GOVERNOR'S Energy Office

MAINE DEPARTMENT OF MARINE RESOURCES

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

Sea Grant MAINE

CARBON TRUST

SAMBAS Consulting LLC

## Advisory Board

# Maine Offshore Wind Research Consortium

June 21, 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. This is a working meeting of the Advisory Board.
- Please keep video off and so we can focus discussion on the Advisory Board members.

***Everyone on-line***

- *Mute unless speaking please (*6 on phone to unmute)*

# Meeting Objectives

- Introduce new Advisory Board members
- Receive brief updates on Research Consortium activities and research
- Prioritize research questions (8) through an Advisory Board discussion and vote

# Meeting Agenda

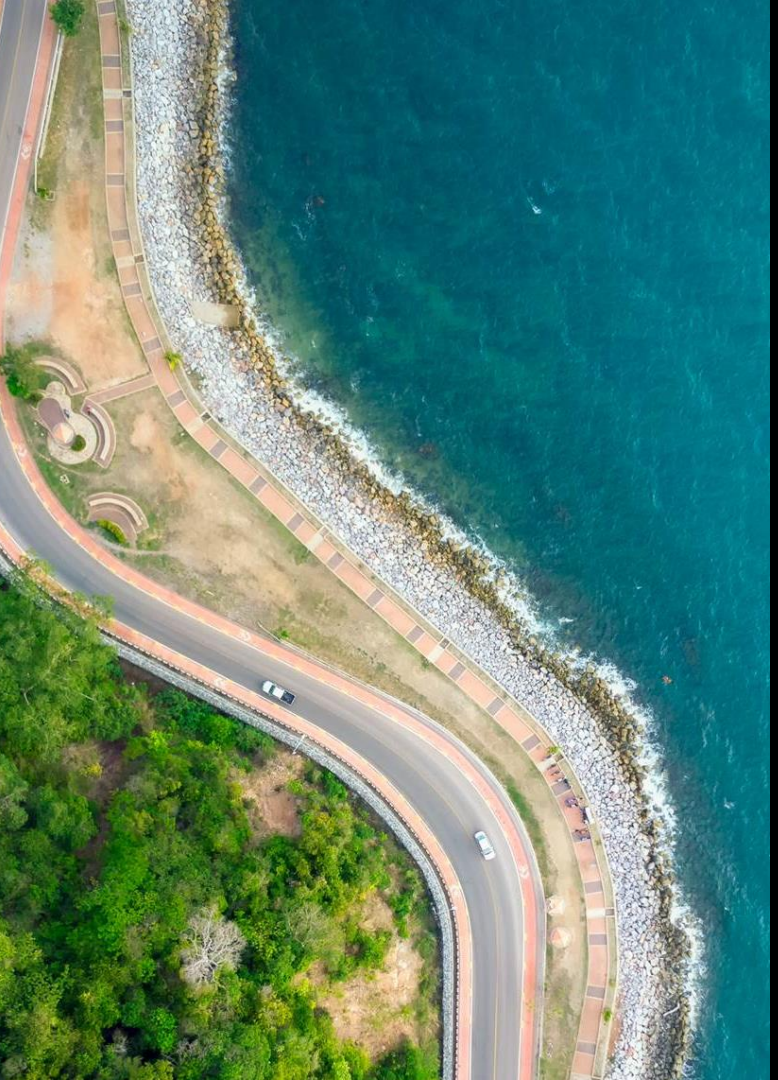
| | |
|---|---|
| **10:30** | **Welcome & Introductions** – *Terry Alexander, Co-chair; Katy Bland, Maine Sea Grant* |
| **10:40** | **Programmatic & Research Updates –** *Stephanie Watson & Meghan Suslovic, GEO; Carl Wilson, DMR* |
| **10:50** | **Review Research Portfolio Decision Process –** *Laura Taylor Singer, SAMBAS Consulting* |
| **10:55** | **Research Prioritization Discussion and Vote –** *Olivia Burke and Jan Matthiesen, The Carbon Trust* |
| **12:15** | **Review External Funding Opportunities –** *Olivia Burke and Jan Matthiesen, The Carbon Trust* |
| **12:25** | **Wrap Up and Next Steps** |
| **12:30** | **Adjourn** |

