GOVERNOR'S Energy Office

Sea Grant MAINE

CARBON TRUST

SAMBAS Consulting LLC

Advisory Board

Maine Offshore Wind Research Consortium

November 22, 2024

A Few Guidelines for Today

Advisory Board Members

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

Observers

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

Meeting Objectives

- Receive brief updates on Research Consortium research and relevant external research
- Provide feedback on draft recommendations for *Project #2 (Fisheries Coexistence)*
- Discuss strawman process for reviewing future match funding requests
- Discuss strategy for allocating remaining research funds

Meeting Agenda

9:00 **Welcome & Introductions –** *Terry Alexander, Co-Chair; Katy Bland, Maine Sea Grant*

9:10 **Research Updates –** *Meghan Suslovic, Governor's Energy Office*
- *Jesse Minor, Department of Marine Resources*
- *Alice Sandzén, ERM; Hannah MacDonald & Chas Van Damme, Gulf of Maine Research Institute*

9:40 **UMaine 1:4 225kW Floating Wind Turbine Scale Demonstration Unit Update** - *Anthony Viselli, University of Maine*

10:00 **Draft Match Funding Process Discussion** - *Katy Bland, Maine Sea Grant*

10:30 **Break**

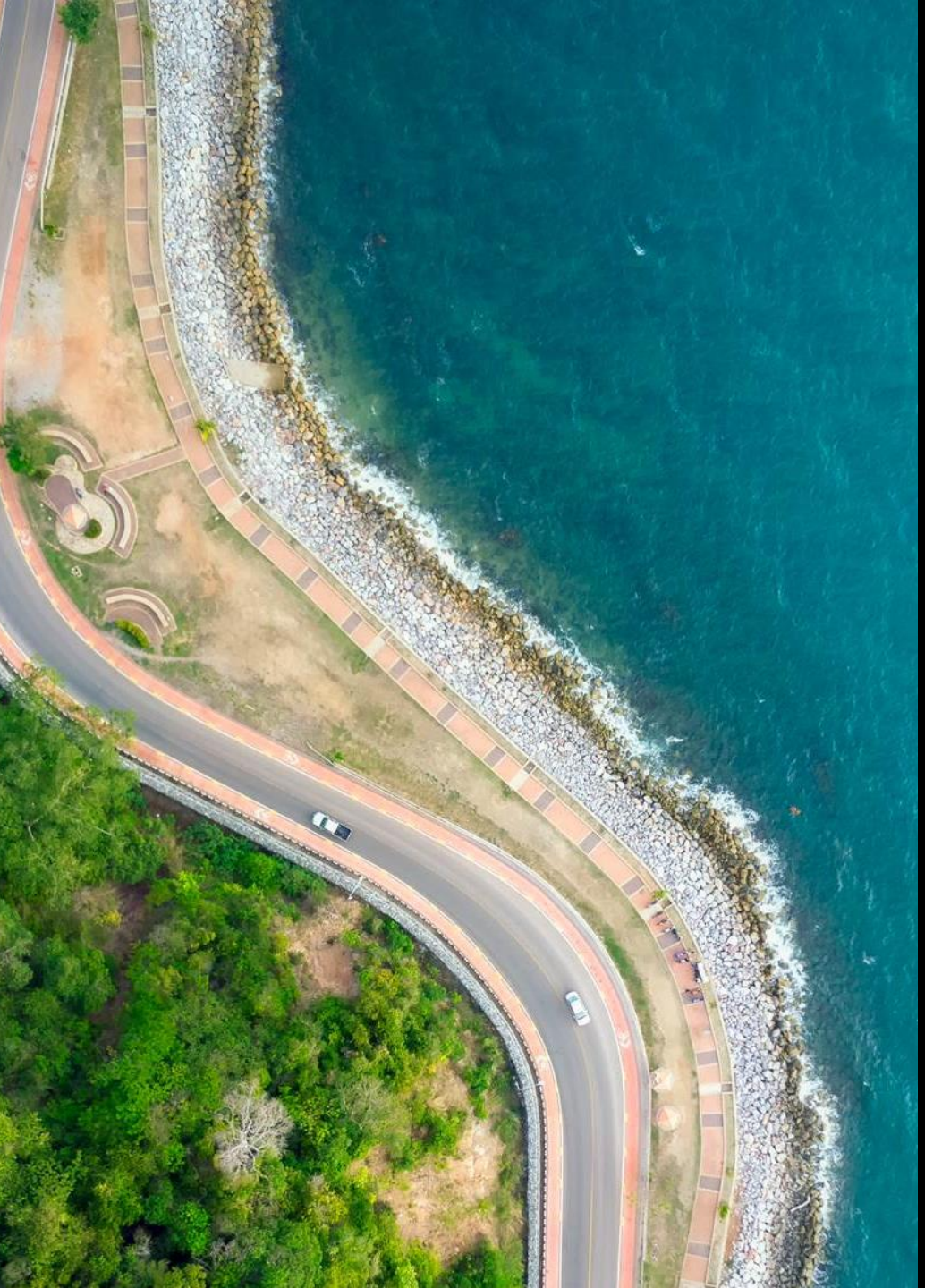
10:35 **Prioritization Next Steps –** *Olivia Burke, Carbon Trust*

11:30 **Programmatic Updates -** *Katy Bland, Maine Sea Grant*

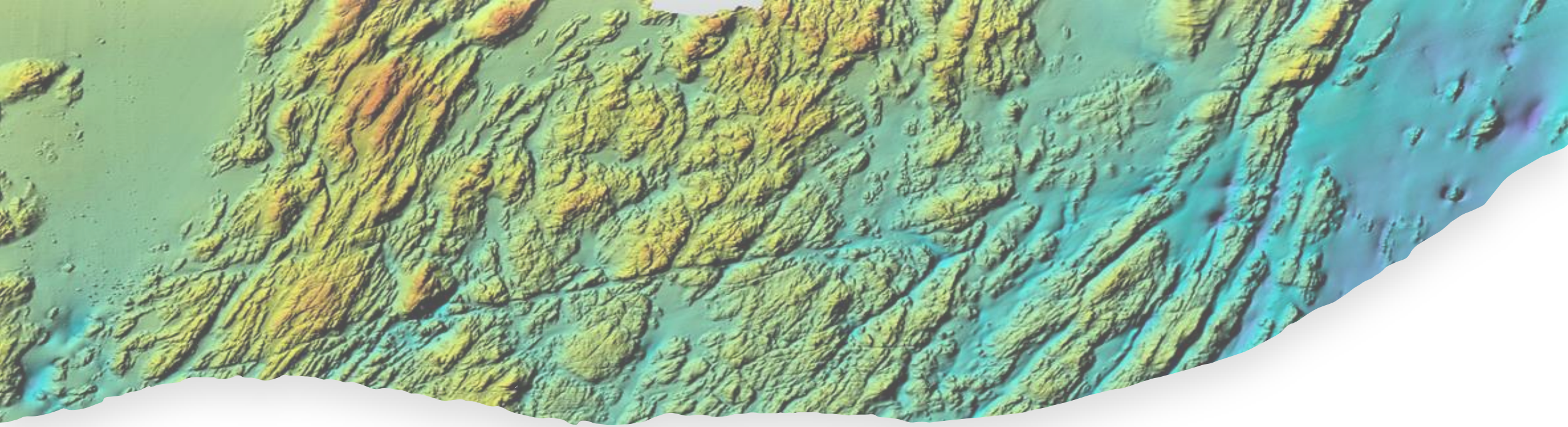
11:35 **Advisory Board & Collaborator Updates**

11:50 **Wrap Up and Next Steps**

12:00 **Adjourn**



Research Updates



DMR Mapping in the Research Array and Offshore

MAINE GOVERNOR'S Energy Office

MCMI Maine Coastal Mapping Initiative

Maine Department of Marine Resources

Bureau of Marine Science

Division of Ecology and the Environment

Jesse Minor, program lead

Peyton Benson, lead hydrographer

Anne Simpson, benthic ecologist

MAINE MARINE RESOURCES

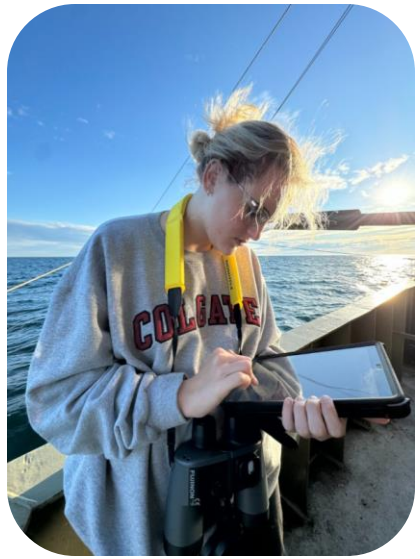
Offshore Survey Effort

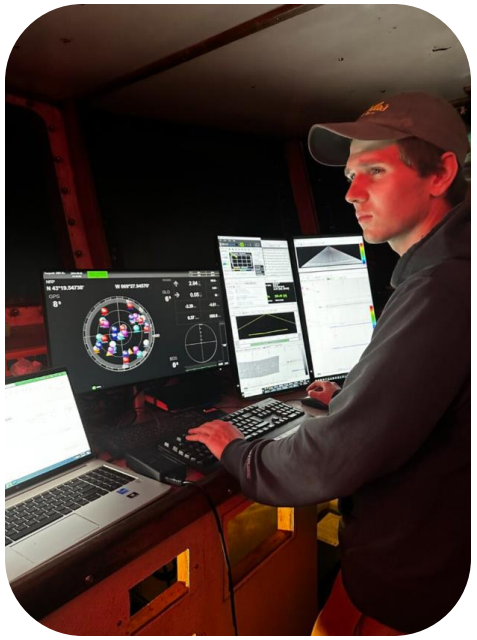
Survey Details:

- F/V Titan
  - 66’ commercial scalloper
- Sonar operations
  - 24-hour surveys
- Wildlife observations
  - Daylight: Seabird, marine mammal
  - 24 hr: passive acoustic bat sensor

Mapping Priorities:

- Maine Research Array lease area
- 9-mile research strata
- bathymetric data gaps
- potential cable routes





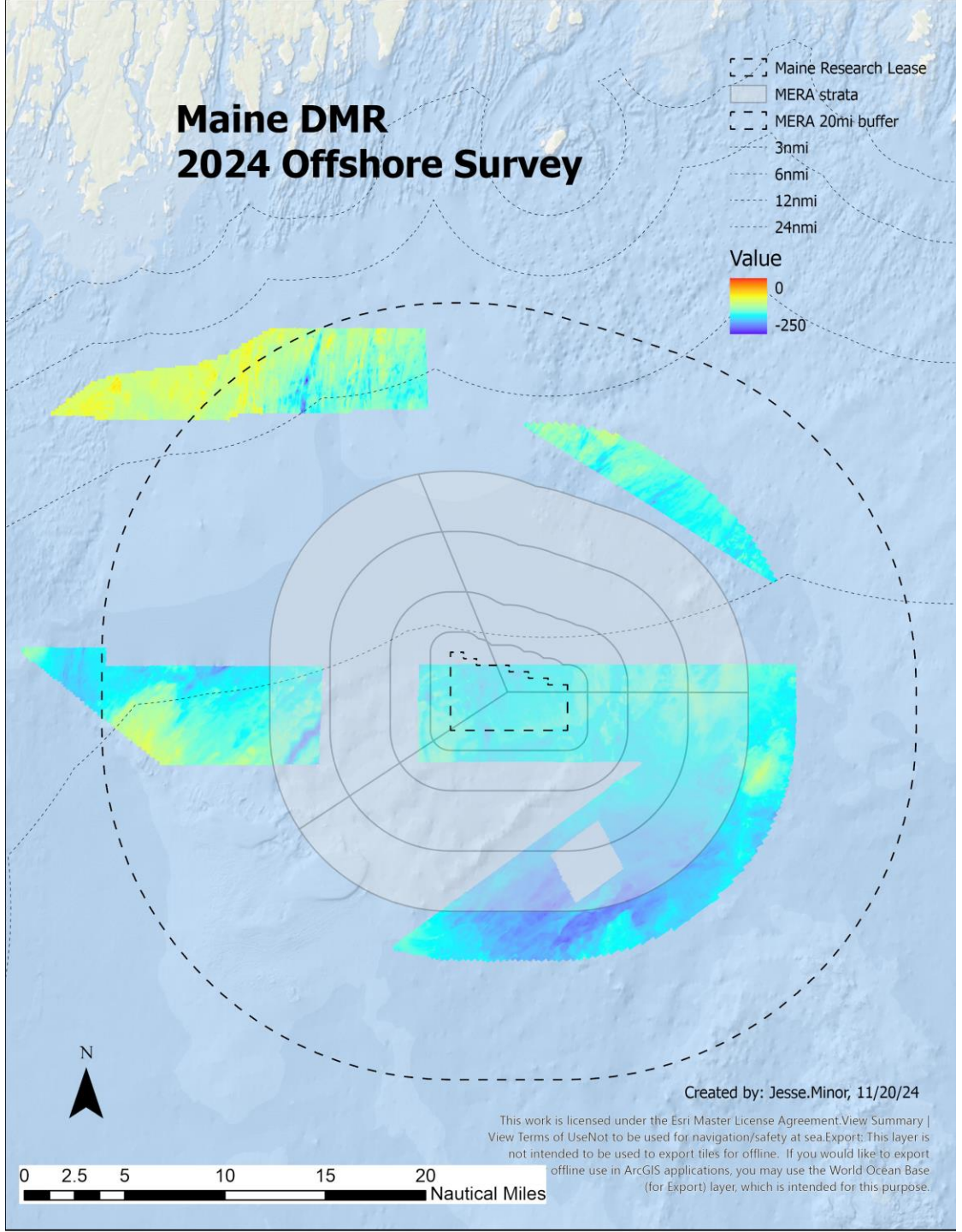
Survey Results

Sonar Survey:

- August 1 - October 23
  - 34 days at sea
- 337 nmi^2 mapped
  - 2,002 linear miles
  - 502 hours of sonar time

Wildlife Observations:

- 98 bat detections
- 314 marine mammals
  - 48 whales; 265 dolphins
- 2,771 seabird observations



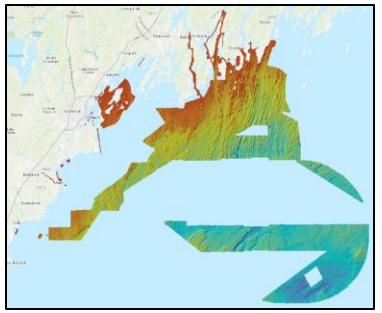
Contributions to Regional Mapping

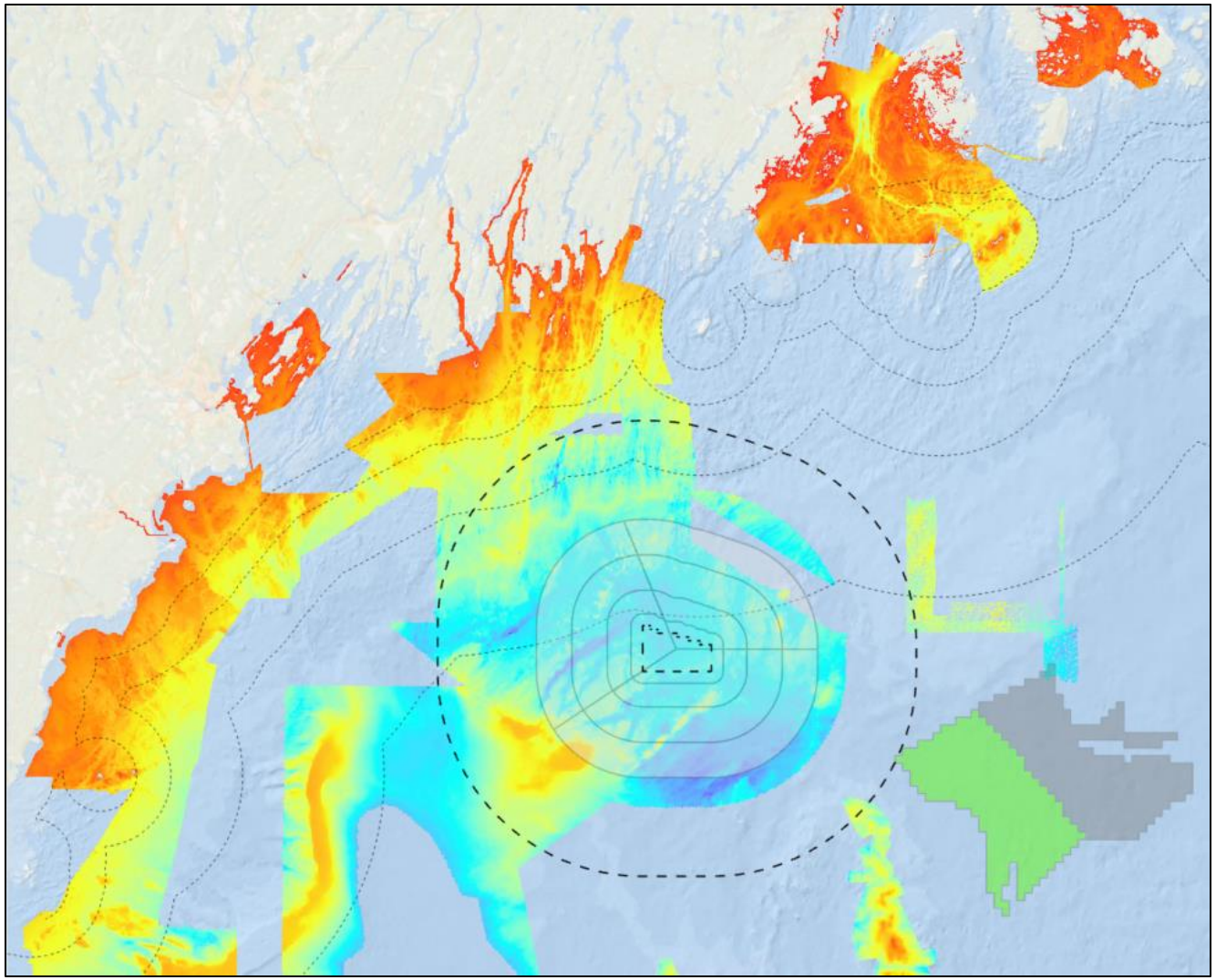
Large footprint of:

- 4m-resolution bathymetry
- 2m-resolution backscatter

Data access:

- Maine DMR OpenData map server
- Northeast Ocean Data Portal
- By request





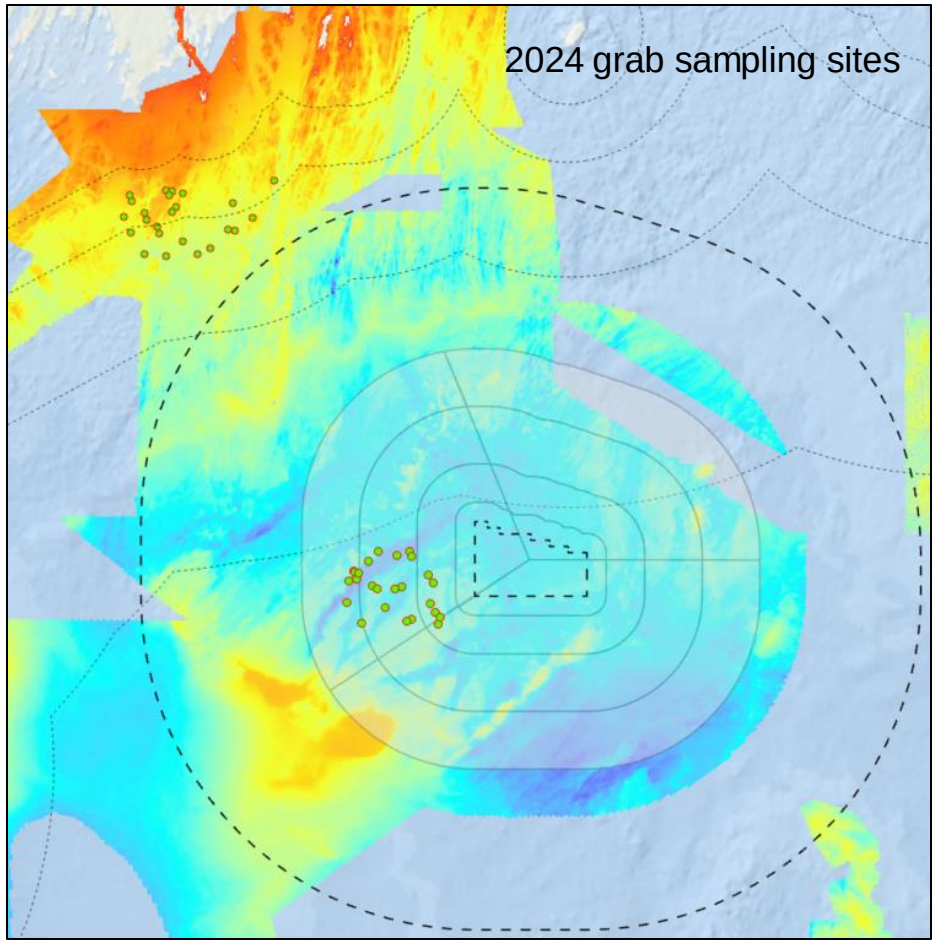
Benthic Survey

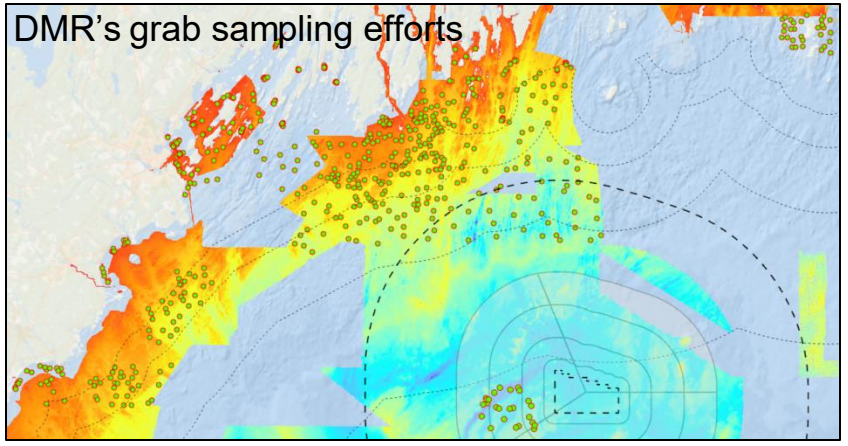
Grab Sampling:

- 25 sites west of Research Array
- 24 infill sites in potential cable route areas

Each grab yields:

- 2-3 minutes of video
  - Benthic epifauna
- Grain Size Analysis
- Benthic infauna communities
- CTD casts





