Advisory Board

Maine Offshore Wind Research Consortium

August 13, 2025

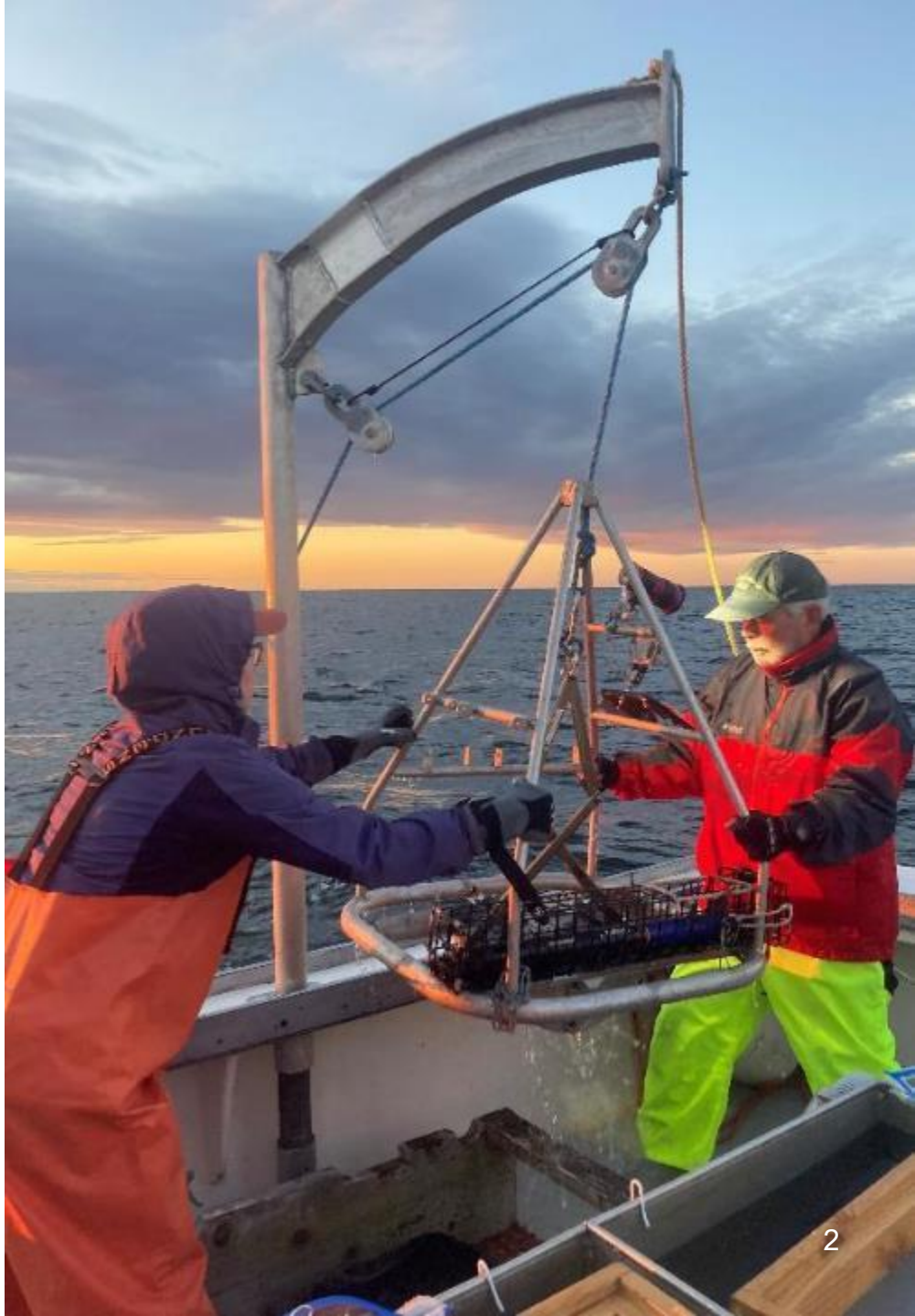
Maine OSW Research Consortium

Established to better understand the local and regional impacts of floating OSW in the Gulf of Maine

The consortium includes representation from fishing industry, ocean experts, and others to inform research priorities, and will work to align with related regional and national efforts.

GOAL: develop and execute a research strategy to better understand the local and regional impacts of floating offshore wind power projects in the Gulf of Maine, including:

- Opportunities and challenges to existing uses in the GOM, including how to best support co-existence with the fishing industry
- Methods to avoid and minimize impacts on ecosystems and existing uses
- Ways to realize cost efficiencies in commercialization
- Conservation actions and projects for impacted species and habitats (NEW from LD 1895)



Meeting Objectives

- Receive brief updates on Research Consortium activities and relevant Maine research
- Discuss candidate research project scopes for Round 3 Funding
- Initiate Advisory Board ranking of research projects

Meeting Agenda

1:00	**Welcome & Introductions –** *Alison Bates, Co-Chair; Katy Bland, Maine Sea Grant*
1:05	**Programmatic Updates –** *Katy Bland, Maine Sea Grant; Meghan Suslovic, Governor's Energy Office; Erin Wilkinson, Maine Department of Maine Resources*
1:25	**Relevant Maine Research Updates –** *Anthony Viselli, University of Maine; Stephanie Watson, Governor's Energy Office*
1:55	**Consortium Research Updates –** *Meghan Suslovic, Governor's Energy Office*
2:00	**Project Scoping Discussion –** *Olivia Burke, Carbon Trust*
2:30	**Break**
2:45	**Project Scoping Discussion, continued** – *Olivia Burke, Carbon Trust*
3:55	**Wrap Up and Next Steps –** *Katy Bland, Maine Sea Grant*
4:00	**Adjourn**