# New Advisory Board members

Process

- March 20: AB member call
- April 9: Initial membership review
- June 14: Final decision

- Julian Fraize (Technology)
- Ann Zoidis (Marine Mammals)
- Kanae Tokunaga (Economics)



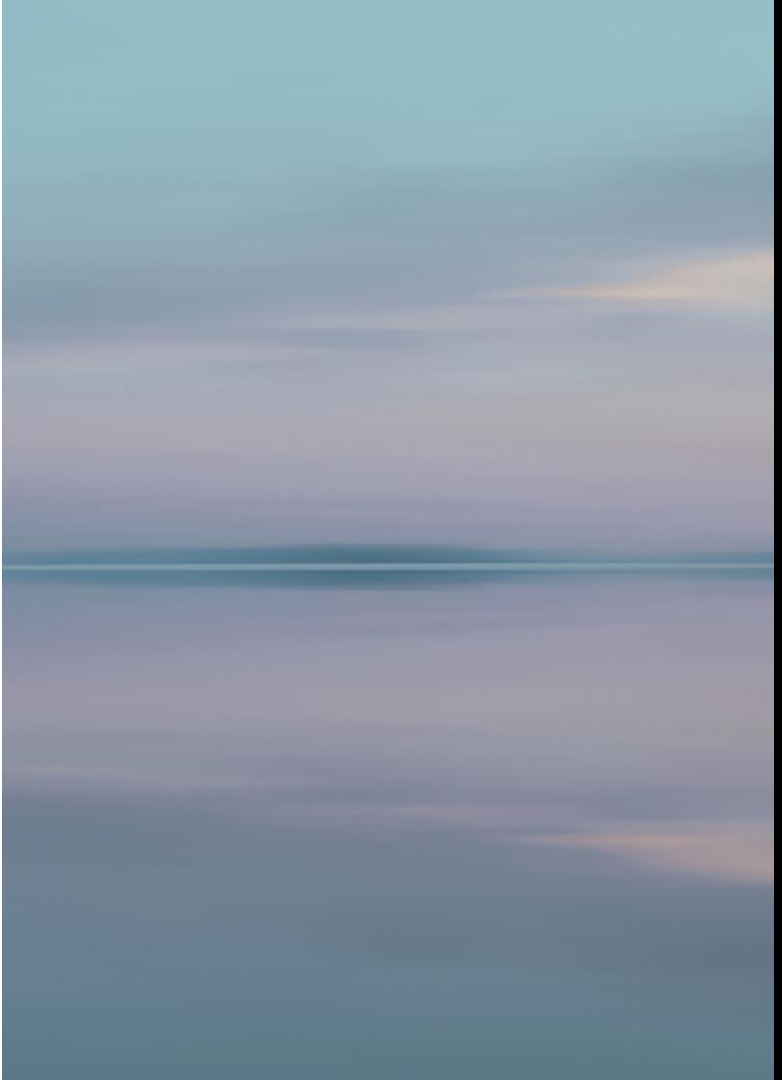
# Programmatic & Research Updates

# GEO Update: RFP #1 Status

| Research Area | Title | Project Team | Objective | Anticipated Outcome |
|---|---|---|---|---|
| Socioeconomic Impacts and Community Benefit | **Socioeconomic Data Inventory**<br><br>Informing Responsible Offshore Wind Development in the Gulf of Maine | Karp + Colby | - Create a comprehensive inventory of existing socioeconomic data (jobs, industry data, supply chain) around fishing communities and the potential impacts of OSW<br>- Identify gaps in data and best practices in order to develop recommendations on where and how GEO should prioritize future studies | Inventory of available socioeconomic data and gap analysis<br><br>**Wrapping up in July** |
| Impact on ecosystems | **Benthic Mapping**<br><br>Seafloor Mapping in the Gulf of Maine | DMR MCMI | - Rapidly fill data gaps relevant to potential offshore wind development | Habitat maps and seafloor classification |
| Reduce co-use conflicts | **Co-Existence**<br><br>Exploring approaches to fisheries' coexistence with floating offshore wind | ERM + GMRI | - Contribute to filling key data gaps that are not being addressed elsewhere.<br>- Build on existing resources and data for greater efficiency and immediacy of results.<br>- Allow the State to make sensible predictions for other regions/species/ applications/scales.<br>- Provide collaborative research opportunities with community members. | Definition of coexistence and initial coexistence guidelines |

