Maine Offshore Wind Research Consortium Research Strategy

Version 2

Updated December 2025

Originally Published February 2024

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Purpose of this Document

This document serves as the Research Strategy for the Maine Offshore Wind Research Consortium pursuant to 35-A MRSA S3406, 3. Research Strategy. The Research Strategy outlines the priority research ideas and questions identified by the Maine Offshore Wind Research Consortium (the Consortium) and describes the prioritization process the Advisory Board uses to identify projects for funding. The Consortium undergoes a priority setting process on an annual basis to generate and/or update an evolving list of research topics and questions. This dynamic list signals to funders, researchers, and other interested parties the most pressing questions identified through an open and transparent process by a cross-section of experts and interests in floating offshore wind in the Gulf of Maine.

Introduction and Background

Maine has over a decade of experience researching and planning for floating offshore wind to serve as a local, renewable alternative to Maine's over-reliance on heating oil and price volatile natural gas-generated electricity. In 2019, Governor Mills launched the Maine Offshore Wind Initiative, which focuses on how to responsibly advance offshore wind in a manner that minimizes impacts to the Gulf of Maine and existing users while strategically taking advantage of the significant economic opportunity that offshore wind holds for the state and region. As part of the Initiative, the Department of Energy Resources (DOER; formerly the Governor's Energy Office) led an 18-month strategic planning process that resulted in the Maine Offshore Wind Roadmap. The development of the Roadmap signaled the state's desire to realize the economic, energy, and climate benefits from offshore wind while protecting the environment and existing ocean users.

About the Maine Offshore Wind Research Consortium

In July 2021, the Maine Legislature established the Maine Offshore Wind Research Consortium and directed DOER to serve as the coordinating agency. The governance structure of the Research Consortium was developed based on the enabling legislation (Title 35-A, §3406) and a series of interviews with individuals who have a variety of interests, perspectives, and expertise. The structure includes an *Advisory Board* (AB) (see Appendix A) with representation from the commercial and recreational fishing industries, research scientists with relevant expertise, coastal community leaders, Maine-based environmental groups, marine wildlife researchers, commercial offshore wind industry experts, Tribes, and state agencies. The Advisory Board identifies and prioritizes project topics to inform funding recommendations. The *Steering Committee* (SC) (see Appendix B), comprised of state agents from DOER, Maine Department of Marine Resources (DMR), Maine Department of Inland Fish and Wildlife (MDIFW), and two Advisory Board Co-Chairs elected by their peers (one for fisheries, one for non-fisheries), makes formal recommendations to the State around budget allocation and research portfolio and guides the overarching direction of the Consortium in support of the objectives. The Research Consortium also solicits input from *Collaborators* who represent other states, federal partners, and related regional and national organizations to ensure the research aligns with broader efforts and to create opportunities for collaborative research that leverages funding and resources for greater impact (see Appendix C for full list of Collaborators). The Collaborators contribute to discussions, share relevant updates and provide technical review as needed, but are not part of the decision-making process. The Research Consortium is supported by a Program Management (PM) team (see Appendix D).

The Advisory Board established the following goals and objectives and outlined key strategies to implement their work.

Goal

The Maine Offshore Wind Research Consortium aims to create a common understanding of the local and regional impacts (positive and negative) of floating offshore wind in the Gulf of Maine. The consortium may prioritize, scope, commission, and/or find collaborative partners to implement scientific studies on the ecological, technological, economic, and social impacts to achieve this goal.

Objectives

- Explore opportunities and challenges that floating offshore wind poses to current and future uses in the Gulf of Maine, including how to best support co-existence with the fishing industry.
- Identify methods to avoid and minimize impacts on ecosystems and existing uses of the Gulf of Maine.
- Investigate ways to realize cost efficiencies in commercialization of offshore wind to reduce potential costs to ratepayers.
- Support conservation actions and projects that support species and habitats impacted by offshore wind development.