A Few Guidelines for Today

Advisory Board Members

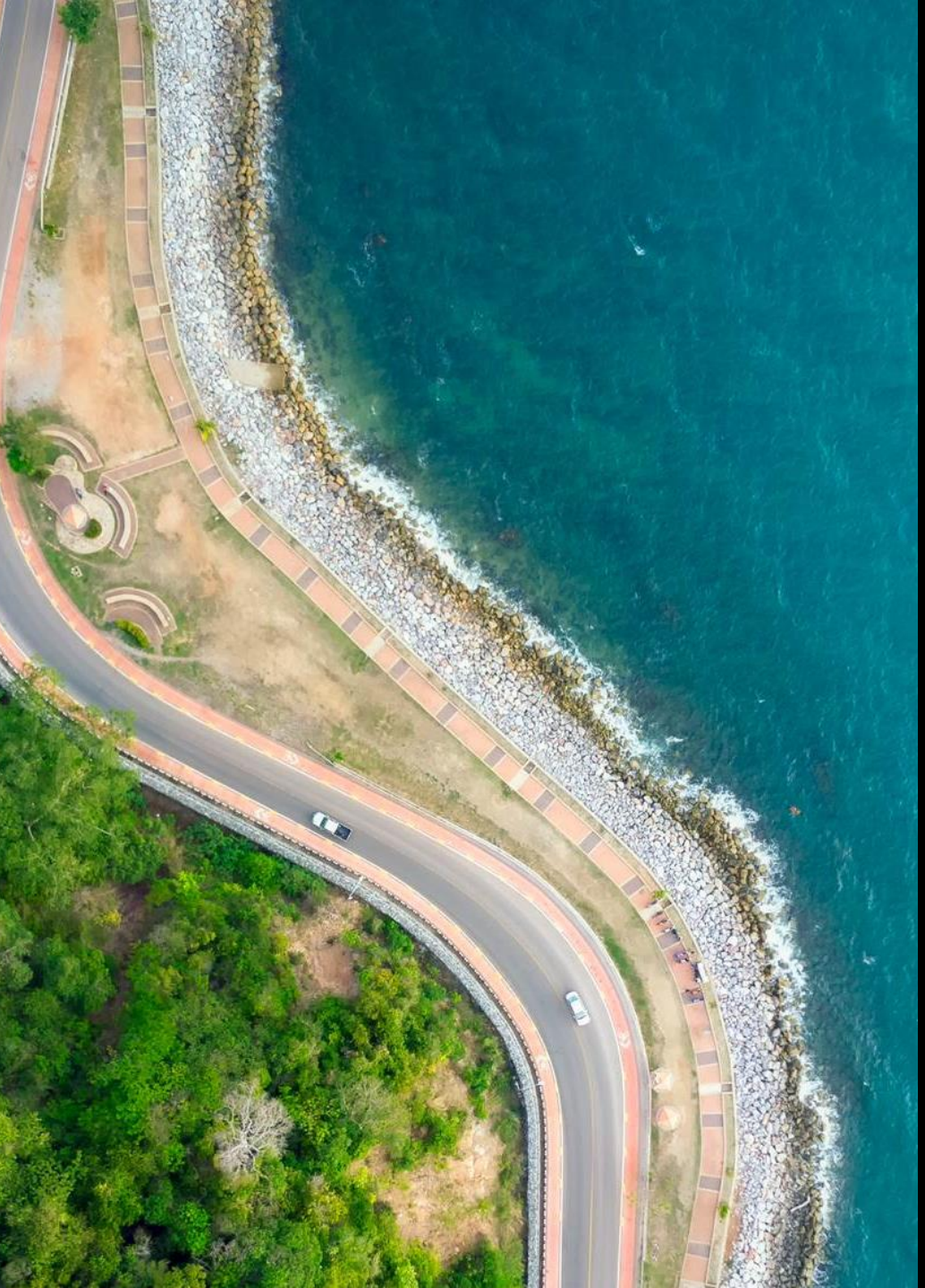
- Practice common rules-of-the road: Please raise your hand, share the floor and respect differences of opinion.
- Please use video (if you can) and use hand-raise function (*9 on phone). We'll try to be sure we pause periodically to make sure you can participate fully but shout out if you need to or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

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.
- ***New***: Please identify yourself when participating in the meeting.

Everyone

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



Programmatic Updates

Program Management 2025

Roles and Responsibilities

Program Management
Supports work of Research Consortium, including coordination, meeting facilitation and implementation of RFP process

Program Manager: *Maine Sea Grant*

- Primary contact point for AB/SC
- Connect work to communities

Expert Advisors: *Carbon Trust & Laura Singer*

- Coordination of research activities with wider industry
- Help identify funding opportunities
- Continued identification of research priorities
- Support with scoping and delivery of research projects
- Support with local engagement, coalition building

SAMBAS Consulting LLC

GEO with DMR and IFW

- Manage state RFP and contracting processes
- State fiscal responsibilities and liaison with Legislature
- Participate on AB/SC

Learning from Scotland's Experience with Floating Offshore Wind– A Study Tour for Maine's Fishing Industry

SAMBAS Consulting LLC

Objectives

Establish a common understanding of FOW technology

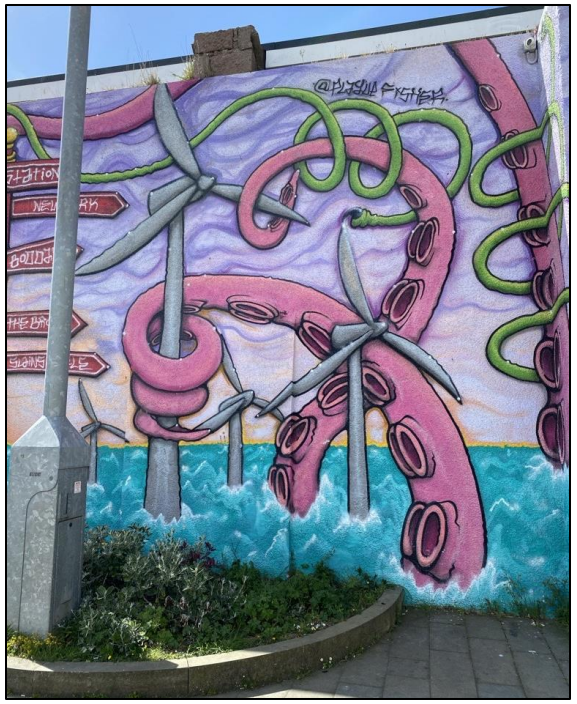
Understand the status of FOW development in Scotland, including planning and policy, science and research, and engagement with the fishing industry

Learn about Kincardine FOW project, focusing on the technology employed, the design and installation process, and the engagement with the fishing industry and wider coastal communities during its development

Exchange best practices for assessing and mitigating the impacts of FOW development on the fishing industry and wider coastal communities

