# Maine Offshore Wind Research Consortium
# Advisory Board
## *Spotlight on Floating Wind Substructure Technology & Currently Funded Projects*
## Webinar Summary

Wednesday, April 3, 2024
2:00PM – 4:00 EDT

Meeting materials are available here.
Recording of Walt Musial's (NREL) presentation is available here (Governor's Energy Office Youtube).

### Meeting Objectives

On April 3, 2024, the Maine Offshore Wind Research Consortium (Research Consortium) Advisory Board (AB) held a virtual "webinar" meeting. The objectives of this webinar were to:

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

### Welcome & Introductions

Opening remarks given by Terry Alexander acknowledged that this webinar will help answer questions about new technologies, and that he looks forward to learning about the projects that the Research Consortium funded through the first RFP. Katy Bland, program manager (Maine Sea Grant) reviewed the meeting agenda and objectives, and gave a brief overview of the meeting guidelines, noting that Walt's presentation will be recorded. She introduced Walt Musial, Principal Engineer at the National Renewable Energy Laboratory to the webinar participants.
A list of AB members participating in the meeting and meeting observers is in Appendix A.

### Presentation: Floating Offshore Wind Substructure Technology for the Gulf of Maine

Presenter: Walt Musial, National Renewable Energy Laboratory

- Presentation recording is available on the Governor's Energy Office Youtube channel here.
- Purpose: Provide an overview of the FOW technology options that are suitable for the Gulf of Maine
- For more detailed information from the presentation, see the meeting slides on the meeting archive page.
- Key information:
    - Review of basic floating platform types that may be used in the Gulf of Maine, including semisubmersible, spar buoy, and tension leg platform. Each technology comes with its own set of benefits and challenges (see slides), and the type of platform that is best suited for the Gulf of Maine will depend on depth, substrate, and cost, among other factors.
    - Mooring systems with smaller anchor footprints are under development to maximize co-existence with fishing. Different mooring options include caternary, semi-taut, and taut mooring systems.
    - Floating or bottom mounted substations will likely be used in the Gulf of Maine. Both full-scale floating substations and bottom mounted substations are still under development.

- 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. Export cable distances greater than about 50 miles will likely use high voltage direct current systems (HVDC) to reduce losses and costs, meaning HVDC transmission will likely be more economical.
- Key decision points for commercial developers regarding FOW in the Gulf of Maine:
  - Construction and Operations Plans (COP) and power offtake contracts - lock in key variables like turbine size, turbine layout, projects size, foundation type, Safety Management System. *COP submission approximately 2-5 years after lease auction.*
  - Facility Design Reports (FDR) and Fabrication and Installation Reports (FIR) - lock in final design and installation details — turbine type, anchor type and exact locations; installation plans. Power offtake agreement is needed to obtain financing. *FDR/FIR submission approximately 4-8 years after lease auction.*

Discussion

- Question about how offshore wind deployed will be able to coexist with fisheries in other places such as California. Response is that the two geographical areas are substantially different with much deeper water depths in California, and many of the concerns about fishing activities in Maine are not relevant to California.
- Question about how ocean depth might influence anchoring and mooring technology. Response that across the current BOEM Wind Energy Area for the Gulf of Maine, no depth exceeds 200 to 300 meters, so the technologies used in the Gulf of Maine will differ from those off California with waters 750-1000 meters deep.
- Question about placement of substations. Response that they are likely to be placed closer to the shore-side of the lease area, but still within the lease area with enough margin to connect all cables. Substations would not be in the center of lease areas, as it becomes harder for ships to access them. The question of substation placement is still under investigation.
- Question about durability of synthetic mooring lines under different conditions. Response that this technology is well-tested in the offshore energy industry. The mooring lines, like all others, are subject to biofouling; however, the primary concern with this technology is secondary entanglement.
- Question about DC lines and their onshore crossover point (point at which HVDC transmission lines are more economical on land). Response that on land, HVDC transmission lines are economical over about 300 miles cable length, but in the offshore context, HVDC is economical over a much shorter cable length.
- Question about workers' access to the lease area. Response that crew transfer vessels would approach the turbines, and other service operation vessels would hotel the crews offshore.
- Question about HVDC cooling. Response that there are different cooling methods (Air cooled or water cooled), and each method has its own economic and environmental considerations.