Strategies to Achieve Objectives

- Identify priority data gaps and research needs to achieve the above objectives, building off other initiatives.
- Share knowledge and promote joint learning about floating offshore wind technology, the Gulf of Maine ecosystem, and the current ocean users.
- Collaborate and partner with government entities and other organizations focused on floating offshore wind research and monitoring in the Gulf of Maine.
- Coordinate, support and leverage funds to commission research and monitoring.
- Promote communication and implementation of research results and data in a timely manner.

Floating Offshore Wind Research Themes

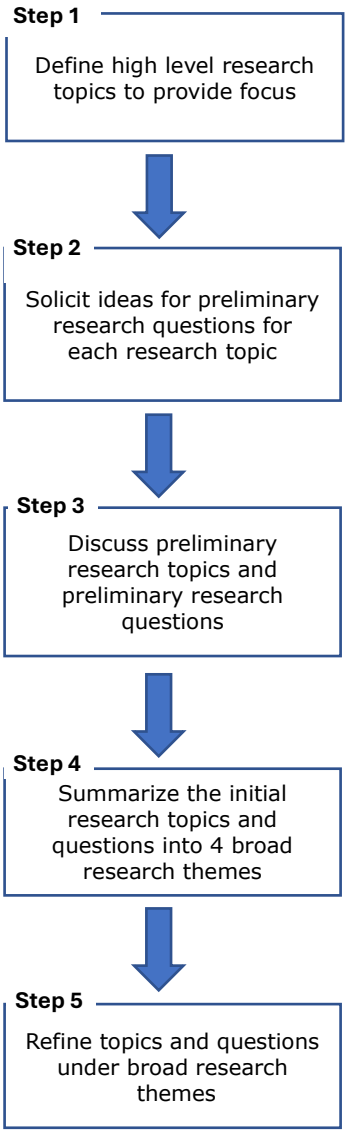
Process for Establishing High-Priority Guiding Research Themes and Topics

The Research Consortium developed research priorities over a series of meetings from January to September 2023 through an iterative process. The process was designed to build upon recent work to identify priorities through the Maine Research Array conversations, Roadmap working group recommendations, and other regional organizations as applicable to the Gulf of Maine and floating offshore wind projects. These included relevant work products from the Responsible Offshore Science Alliance (ROSA), the Regional Wildlife Science Collaborative (RWSC), National Offshore Wind Research & Development Consortium (NOWRDC), and New York State Energy Research & Development Authority (NYSERDA) technical working groups. Input on the research priorities was received through Advisory Board discussions, online surveys, and smaller meetings among content experts.

The Consortium placed strong emphasis on scoping research initiatives that deliver cost-effective benefits by building on existing efforts, with a particular focus on the unique ecological and operational niche of floating offshore wind within the Gulf of Maine. This

approach ensures that new research complements or enhances ongoing efforts by leveraging resources and avoiding duplicative research. The priority list consists of cross cutting "research themes" which address the overall Consortium objectives and goals. "Research topics" provide more detailed direction and assist Consortium partners in proactively seeking and responding to funding opportunities, in addition to designing "research ideas and questions" in-line with the overarching goals

The following flow chart outlines the steps taken to arrive at the research themes.



Review of Existing Research Priorities

Review existing materials (e.g. from sources such as legislation, research array, and working group summaries) to identify a list of high-level research topics to focus the initial discussion.

Mini workshops

A standard template was circulated to Advisory Board members to gather missing research topics and ideas for preliminary research questions in line with the Consortium's goal. Template covered: research question/ key idea (what), objective (why) and potential approach (how). The research questions/key ideas were compiled and sorted by the Program Management team.

Advisory Board Meeting

At in-person Advisory Board meetings (when possible), AB members discussed preliminary research questions, and began to discuss the process and desired criteria for prioritizing research questions. Additional research questions/topics were raised during the meeting and topics were refined.

