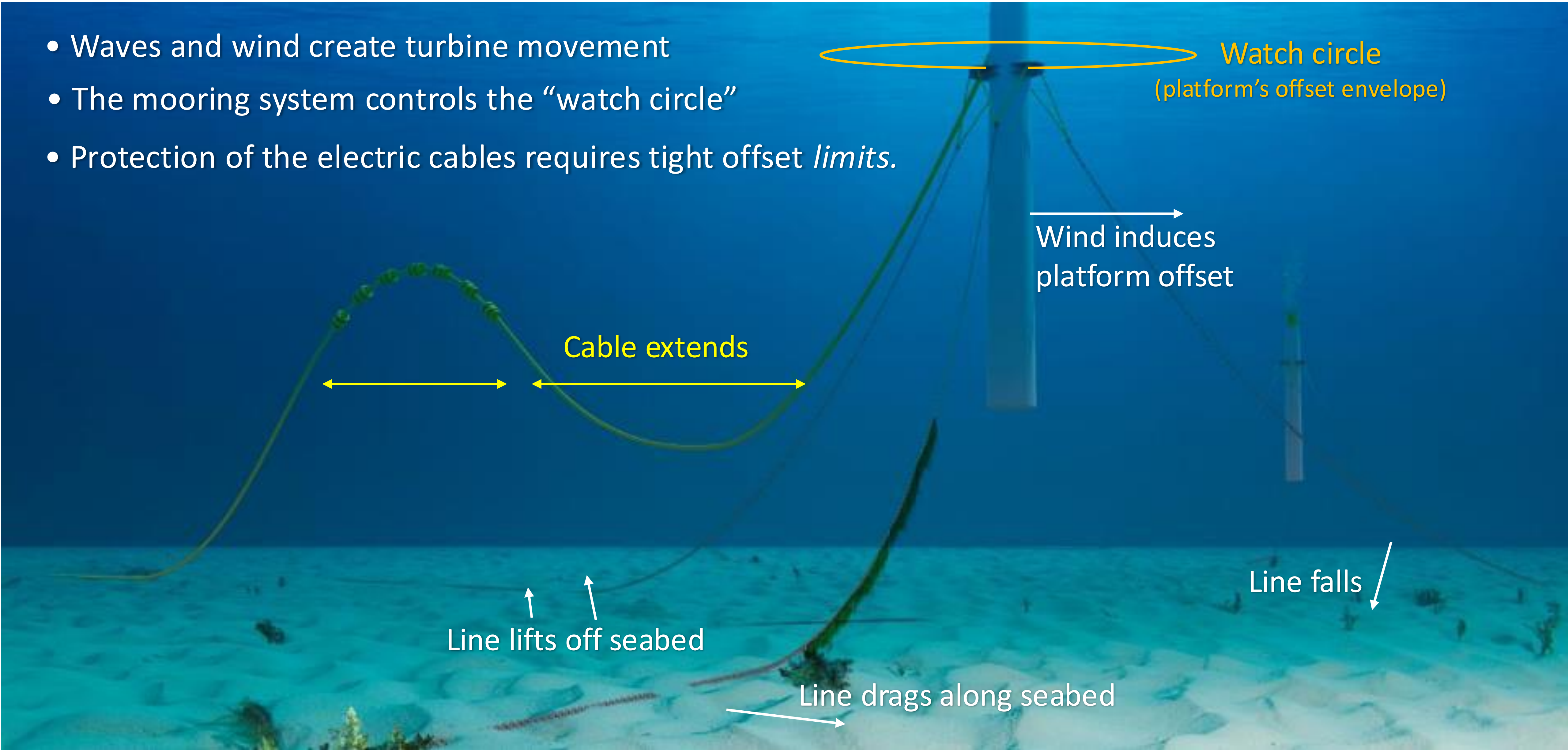
Rope Materials – Polyester, Nylon, Polypropylene. (Photo: Walt Musial)



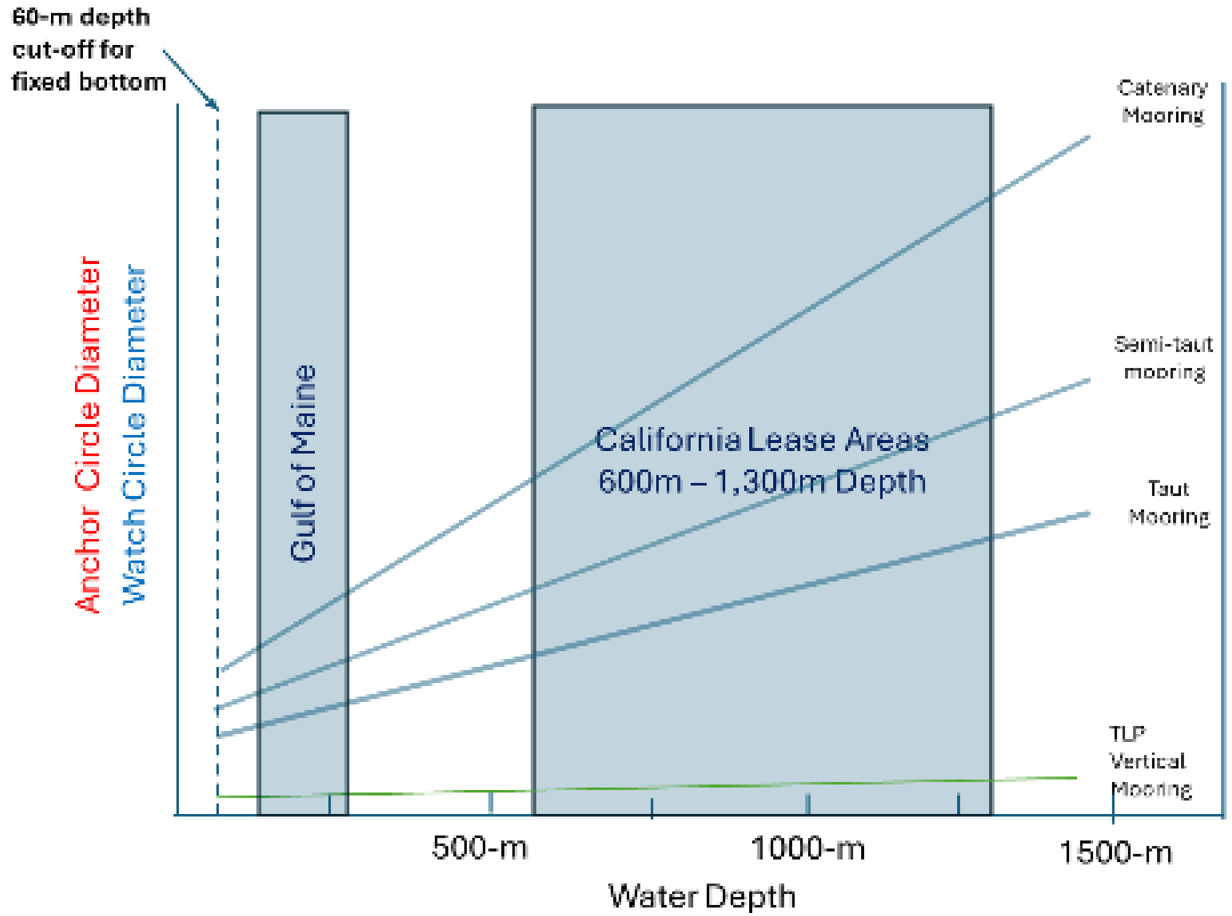
Comparison of the size of a person (left) next to representative sections of mooring rope (middle) and a mooring chain link (right). Image by Matt Hall, NREL

The Underwater View

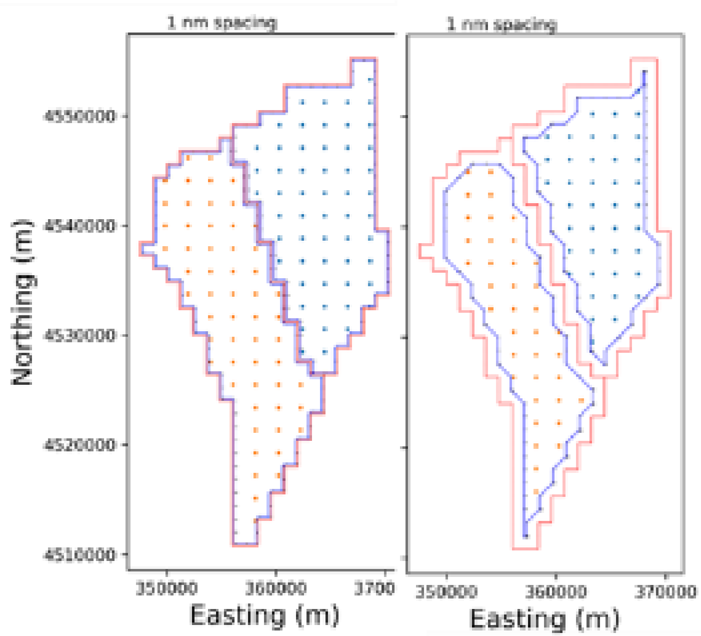
- Waves and wind create turbine movement
- The mooring system controls the “watch circle”
- Protection of the electric cables requires tight offset *limits.*