# GEO Update- Budget for Fiscal Year 2025

| Purpose | Amount |
|---|---|
| Research Program and Programmatic Support | $2,148,000 |
| Data and Information Sharing, Education, Engagement | $ 100,000 |
| Regional/National Collaboration | $ 27,500 |
| **TOTAL** | **$2,275,500** |



# Research Questions Discussion

# Research Portfolio Decision Process

- AB holds prioritization vote and makes recommendations to SC (June 21)
- SC reviews AB vote and recommendations (July 1)
  - SC considers overlap of external research (active and planned) with ME OSW RC research priorities
  - SC considers possibility to serve ME OSW RC research priorities through external opportunities
- SC approves final research portfolio and recommends to the state (GEO, DMR, DIFW) with request to identify appropriate funding mechanisms
- AB receives memo summarizing the SC decisions and rationale

- **Questions about COI Policy?**

# Project prioritization process this year (2024)

- **Step 1:** Small informal small group working sessions run in line with the four research areas, to develop project ideas aligning with the priority research topics (Feb-end of March)
- **Step 2:** Follow-up discussions and 1-2-1 calls held with Advisory Board members and Collaborators
- **Step 3:** Discussions from the calls have guided the development of more detailed one-pager summaries for potential projects in the areas of highest priority

Next steps:

- **Please read through the one pagers and let us know if you have any comments or clarifications**
- We will use these for the prioritization discussion at the June 21 meeting
- The more detailed one-pagers will be used to prioritize work for the next GEO RfP and/or as a starting point to get external funding. This gives flexibility to apply for funding or develop projects with external partners throughout the year.

# Summary of the 1-pagers

| Research Area | Title |
|---|---|
| Co-use and co-existence | **Modelling distributional changes to fish stock in response to temporal and spatial changes in the Gulf of Maine** |
| Impact on wildlife | **Assessing and minimizing risks to bat species in the Gulf of Maine in collaboration with the fishing industry** |
| Impact on wildlife | **Bird tracking study in the Gulf of Maine** |
| Socio-economic | **Socioeconomic Impact Assessment of Floating Offshore Wind Development** |
| Socio-economic | **Framework for Socioeconomic Impact Assessment of Floating Offshore Wind Development** |
| Technology | **Understanding the risk and remote detection of secondary entanglement** |
| Technology | **Industrialization of the floating supply chain in Maine** |
| Technology | **Feasibility study on coexistence with aquaculture in the Gulf of Maine** |

# Assessing and minimizing risks to bat species in the Gulf of Maine in collaboration with the fishing industry

| | |
|---|---|
| Budget: | ~$500k |
| **Duration:** | March 2025 onwards (Two-year campaign preferable but a trade off with the number of detectors for the budget. Single year and look for additional funding to extend the campaign or 2-year study and fewer detectors? ) |
| **Research area:** | Impact on wildlife |

**1 – Challenge trying to address:**
Bats activity has been detected in coastal areas of the Gulf of Maine, but **little is known about bat use of the offshore environment**, including species composition, temporal patterns, and influence of weather conditions. Without collecting baseline data, understanding the future potential impact of floating offshore wind will be limited.

As part of the Construction and Operation Plans (COPs), developers will submit bat risk assessments and monitoring plans for specific lease areas, but **baseline data collection is needed to provide context for individual project risk assessments** as well as an understanding of the species most at risk.

**2 - Objectives:**
**Conduct acoustic data collection and analysis** on bat species to further support an ecological/ environmental baseline understanding in the Gulf of Maine.

This study focuses on **yielding information on baseline bat activity** rather than specifically collecting data within a location such as the proposed Wind Energy Areas (WEAs).