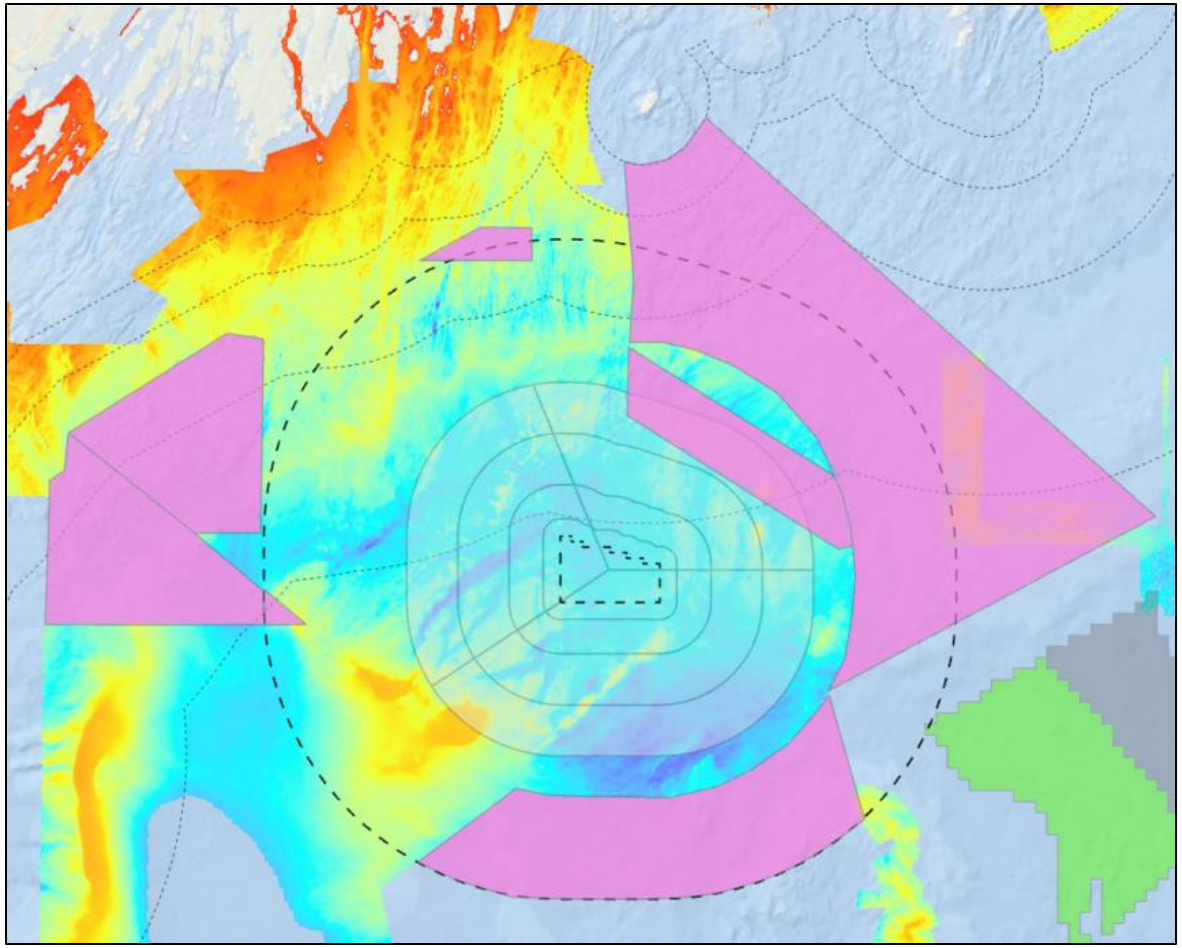
Next Steps

Data Processing:

- Final bathymetric surfaces
- Backscatter mosaic (normalized)

2025 Survey Season:

- Completely map MERA-region study areas
- Expand bathymetric footprint
- Connect to NOAA's planned 2025 surveys
- Grab sampling in MERA and research strata



Thank you to the Governor's Energy Office and the Offshore Wind Research Consortium for project funding!

MAINE MARINE RESOURCES

MCMI Maine Coastal Mapping Initiative

Exploring Approaches to Fisheries Coexistence with Floating Offshore Wind

ERM
+
Gulf of Maine Research Institute

Alice Sandzén & Chas Van Damme

ERM

Gulf of Maine Research Institute

Funding from the Maine Offshore Wind Research Consortium through the Governor's Energy Office

Introduction

Gulf of Maine Research Institute

2023
Identification of priority research topics

March 2024
Project kick off

September/ October 2024
AFloat and ACP

January/ February 2025
Final presentation and report

December 2023
GEO releases RFP for priority research topics

April 2024
Presentation to the OSW RC Advisory Board

Stakeholder Engagement

November 2024
Update to the OSW RC Advisory Board

Study will contribute to filling key data gaps that are not being addressed elsewhere

Research will build on existing resources and data for greater efficiency and immediacy of results

Project will inform sensible predictions for other regions/species/ applications/scales.

Project will provide collaborative research opportunities with community members.

Methods & Engagement Approach

Regulatory, Legal, & Literature Review

- Compile existing global regulations and standards
- Compile and review case studies
- Advise decision-makers on how standards can be applied and implemented
- Recommend site-specific analyses

FOW Technology & Fishing Gear Review

- Review FOW technology and develop/compile schematics
- Identify the top 10 species landed (weight/value) in the lease areas
- Identify gear types used to land the top 10 species
- Identify vessel types/sizes
- Consider temporal trends

Develop Recommendations

- Assess compatibility of FOW technologies, layouts, and/or designs with fisheries practices and equipment
- Summarize key recommendations
- Recommend future studies to fill key data gaps

Stakeholder Engagement

Engagement Process

Phase 1

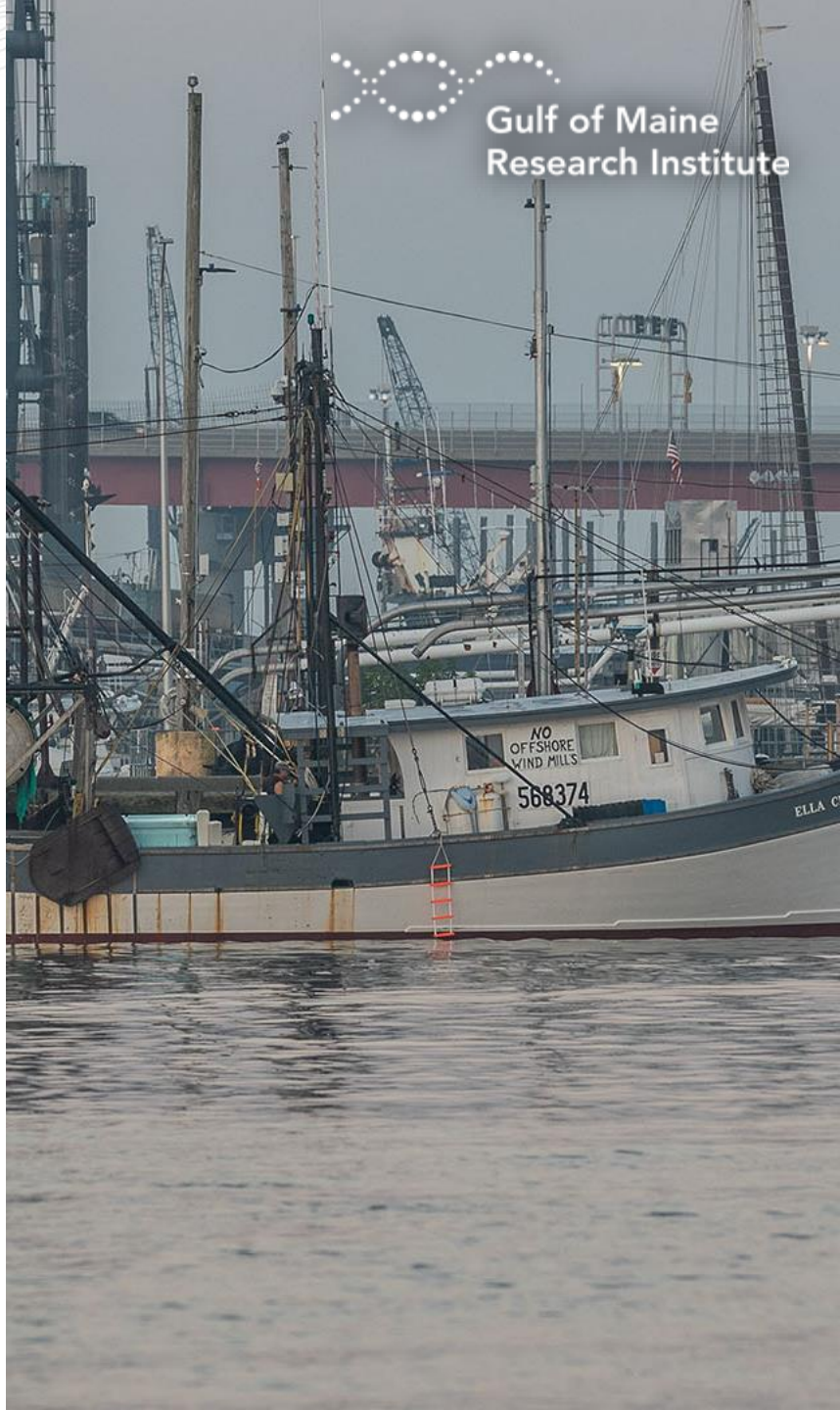
Discuss initial understandings, curiosities, and concerns regarding general operability around FOW arrays.

Phase 2

Evaluate and discuss how different gear types and fisheries may operate within various FOW technology concepts summarized by ERM, including platform, mooring, anchoring, and cabling designs.

Phase 3

Present ERM's initial recommendations for best practices on coexistence to previously engaged stakeholders and receive feedback. This feedback will be incorporated into the final report.



Regulatory, Legal, and Literature Review

Academic **literature** identifies four key types of coexistence:

- **Multipurpose:** users occupy the same area, at the same time, and share core infrastructure and services
- **Symbiotic Use:** users occupy the same area, at the same time, and share peripheral infrastructure or services
- **Colocation:** users occupy the same area at the same time
- **Repurposing:** users occupy the same area, but sequentially (one after the other) rather than at the same time

Fishing industry stakeholders describe coexistence as:

"A way of getting to a compromise, where both sides are respecting the other side's perspectives and needs and give as much as they can."

"Coexistence means no change in revenue, no large-scale spatial disruption."

"Coexistence requires adaptation on both sides. Adaptation has to be a two-way street."

"Wind and fisheries are able to operate profitably and safely."

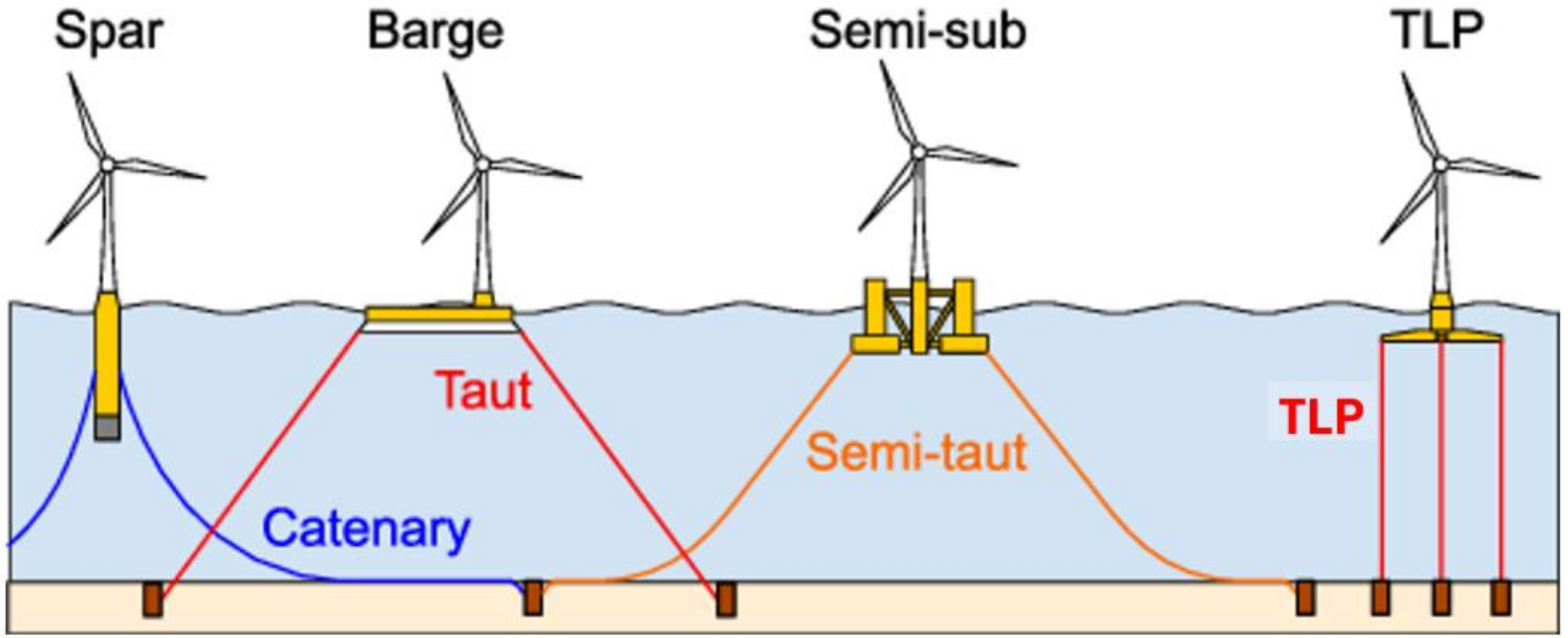
"Multiple entities existing in the same space or at the same time."