Program Management Team Summary

Following the workshop, the research topics were further refined based on the input at the Advisory Board meeting. The list of research topics was grouped into four broad research themes: 1) Reduce co-use conflicts, 2) Impacts on wildlife, 3) Socio-economic impacts and community benefit, 4) Technology Development

Advisory Board Meeting

The Advisory Board and Collaborators worked through breakout groups to discuss and refine the types of research questions under each of the four broad research topics.

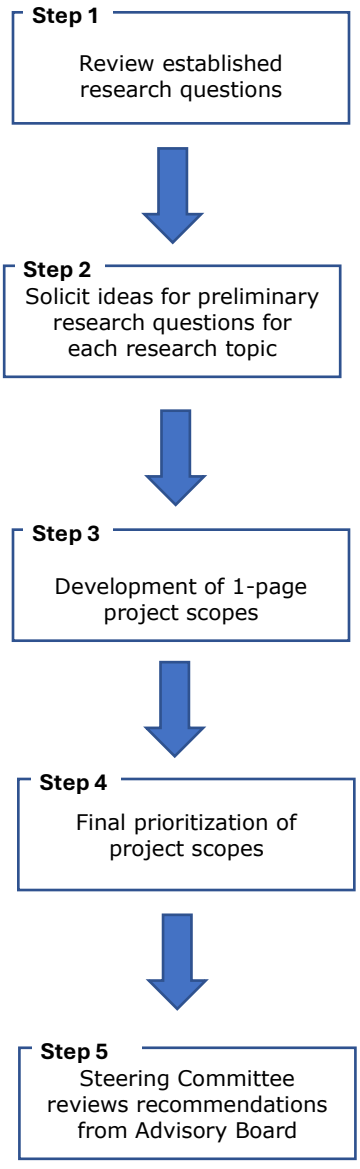
High-Priority Research Themes and Topics

	Research Themes			
	Reduce co-use conflicts	**Socio-economic impacts and community benefits**	**Impact on ecosystems**	**Technology development**
Research Topics	Collection of baseline data to inform siting and understanding of the impact on commercial and recreational fisheries and ecosystems currently and historically happening in areas where arrays and transmission are proposed or sited	Socio-economic impacts of offshore wind industry development on Maine coastal communities	Investigate interactions of floating offshore wind at various stages (i.e., site assessment, construction, and operations and maintenance) in regards to developing an interdisciplinary understanding of change and impact over time and space on Gulf of Maine species (baseline data and site assessment to better understand species composition, distribution and cumulative effects)	Explore advancements in mooring and anchoring concepts for floating foundations.
				Floating wind operations and maintenance approaches to reduce costs, improve safety and increase efficiency.
	Technology assessment/ methods to reduce co-use conflicts	Necessary preparation for Maine's supply chain and workforce to support floating offshore wind	Examine potential sensory stressors (sound, vibration, EMF) on wildlife from OSW transmission infrastructure, including pre-deployment, construction, and operation, and how they can be avoided or minimized	Assess shoreside infrastructure and other requirements to advance industrialization of the floating supply chain.
				Methods to optimize integration of renewable energy into the grids
			Methods to integrate and advance wildlife deterrent and ecological monitoring technology with floating offshore wind projects to minimize impacts.	Develop technologies to monitor and minimize impacts to wildlife.
				Autonomous systems and validation of new technology

Research Project Solicitation

Recurring Project Prioritization Process

Driven by the ongoing evolution of research themes and topics, the Consortium follows a cyclical process for prioritizing research. After high-priority research themes and topics were defined, the first round of research priorities was selected by the Advisory Board in 2023, which led to funding for initial projects through competitive proposals. Each subsequent year, the Advisory Board has reviewed progress on funded projects, updated research priorities based on new findings and emerging needs, and identified the next set of high-priority projects. This iterative process ensures continual alignment with legislative requirements, existing research, and ongoing funding opportunities.