## PROJECT OVERVIEW (RFP#1 TOPIC: EXPLORING CO-EXISTENCE) - ENVIRONMENTAL RESOURCES MANAGEMENT, GULF OF MAINE RESEARCH INSTITUTE

Project title: "Exploring approaches to fisheries' coexistence with floating offshore wind"

Presenters: Alice Sandzen (ERM) and Hannah MacDonald (GMRI)
Timeline: April 2024 – January 2025, with a final presentation before the end of 2024.

Alice Sandzen (ERM) and Hannah MacDonald (GMRI) provided an overview of their organizations and roles in the project, before describing the project goals and timeline. Their project objectives are:

- Contribute to filling key data gaps that are not being addressed elsewhere
- Build on existing resources and data for greater efficiency and immediacy of results
- Allow the State to make sensible predictions for other regions/ species/ applications/ scales.
- Provide collaborative research opportunities with community members

Overall, the objective is to be collaborative, and the project leads will be seeking feedback throughout the duration. The project consists of the following tasks: Task 1 – Project Kickoff; Task 2 - Define Coexistence; Task 3- Regulatory, legal, and other project requirements; Task 4- Evaluate Floating Offshore Wind Technology to Determine Compatibility: Task 5- Provide Initial Guidelines; Task 6 - Summary Report and Presentation. For more detailed information from their presentation, see the meeting slides on the meeting archive page.

Discussion:

- Comment to make sure we are going to concentrate also on the people who are Maine based but fish out of Massachusetts. The presenters noted that the premise of their project will consider the dynamic nature of the Gulf of Maine and that fishermen based in one area may fish all over the Gulf of Maine. Their fisheries engagement plan is currently under review by the Governor's Energy Office and the Advisory Board Ad Hoc Fisheries Engagement Plan subcommittee for review. The Advisory Board should point to how to engage the right people, and the project team is also looking for feedback right now. Katy noted that if other Advisory Board members would like to join this Ad Hoc Fisheries Engagement Plan subcommittee, please reach out to GEO via Meghan Suslovic.

## PROJECT OVERVIEW (RFP#1 TOPIC: SOCIOECONOMIC DATA INVENTORY)
## KARP STRATEGIES, COLBY COLLEGE

Project Title: "Informing Responsible Offshore Wind Development in the Gulf of Maine"
Presenters: Alison Bates (Colby College) and Annie White (Karp Strategies)
Timeline: February 2024 - July 2024

Alison Bates and Annie White provided an overview of their affiliations and project background, before describing their roles and the project goals and timeline. They noted that one of the high priority research projects for the Consortium is an inventory of baseline data on socioeconomics in Maine fishing communities. Before the Research Consortium and GEO dedicate more time and resources for further studies, it is critical that we understand what data currently exists, where the gaps in collective research is, and what the best practices for a socioeconomic impact analysis are. Their project objectives are:

- 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

They will approach these objectives by conducting 1) a participatory data inventory to engage with stakeholders to identify and collect existing, available data that measures the qualities or well-being of Maine's fishing population and businesses; 2) a supplemental review of data and research to identify and review relevant data and analyses; and 3) a gap analysis and best practice analysis to highlight priority area for future data collection and research investment.

The project team finished their presentation by asking the Advisory Board and collaborators to take 10 minutes to fill out a short survey, and noting that they will follow up to have more detailed conversations regarding data leads. Their survey can be found here. For more detailed information from their presentation, see the meeting slides on the meeting archive page.