Participants

- Organizers
  - Carbon Trust
  - SAMBAS Consulting
- Policy makers
  - Maine DMR
  - Maine GEO
  - Massachusetts DMF
- Fisheries
  - Broad group of fishermen and fisheries organizations



Engagement Sessions

OCEAN WINDS

Scottish Government
Riaghaltas na h-Alba

SSE

FloWave

CARBON TRUST

Ørsted

SCOTTISH FISHERMEN'S FEDERATION

PETERHEAD PORT AUTHORITY

Key Takeaways- Kincardine FOW Farm

Key Takeaways- Fisheries Perspective

- Many similar issues – Data gaps, lack of research & monitoring in and around arrays and export cables
- Scottish fishing industry:
  - Mostly excluded from leasing process (similar to Southern New England)
  - Sees FOW arrays as non-mobile gear zones regardless of anchoring type
- Still unresolved grid and connection issues – How to get wind power to areas of need
- Port infrastructure needs totally different for FOW, Scotland infrastructure is getting there, US has to consider what port(s) can be upgraded or developed to support FOW
- Scottish government considering creating additional sanctuary areas to mitigate for impact of OSW, creating possibility of >50% closure of Scottish waters to fishing

Key Takeaways- High-level

- Compared to Scotland, feelings that the Gulf of Maine siting/leasing process was OK and used outreach and fisheries data to deconflict Lease Areas
- Many of the same research questions and limited funding
  - EMF, displacement modeling, coexistence, cumulative impacts
- See potential for fixed gear fishing within arrays but mobile gear will be highly dependent on layout
  - Anchoring footprint, inter-array cable routing design and burial/suspension a large factor
- Monitoring and enforcement a big question in Scotland
  - No equivalent of BSEE to ensure lease terms are being met
- In Scotland, both developers and fisheries want more government intervention to facilitate coexistence and baseline statutory requirements
  - Lot of issues around mitigation
  - No guidance or uniform method on fisheries direct compensation


FUEL SHUT OFF
BELOW DECK

Relevant Maine Research Updates

*Insert slides from Anthony (¼ scale turbine)

Image courtesy of UMaine ASCC

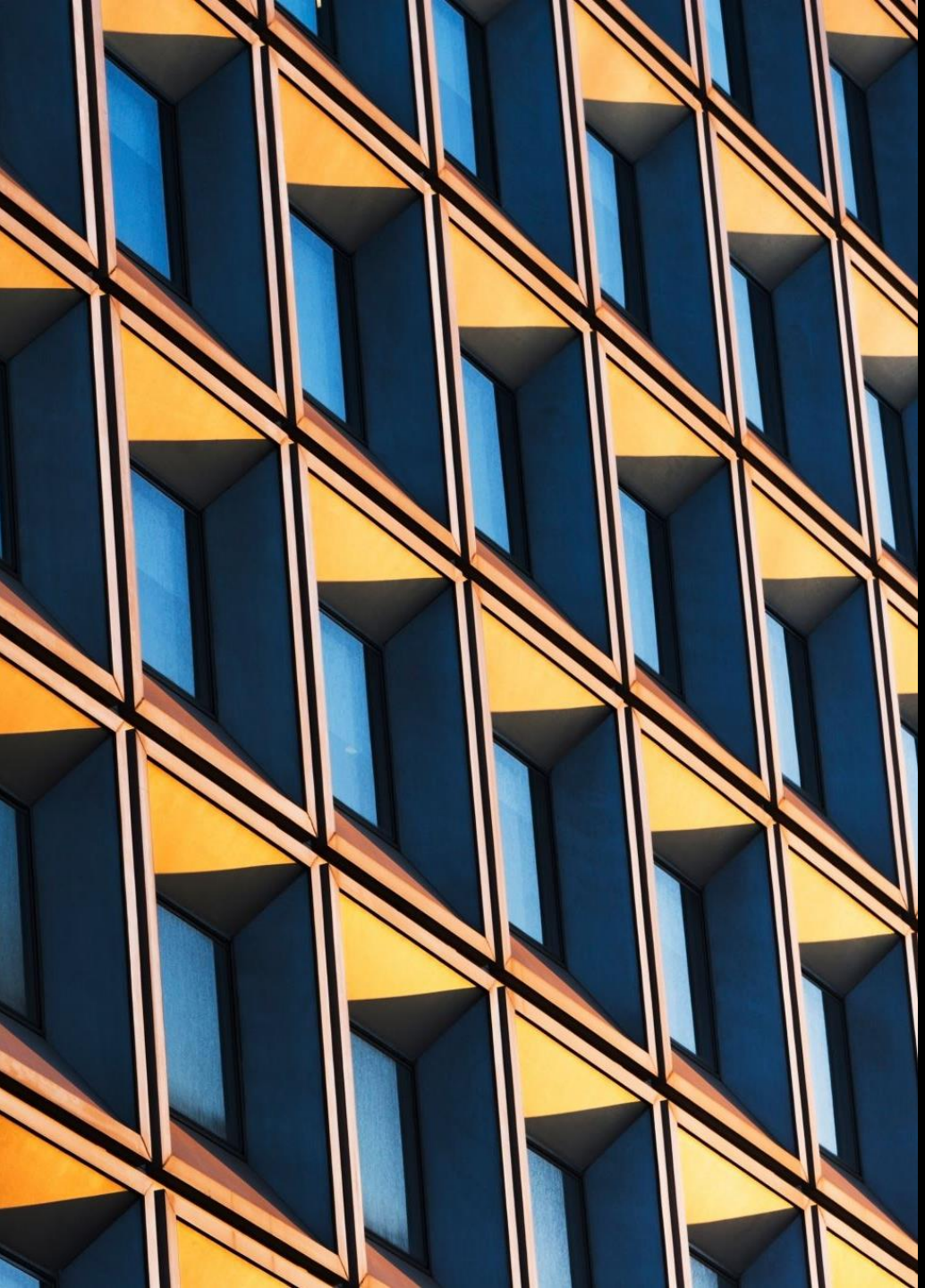
UMaine VolturnUs+ ¼ Scale Demo

- Only floating turbine in the U.S.
- Anchored at test site off Castine (75 ft. deep)
- 1500 feet from shore
- 110 feet tall, 56 feet wide
- 225 kW Vestas turbine, grid connected
- Deployment through Fall 2026