Water Depth Considerations



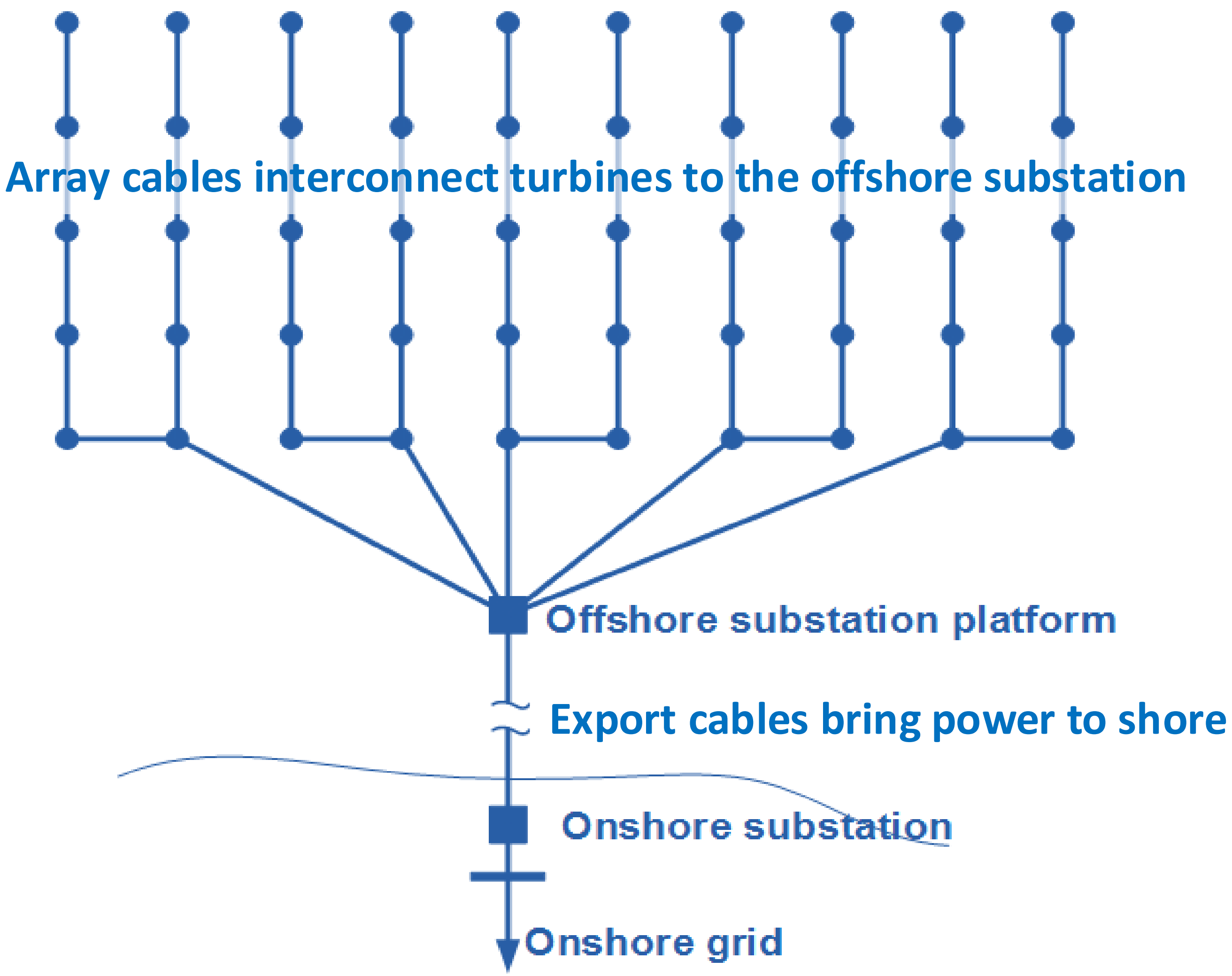
28% Reduction in Usable Lease Area between Catenary and TLP



Humboldt lease areas in northern California. (a) 1 nm spacing and TLP technology, (b) 1 nm spacing and catenary technology. The red outer lines are the lease area boundaries, and the blue inner lines indicate the mooring setback.

- Mooring type affects the usable space between turbines and the total energy capacity of the lease area.
- As water depth increases the watch circle and anchor spacing also increase.
- The shallower water in the Gulf of Maine reduces the space taken up by moorings but mooring type can still influence the available space significantly.
- Technology readiness and risk are key considerations for emerging mooring types.

Typical Array and Export Cable Layout



- Electrical array cable cost increases with turbine spacing but decreases with wind turbine size (fewer cables needed)
- Exact turbine spacing is largely a trade-off between wake losses and array cable costs
- Navigational concerns and array cable voltage also influence turbine spacing

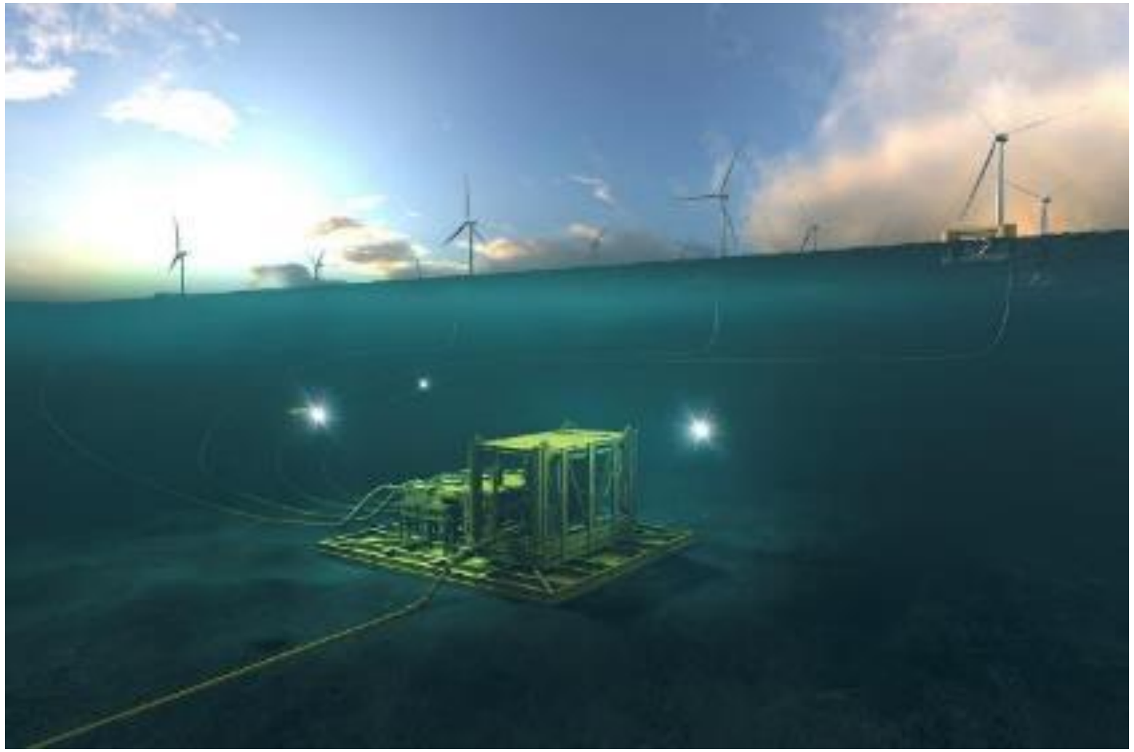
Floating Offshore Wind Substations

- Offshore substations or electric service platforms collect AC power from turbines at 66 kilovolts (kV) or greater.
- High-voltage transformers step up the voltage to 220 kV and export power to shore through buried subsea cables.
- In the Gulf of Maine, a floating substation may be needed, but fixed bottom support structures also may be possible.
- Floating substations at full-scale have not yet been proven but many are under development. Bottom mounted substations are also under development.
- Export cable distances greater than about 50 miles will use high voltage direct current systems (HVDC) to reduce losses and cost.