FOW Technology & Fishing Gear Review

Evaluated

- Foundations
- Moorings
- Anchors
- Inter array cables

The **mooring system** influences the **cabling** and **takes up the most space** → assessing compatibility of fishing activities and the mooring system is critical.



FOW Technology & Fishing Gear Review

Top Species	Gear Type	Vessel Type & Size
Haddock	Bottom Trawl	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
Pollock	Bottom Trawl	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
Cod	Bottom Trawl, Bottom Gillnet	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
Monkfish	Bottom Trawl, Bottom Gillnet	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
Redfish	Bottom Trawl	Bottom Trawlers (40-90 feet)
American Lobster	Pots & Traps	Offshore Lobster Vessels (40-70 feet)
Sea Scallop	Dredge	Scallop Dredge Vessels (40-100 feet)
White Hake	Bottom Trawl, Bottom Gillnet	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
American Plaice Flounder	Bottom Trawl	Bottom Trawlers (40-90 feet)
Witch Flounder	Bottom Trawl, Bottom Gillnet	Bottom Trawlers (40-90 feet), Gillnetters (40-50 feet)
Atlantic Herring (Bait)*	Pelagic Trawl, Purse Seine	Pelagic trawlers (60-90 feet), Purse seine vessels (60-90 feet)
Bluefin Tuna*	Harpoon	Harpoon Vessels (20-50 feet)

*Identified by local stakeholder

FOW Technology & Fishing Gear Review

Preliminary technical compatibility assessment based on currently available technology[1]:

Mooring Type	Bottom Trawls	Midwater/ Pelagic Trawls	Bottom Gillnets	Pots & Traps	Dredges	Pole & Line	Purse Seine	Harpoon
Catenary	X	~	~*	~*	X	~	~*	✓
Semi-Taut	X	~	~*	~*	X	~	~*	✓
Taut	X	X	~*	~*	X	~	~*	✓
TLP	~*	~	✓*	✓*	X	~	~	✓

X	Not expected to be technically compatible
~	May be technically compatible in certain areas of the array in certain circumstances[2]
✓	Expected to be technically compatible throughout most of the array

* = Technical compatibility depends on the cable being buried and an established exclusion zone around the wind turbines

[1] FOW technology and fishing gear are continuing to evolve

[2] For all amber categories, additional engineering solutions would be needed for fisherman to feel comfortable fishing in the array

Methods & Engagement Approach

Regulatory, Legal, & Literature Review

- Compile existing global regulations and standards
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FOW Technology & Fishing Gear Review

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Develop Recommendations

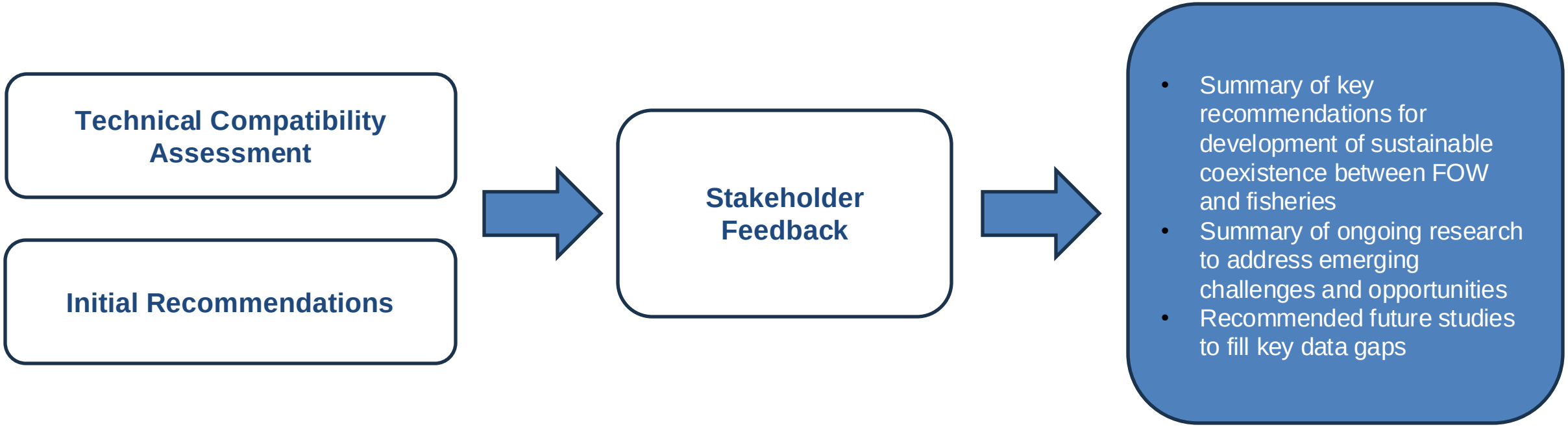
- Assess compatibility of FOW technologies, layouts, and/or designs with fisheries practices and equipment
- **Summarize key recommendations**
- Recommend future studies to fill key data gaps

Stakeholder Engagement

Develop Recommendations

Spacing Considerations (Mooring and Platform)	Layout Considerations	Technology Opportunities	Implement regulations to support coexistence
Increasing spacing between turbines could allow more fishing activity but would reduce array density, requiring the array to cover more area	The layout of the wind array could be optimized for greater fishing potential.	Invest in and deploy existing and new technology to provide accurate, real-time location information of underwater equipment.	1. Comprehensive EIAs 2. Marine protected areas 3. Schedule requirements 4. Fishing policies
Engage Fishermen in Survey Operations	**Establish Clear Protocols for Compensation**	**Establish Adaptive Management Frameworks**	**Mitigate Impacts on Fishing**
Engage fishing communities, hire fishermen to provide support and use fishing vessels	Establish a standard gear loss compensation program, establish regional compensation funds, leverage developer funding	Establish adaptive management frameworks that consider new fishing and monitoring data and adjust operations, where needed to reduce impact	Develop clear guidelines and buffer zones, promote dialogue between developers and fishermen, establish communication protocols
Use data-driven siting to reduce ocean user conflicts	**Incorporate Preventative Measures**	**Implement nature-inclusive design**	**Share Data**
Use a data-driven siting process to avoid specific user conflicts (e.g., BOEM wind energy area siting and deconflicting process)	Engage with fisheries during project design, leverage technology innovations and new gear technologies	Consider nature-inclusive design principles to increase species populations in the wind array and surrounding waters	Monitor before, during and after construction, track activities and record conflicts, map fishing activities, and share raw data in an open-source format

Seeking Feedback



We are seeking your feedback.

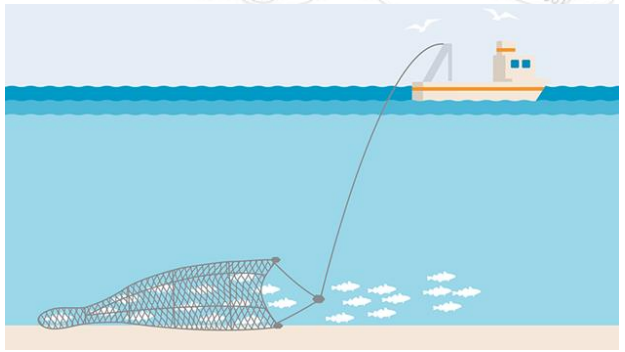
You will receive an email from cvandamme@gmri.org with a survey link.

Seeking responses by Dec. 13th 2024

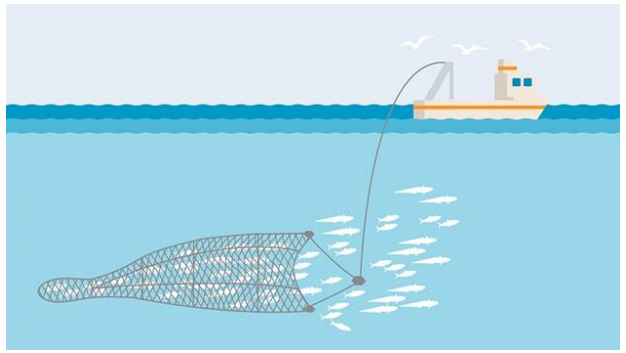
Questions?