GEO has a Live RFA to Test Innovative BlueTech and Monitoring at Demo

- Research topics discussed by Consortium
- August 11 Questions due
- September 17 Applications Due
- $380,000 total – looking to attract match

MAINE GOVERNOR'S Energy Office



Consortium Research Updates

Consortium Funded Projects Round 1

1. Socioeconomic Baseline Inventory

- Inventory data and metrics related to Maine's fishing communities through stakeholder engagement and research to inform a future socioeconomic impact assessment

2. Fisheries Coexistence

- Engage fishermen to explore definitions and considerations for coexistence and researching compatibility of FOW technologies with fishing gear used in the Gulf of Maine

3. Seafloor Mapping

- Map ~840 sq nm around the Research Array lease and potential cable corridors to fill habitat and seafloor classification data gaps

Anticipated Completion Fall 2025

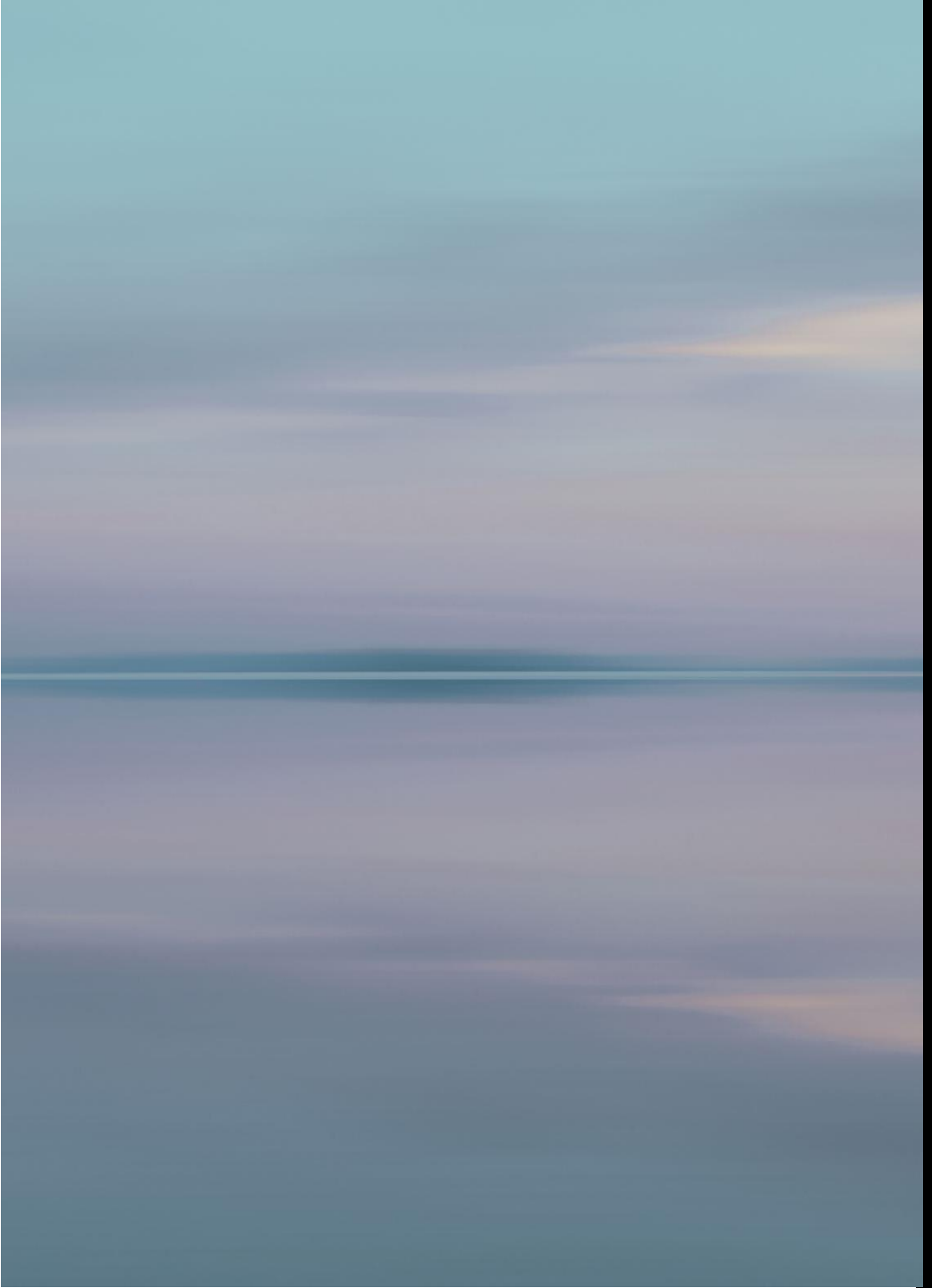
MAINE GOVERNOR'S Energy Office

Consortium Funded Projects Round 2

Kickoff ~Fall 2025

1. **Baseline assessment of social, economic, and cultural impacts of FOW development on Maine's fishing industry**
   - Characterize and, when possible, quantify the social, economic, and cultural impacts of FOW development on Maine's commercial fishing industry
2. **Baseline secondary entanglement risk assessment and technology feasibility study**
   - Understand the potential for marine debris accumulation and the likelihood of entanglement on the dynamic mooring and cabling systems. Also includes a technology feasibility study from both a monitoring and retrieval perspective
3. **Baseline offshore bat monitoring assessment**
   - Fill key data gaps on the seasonal abundance and distribution of bat species in the Gulf of Maine using acoustic monitors

Break
(reconvene 2:45)



Project Scoping Discussion

Summary of Last Advisory Board Meeting (May 12, 2025)

- 11 projects presented
- Decision to stop scoping on 3 projects
- Agreement to have a socio-cultural workshop to consider new projects

~~16~~	~~Vulnerability assessment of marine bird displacement in the Gulf of Maine~~
15	**Bird tracking study in the Gulf of Maine**
35	**Review of scour risks from moorings and anchors on the benthic environment**
25	**Improve Accuracy of GOM Ecosystem Models (previously "High-resolution metocean model development")**
24	**Characterising EMF in the water column from subsea power cables to build knowledge and understanding of potential EMF exposure on marine life in the Gulf of Maine**
~~11~~	~~Methods to reduce risks of secondary entanglement including design and technologies for removal.~~
21	**Forecasting marine species distributions in the GoM**
~~30~~	~~Desktop assessment of the potential hydrodynamic impacts of offshore wind on the Gulf of Maine marine mammal prey availability and movement dynamics~~
58, 59	**Job creation potential and skill set required linked to offshore wind development**
51	**Regional coordination to communicate the potential economic impacts under different scenarios of offshore wind deployment**
60	**Demonstrator site/ technology test bed- 1/4 scale testing of sensors and monitor potential impacts**