Vineyard Wind 1 Substation
Photo Courtesy of Vineyard Wind

Deepwater Substations – Floating or Bottom Mounted

Semco Maritime, ISC Consulting Engineers, Aalborg University, Energy Cluster Denmark and Norwegian-Swedish Inocean have Collaboration for a Floating Offshore SubStation (FOSS).



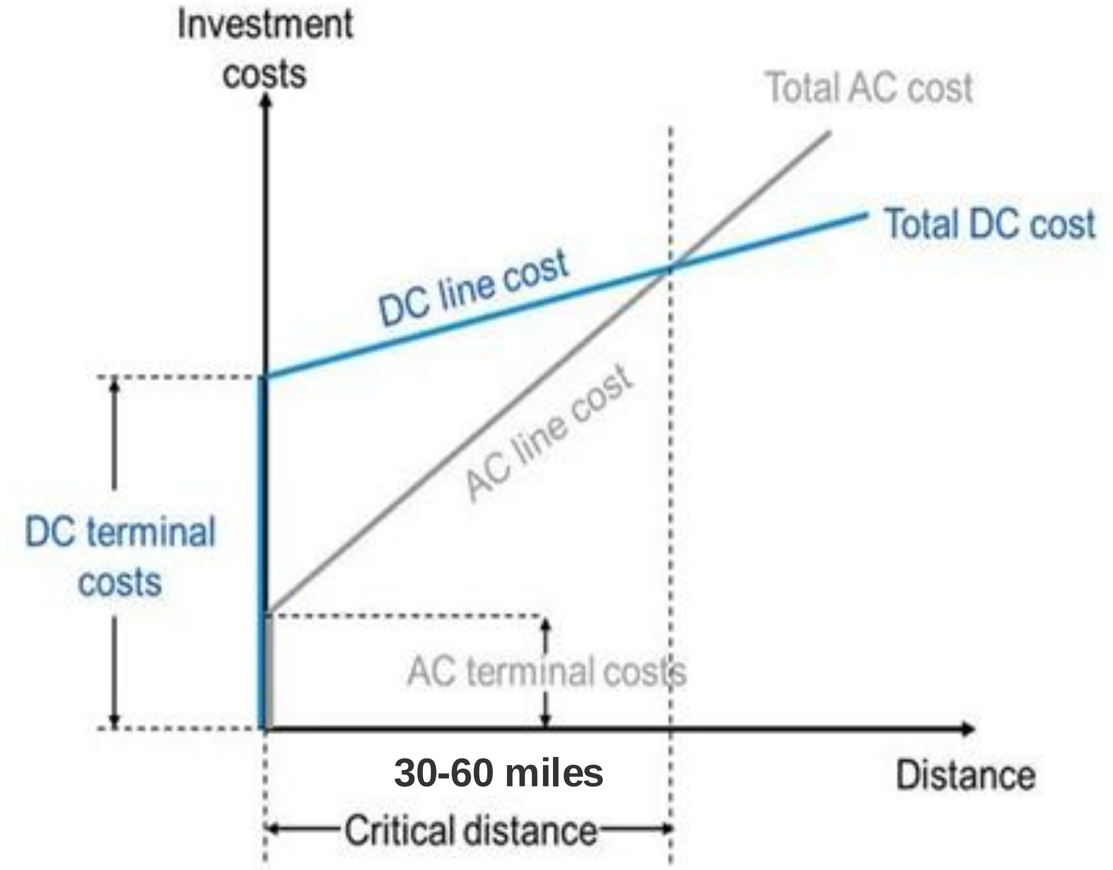
Concept for Bottom Mounted Substation by Aker Solutions

2-GW High Voltage Direct Current Converter Station

https://www.tennet.eu/about-tennet/innovations/2gw-program

Concept of HVDC Converter Station Capable of Carrying Equivalent Energy for 1.2 million Maine Households

"TenneT will build at least 14 high-voltage direct current (HVDC) offshore grid connection systems with a transmission capacity of 2 gigawatt (GW) each in the Dutch and German North Sea by 2031".

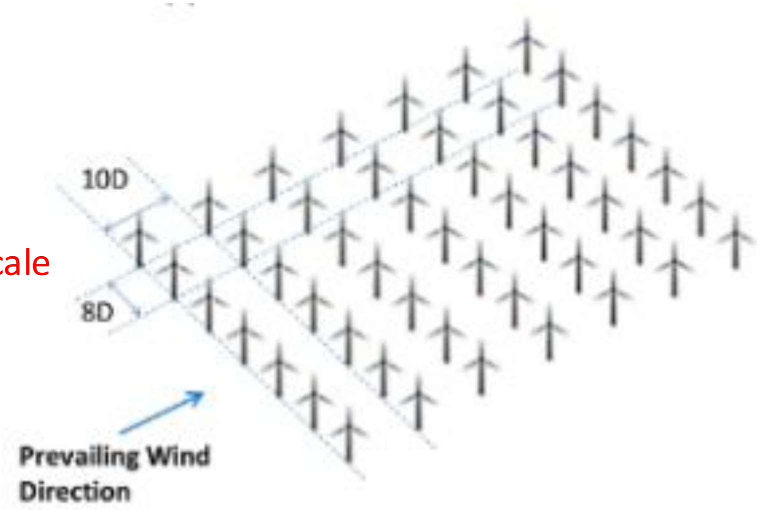


The breakeven distance where HVDC transmission becomes more cost effective is thought to be 30-60 miles – Gulf of Maine will like use HVDC systems.

https://medium.com/predict/future-of-electricity-transmission-is-hvdc-9800a545cd18

Turbine Spacing Increases With the Rotor Diameter

Turbine spacing shown is not to scale



- Typical spacing 6-8 rotor diameters
- Larger turbine spacing = fewer turbine positions but lower wake losses
- Turbine spacing is independent of anchor spread
- Lease area energy yield may be greater with tighter spacing but with diminishing returns and higher costs.

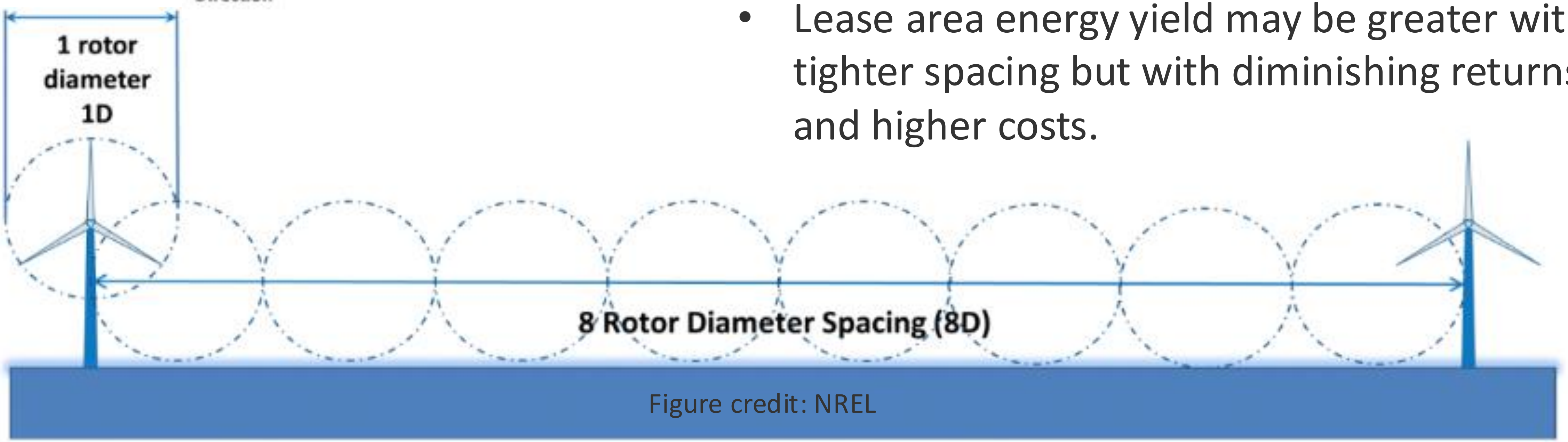


Figure credit: NREL

Example: GE 14-MW Haliade-X turbines with a 220-m rotor would be spaced over 1 mile apart