Please feel free to email alice.sandzen@erm.com or cvandamme@gmri.org

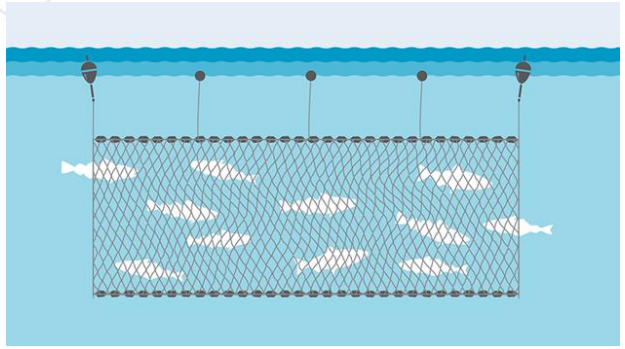
Fishing Gear Types



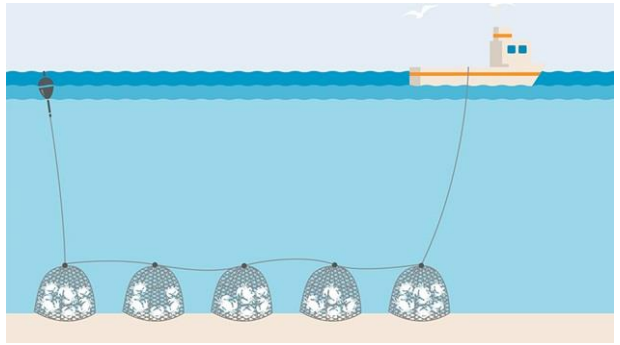
Bottom Trawls



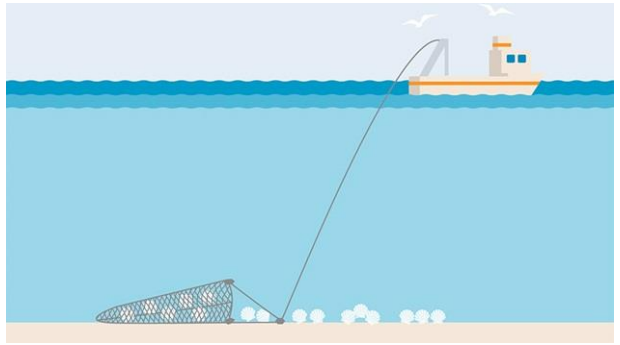
Midwater/Pelagic Trawls



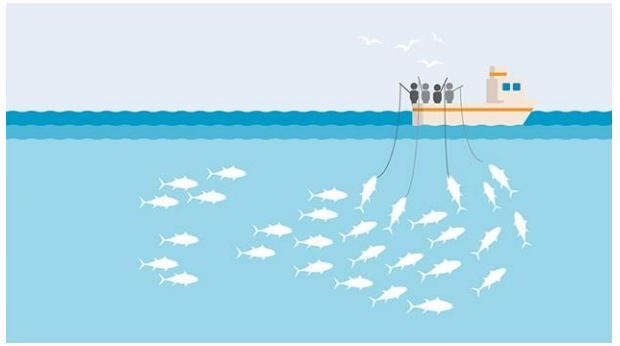
Bottom Gillnets



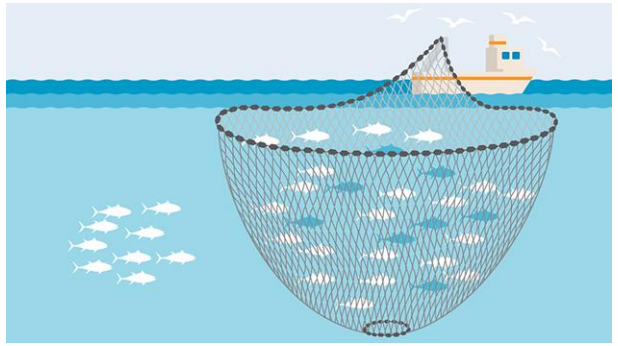
Pots and Traps



Dredges



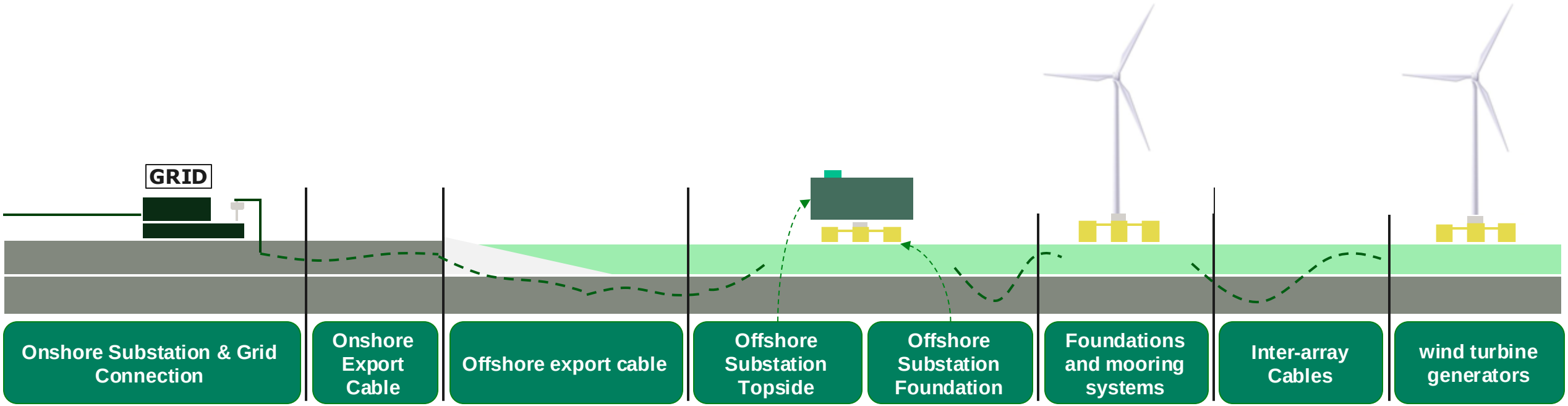
Pole and Line



Purse Seine

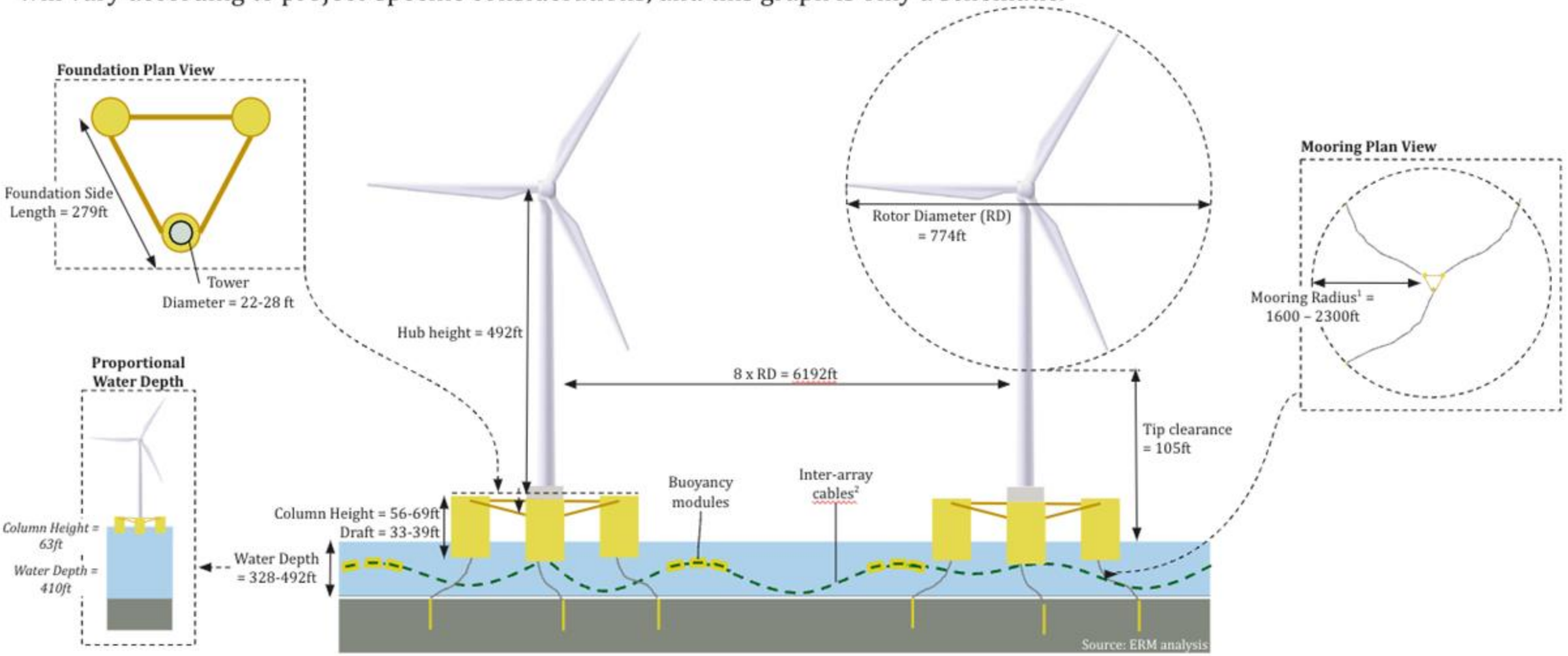
Graphics from Marine Stewardship Council

Technology Overview

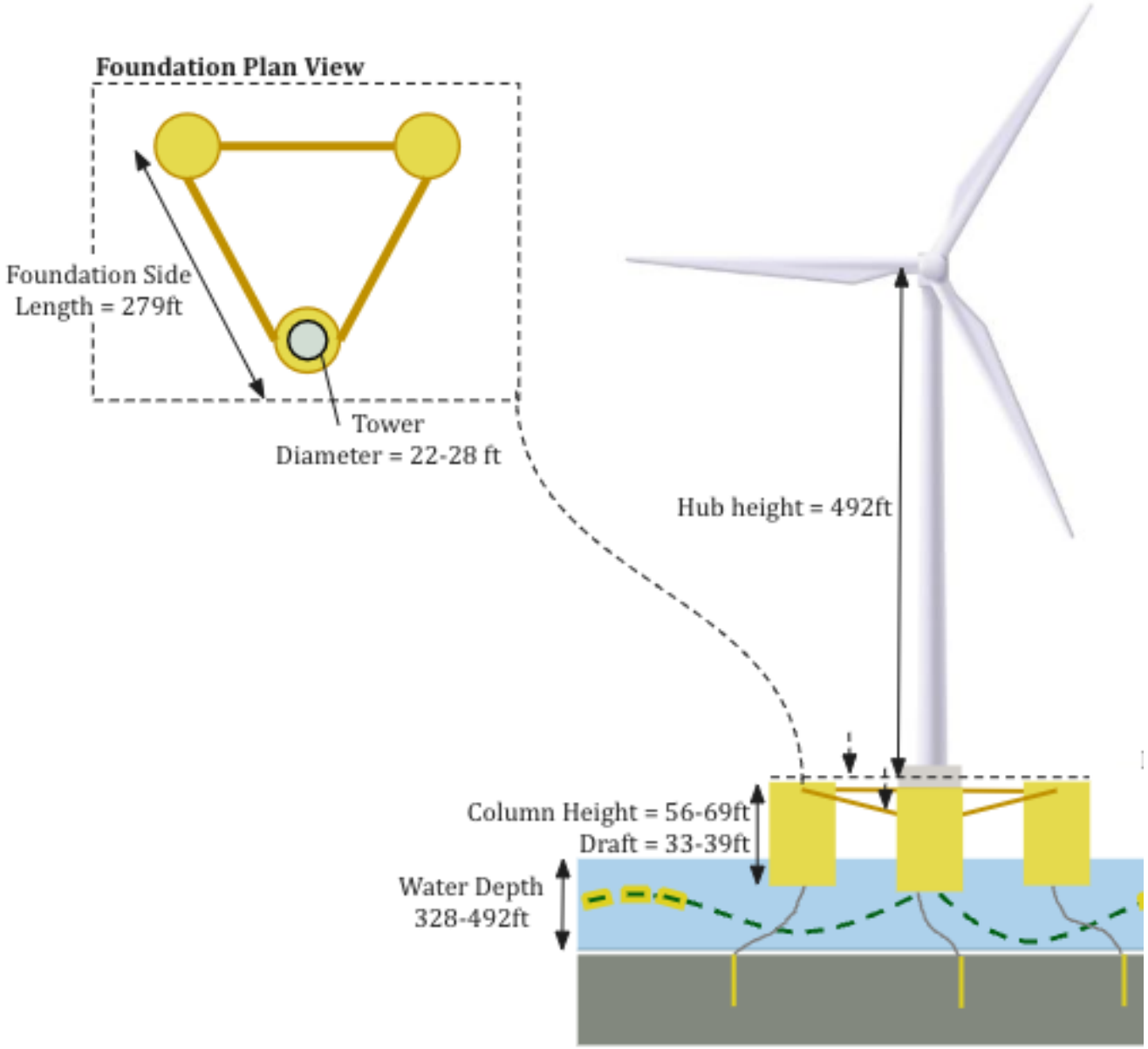


Typical Component Dimensions (15MW Turbines)

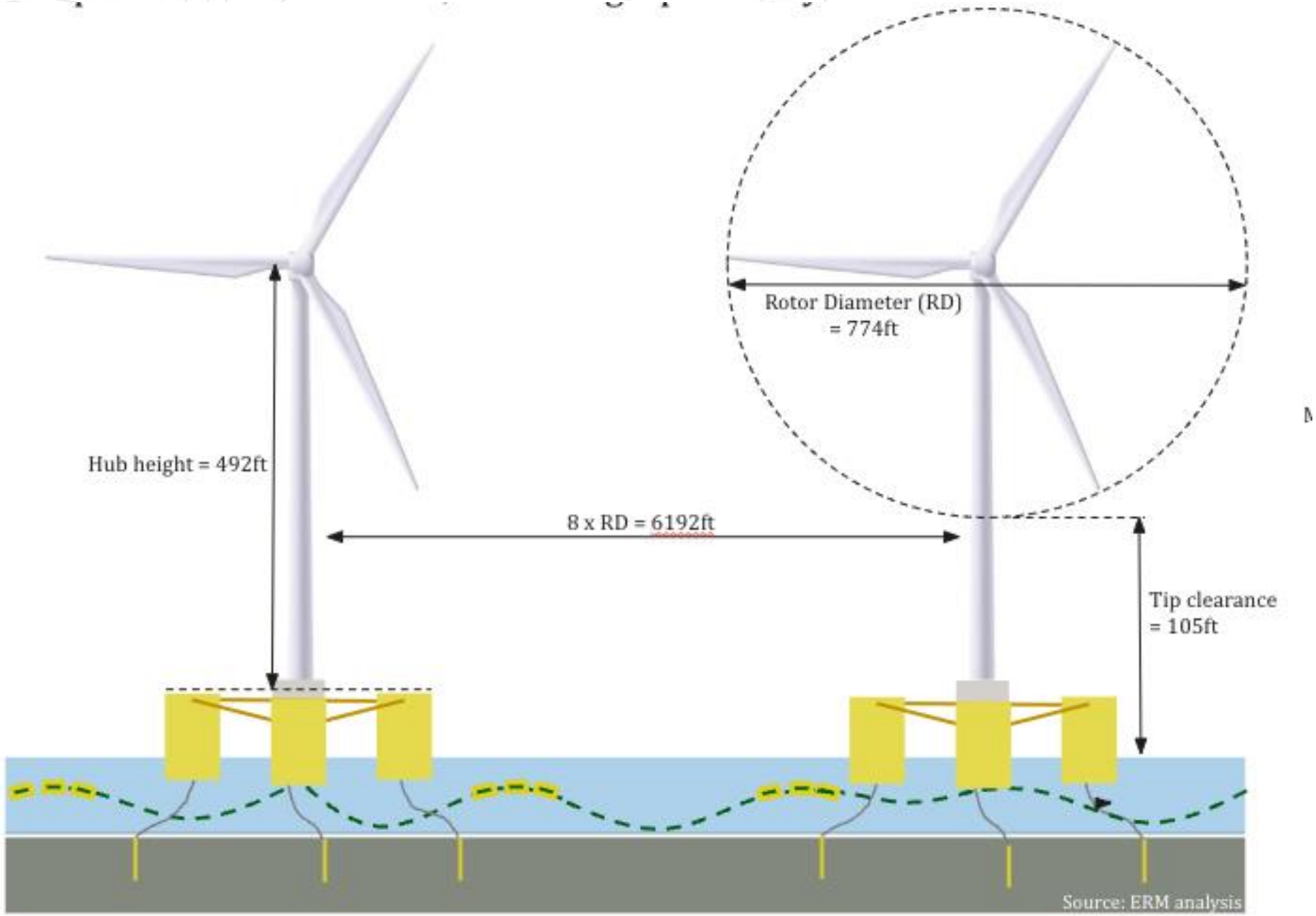
The figure below outlines illustrative dimensions for a Floating Offshore Wind array in the Gulf of Maine (not drawn to scale), considering, for example, a 15 MW wind turbine generator capacity and a generic semi-submersible foundation design. The exact values will vary according to project-specific considerations, and this graph is only a schematic.