The **primary data collection activity is anticipated to be bat acoustic detectors** that could be fitted to the existing buoy networks, island weather stations, and coastal sites. There could be opportunities to build on planned work with fishing vessels, and other vessels of opportunity.

**3 - Approach / Scope:**
1. Establish a detailed study plan including the survey area and agreements on buoy modifications or deployments
2. Data collection
3. Quality control, data processing and data analysis
4. Report with a route to publication

Split campaign?
Phase 1: acoustics to understand what species are using the environment
Phase 2: Motus and tagging effort

**4 - Output**:
- Public report synthesizing the approach and results
- Anticipated journal publication
- Data submitted to NABat

**5 - Expected Benefits:**
- Significantly increase the understanding of bat use of the Gulf of Maine to inform permitting and conservation efforts.
- Bat acoustic studies are relatively inexpensive but have the potential to yield high quality data

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**
- If buoys are used, deployment should be for a minimum of 3 months, ideally 6-9 months
- https://rwsc.org/science-plan/
- Utilize existing network e.g. NOAA and NERACOOS?
- Primary monitoring times are March – November, with greatest migratory use expected July – October.
- https://remote.normandeau.com/docs/Final_Buoy_Report_2024.pdf

# Modelling distributional changes to fish stock in response to temporal and spatial changes in the Gulf of Maine

| | |
|---|---|
| Budget: | $400k |
| **Duration:** | 12-18 months |
| **Research area:** | Co-use/co-existence and impact on wildlife |

**1 – Challenge trying to address:**
Knowledge **gaps exist in the Gulf of Maine fisheries data including fish distribution** (e.g. groundfish). This is further complicated by uncertainties in **future species distribution** changing as a result of climate change.

It is currently unknown whether certain fishing activities will be able to operate safely within a floating offshore wind farm, which may create de facto closed areas unless or until further technology development facilitates these activities within the windfarm.

Having a better understanding of the spatial and temporal changes to fish distribution could **ultimately inform better decision-making** and policy development to mitigate potential conflicts and promote sustainable coexistence between the two industries.

**2 - Objectives:**
**Better understand fish distribution** by utilizing data from various sources to undertake a modelling exercise of present and future distribution within and adjacent to WEA sites.

**Dynamic modelling** will examine potential climate change impacts and simulating marine protected areas will allow an evaluation of reduced biomass removals in overlapping locations to understand locally increased biodiversity, displacement, productivity and redistribution of fish species.

**3 - Approach:**
1. Utilize multiple catch data sources (e.g., trawl survey and longline survey) coupled with habitat variables to fill in species distribution and abundance in areas not surveyed. Data could be considered from vessel monitoring, ethnographic surveys and fishery-independent surveys.
2. Spatial and temporal analysis of MPAs and intermediate closures (i.e. closures to certain gear types or during some seasons or under certain "bad" weather thresholds)
3. Analyse changes in fish stock recovery, displacement and redistribution.
4. Communication of results and recommendations

**4 - Output**:
Scenario models of fish distribution within and adjacent to selected sites in WEAs to inform future socio-economic analysis of the impact on communities.

**5 - Expected Benefits:**
Using the model, we can better understand the potential impacts of climate change on fish species and distribution within WEAs to potentially inform future fisheries management and the socio-economic impact of certain decisions on siting.

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**
- Does the model quantify or consider a number of scenarios around increasing/decreasing fish stock
- This ecological study is a precursor/informer to socio-economic work.
- Follow-up work could include scenario modelling to predict how fishermen may change their fishing locations, gear or strategies in response to planned developments.

# Bird tracking study in the Gulf of Maine

| | |
|---|---|
| Budget: | ~$500k -$700k |
| **Duration:** | 2 years |
| **Research area:** | Impact on wildlife |

**1 – Challenge trying to address:**

Currently, researchers are tracking seabirds from breeding colonies in the Gulf of Maine, but there remain **data gaps on the movement of some less studied colonial seabirds** (e.g., Common Guillemots), **terrestrial migrants, shorebirds, and non-breeding marine birds**.