Today's Advisory Board Meeting (August 13, 2025)

- 10 projects scoped since May 12
- 9 projects for discussion today
  - Including 2 new socio-cultural project ideas
- Suggestion to deprioritize 2 of 9 projects

	Project Name	Note
15	**Bird tracking study in the Gulf of Maine**	
21	**Forecasting marine species distributions in the GoM**	
25	**Improve Accuracy of GOM Ecosystem Models**	*Previously "High-resolution metocean model development"*
73	**Impacts to cultural identity of fishing communities**	*NEW since the last Advisory Board meeting*
75	**Community Planning for a Distinct Target Community**	*Suggest putting on hold (discuss today) and wait until the newly established Maine Office of Community Affairs (MOCA) has a clear program of work*
51	**Regional coordination to communicate the potential economic impacts under different scenarios of offshore wind deployment**	*Suggest putting on hold (discuss today). Increased uncertainty reduces the urgency of this project.*
~~58~~, ~~59~~	~~Job creation potential and skill set required linked to offshore wind development~~	*Put on hold until existing project is complete. Not presented today*
35	**Review of scour risks from moorings and anchors on the benthic environment**	
24	**Potential environmental effects of offshore wind electrical infrastructure on marine life in the Gulf of Maine**	
60	**Demonstrator site/ technology test bed- 1/4 scale testing of sensors and monitor potential impacts**	*Progressed through other funding routes. Could consider an additional project but within current permitting restraints and needing to wait until winners have been announced, it would be difficult to do meaningful work within the timeframe*

Project ID 15 – Terrestrial endangered species bird tracking study in the Gulf of Maine

Budget:	$330-$450k (depending on length of time)
Duration:	3 years (would there be meaningful results for a shorter period of time?)
Research area:	Impact on ecosystems

1 – Challenge trying to address:
There are large data gaps when it comes to the vulnerability of the 300+ birds offshore in the Gulf of Maine. This includes marine birds and terrestrial birds, but there is especially limited knowledge around offshore terrestrial 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 a broader context relevant to the Gulf of Maine region, which could help contextualise individual site assessments.

Baseline data on the movement of birds helps to evaluate the risks of collision and displacement across the Research array and future commercial sites.

2 - Objectives:
- Plan and conduct a tracking study to examine how specific bird species (from the Endangered Species Act) move through the Gulf of Maine.
- Understand the ecological baseline in the Gulf of Maine for specific bird species and how offshore wind development could impact this, with mitigation techniques to communicate to SNCBs for future monitoring requirements.

3 - Approach / Scope:

Wp1: Species identification
Conduct workshops with key stakeholders to agree the bird species of interest for tracking in GoM.

Wp2: Study design and preparation
Produce a detailed study plan, tracking technology and data gap to be filled.
Procure necessary tracking equipment, necessary permits and permissions, and formation of team

Wp3: Data collection
Data collection period over a minimum of 2 years (to account for variation) on migration routes, flight altitude, seasonal patterns.

Wp4: Assessment of interaction potential
Undertake quality control and process of data. Evaluate the potential interactions between the bird species and offshore infrastructure.

Wp5: Dissemination and mitigation measures
Develop a report outlining the findings of movements and mitigation measures for OSW, to target SNCBs for agreed monitoring requirements.

4 - Output:
- Data outlining the movement of birds through the Gulf of Maine
- Public report summarizing the learnings of bird movements and any mitigation
- Journal paper?

5 - Expected Benefits:
- Supports assessment for other species when projects are built. If no information is available, it's harder to assess which species might be at risk.
- Supports the understanding of bird exposure to the Gulf of Maine Wind Energy Area (WEA), including migratory pathways
- Supports the understanding of bird flight height (dependent on tag type)

6 - Other Comments
- It is difficult to prioritize which birds to track, but this could consider the state's Endangered Species Act (ESA). This could focus on song birds and be complimentary to existing studies on nested birds. TBD in consultation with the RWSC Bird and Bat subcommitee;
- 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/

Project ID 21: Forecasting marine species distributions in the GoM

Budget:	$250-$350k
Duration:	12-18 months
Research area:	Impact on ecosystems

1 – Challenge trying to address:

The Gulf of Maine is experiencing shifts in species distribution and abundance due to changing ocean temperatures. Understanding these patterns is important for establishing ecological baselines, particularly as offshore wind development moves forward.

While existing studies and models provide useful insights, there is no centralized resource that identifies data gaps or assesses whether current models are suitable across different species, timeframes, and spatial scales. Additionally, modeling efforts have been limited in areas where offshore wind lease sites are located.

There is a need to improve and develop models that can predict spatial and temporal species distribution in the region to better inform planning and environmental assessments under changing ocean conditions.

2 - Objectives:

Synthesis existing work that has focused on modeling forecasted species and habitat change in the Gulf of Maine, and identify data gaps in relation to the interface with offshore wind.

Update, adapt or develop a model (likely VAST) to account for priority species where there is limited information, at sites where offshore wind will likely be constructed.

3 - Approach / Scope:

Phase 1

- Desk-based review and synthesis of existing models to identify relevant stakeholders and work.
- Identification of gaps in species, location, habitat or modelling capabilities (including adaptability of existing work)
- Workshop to bring together the relevant stakeholders to prioritize the species and modelling framework for Phase 2

Phase 2

- Create or update a model to explore spatial and temporal distribution trends by applying VAST (Vector Autoregressive Spatial Temporal) and use collected data to fill in the distribution and abundance of species in areas not surveyed;
- Integrate climate forecasts into the model to predict future changes in habitat and priority fish distributions under various climate scenarios.

4 - Output:

Phase 1:

- Workshop
- Literature report synthesising existing work
- Identification of priority species for additional modelling work

Phase 2:

- Dynamic model that is open source or adaptable by other entities.
- Spatial layers focused on future offshore wind sites
- Agreed list of layers for habitat and species

5 - Expected Benefits:

- Understand data gaps and prioritize data collection within the WEAs based on the identified data gaps;
- Better modelling estimates of priority fish distribution, allowing for better planning in a changing marine environment – both for the installation of offshore wind farms and installation and operations in the GoM;
- Improve stakeholder understanding of fish distribution in the GoM and how this may change under various climate scenarios.