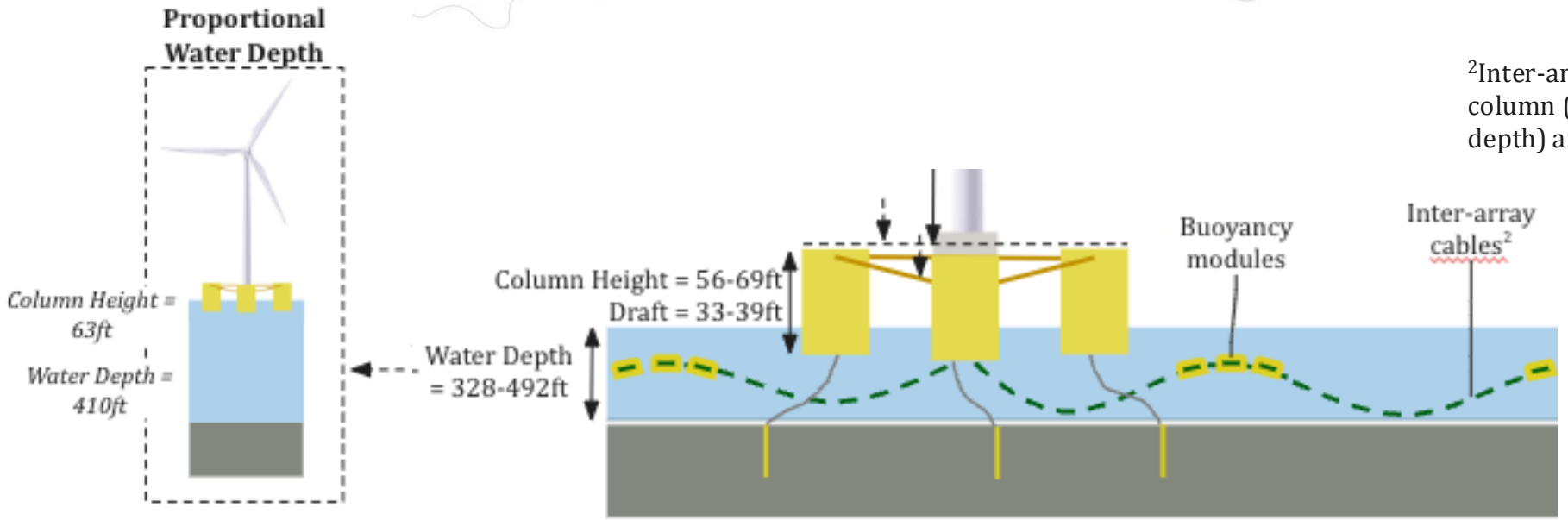
Above Sea Surface - Tower and Foundation Specs



Above Sea Surface - Tip Clearance and Rotor Spacing

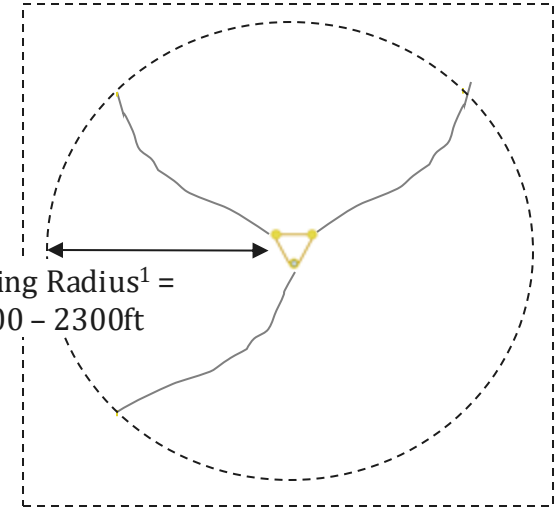


Below Sea Surface



[2]Inter-array cables are often suspended in the mid-water column (approximately 160-250ft for the assumed water depth) and can be partially buried.

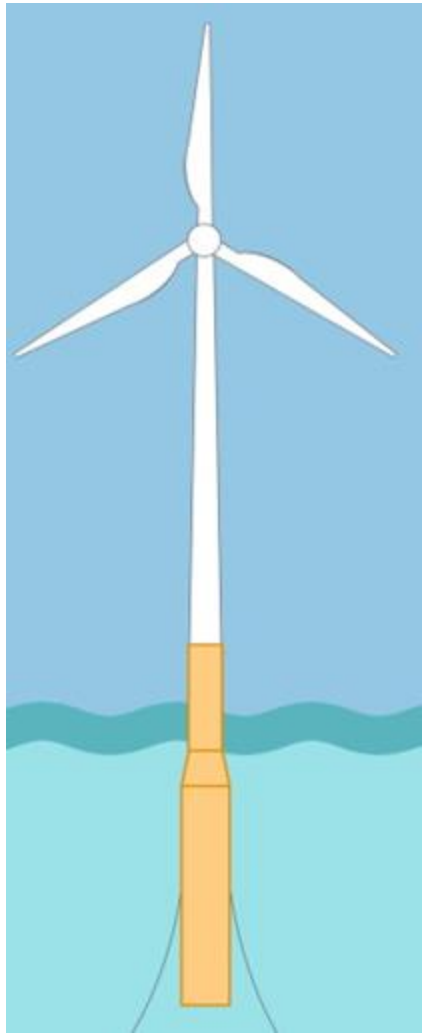
Mooring Plan View



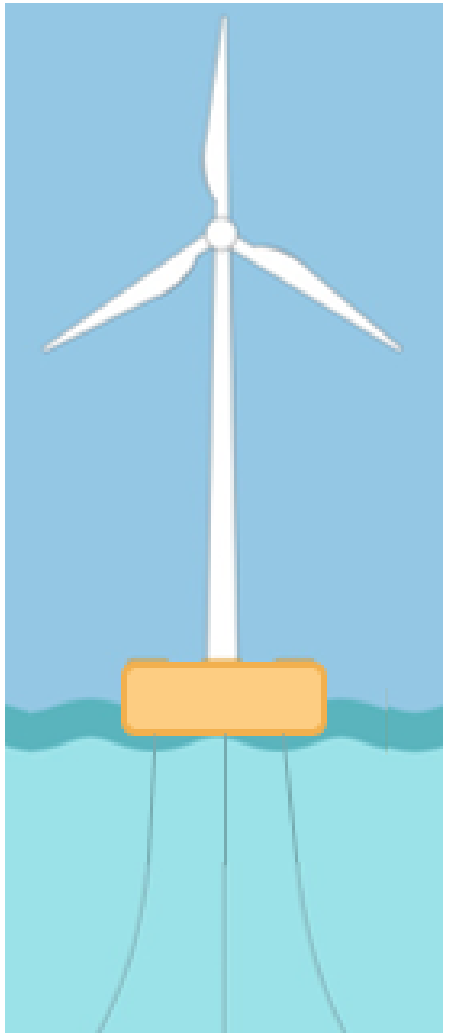
[1]Mooring radius is defined as the distance from the center of the floating platform to the point where a mooring line is anchored to the seabed. A catenary mooring system has been assumed for this value.