Based on BOEM's Avian Survey Guidelines, developers are likely to conduct site specific monitoring, but these **surveys will not provide an ecosystem-wide perspective**. This study would provide broader context relevant to the Gulf of Maine region, that could help contextualise individual site assessments.

**2 - Objectives:**
**Conduct data collection and analysis on key bird species to further support an ecological/ environmental baseline in the Gulf of Maine** and to support understanding the risk offshore wind poses to bird.

Ideally, over a minimum of a two-year period to account for variations in bird movement, data will be collected on prioritised (and identified by the RfP responder) bird species where there are data gaps.

Proposals **may leverage existing assets or deployment of new technology** within the total maximum budget. Projects should coordinate surveys that cover multiple lease areas.

**3 - Approach / Scope:**
1. Establish detailed study plan, including the species and tracking technology, and data gap to be filled
2. Procurement of tracking equipment, necessary permits and landowner permission for field work, and establishment of an experienced field team
3. Data collection
4. Quality control and data processing
5. Data analysis
6. Report with a route to publication

**4 - Output**:
- Public report synthesizing the approach and results
- Anticipated journal publication
- Data submitted to MoveBank

**5 - Expected Benefits:**
Support understanding of:
- bird exposure to the Gulf of Maine Wind Energy Area (WEA), including migratory pathways
- bird flight height (dependent on tag type)
- migratory connectivity

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**
- Individual tracking complements surveys by providing data for rare species, nocturnal migrants, and species movement during inclement weathers
- Priority species and tagging method be determined in consultation with the RWSC Bird & Bat Subcommittee using the prioritization framework
- Tagging chosen may require deployment of MOTUS. If used, the tools developed by USFWS/BRI should be relied on for study design and data collection
- https://rwsc.org/science-plan/

# Socioeconomic Impact Assessment of Floating Offshore Wind Development in the Gulf of Maine

| | |
|---|---|
| Budget: | ~$200k |
| **Duration:** | 12 months |
| **Research area:** | Socio-economic |

**1 – Challenge:**

We are currently undertaking a project (led by Karp Strategies) to develop a data inventory with initial results highlighting that there is quite a lot of data already available. We have also learned the designation of the Wind Energy Areas (WEAs) in the Gulf of Maine and can therefore start to understand which communities may be impacted.

**No detailed assessments have taken place to understand who will be impacted** by the OSW development in the Gulf of Maine.

**2 - Objectives:**

Phase 1

- **Define and identify the communities that will be most likely to be significantly affected** (positively or negatively) by offshore wind development (based on the WEAs). This could include impact in fishing, from electrical infrastructure and construction activities.
- **Assess how impacted communities may change over time** (e.g. by the phase of development)

**3 - Approach:**

- Define and identify communities that will likely be affected accounting for different phases of offshore wind development. This may include several scenarios where there is uncertainty over location of developments (e.g. cable routes).
- Review existing work e.g. NOAA port and lease area assessment.

**4 - Output**:

- Identification of who will be impacted by offshore wind in the GoM

**5 - Expected Benefits:**

- Better comprehension of both positive and negative impacts of floating offshore wind on communities.
- Generation of data to monitor socioeconomic impacts over time.
- Inform local and state efforts in preparing for and responding to floating offshore wind development.

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**

- Approach: Could work directly with BOEM to amend/expand their scope or RfP?
- Boundary of the scope? Fishing communities, broader coastal communities, communities directly linked to the sites impacted by the electrical infrastructure
- Potential points of interconnection, the Searsport potential development and the fishing communities based on NOAA's assessment for GOM leases. Missing data on lobster – could be very targeted scope

# Framework for Socioeconomic Impact Assessment of Floating Offshore Wind Development

| | |
|---|---|
| Budget: | |
| **Duration:** | 8-12 months |
| **Research area:** | Socio-economic |

**1 – Challenge:**

There is **no commonly accepted framework** to assess the socioeconomic impact of offshore wind developments on communities.

Guidance does exist from entities such as NOAA for specific communities, but there is an opportunity to work collaboratively to develop a broader framework that helps build trust in the process and therefore the outcomes.