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

- Engage with entities such as BOEM, ROSA, NOAA to build on past studies and to support a coordinated gap analysis.
- NOAA CEFI was working in this space but considerable change in personal – unsure of the status of lots of activities
- Discussed with UNE, BOEM, NOAA, DMR, GMRI who agree on gap for this work
- NOAA (funded by BOEM) database - >200 data sources as input into modelling effort. Published in Fall 25
- NOAA habitat model to be published Fall 26 could be adapted to GoM. Currently only focuses on 35 species

Project ID 25 – Filling gaps to improve accuracy of baseline ecosystem models in the GOM

Budget	Total: 100K-400K depending on scope of proposal
Duration:	6-12 months (flexible)
Research area:	Impact on ecosystems

1 – Challenge trying to address:

To assess the potential impacts (at multiple scales) of a future floating offshore wind farm buildout in the Gulf of Maine (GOM) on oceanographic processes, studies use coupled atmospheric, hydrodynamic, and biogeochemical models (as performed in Georgas et al. 2025). For these modeled OSW impact estimates in the GOM to be robust, the models must most accurately represent baseline oceanographic conditions and processes in the GOM.

Improving this baseline skill could require better model parameterization, higher resolution domains, more accurate boundary condition data, and/or stronger observational evidence and assimilation to support or refine model assumptions. Model improvements will directly enhance the reliability and utility of future OSW impact predictions, enabling decision-makers to evaluate offshore wind scenarios with greater confidence and reduced uncertainty.

2 - Objectives:

- Improve model(s) used to represent atmospheric, hydrodynamic, and/or biogeochemical processes in the GOM

3 - Approach / Scope: Approach/scope is flexible.

Examples of approaches include, but aren't limited to:

- High resolution nesting and boundary condition refinement
- Cross model interoperability testing
- Assimilation of existing observations into hindcasts
- Field campaign to fill specific observational gaps to hone understanding of processes (e.g., seasonal dynamics, coastal inputs, timing of mixing).
- Coupled model sensitivity analysis and ensemble tuning

4 - Output:

- Report quantifying model improvements, documentation of code updates for replicability in future
- Reproducible, open-source model configuration

5 - Expected Benefits:

- Model improvements will directly enhance the reliability and utility of future impact predictions, enabling decision-makers to evaluate offshore wind scenarios with greater confidence and reduced uncertainty.

6 - Other Comments

- Need to learn project awarded under RWSC RFP (late August 2025) "Characterization and assessment of potential effects from offshore wind infrastructure on hydrodynamics and ecology"
- BOEM Study deferred for at least two years "Future Directions of Physical Oceanography Research on Offshore Renewable Energy Development at the Bureau of Ocean Energy Management" (FY24-25)
- Report from BOEM due in early fall 2025 "A Comprehensive Assessment of Existing Gulf of Maine Ecosystem Data and Identification of Data Gaps to Inform Future Research (AT-22-11)"
- Report: "Offshore Wind Impact on Oceanographic Processes: North Carolina to New York, Volume 1 - RPS" (Georgas et al. 2025)
- ROSA funding (June 2025): "University of Massachusetts Dartmouth School for Marine Science and Technology will investigate the applicability of modern spatiotemporal models to integrate data from existing local and regional monitoring programs for evaluating fisheries monitoring plans and assessing the regional and cumulative impacts of wind farm development on marine biodiversity and fisheries productivity."

New

Project ID 73 – Longitudinal impact assessment of cultural identities of a fishing community

Budget:	75k-150k
Duration:	~18 months
Research area:	Sociocultural

1 – Challenge trying to address:

Maine's coastal communities face complex, interconnected changes from multiple sources—including potential offshore wind (OSW) development, climate change, regulatory shifts, economic pressures, and demographic transitions—that may impact cultural identity over time.

Current approaches to community impact assessment typically rely on cross-sectional snapshots that cannot capture how cultural identities evolve, nor distinguish OSW-related changes from other drivers.

By collecting baseline data through longitudinal methods, we are better able to accurately assess how any future energy developments may specifically affect community cultural identity (as opposed to broader environmental and social changes occurring simultaneously)

2 - Objectives:

- Develop a methodology for collecting baseline cultural identity data for future longitudinal assessment
- Design flexible, long-term study protocols to track cultural identity changes over years/ decades under various future scenarios
- Create frameworks to distinguish OSW-related cultural changes from those due to climate, regulation, etc.

3 - Approach / Scope:

- **Methodological Framework Development**: Synthesize best practices from longitudinal community studies, cultural identity assessments, and multi-driver attribution studies
- **Community-Centered Design**: Collaborate with diverse coastal communities to ensure culturally appropriate, relevant measurement tools; identify critical cultural identity factors for tracking
- **Baseline Data Collection Design:** Develop mixed-methods protocols suitable for repeated application.
- **Attribution Framework**: Establish methodological approaches for distinguishing OSW-related impacts from other drivers

4 - Output:

- Comprehensive Scoping Report detailing methodological framework, baseline data collection protocols, and longitudinal study design
- Attribution Framework providing methodological approaches to distinguish OSW impacts from other cultural change drivers
- Implementation Roadmap identifying prioritized communities for pilot testing, resource needs, and phased rollout plan.

5 - Expected Benefits:

• Establishes foundational methodology for assessment of OSW impacts on cultural identity, providing essential baseline data regardless of development outcomes
• Creates replicable framework applicable to any coastal community facing multiple concurrent changes
• Enables evidence-based policy decisions by providing robust methods for attributing cultural changes to specific drivers

6 - Other Comments

NOAA NEFSC/GARFO are developing monitoring standards for OSW, including social, cultural, economic monitoring guidelines. This project could develop the indicators that fit into these longitudinal/ monitoring recommendations.

New

Project ID 75 - Community Planning for a Distinct Target Community

Budget:	$75k - 120k
Duration:	12-18 months
Research area:	Sociocultural

1 – Challenge trying to address:

As offshore wind (OSW) development progresses in Maine, communities face complex questions about how best to balance opportunities with local needs and values. This project responds by supporting a targeted community in a collaborative, place-based planning process that creates a framework for community-led engagement, whether in the OSW space, or in other energy planning contexts.