Foundation Concepts

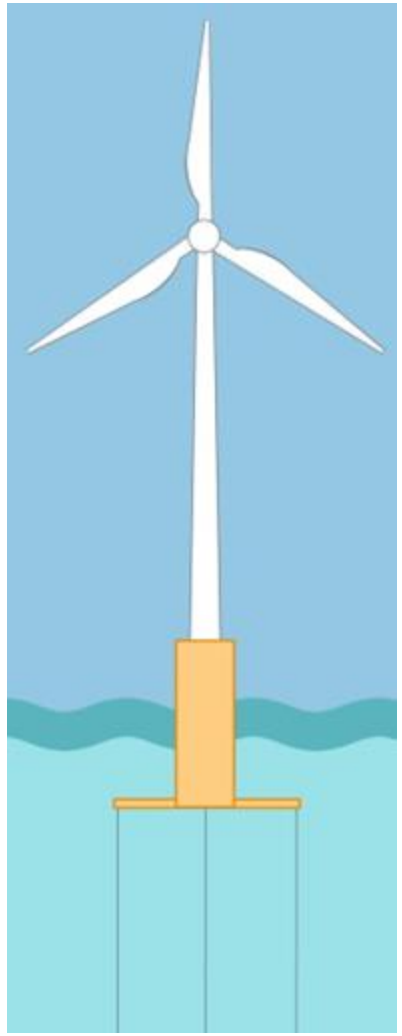
Spar



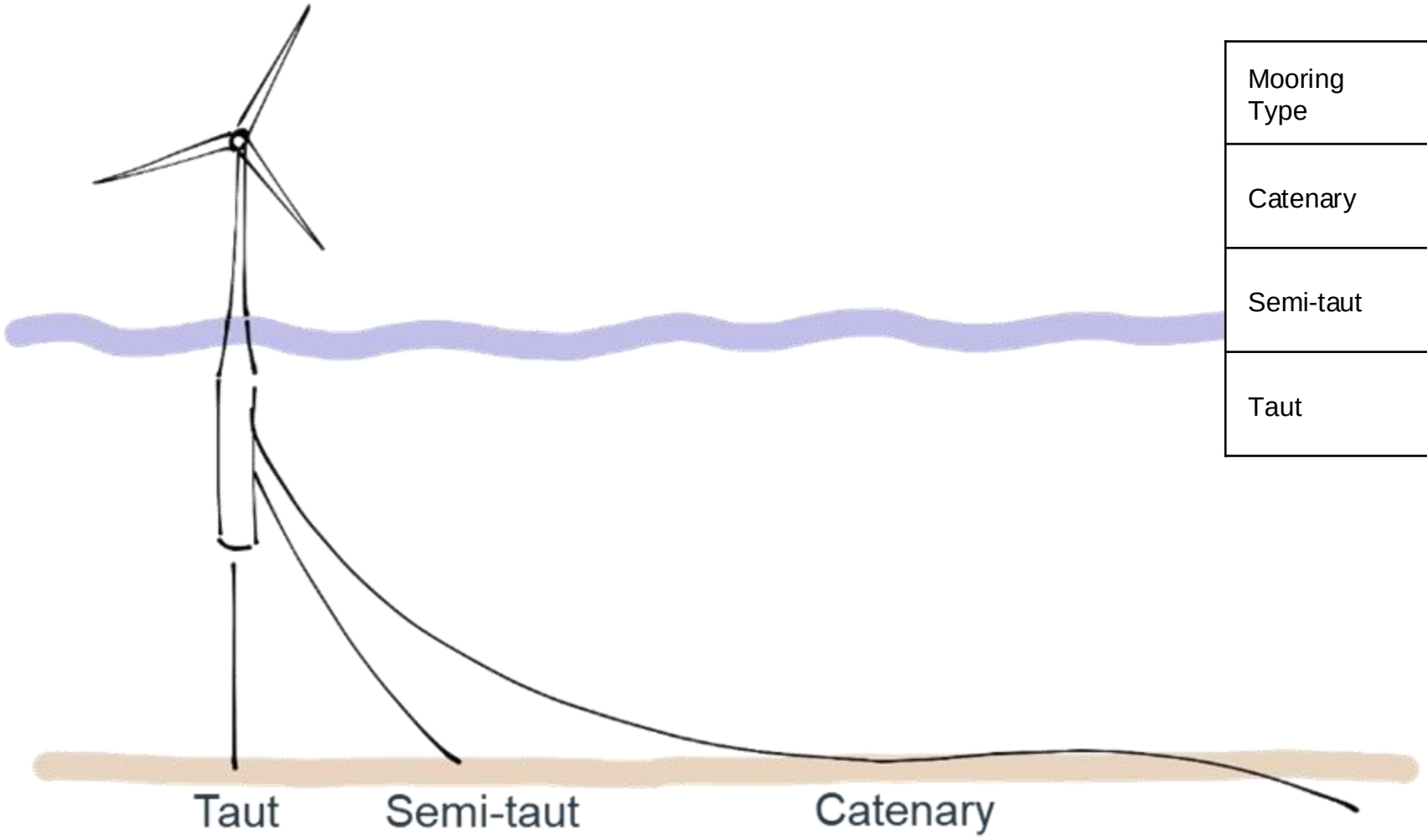
Semi-Submersible



Tension-Leg Platform

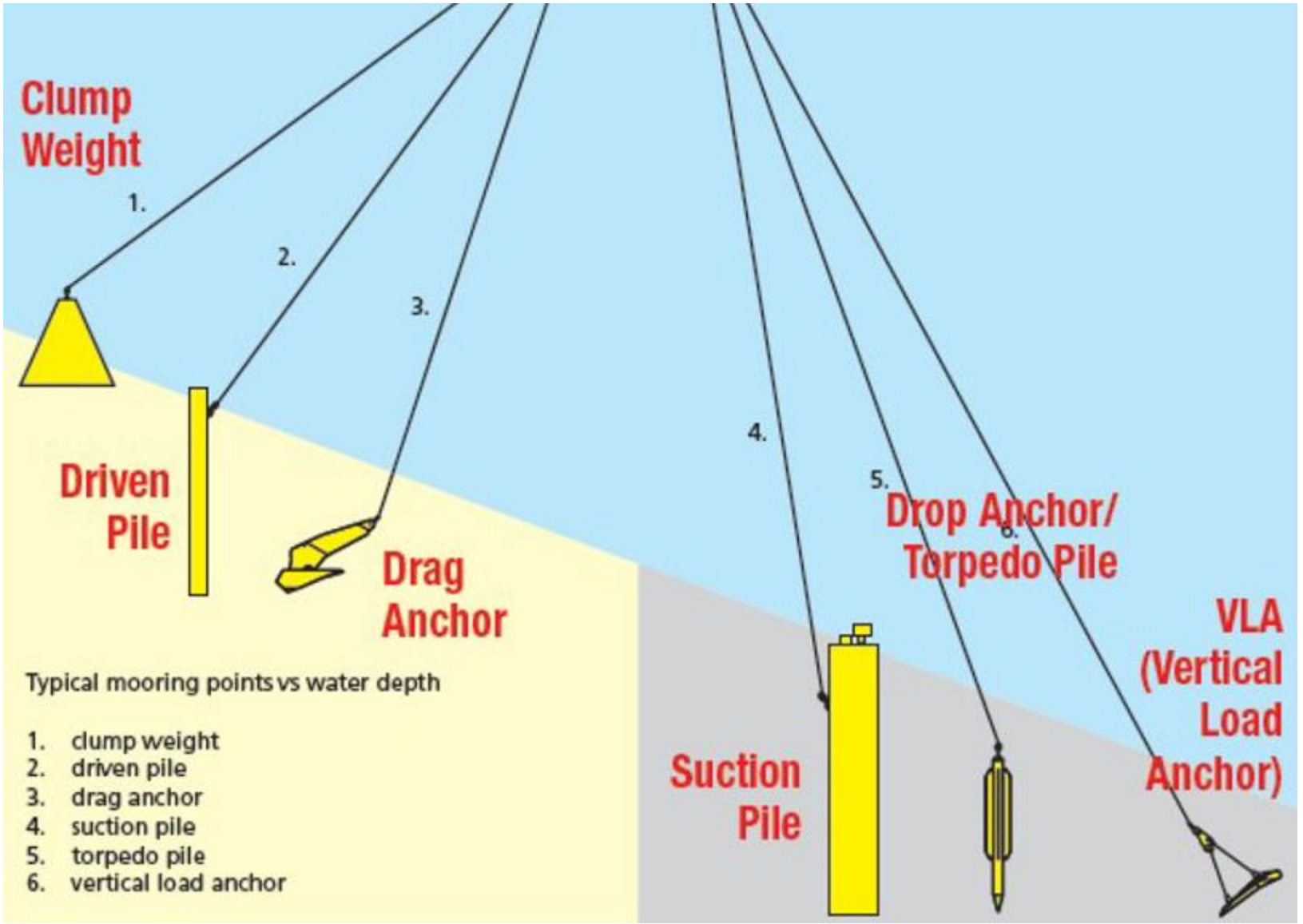


Mooring Systems



Mooring Type	Approximate Mooring radius in 400ft water depth (ft)
Catenary	1600 – 2300
Semi-taut	330 – 1000
Taut	0

Anchoring systems



UMaine 1:4 scale 225kW Floating Wind Turbine Demonstration Unit Update

THE UNIVERSITY OF MAINE

ADVANCED STRUCTURES & composites center

FLOAT

FLoating Open Access Turbines

A Bi-coastal Research and Training Center of Excellence

November 19th, 2024

Dr. Habib Dagher, PE, Executive Director, BIW Professor of Civil Engineering

Dr. Anthony Viselli, PE, Assistant Director and Chief Engineer, Assistant Research Professor Civil Engineering

Dr. Richard Kimball, Professor Mechanical Engineering

Dr. Andrew Goupee, Associate Professor Mechanical Engineering

Dr. Amrit Verma, Assistant Professor Mechanical Engineering

Dr. Damian Brady, Associate Professor, School of Marine Science

Concept Paper Overview/History of Program

- ***UMaine led a proposal to the DOE to form a Floating Wind Center of Excellence in the Fall 2024 with 41 industry partners to establish educational and research programs***
- ***Proposal under review (March 2025)***
- ***$3.8 million DOE funds***
- ***UMaine has built strong floating wind program***
  - *16-year track record of funded research, 9 PhD/ 26 Masters*
  - *Over 70 patents and 50 publications*
  - *First grid connected floating wind turbine in 2013*
  - *Alfond Wind Wave Basin constructed in 2015*
  - *48-person team at UMaine*
  - *Deploy 225kW floater in 2025 for up to 2 years*
  - *Aligned with State of Maine Offshore Wind Road Map*

41 Partners Including 6 Universities and Leading Wind Developers in the US

FLOAT Center of Excellence Overview

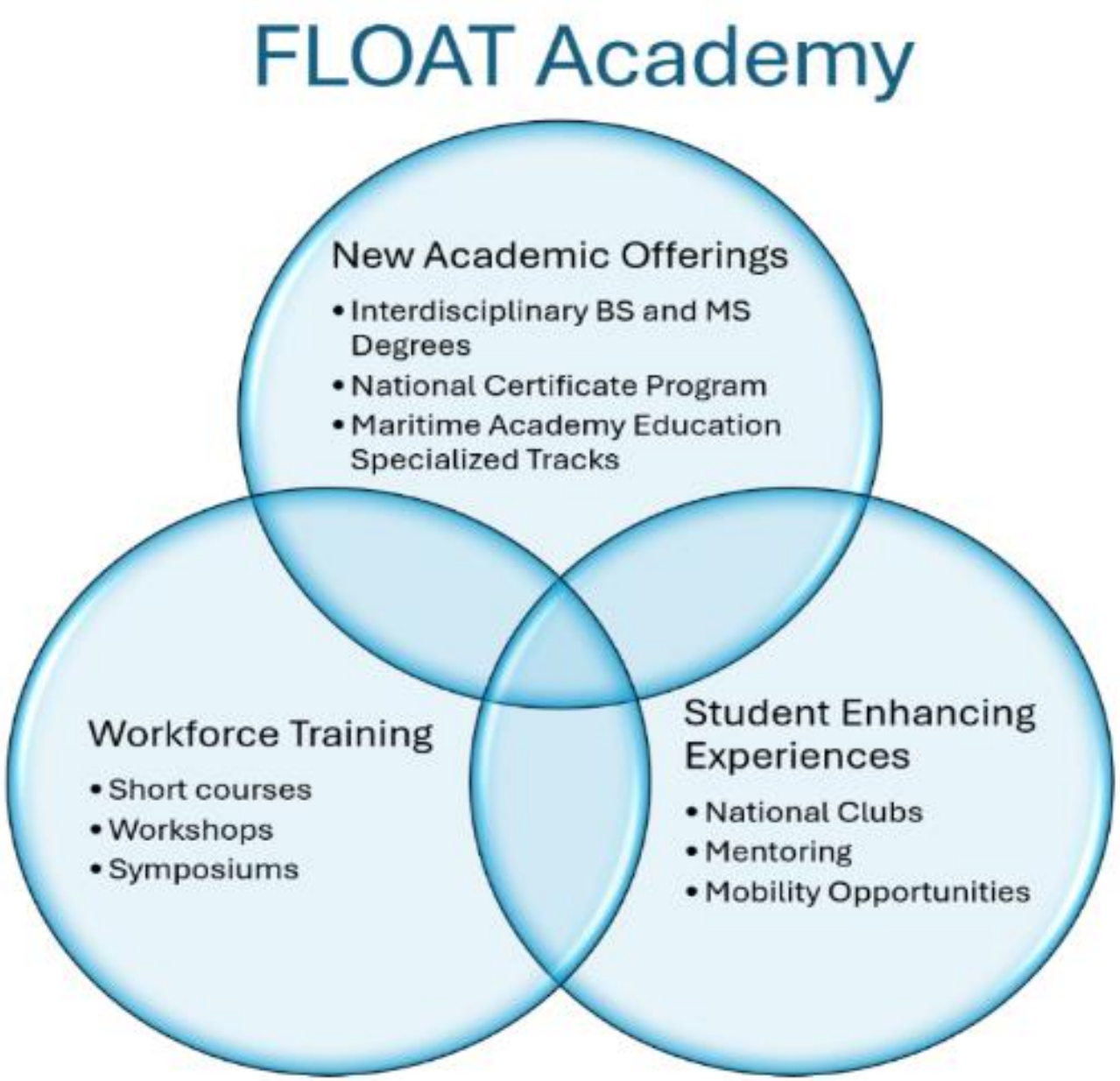
1. Main Problem addressed by FLOAT
   - US has no open-access offshore test facility for floating wind research and training.
   - Limits ability generate knowledge, validate models and technologies, and conduct “hands-on” workforce training.
2. Mission: Establish open-access floating offshore wind research and educational test facilities to help achieve the goals of the Floating Offshore Wind Shot as follows:
   - FLOAT-Castine, 225kW Vestas V27 under construction and to be deployed in Q1 2025.
   - Execute a diverse portfolio of research projects and workforce.
   - Expand center with Maine MeRA 144MW floating project, California CADEMO 60 MW floating project
3. DOE Proposal Funding = $12.5M over 5 years
   - $3.8 million DOE funds
   - $8.7 million of cost-share (UMaine, Industry, $3M from State of Maine)