Review of Existing Research Priorities

All research questions and project ideas are documented in a running list which is kept up to date by the Program Management team. At the start of each round of prioritization, this list is shared with the Advisory Board and Collaborators to understand which research ideas remain most timely or relevant.

Mini-workshops

Advisory Board members and Collaborators attend virtual mini-workshops to review the ongoing list of project ideas and/ or identify additional questions related to each of the research themes. Based on the present landscape (including factors such as funding opportunities and research gaps), attendees are asked to identify highest-priority research needs specific to the Gulf of Maine and floating offshore wind.

Information Gathering and Small Group Meetings

Data gaps are further explored through a series of small group discussions with content experts. These conversations help guide the development of 1-page project ideas (referred to as 1-pagers) outlining a high-level scope that can be used to craft an RFP or RFA. 1-pager details include an estimated cost, duration, objectives and expected benefits.

Advisory Board Meeting

The Advisory Board convenes to review the 1-page descriptions of the project ideas and discuss the merits of moving forward with each. The Advisory Board is asked to rank the projects in order of highest to least priority, with the highest-ranking projects forwarded as recommendations to the Steering Committee.

Steering Committee Recommendation

The Steering Committee convenes to discuss the Advisory Board's recommendations for Consortium-funded projects. The Steering Committee must reach consensus around the projects recommended for funding. The recommendations to pursue the projects through competitive solicitation are then shared with DOER.

Consortium-Funded Projects To-Date

The following table outlines the Consortium-funded projects and their respective research themes. All projects were funded through competitive solicitations (e.g., RFA, RFP), except where noted (*) to denote a Memorandum of Understanding. Funding rounds were timed as follows:

- Funding Round 1: RFP issued November 2023
- Funding Round 2: RFA issued November 2024
- Funding Round 3: anticipated 2026

					Reduce co-use conflicts	Socio-economic impacts and community benefits	Impact on ecosystems	Technology development
Round	**Project**	**Awardee**	**Award Period**	**Summary**	**Research Theme**			
1	Exploring Approaches to Fisheries' Coexistence with Floating Offshore Wind	ERM and Gulf of Maine Research Institute	2024-2025	Project report	✓			
	Inventorying Baseline Data on Socioeconomics of Maine Fishing Communities	Karp Strategies and Colby College	2024	Project report		✓		
	Seafloor Mapping in the Gulf of Maine	Maine Department of Marine Resources*	2024-2026	Project overview			✓	
2	Assessing Social, Cultural, and Economic impacts of Floating Offshore Wind on Maine's Fishing Communities	Gulf of Maine Research Institute, University of Maine, University of Rhode Island	2025-2026	Project kick-off presentation		✓		
	Baseline offshore bat monitoring assessment in the Gulf of Maine	Biodiversity Research Institute, Bat Conservation International, Maine Coast Fishermen's Association	2025-2028	Project kick-off presentation			✓	
	Baseline secondary entanglement risk assessment and technology feasibility study	University of Maine	2025-2026	Project kick-off presentation			✓	✓
3	Bird tracking study in the Gulf of Maine	TBD via competitive solicitation	~2026-2028	N/A			✓	
	Understanding potential interactions between offshore wind electrical infrastructure and marine life in the Gulf of Maine	TBD via competitive solicitation	~2026	N/A	✓		✓	
	Review of potential interactions between moorings and anchors and the benthic environment in the Gulf of Maine	TBD via competitive solicitation	~2026	N/A			✓	✓

	Forecasting marine fish species distributions in the Gulf of Maine	TBD via competitive solicitation	~2026-2027	N/A	✓		✓	
	Improving the accuracy of Gulf of Maine Environmental Models	TBD via competitive solicitation	~2026-2027	N/A			✓	