2 - Objectives:

- Support a specific community in developing a comprehensive plan to understand, navigate, and benefit from OSW opportunities.
- When timely and appropriate, engage with Maine Office of Community Affairs, Maine Climate Council, and/ or other agencies/ programs to leverage funds and efforts

3 - Approach / Scope:

- Identify a high-priority community with clear interests and/or vulnerabilities related to OSW
- Convene a planning group including local leaders, residents, state agencies, industry representatives, and relevant NGOs.
- Facilitate community visioning sessions to identify needs, concerns, opportunities, and desired outcomes related to OSW.
- Develop an actionable roadmap highlighting community priorities, resource needs, partnership opportunities, and next steps that can be employed in other communities.

4 - Output:

- Community-driven offshore wind readiness plan, including risk assessment, benefit identification, and mitigation strategies.
- List of aligned agency/program collaborations and coordinated actions.
- Stakeholder engagement summary and community vision statement.
- Toolkit for replication in similar Maine communities

5 - Expected Benefits:

- Greater awareness of local needs for responsible offshore wind integration.
- Stronger coordination among state, local, and nonprofit partners.
- Replicable model to inform future community-focused planning elsewhere in Maine.
- Potential to prepare communities for CBA planning in the future

6 - Other Comments

Suggestion to put on pause to consider potential future collaborations with:

- Climate Action Plan – doing work with K-12 models
- MAINECAN
- Maine Office of Community Affairs (MOCA)
- Scope could be adapted to focus specifically on building municipal capacity

Project ID 51 - Regional coordination to communicate the potential economic impacts under different scenarios of offshore wind deployment

Budget:	$80-110k
Duration:	6 months
Research area:	Socio-economic

1 – Challenge trying to address:
The Gulf of Maine has significant potential for offshore wind deployment. Given the scale of this potential development, it is essential to understand how different deployment scenarios, could affect the local economy.

OSW development has the potential to drive significant economic benefit through job creation, supply chain development and private investment. However, realizing these benefits will likely depend on the timeline coordinated policy support and upfront investment. Without these, there is a risk of missed opportunities, delayed growth, or failure to maximize regional value.

At the same time, concerns remain around the potential negative impacts of OSW development on existing ocean-dependent industries, that are vital to many coastal communities.

Comprehensive analysis is needed to evaluate the trade-offs under various development scenarios, identify the conditions under which economic benefits are maximized and ensure the potential adverse effects, particularly on vulnerable communities, are understood and mitigated.

2 - Objectives:
- Conduct a desktop analysis of different OSW deployment scenarios to evaluate their effects on key economic drivers
- Assess the potential consequences of missed investment opportunities and provide evidence-based recommendations for future policy development
- Communicate the outputs to decision makers to inform policy decisions

3 - Approach / Scope:

Wp1: Scenario definition
- Identify and define a range of OSW development scenarios.
- Define and identify communities that will likely be affected by offshore wind development activities.
- Identify the key economic drivers for assessment (e.g. jobs, revenue)

Wp2: Baseline assessment and economic drivers
- Identify economic indicators for assessment (e.g. job creation, revenue, industry displacement)
- Establish baseline conditions for existing ocean-dependent industries

Wp3: Impact assessment
- Assess the potential economic outcomes for each OSW development scenario (as identified in Wp2)
- Identify risks of missed investment and potential economic losses if policy/finance is lacking

Wp4: Dissemination
- Engage with key policy and decision makers (output/format tbc.)

4 - Output:
- A report outlining the economic impacts under different growth scenarios, with key policy recommendations for ensuring opportunities are not missed.
- Dissemination materials (slide deck, summary report) to discuss with policy makers.

5 - Expected Benefits:
- This study could inform and shape the industry development, through targeting policy makers.
- Outputs can also be disseminated more widely, for information sharing.

6 - Other Comments (urgency, synergy with existing initiatives)**:**
- Not high urgency and need to be very clear on the stakeholders that we are trying to engage
- Karp Strategies data inventory might be utilized for data.
- Factor in Canadian offshore wind development

Project ID 35 – Desk-based review of scour risks from moorings and anchors on the benthic environment

Budget:	$100k
Duration:	5 months
Research area:	Impact on ecosystems

1 – Challenge trying to address:

As floating offshore wind development is in the pre-commercial stage, further understanding is required about the impacts on the marine environment, particularly the benthic ecosystems.

Anchors and mooring lines, used to anchor FOW systems in position, interact dynamically with the seafloor which can lead to scour or localised erosion, which may disturb habitats.

Scour protection can be installed to minimise the risk of scours, but these mitigation systems, typically rock mats, also permanently alter the benthic environment.

Despite increasing deployment, limited data exists on the scale and nature of these impacts which vary across different environmental conditions and geographical regions. These variations will influence the design of floating platform types, anchors, and mooring systems, and consequently affect the risk of scour.

2 - Objectives:

- Identify the types of anchor and mooring systems most suitable for seabed characteristics in GoM
- Review existing literature to understand the likely scour impact from these anchors and associated components, and the potential impact on the benthic environment
- Identify mitigation measures and any potential impact on the benthic environment
- Where possible, describe the end-of-life benthic impacts

3 - Approach / Scope:

Wp1: Technology mapping and literature review
Determine the types of anchor systems most suited for the seabed conditions in the Gulf of Maine.
Conduct a literature review of scour risk for anchors and mooring systems identified as most suitable for GoM, and the impact on the benthic environment. Investigate the end-of-life impact on benthic environment. Identify any knowledge gaps.

Wp2: Benthic environment impact assessment
Extrapolate for a 1 GW wind farm to determine the potential effects at the wind farm level, rather than the individual anchor site.

Wp3: Mitigation strategies
List mitigation strategies and likely commercial challenges (cost, access,) and the potential impact on the benthic environment. Assess the potential end-of-life strategies and impacts for any mitigation materials.

Wp4: Further assessment
List recommendations and potential follow-on work of hydrodynamic modelling for deeper understanding of scour impacts.