Windfarm developments impact communities across state divides and it is important than socio-economic assessments consider these complexities. A commonly accepted framework could be used along the East Coast (and further) to help assess impacts and improve stakeholder engagement and acceptance in the longer-term.

**2 - Objectives:**

**Develop a common framework** to assess the socio-economic impact of offshore wind on affected communities.

**3 - Approach:**

- Develop a methodology and engagement plan for a commonly accepted socio-economic impact assessment framework that can be used in the Gulf of Maine
- Methodology should include a review or existing work and a list of organisations that should be consulted/involved in the development and approval

**4 - Output**:

- A broadly accepted framework to assess socio-economic impacts that can be used in the Gulf of Maine and wider

**5 - Expected Benefits:**

- Better comprehension of both positive and negative impacts of floating offshore wind on communities.
- Inform local and state efforts in preparing for and responding to floating offshore wind development.

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**

- Potential to work (co-fund) with NYSERDA, MassCEC (?) to develop a commonly accepted framework
- BOEM will be undertaking a study – try to work directly with them to expand their scope/approach

# Understanding the risk and remote detection of secondary entanglement

| | |
|---|---|
| **Budget:** | Phase 1& 2 $350k |
| **Duration:** | 12 month for Phase 1&2.<br>Assume launch of phase 3 test program ~April 2025 (P3 not envisaged to be part of this current project one-pager) |
| **Research area:** | Technology; impact on wildlife |

**1 – Challenge trying to address:**
The extensive underwater mooring and cable system of commercial floating wind farms pose a potential risk of entanglement for marine wildlife.

Secondary entanglement refers to marine debris (such as lost fishing gear) becoming ensnared around mooring lines and/or cables, subsequently entangling marine wildlife**. There has been qualitative assumptions about potential entanglement, but it has not been studied in detail and there is not a well described baseline for the risk or a clear approach for entanglement removal.**

Monitoring and mitigation efforts aim to reduce this risk and there has been work for deep water oil and gas but gaps remain on defining how applicable this is to floating wind developments.

This is a **technology focused project** looking at the risk of the marine debris on the windfarm and not the potential impact on wildlife.

**2 - Objectives:**
- **Investigate the potential impact** and likelihood of secondary entanglement in floating offshore wind moorings and cable systems.
- **Understand the extent of fishing gear** accumulation on the floating wind structures and **leverage existing data**, such as from the Gulf of Mexico
- **Identify technologies that can minimize the risk** of secondary entanglement, determine the most effective methods for automated detection and approaches to removal.
- Optional: Test and validate relevant technologies.

**3 - Approach / Scope:**
**Phase 1: Desk based risk assessment**
- Literature review
- Data collation (ROV footage, logbook data, marine mammal behavior) and risk analysis

**Phase 2: Technology feasibility study**
- Literature review

**(Optional Phase 3): Technology test program**
Competition scope/evaluation criteria and launch
- Assess and agree technologies to test at Umaine
- Summary report including recommended practice

**4 - Output**:
- Report on the risk of secondary entanglement on floating wind technologies likely to be used in the Gulf of Maine
- (Optional: testing of the selected technology in UMaine's test tank to assess the effectiveness in detecting secondary entanglement)

**5 - Expected Benefits:**
- A clearer **understanding of the risk** of secondary entanglement, including the likelihood and severity.
- Understanding of the **potential technology options** to detect secondary entanglement.

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**

Potential to design P3 with NOWRDC to utilize the UMaine test tank as part of Maine's in-kind contribution as a member of NOWRDC. Interest from NYSERDA and California

RfP approach:
- Offer the tank test as a resource and ask responders on a proposed project around the topic, or
- We run a JIP with UMaine and NOWRDC as key partners (likely cheaper option)

# Industrialization of the floating supply chain in Maine

| | |
|---|---|
| Budget: | ~$250k? |
| **Duration:** | 8 months |
| **Research area:** | Technology |

**1 – Challenge trying to address:**

The industrialization of the floating offshore wind supply chain in Maine presents promising opportunities for economic growth, job creation, and regional development. To realize these opportunities, the supply chain needs to rapidly scale up in a cost-effective manner.