Floating Offshore Wind Commercial Port and Infrastructure Requirements

Photo Rendering of Future Salem Offshore Wind Terminal. Source: Crowley

Wharf

Length and draft must accommodate serial turbine/substructure assembly and delivery – (e.g., one unit per week)

Navigation Channel and Wet Storage

Storage and wet-tow out of assembled turbines with year-round access. Nominal width/depth about 100-m/8-m minimum

Upland Yard

30 – 100+ acre storage and staging of blades, nacelles, towers, possible fabrication of floating substructures

Crane

Minimum 800-ton lift capacity at 500 feet height to attach components

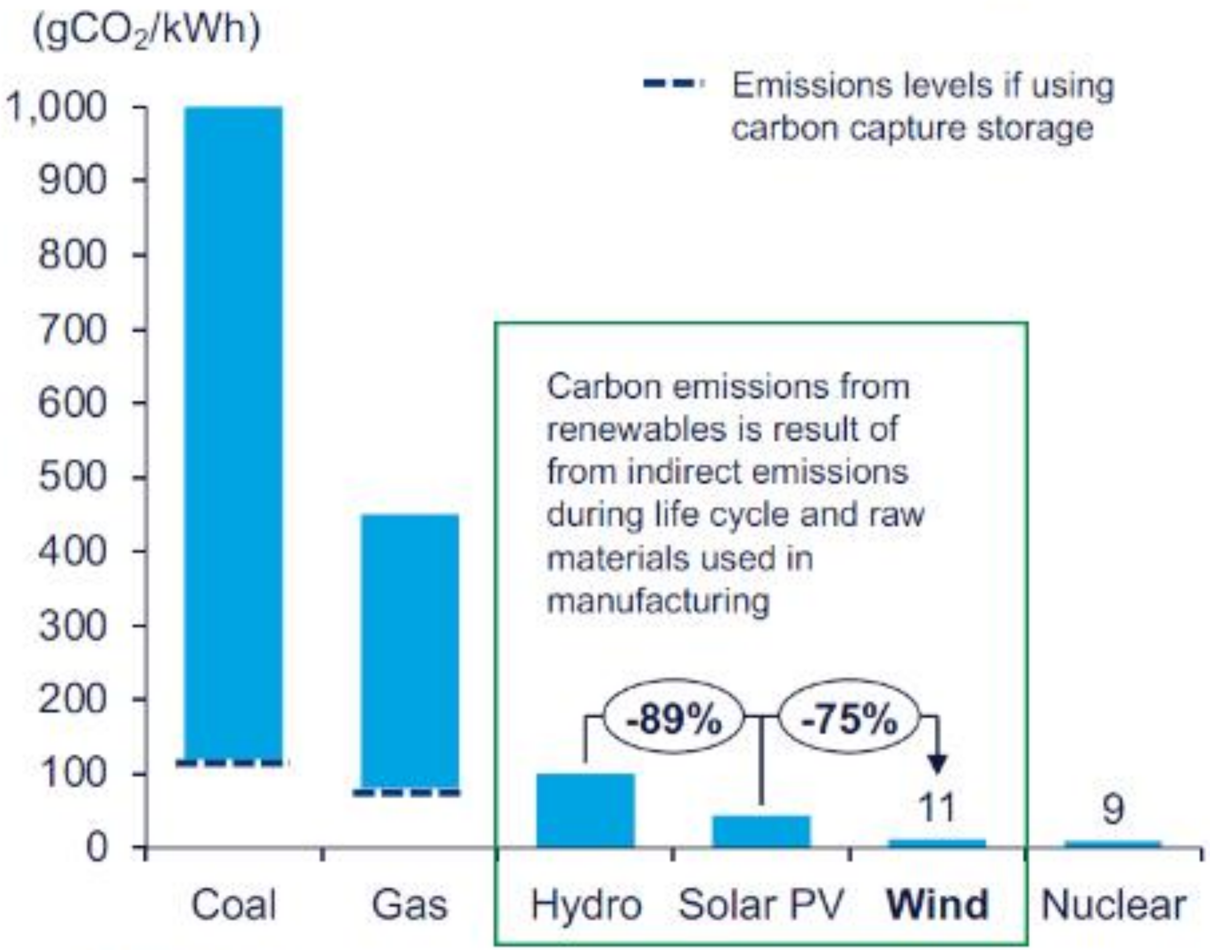
Crew Access & Maintenance

Moorage for crew access vessels. O&M berth for major repairs of full system

Wind power is still one of the lowest emitters of all power technologies

No power technology has achieved being carbon neutral over its life cycle but wind power has the potential to reach that possibility ahead of other technologies

Life cycle CO_2 emissions by technology type



Source: Wood Mackenzie, IEA

- All types of mainstream power generation technologies result in carbon emissions over its life-cycle
- **Within renewable energy, wind power has the lowest life cycle carbon emissions** with indirect emissions derived from raw material extraction and manufacturing of:
  - » Steel (in the turbine nacelle, tower, rotor and hub)
  - » Concrete (if inclusive of the foundations used to hold the turbine) in a wind power plant
- **Only nuclear power has a lower carbon lifecycle** than wind power but capex costs per MW can be 2-3 times more than solar and wind power plants
- Major global turbine suppliers have already reached carbon neutral in operations with plans to decarbonize life cycle emissions in the long term (see slide 13)
- **Reductions will largely come from greening of wind power supply chain** instead of buying third party offsets

Key Takeaways

- Offshore wind in the Gulf of Maine will use floating wind turbines
- 80% of the global offshore wind resources are suited for floating offshore wind energy. Gulf of Maine has some of the best in the world.
- Floating offshore wind is expected to be deployed globally at utility-scale by 2027.
- Mooring systems with smaller anchor footprints are under development to maximize co-existence with fishing.
- Floating or bottom mounted substations will likely be used in the Gulf of Maine. HVDC transmission may also be more economical.
- Wind energy is among the lowest carbon emitters on a life cycle basis.

Thank you for your attention!

Walt Musial
Offshore Wind Chief Engineer
National Renewable Energy Laboratory
walter.musial@nrel.gov

Photo Credit : Dennis Schroeder-NREL

Exploring approaches to fisheries' coexistence with floating offshore wind

PRESENTED TO: ME OFFSHORE WIND RESEARCH CONSORTIUM

PRESENTED BY: ERM AND GMRI

Sustainability is our business

ERM

Introduction

Sustainability is our business

Sustainability is our business

We are the world's largest pure play sustainability consultancy

Founded in 1971, we are the largest advisory firm in the world focusing solely on sustainability, offering unparalleled depth and breadth of expertise.

We shape a sustainable future with the world's leading organizations

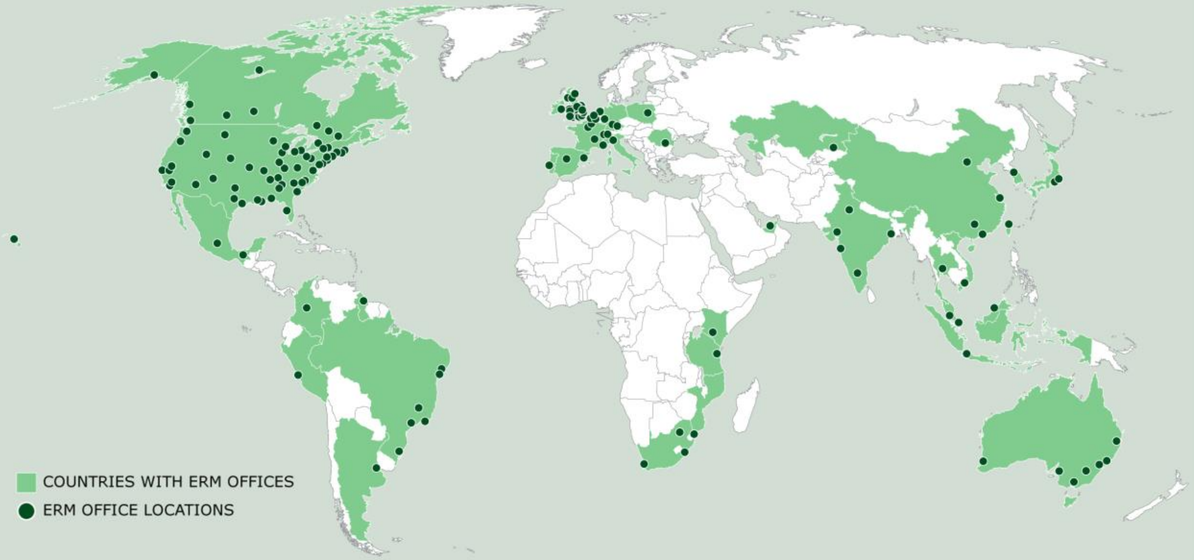
Our purpose guides everything we do. We create a better future by helping the world's biggest brands address today's sustainability imperatives.