4 - Output:

- Impact assessment for 1 GW FLW wind farm in GoM
- Report with literature review findings and recommendations for mitigation strategies
- Scope of work for detailed hydrodynamic modelling exercise

5 - Expected Benefits:

- Identifies knowledge gaps in the industry and potential follow-on work
- Tailored review for the GoM

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

- Scour and liquefaction issues for anchors and other subsea structures in floating offshore wind farms: A review – ScienceDirect
- SEER Educational Research Brief: Benthic Disturbance from Offshore Wind Foundations, Anchors, and Cables

- Follow-on work could be hydrodynamic modelling
- Near-shore environment may not mimic far offshore environment sufficiently for real-time data collection on scour. More general knowledge gaps could be filled by literature review.
- Research could inform future designs but unsure of the urgency and there will likely be more information before designs in the GoM are chosen

Project ID 24: Potential environmental effects from offshore wind electrical infrastructure

Budget:	($70k-100k)
Duration:	12 months
Research area:	Impact on ecosystems

1 – Challenge trying to address:
The development of floating offshore wind in the Gulf of Maine may introduce new environmental and ecological dynamics that require further understanding. While the impact of electromagnetic fields (EMF) emitted by subsea power cables has been studied for bottom-fixed offshore wind farms, using cables buried in the seabed, floating wind requires the installation of subsea water cables suspended in the water column, potentially increasing the EMF exposure to marine life.

In addition to subsea cables, Maine based stakeholders have raised questions about the use of HVDC systems. While information is available on the impact of cooling water discharged from transformers stations, it has not been communicated effectively and in a manner that is digestible.

2 - Objectives:
Phase 1
Conduct a desk-based study to investigate the characteristics and spatial distribution of EMF emitted by subsea cables in offshore wind farms, focusing on EMF propagation vertically and horizontally through the water column and sediment, specifically in relation to floating offshore wind and sediments typical of the Gulf of Maine.

Phase 2
Investigate existing HVDC offshore wind substation cooling water systems and assess their potential environmental impacts.
Phase 3
Raise awareness of potential EMF exposure and cooling processes on marine life in the GoM, identify knowledge gaps and help outline future research opportunities.

3 - Approach / Scope:
Phase 1
Analyse existing research on EMF emissions from offshore wind farms and understand its relevance to floating offshore wind farms in the GoM.
Phase 2
Review current HVDC offshore substation cooling technologies and assess potential environmental effects.
Phase 3
Define a communication strategy to disseminate findings and prioritise future research on EMF and cooling systems impacts on the marine environment in the GoM.

4 - Output:
- Short digestible report summarising key findings from the desktop research;
- Outreach (i.e. workshops, presentations, stakeholder engagement)

5 - Expected Benefits:
- Clarity to all offshore wind stakeholders, namely fishermen on the real impact of electrical infrastructure on marine life;
- Better understanding of existing HVDC substation cooling technologies and identification of gaps to outline future innovations.

6 - Other Comments (urgency, synergy with existing initiatives)**:**
- This has been expanded from the original project looking at EMF to wider concerns on electrical infrastructure impacts
- Potential to work with BOEM to further develop their study on existing cooling systems and SeaGrant on EMF.
- NOWRDC potential JIP on HVDC

Project ID 60: Floating Wind Sensor Demonstrator: 1/4 Scale Monitoring Test Bed

Budget:	
Duration:	6 – 12 months
Research area:	Technology

1 – Challenge trying to address:

There are limited opportunities to test and demonstrate capabilities of new environmental monitoring *[could keep this open i.e. not just environmental]* technologies for offshore wind applications. Sensor technologies for collecting above and below water data can still be optimised, but opportunities for proof of concept and marinization are often still challenging to innovators.

This would give a unique opportunity for researchers, companies or innovators to test technologies and work in collaborative partnerships to collect additional environmental data

2 - Objectives:

Accelerate the development of scalable, marine-ready solutions by providing an accessible environment (VolturnUS+ platform) to test technologies and collect additional data (above and/or below water). Participants will demonstrate performance, reliability, and adaptability of their technologies under nearshore conditions. wave, wind, and tidal influences.

<u>Phase 1</u>

- Launch a competitive call for innovative sensor technologies to gather data e.g. floating turbine behaviour, and interaction of floating wind units with species and the ocean environment.

<u>Phase 2</u>

- Validate sensor technology performance and data quantify by testing it on a floating platform;
- Gather relevant data that can be used by stakeholders in the GoM;
- Assess the suitability (and value) of integrating these sensors for long-term offshore use.

3 - Approach / Scope:

<u>Phase 1</u>

- Identify and select promising sensor technologies
- Agree a deployment plan, working with UMaine

<u>Phase 2</u>

- Integrate the sensors selected on the 1/4 scale VolturnUS+ platform. Operate and maintain the sensors for a period of 6 months (?).
- Process and analyse the data collected and assess the sensor performance.

4 - Output:

- Detailed environmental and floating wind turbine behavior datasets;
- Technical validation of novel sensor technologies.

5 - Expected Benefits:

- Development and testing of sensor technologies for floating offshore wind;
- De-risk full scale deployment of the technology;
- Strengthens collaboration between academia and the industry.
- This is a unique opportunity to validate ideas in a safe, cost-effective setting before scaling to offshore applications.
- Collection of additional environmental data

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

This project supports existing data needs and leverages existing infrastructure, in line with existing near-term deployment timelines.

Supports technology development and testing, while enabling the collection of relevant data for the GoM region.

Wrap Up and Next Steps

- AB member survey

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

Project prioritization process this year

- Discussion at the Advisory Board and virtual group working sessions, to develop project ideas aligning with the priority research topics
- Follow-up discussions and 1-2-1 calls held with Advisory Board members and Collaborators

Today

- Discuss topics to expand, refine or de-prioritize based on factors such as **urgency, collaboration opportunities** and **interest**
- Are there any critical needs not yet considered?

Next steps:

- Develop more detailed one-pager summaries for potential projects
- 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

Projects funded

	Reduce co-use conflicts	Socio-economic impacts and community benefit	Impact on ecosystems	Technology development
Year 1 (2023)	Exploring approaches to fisheries' coexistence with floating offshore wind	Socioeconomic data inventory	Seafloor Mapping in the Gulf of Maine	
Year 2 (2024)		*Baseline assessment of social, economic, and cultural impacts of FOW development on Maine's fishing industry*	*Baseline offshore bat monitoring assessment*	
			Baseline secondary entanglement risk assessment and technology feasibility study	