Currently, **costs for floating offshore wind are still high, and significant cost reductions are needed** within the supply chain. **Advancements in technology, optimizations, and industrialization will be crucial in achieving the necessary cost reductions**, and as a leader in floating wind, Maine is well placed to be at the cutting-edge.

**2 - Objectives:**

**Explore innovative technology solutions** for infrastructure development, industrialization, and cost reduction. Provide a comprehensive understanding of how to advance the floating supply chain industry in Maine through technology development, while maximizing economic benefits and minimizing costs. **The study will analyze market potential, regulatory factors, and technological readiness.** This research is crucial for identifying opportunities for growth and efficiency within the floating supply chain industry in Maine, and for developing strategies to leverage technological advancements to drive sustainable economic development.

**3 - Approach / Scope:**

- Infrastructure Assessment: Evaluate existing facilities and identify needs.
- Technology Evaluation: Assess innovative solutions and their feasibility.
- Regulatory Analysis: Review regulations and address compliance issues.
- Environmental Impact Assessment: Study potential environmental effects and propose mitigation.
- Economic Feasibility: Analyze costs, benefits, and funding options.

**4 - Output**:
- Published report

**5 - Expected Benefits:**

- **Industry Innovation**: Fostering innovation within the floating supply chain sector through technology evaluation and advancement.
- **Increased Competitiveness**: Enhancing the competitiveness of Maine's floating supply chain industry on a regional, national, and global scale.
- **Infrastructure Resilience**: Developing resilient shoreside infrastructure that will be relevant and needed for the future.
- **Community Development**: Creating job opportunities, fostering economic development, and supporting small businesses in local communities.

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**
- Could we explore this with Nova Scotia (with a potential focus on ports) or New England

# Feasibility study on coexistence with aquaculture in the Gulf of Maine

| | |
|---|---|
| Budget: | ~$200k |
| **Duration:** | |
| **Research area:** | Technology / co-use |

**1 – Challenge trying to address:**

The integration of offshore wind and aquaculture presents an opportunity to utilize marine space and resources. This **co-location offers significant economic advantages for both sectors, however, there are technical, logistical, and regulatory challenges that need to be addressed.**

The installation and maintenance of **offshore wind turbines may disrupt aquaculture activities, while the presence of aquaculture infrastructure could pose obstacles to offshore wind** installation and maintenance operations.

Coordination between regulatory agencies responsible for overseeing offshore wind development and aquaculture operations is essential to streamline the permitting process and address potential conflicts in licensing requirements.

**2 - Objectives:**
**Explore the synergies between offshore aquaculture and floating offshore wind in the Gulf of Maine.**

**Analyse the operational and infrastructure requirements of each industry to develop conceptual designs** that optimize spatial efficiency and operational synergy while mitigating potential conflicts.

**Define the operational protocols and maintenance procedures** necessary for the co-existence of mussel farming and offshore wind infrastructure to ensure long-term sustainability and success.

**3 - Approach / Scope:**
- Stakeholder engagement,
- Site consideration,
- Technical analysis,
- Cost benefit analysis,
- O&M analysis
- Environmental impact assessment,
- Regulatory and permitting analysis,
- Risk assessment,
- Conceptual design

**4 - Output**:
- Published report

**5 - Expected Benefits:**

- Optimized use of marine space
- Diversified revenue streams for offshore wind developers
- Improved resource efficiency
- Reduced environmental impacts by consolidating human activities
- Synergistic operations leading to cost savings and improved efficiency
- Promotion of innovation and collaboration between sectors

**6 - Other Comments** (urgency, synergy with existing initiatives)**:**
- Potential DOE competitive initiative

# AB Member & Collaborator Updates

# Updates

- **"Environmental Effects of Marine Renewable Energy Development Around the World":** https://tethys.pnnl.gov/publications/state-of-the-science-2024

- Updates from last meeting are available on the May 6 meeting archive

- Verbal updates from AB Members and Collaborators

## NEXT STEPS

- Slido open for 1 week
- Steering Committee meeting July 1
- Form to request RFP reviewer ideas
- Karp presentation on July 22 (calendar invite to come)

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# Contact

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