We are the recognized market leader in sustainability services

Numerous industry benchmarks attest to our market leadership and the majority of our work is sole-sourced, reflecting trusted partnerships we build with our clients.

ERM OVERVIEW

8000+ Professionals	40 Countries & territories	**Climate change consulting Leader** Verdantix Green Quadrant 2023
150+ Offices	50+ Years of experience	#1 Sustainability service provider – HFS 2022

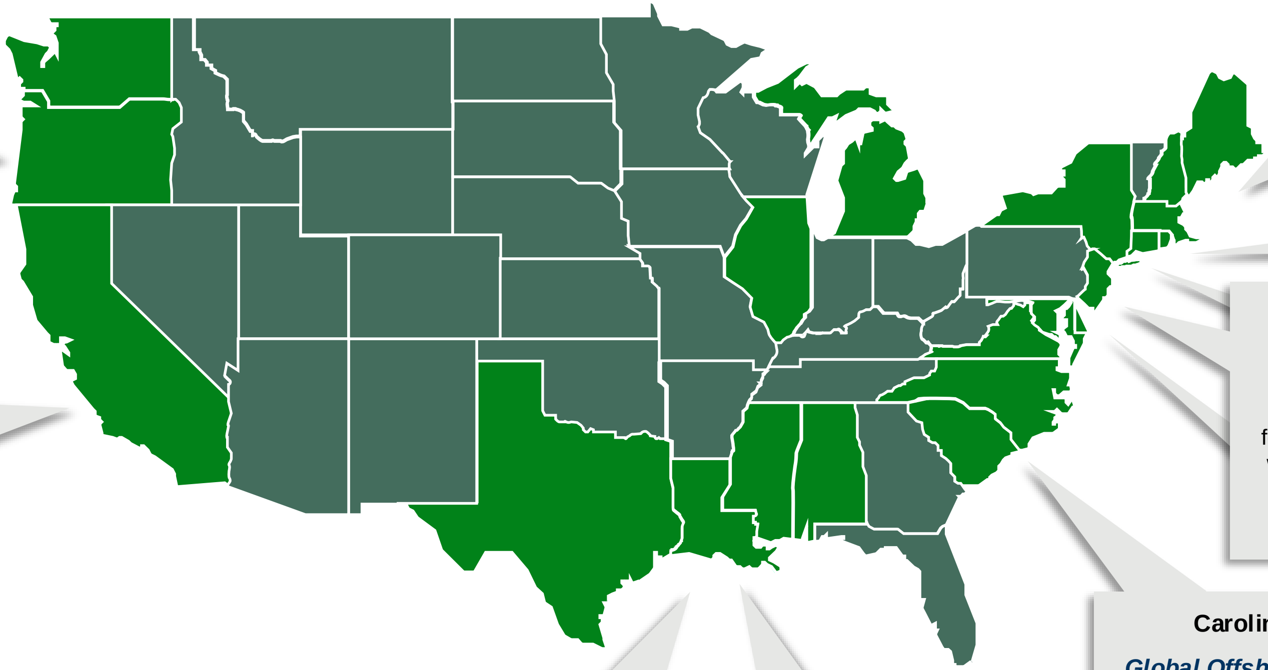


We partner with…

70%
of Fortune 100

55%
of Fortune 500

Representative OSW Experience in U.S.



Pacific Northwest

Global Offshore Energy Developer

Demand and market assessment of electricity and alternative offtake markets for West Coast entirety of West Coast.

California

Successful CA OSW Lease Winner

Extensive site characterization, risk and LCOE analysis/ranking, and market assessments to inform strategy and participation in the 2022 floating wind lease auction.

Gulf of Mexico

Global Offshore Wind Developer

Site characterization and in-depth route to market assessment informing market entry strategy.

Gulf of Mexico

Global Offshore Wind Developer

GIS constraint analysis and recommendations on blocks to nominate in response to the RFI. Follow-up engagement analyzed RFI responses to map and understand competitive interest.

Carolinas

Global Offshore Wind Developer

In-depth regional market analysis and utility assessment for route to market / offtake mechanism evaluation.

Central Atlantic

Global Offshore Energy Developer

Site characterization and in-depth route to market assessment informing market entry strategy.

New Jersey

Regional Utility

Lease auction price forecasting, projections of winning OREC bids, and cable routing analysis in prep for New York Bight auction.

New York

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

Involved in development of NYS OSW Master Plan as technical consultants and section leads. Also created the Supply Chain database and supplier matchmaking forums.

Massachusetts

VINEYARD WIND 1

ERM developed the EIS for Vineyard Wind 1 as BOEM's third-party NEPA contractor; also acts as developer's environmental compliance partner.

Gulf of Maine

Global Floating Wind Developer

Strategy analysis for Gulf of Maine including feasibility study, cost analysis, site characteristic analysis and offtake scenario modelling.