Appendix A – Advisory Board Members

- **Commercial and recreational harvesting interests**
  - Terry Alexander*, F/V Jocka
  - Jack Cunningham, Maine Lobster Union
  - Ben Martens, Maine Coast Fishermen's Association
  - Patrice McCarron, Maine Lobstermen's Association
  - Mary Beth Tooley, O'Hara Corp
- **Scientists from private and public research institutions with various expertise**
  - Alison Bates*, Colby College
  - Damian Brady, University of Maine
  - Wing Goodale, Biodiversity Research Institute
  - Walt Musial, National Renewable Energy Laboratory
  - Graham Sherwood, Gulf of Maine Research Institute
  - Kanae Tokunaga, Gulf of Maine Research Institute
  - Anthony Viselli, University of Maine
  - Ann Zoidis, Tetra Tech
  - Gayle Zydlewski, Maine Sea Grant
- **Offshore wind industry experience**
  - Julian Fraize, ABB
  - EJ Marohn, Invenergy
  - Laura Morse, JASCO Applied Sciences
- **Tribal members and representatives**
  - Fred Moore, Pleasant Point Passamaquoddy Reservation
  - Trevor White, Indian Township Passamaquoddy Reservation
- **Maine-based environmental groups**
  - Sarah Haggerty, Maine Audubon
- **State agencies**
  - John Perry, Maine Department of Inland Fisheries and Wildlife
  - Becca Peters, Maine Department of Marine Resources
  - Stephanie Watson, Maine Department of Energy Resources
- **At large**
  - Daniel Salerno, Fisheries Scientist, Limington, Maine

*Denotes Advisory Board Co-Chair

Appendix B – Former Advisory Board Members

- **Commercial and recreational harvesting interests**
  - Bob Humphrey, Sport-Ventures (*2023-2025*)
  - Chris Weiner, F/V Elizabeth Ames, American Bluefin Tuna Association (*2023-2024*)
- **Scientists from private and public research institutions with various expertise**
  - Nick Record, Bigelow Lab (*2023*)
  - Sean Todd, College of the Atlantic (*2023*)
- **Offshore wind industry experience**
  - Dave Cowan, Diamond Offshore Wind (*2023-2025*)
  - Wojciech Wiechowski, RWE (*2023-2024*)
- **Coastal communities**
  - Bill Needleman, Portland Waterfront Coordinator (*2023-2025*)
- **Maine-based environmental groups**
  - Jocelyn Runnebaum, The Nature Conservancy (*2023-2025*)
- **State agencies**
  - Carl Wilson, Maine Department of Marine Resources (*2023-2025*)

Appendix C – Steering Committee

- Terry Alexander, F/V Jocka, AB Co-Chair
- Alison Bates, Colby College, AB Co-Chair
- Becca Peters, Department of Marine Resources
- John Perry, Department of Inland Fisheries and Wildlife
- Stephanie Watson, Department of Energy Resources

Appendix D – Collaborators

- **State and Federal Entities**
  - California Energy Commission
  - MA Executive Office of Energy and Environmental Affairs and MA Clean Energy Center
  - National Oceanic and Atmospheric Administration
  - New England Fisheries Management Council
  - NH Department of Environmental Services
  - NH Fish and Game Department
  - NY State Energy Research and Development Authority
  - US Fish & Wildlife Service

- **Regional Organizations**
  - National Offshore Wind Research and Development Consortium
  - Northeastern Regional Association of Coastal Ocean Observing Systems
  - Regional Wildlife Science Collaborative
  - Responsible Offshore Development Alliance
  - Responsible Offshore Science Alliance

Appendix E – Program Management Team

- Maine Department of Energy Resources (Lead agency)
  - Meghan Suslovic
- Maine Sea Grant (Organizational and programmatic support)
  - Beth Bisson
  - Katy Bland
  - Julia Hiltonsmith
- Carbon Trust (Programmatic Advisor)
  - Olivia Burke
  - Jan Matthiesen
- SAMBAS Consulting LLC (Programmatic advisor, *2022-2025*)
  - Laura Taylor Singer