## NEXT STEPS

Katy concluded the meeting by reminding the meeting participants that:

- The Advisory Board is still looking for expertise in marine mammals, economics, and technology/supply chain to round out the Advisory Board expertise. Individuals should submit materials by Friday, April 5.
- The next Advisory Board meeting is in-person on May 6 in Orono, with more details to come via email. In advance of this meeting, the Carbon Trust will continue to conduct outreach for input on research question 1-pagers. The 1-pagers will be sent out to the Advisory Board in advance of the May 6 meeting. On May 6, we will discuss each research question as a full group and start identifying which questions will be recommended for future funding.

## APPENDIX A – ATTENDANCE

**Advisory Board Members**

Terry Alexander, F/V Jocka, Co-Chair
Alison Bates, Colby College, Co-Chair
Dave Cowan, Diamond Offshore Wind
Bob Humphrey, Sport-Ventures
Patrice McCarron, Maine Lobstermen's Association
Walt Musial, NREL
Bill Needelman, Portland Waterfront Coordinator
John Perry, Department of Inland Fisheries and Wildlife
Jocelyn Runnebaum, The Nature Conservancy Maine
Daniel Salerno, Fisheries Scientist, Limington, Maine
Graham Sherwood, GMRI
Anthony Viselli, University of Maine
Stephanie Watson, Governor's Energy Office
Gayle Zydlewski, Maine Sea Grant

**Collaborators**

Fiona Hogan, RODA
Mike Pol, ROSA
Linda Welch, USFWS
Kim Spiller, USFWS
Lisa Engler, MassCEC
Nils Bolgen, MassCEC
Hollie Emery, Massachusetts Coastal Zone Management
Renee Zobel, NHF&G
Chris Williams, NHDES
Morgan Brunbauer, NYSERDA
Jake Kritzer, NERACOOS
Caitlin Shanahan, NERACOOS
Kori Groenveld, NOWRDC

**Tribal Communities**

Ralph Dana, Passamaquoddy - Pleasant Point (Sipayak)

**RFP#1 Awardees**

Rebecca Karp, Karp Strategies
Annie White, Karp Strategies
Gopi Malathie, Karp Strategies
Shreya Bishnoi, Karp Strategies
Alice Sandzen, ERM
Allison Ahcan, ERM

Lyndsey Colburn, ERM
Tayebeh Tajalli Bakhsh, ERM
Hannah MacDonald, GMRI
Chas Van Damm, GMRI

**Program Management, Advisors, and State Agency Staff**
Laura Taylor Singer, SAMBAS Consulting LLC
Meghan Suslovic, ME GEO
Katy Bland, Maine Sea Grant
Julia Hiltonsmith, Maine Sea Grant
Beth Bisson, Maine Sea Grant
Jess Jansuwicz, Maine Sea Grant
Erin Wilkinson, ME DMR
Casey Yanos, ME DMR
Erin Wilson, ME DMR

Additional observers attended in person and online.

## APPENDIX B – ZOOM CHAT SUMMARY

- Question: how does the onshore/offshore economic cross over compare these days for HVDC? what is the economic line length for a high voltage DC line onshore?
    - Response [verbal]: HVDC onshore is economical only over about 300 miles. Offshore, HVDC is economical at a much smaller distance.

- Question: The Wind Energy Area (WEA) has led ISO-NE to adjust their assumed Point of Interconnection (POIs) to be located in Massachusetts in the 2050 Longer-Term Transmission study. Has there been any change in the target POIs for the research array from Yarmouth / Wiscasset?
    - Response: "https://www.nrel.gov/wind/atlantic-offshore-wind-transmission-study.html this study may help answer your question."

- Question: Will aquaculture be a part of the socio-economic research?
    - [response discussed after end of meeting]

- Contacts shared:
    - Re: ERM/GMRI project: Hannah MacDonald - Fisheries Engagement Program Manager - GMRI hmacdonald@gmri.org
    - Re: Projects' Stakeholder Engagement Plan review: Meghan Suslovic - meghan.suslovic@maine.gov

- Survey link from Karp/Colby project team (feedback welcomed from all meeting participants and observers): https://forms.gle/7h4gfQYMnwwnyu9a7