Offshore Wind Experience

GMRI

Gulf of Maine Research Institute

Core Capacities

Science

Education

Community

Ventures

Climate Center

Our Principles

Locally Focused

Globally Relevant

Interdisciplinary

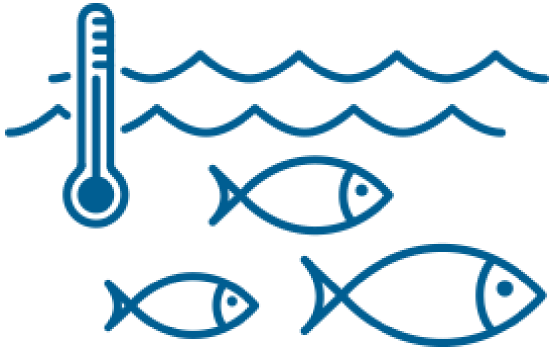
Independent and Objective

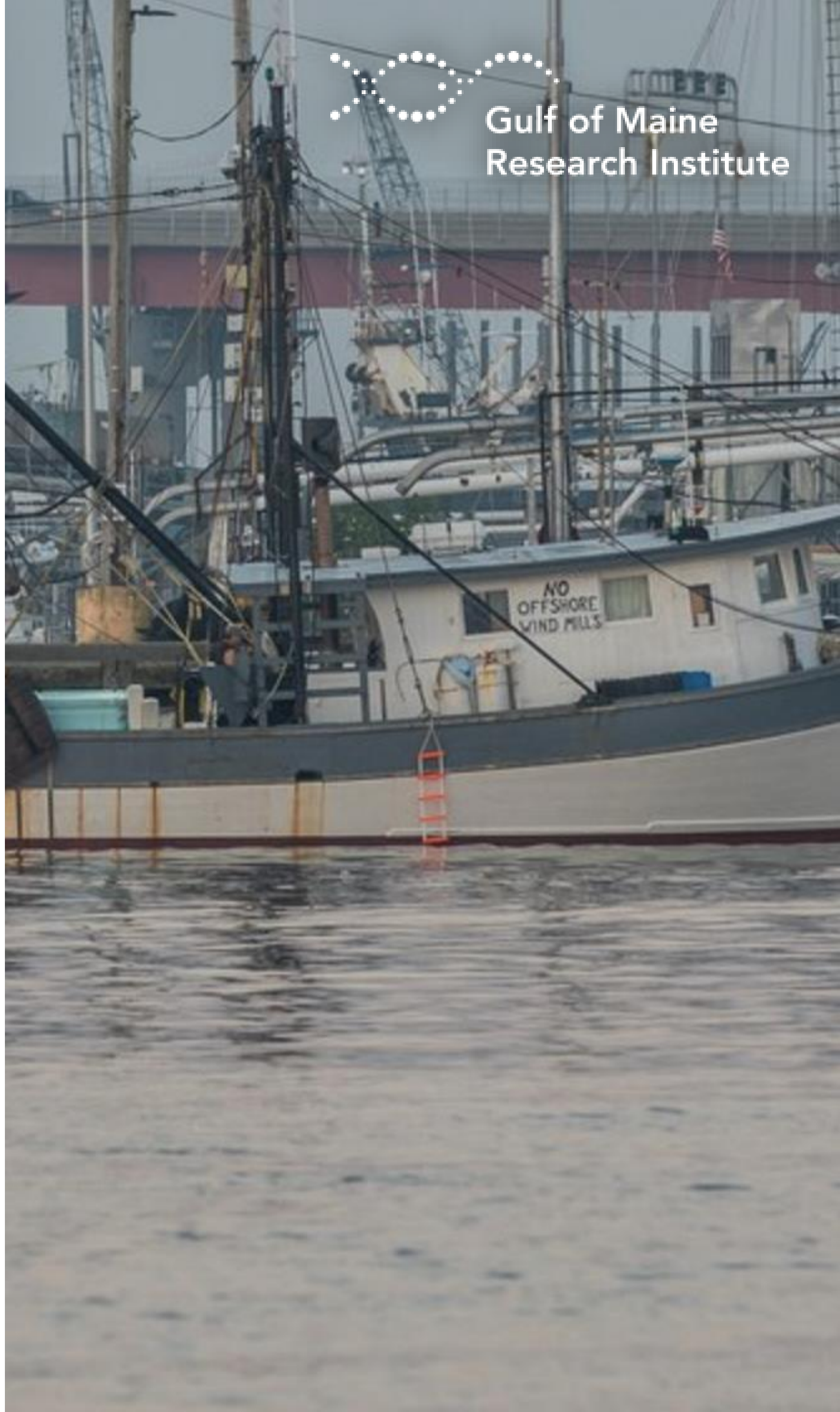
Inclusive and Collaborative

GMRI: Our Vision for Offshore Wind

A **community-centered** and **science-based approach** to floating offshore wind development in the Gulf of Maine reduces our carbon emissions, ensures a healthy ocean ecosystem, and generates economic prosperity across both the traditional seafood industry and the surrounding blue economy.

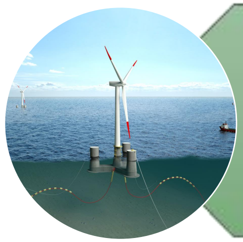
To achieve this ambitious vision, we will use our **science, engagement**, and **solutions** framework to ensure that offshore wind is on a path to being a true climate solution.





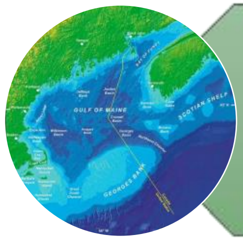
Scope of Work

Objectives



1. The study will contribute to filling key data gaps that are not being addressed elsewhere.

2. The research will build on existing resources and data for greater efficiency and immediacy of results.



3. The Project will allow the State to make sensible predictions for other regions/species/ applications/scales.

4. The Project will provide collaborative research opportunities with community members.

Project Tasks

Kickoff

Regulatory, Legal Requirement

Evaluate FOW Technology

Initial Guidelines

Report and Presentation

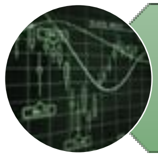
Define Coexistence

TASK 2 – DEFINE COEXISTENCE

EXPLORE EXISTING UNDERSTANDINGS

- Review and catalog existing relevant knowledge obtained through facilitation of BOEM stakeholder engagement meetings, port visits, virtual meetings, and phone calls with the fishing industry.

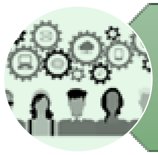
- Conduct desktop scoping regarding existing understandings, considerations, and definitions for coexistence.



- Conduct high-level socio-economic scans to supplement/test existing understandings of fisheries stakeholders.

- Coordinate with GEO on planned exploration approach and priority stakeholders (including those marginalized/vulnerable).

- Interview fishing stakeholders to further inform existing understandings of co-existence and research questions in three phases throughout project.



- Engage with agencies such as BOEM, NOAA, NMFS, and others identified through our initial research, to identify any existing definitions to ensure future alignment with federal policy.

TASK 2 – DEFINE COEXISTENCE

REFINE RESEARCH QUESTIONS AND APPROACH

- Fishermen and stakeholder input
- Collaboration with GEO
- Collaboration with the Maine Offshore Wind Research Consortium Advisory Board

Refine research questions

Identify likely scenarios to test for reaction

TASK 2 – DEFINE COEXISTENCE

IMPLEMENT ENGAGEMENT AND RESEARCH PLANS

To implement engagement and research, we will complete the following:

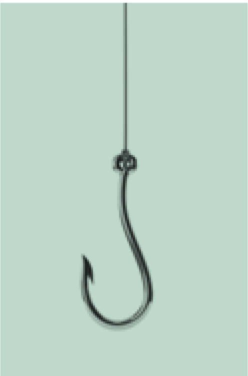
- Characterize current fishing operations (i.e., gear, locations, priority species, seasonality, vessels used, effort, and other relevant factors) through key informant interviews and the results of desktop research.
- Phase 1: engagement to test existing understandings and identify further research questions among fisheries stakeholders,
- Phase 2: engagement to understand interactions between the FOW technology scenarios specific to the various gear types used in the Gulf of Maine, and
- Phase 3: engagement to test draft guidelines with fishing stakeholders to consider their feedback, reactions, and opportunities for further research.

TASK 3 – REGULATORY, LEGAL, AND OTHER PROJECT REQUIREMENTS

- Review of existing knowledge relevant to FOW and global performance analyses to identify the consequences of the development of FOW on the fishing industry.
- Compile best industry practices and existing global regulations and standards to help regulators understand the potential impacts for the defined project locations and the FOW sites.
- Support identification of current best practices regarding the coexistence and sustainable fishery operation around FOW sites.
- Use European, Asian, and Australian regulations as example regulatory regimes because several offshore projects have been consented or approved using specific standards.
- Review other relevant standards for the floating offshore oil and gas industry (e.g., API RP 2T 2010), Bureau of Safety and Environmental Enforcement (BSEE), BOEM comprehensive studies, and other international regulations. We will seek NMFS and BSEE's input of the current approach and the motivation for seeking a review and alternative standards in the development area.
- Examine appropriate approaches to coexistence of industries in the region.
- Identify the technical challenges and critical parameters needed to effectively manage potential co-use conflicts to advise decision-makers on how these standards can be applied and implemented, and what site-specific analysis would be recommended.

TASK 4 – EVALUATE FOW TECHNOLOGY TO DETERMINE COMPATIBILITY

DESKTOP FISHERIES ASSESSMENT



- Key methods and gear types used to land the top 10 species by weight and/or value., differentiate between mobile (towed) gear and static gear (pots/nets).

- Commercial value of the top 10 species landed. Where possible, this will include landed value and added value following onshore processing/selling (for some species, the processed value is much greater again than landed value).

- Key target species – the top 10 species landed by weight/value will be identified and listed, along with a concise overview of any spatial/temporal trends associated with the fisheries targeting them (i.e., are any species seasonally targeted and/or specific to certain locations).

- Vessel types/sizes targeting the key fisheries in the Gulf of Maine and will comment on the overall fleet size. Commentary on fleet size will include details of whether the fleet has reduced or increased in size over the last 10 to 15 years and likely future trends (i.e., likelihood it will continue to increase/decrease in size).

TASK 4 – EVALUATE FOW TECHNOLOGY TO DETERMINE COMPATIBILITY

FOW TECHNOLOGY REVIEW

The Project Team will assess the compatibility of FOW technologies, layouts and/or designs in development against existing and future fisheries practices and equipment.

- The type of foundation: platform, mooring, and anchorage;
- The type of material considered for the concept construction;
- The technology readiness of the design (i.e., maturity of technology in preparation for commercial development); and
- The recorded activity/visibility of each concept in view of future commercial projects.

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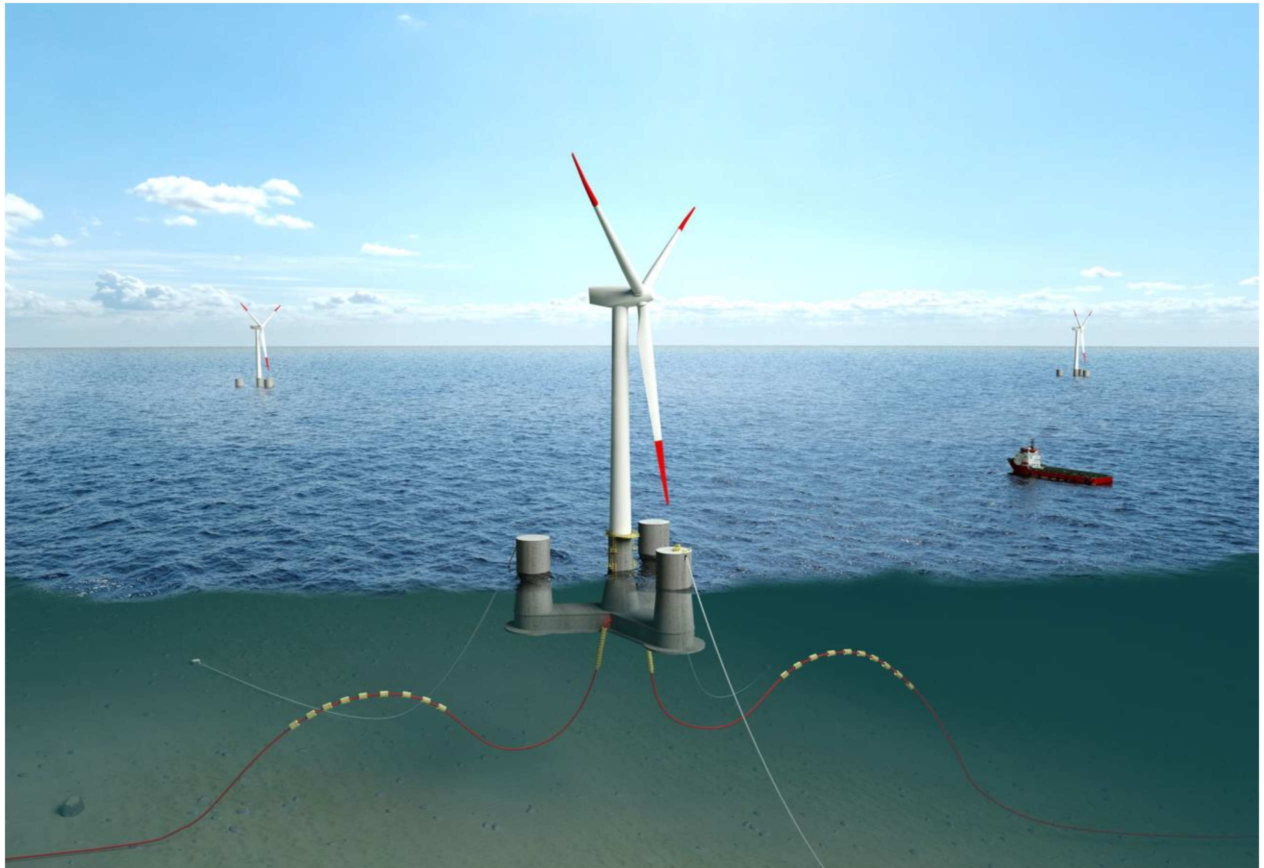
TASK 5 – PROVIDE INITIAL GUIDELINES

Tasks and Deliverables

A summary and key recommendations for development of sustainable co-existence between FOW and fisheries.

Underscore the importance of continuous programs to enhance the understanding and approaches of all involved parties.

Summarize ongoing research initiatives to address emerging challenges and opportunities in the intersection of FOW and fisheries and recommend future studies to fill key data gaps.



TASK 6 – SUMMARY REPORT AND PRESENTATION

Final Deliverables

- Due Dec. 31st

Final presentation

- Due January 31st 2025

Final report

Thank you

Alice Sandzen

Partner in Charge

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Technical Lead, Ocean Engineer

Tayebeh.TajalliBakhsh@erm.com

Questions and Discussion

Deliverables and Schedule

SCHEDULE AND DELIVERABLES

Upcoming Deadline	Deliverable
12-Mar-24	Task (1)Kickoff with GEO at GMRI
1-Apr-24 (latest)	Task (2.2) Engagement and Research Plan
1-Apr-24	Task (4.2) FOW Technology Review
1-May-24	Task (2.5) Case Study Review, and Task (3) Review of regulatory and legal requirements
21-Jun-24	Task (2.2)Phase 1 Report - refine research questions and approach, draft definition of coexistence
23-Aug-24	Task (2.4)Phase 2 Report - engagement on gear types and technology based on stakeholder engagement
30-Aug-24	Task (4.1, in parallel to 2.4) Desktop fisheries assessment
13-Sep-24	Task (4), memo, technology review Matrix
27-Sep-24	Task (5.1) Initial Guideline on Technical Basis, based on Phase 2
30-Oct-24	Task (5.2) Phase 3 Outreach and Feedback
22 Nov. 2024	Task 5 Report
20-Dec-24	Final Presentation, and Draft Report
15-Jan-25	Receiving Comments from GEO
31-Jan-25	Final Report

Informing Responsible Offshore Wind Development in the Gulf of Maine

Socioeconomic Data Inventory

Presentation to the Maine Offshore Wind Research Consortium | April 3rd, 2024

Maine Governor's Energy Office (GEO)
with Karp Strategies and Colby College

BACKGROUND

A year ago, Maine released the **Maine Offshore Wind Roadmap**, which lays out a plan to responsibly advance offshore wind.

The State established the **Maine Offshore Wind Research Consortium** and funded **initial research projects** intended to further understand the benefits of OSW while preserving Maine's vibrant maritime heritage and fishing industry.

One of the high priority research projects is **an Inventory of baseline data on socioeconomics of Maine fishing communities.**

Before the Consortium and GEO dedicates more time and resources for further studies, it is critical that we understand **what data currently exists,** where are **gaps in our collective research**, and what are **best practices** for this socioeconomic impact analysis.

PROJECT OVERVIEW

Project Team
Lead: Maine Governor's Energy Office (GEO)
Consultants: Karp Strategies and Colby College

Timeline
February 2024 – July 2024

Project Objectives

- Create a **comprehensive inventory of existing socioeconomic data** (jobs, industry data, supply chain) around fishing communities and the potential impacts of OSW
- Identify gaps in data and best practices in order to develop **recommendations on where and how GEO should prioritize future studies**

APPROACH

1 Participatory data inventory

Engage with stakeholders to identify and collect existing, available data

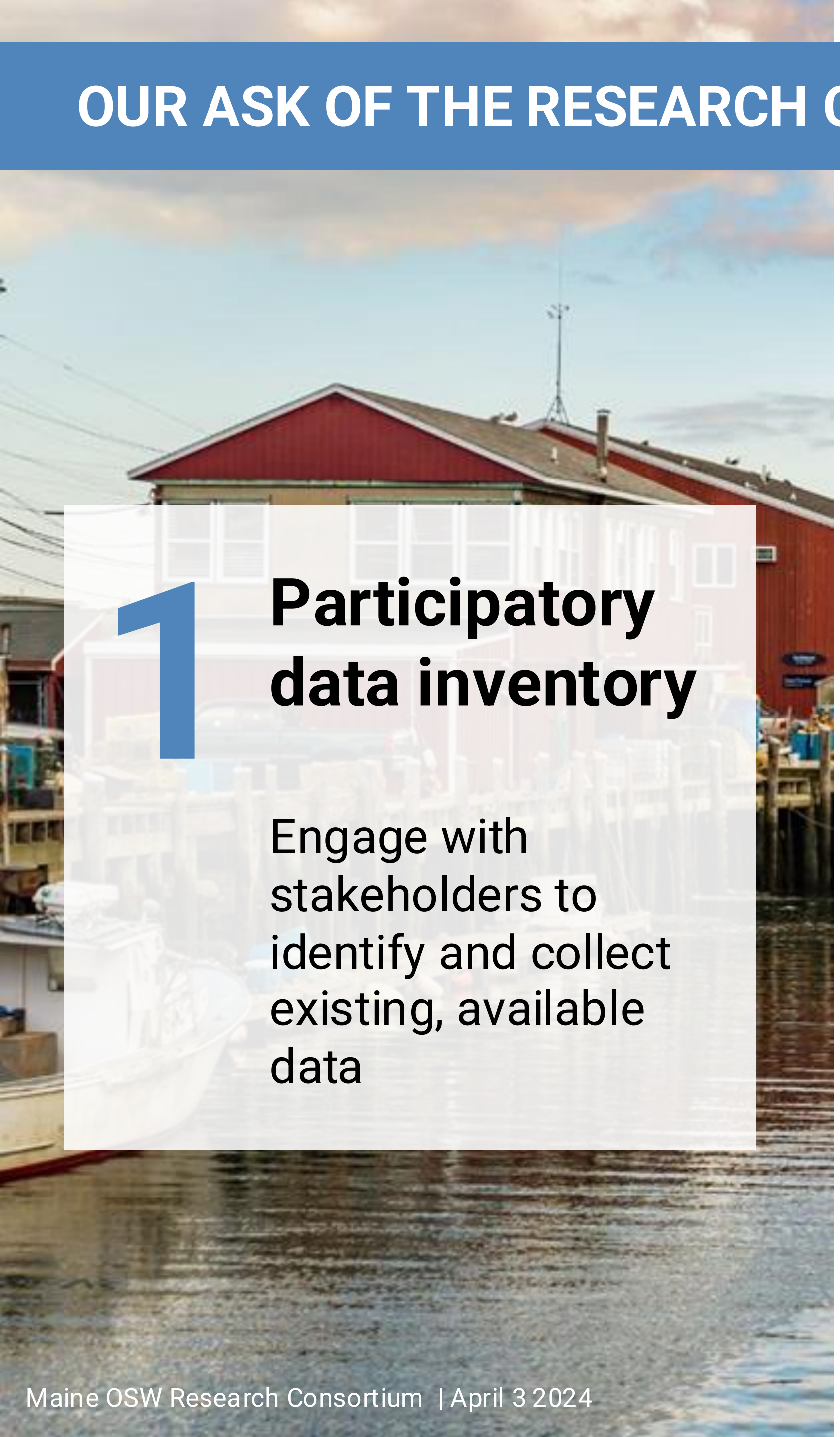
2 Research and data review

Supplement outreach with desk research to identify and review relevant data and analyses

3 Gap & best practice analysis

Highlight priority areas for future data collection and research investment

OUR ASK OF THE RESEARCH CONSORTIUM



1 Participatory data inventory

Engage with stakeholders to identify and collect existing, available data

We are asking for input from the Research Consortium to help our team **identify existing data and research** in order to establish this foundational shared knowledge and data inventory

WHAT WE ARE LOOKING FOR

What socioeconomic data is relevant to our study?

Any information that measures the qualities or well-being of Maine's fishing population and businesses.

- Social: Age, race/ethnicity, gender, language spoken, etc.
- Economic: Income, housing burden, poverty levels, etc.
- Workforce: Education attainment, unemployment, occupation, etc.
- Business: Number of employees, annual revenue, business location, etc.

Where can this data be found?

- Prior planning studies led by the state or industry stakeholders
- Academic research
- OSW project specific study or impact analysis
- Fishing industry or related industry analysis
- Studies on housing, education, health, or other topic area
- Community-led advocacy efforts
- Business membership organizations (Chambers of Commerce, merchant groups)

SURVEY LINK & NEXT STEPS

Are you aware of any data or research that might be relevant to Maine fishing communities?

- We are holding 10 minutes at the end of this meeting to complete a short survey
- We welcome any and all recommendations!
- The Consultant Team will be staying on after the meeting to answer any questions or discuss potential data leads
- After this, the Consultant Team will follow up to have more detailed conversations regarding data leads

Thank you!

Please direct any questions to:

Alison Bates, Colby College
awbates@colby.edu

Annie White, Karp Strategies
annie@karpstrategies.com

NEXT STEPS

Reminders:

- AB Membership Recruitment (Deadline April 5)
- Next meeting: May 6 in Orono (hybrid)

Next steps in Prioritization Process

- April 3 – May 6:
  - Further refine Research Question 1-pagers
  - Send to AB in advance of May 6
- May 6 (AB meeting): Recommend Research Questions to move into RFP

GOVERNOR'S Energy Office MAINE | Sea Grant MAINE | CARBON TRUST | SAMBAS Consulting LLC

Contact

Program manager: Katy Bland – katy@neracoos.org

GEO contact: Stephanie Watson - Stephanie.Watson@maine.gov

Program advisor: Laura Singer - laura@SAMBASconsulting.com

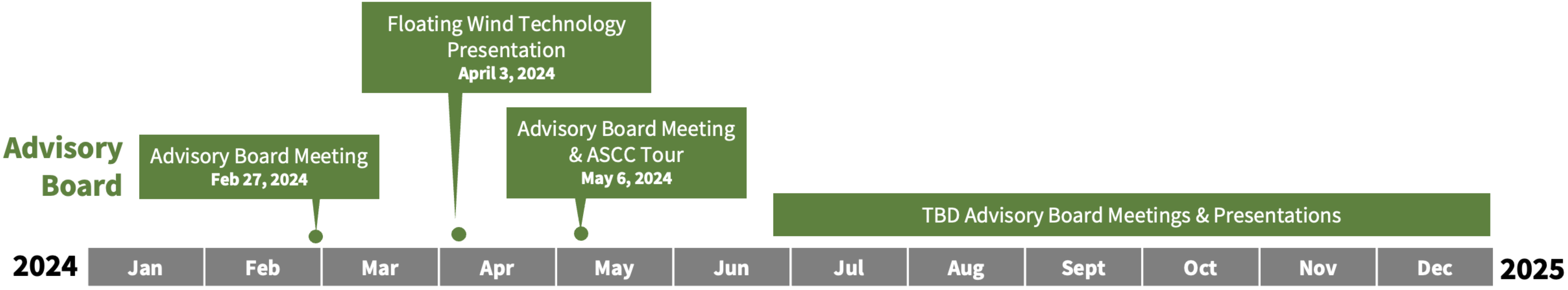
Program advisor: Olivia Burke – Olivia.i.burke@carbontrust.com

https://www.maine.gov/energy/initiatives/offshorewind/researchconsortium

Research Consortium Anticipated Timeline for 2024

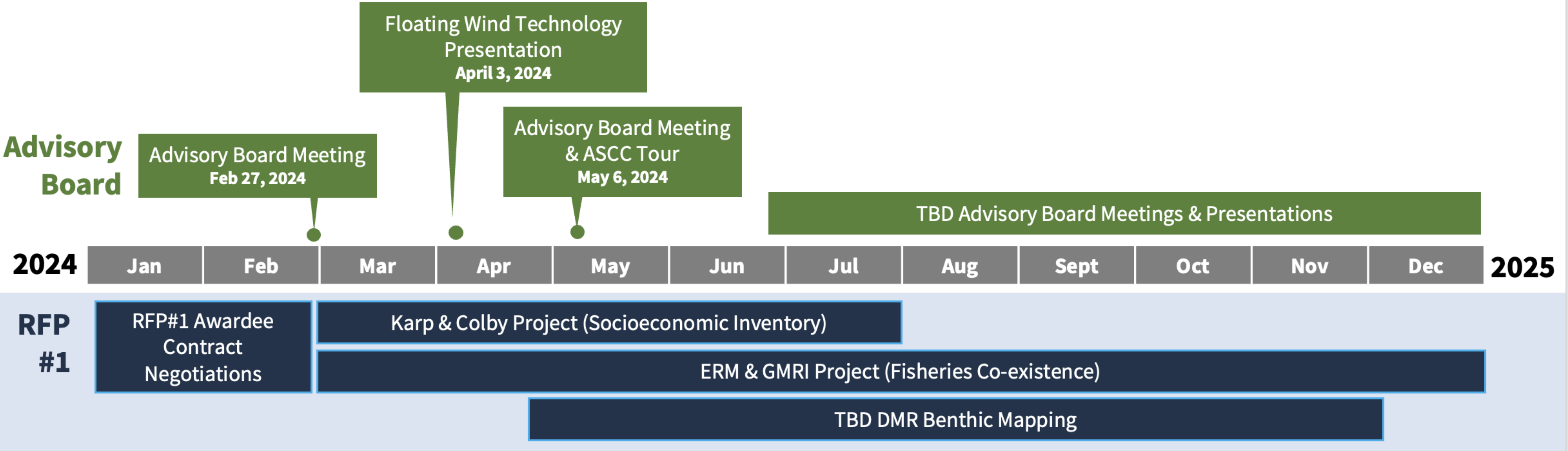
2024 Proposed Research Consortium Timeline

Timeline Updated February 26, 2024



2024 Proposed Research Consortium Timeline

Timeline Updated February 26, 2024



2024 Proposed Research Consortium Timeline

Timeline Updated February 26, 2024