UMaine ¼ Scale 225kW Construction

Background: UMaine VolturnUS Semisubmersible Deployment 2013

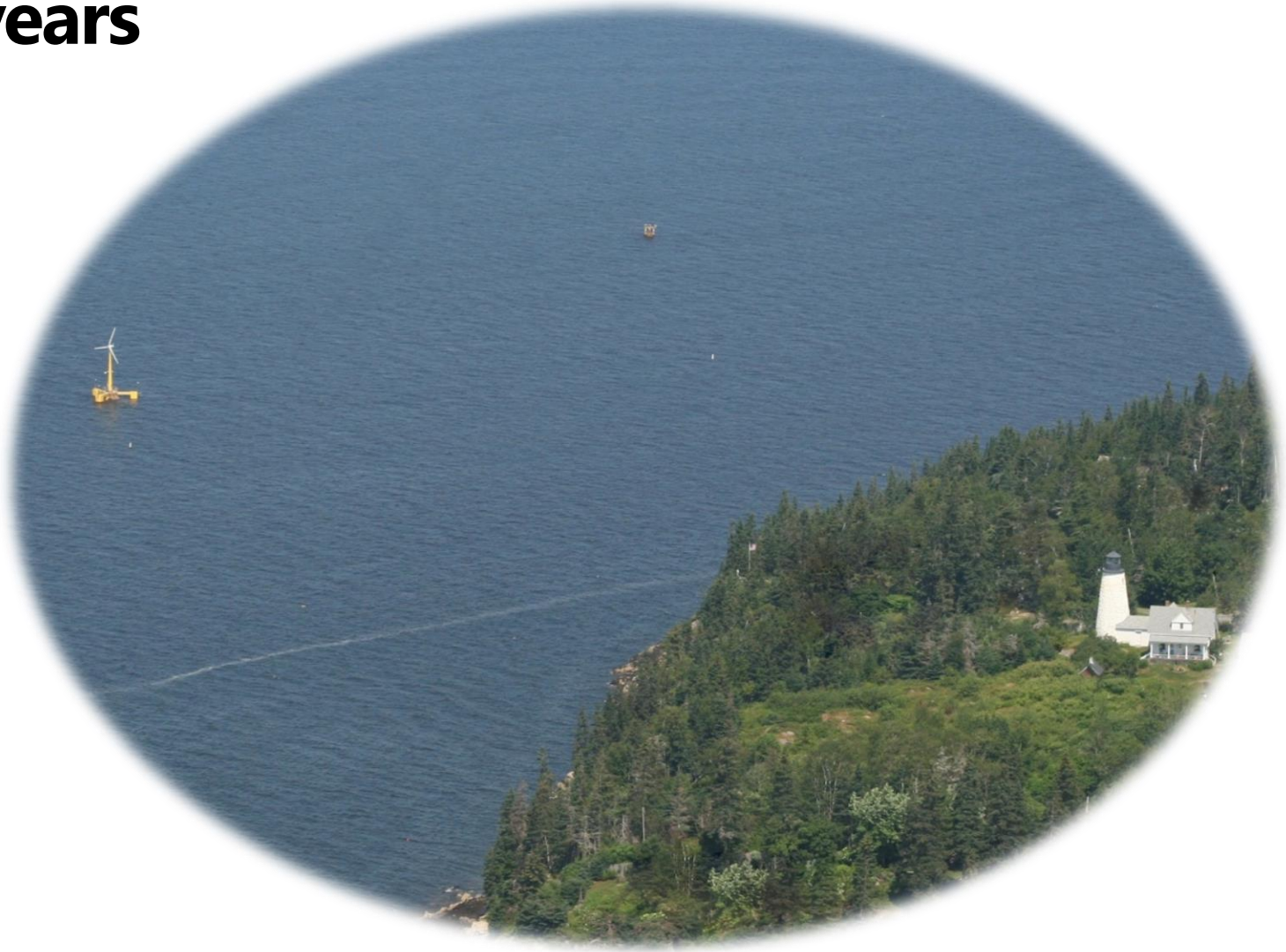
- First grid-connected offshore wind turbine in the US
- 50+ onboard sensors
- Over 40 extreme events, including 500-yr
- Validated numerical tools
- Jan 25th, 2014 1:38pm 22.6m max wave height turbine operating at rated wind speed

Establish New Academic Programs



FLOAT Creates Opportunities for Collaboration with Maine Wind Consortium While MeRA Advances over the next 5 years

1. Environmental monitoring technology and methods
2. Social impacts
3. Co-location and co-existence demonstrations
4. Workforce training
5. Debris and Entanglement detection
6. Underwater acoustic data collection of FOWT
7. Model validation
8. Outreach and education



FLOAT

FLoating Open Access Turbines

A Bi-coastal Research and Training Center of Excellence

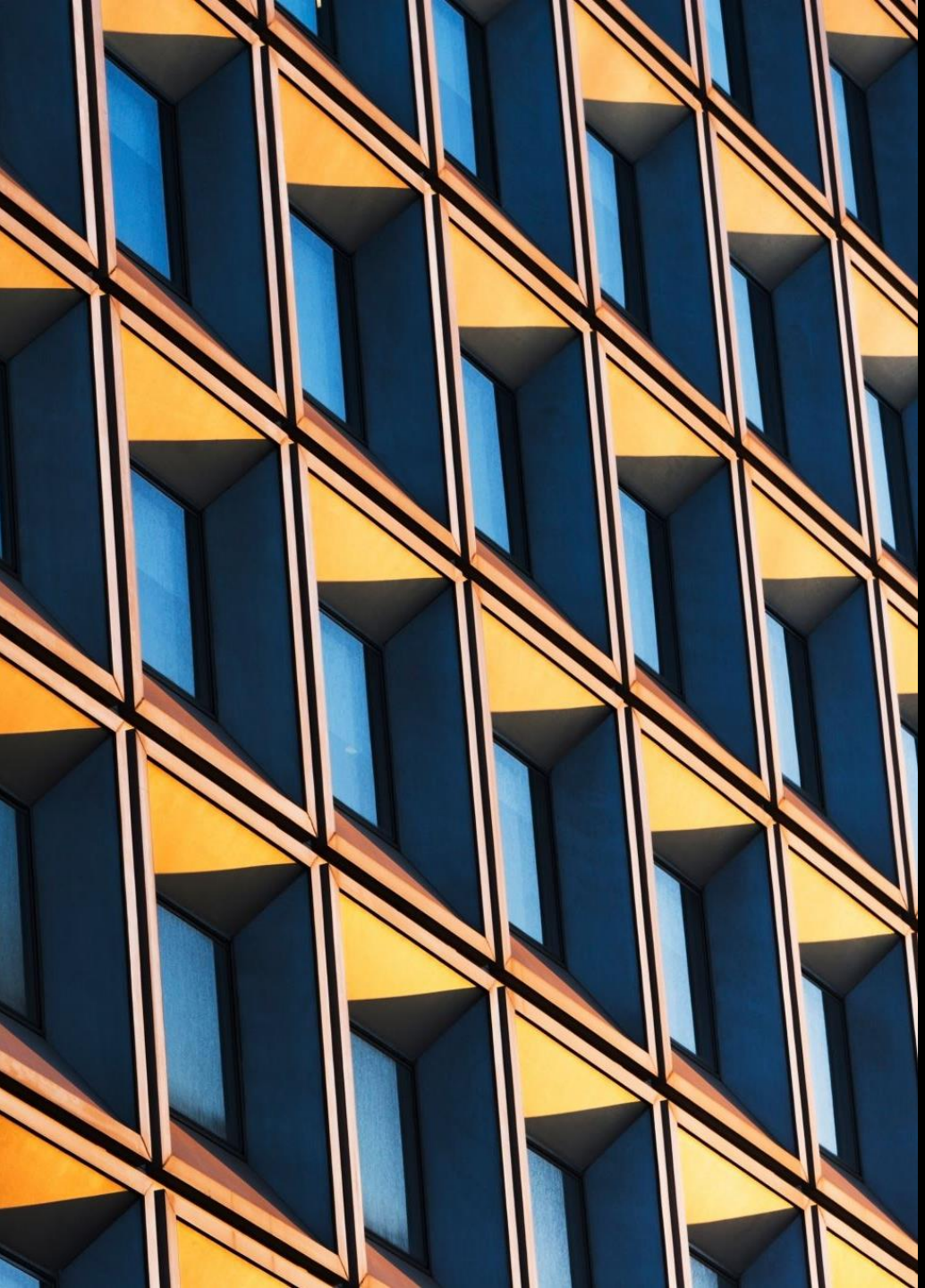
Questions?

Dr. Anthony Viselli, PE

Chief Engineer, UMaine

Anthony.Viselli@maine.edu

207 581 2828



Draft Match Funding Process

Need for "Draft Match Funding Process"

- Consortium Research Strategy (link):

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.

Draft Match Funding Process

PM = Program Management

SC = Steering Committee

AB = Advisory Board

Interested Parties submit to Consortium PM team:

- Project summary (scope, team, timeline, proposal review timeline)
- Written narrative on alignment
- Match request (amount, type) and budget overview

Consortium PM team reviews application for completeness and fit.

Criteria:

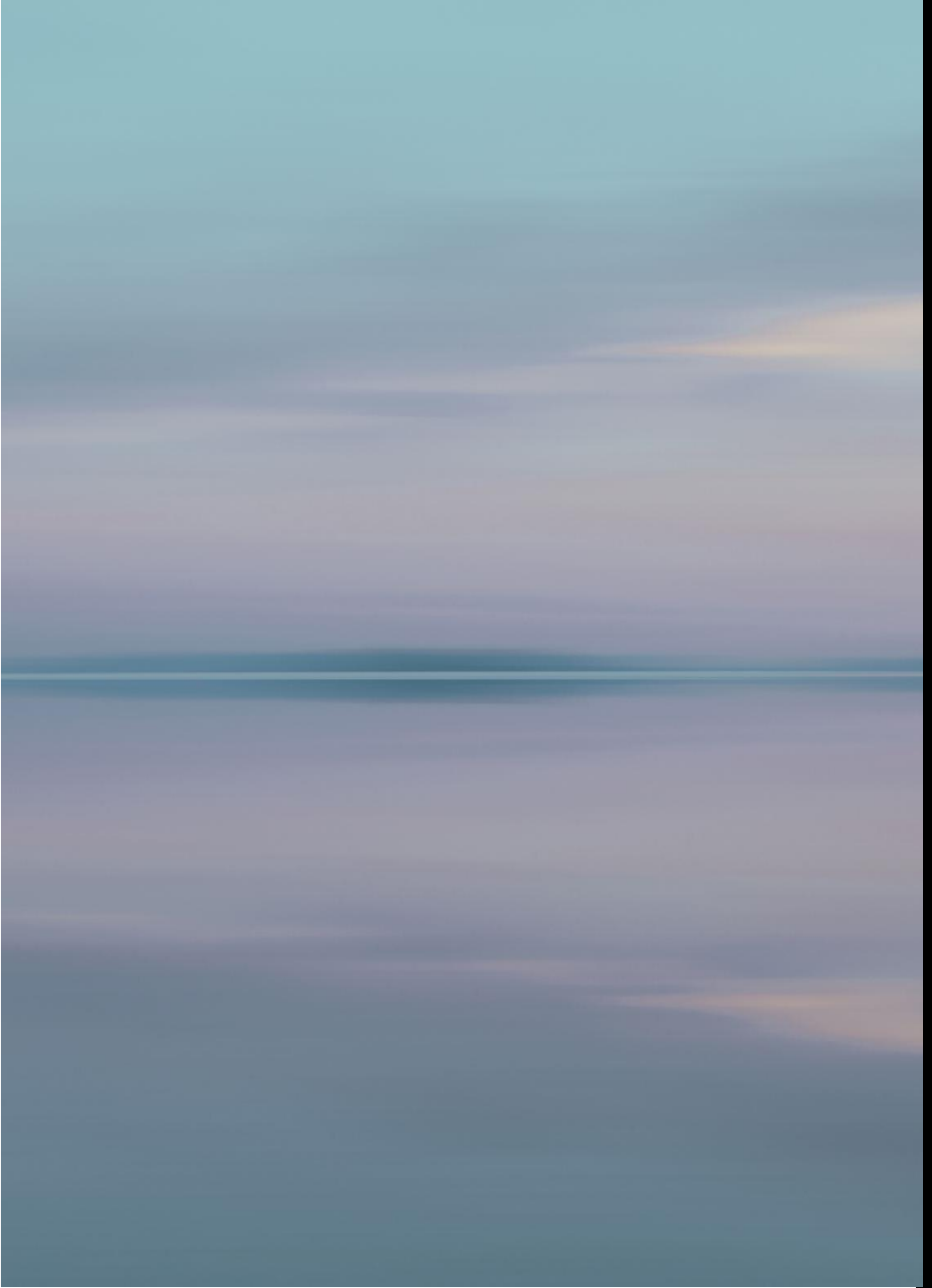
- Alignment with Consortium goals and objectives
- Level of impact/national interest
- Return on investment

If application meets criteria, convene a SC meeting to review application. Send to SC:

- application
- summary of how match request impacts Consortium budget and aligns with objectives

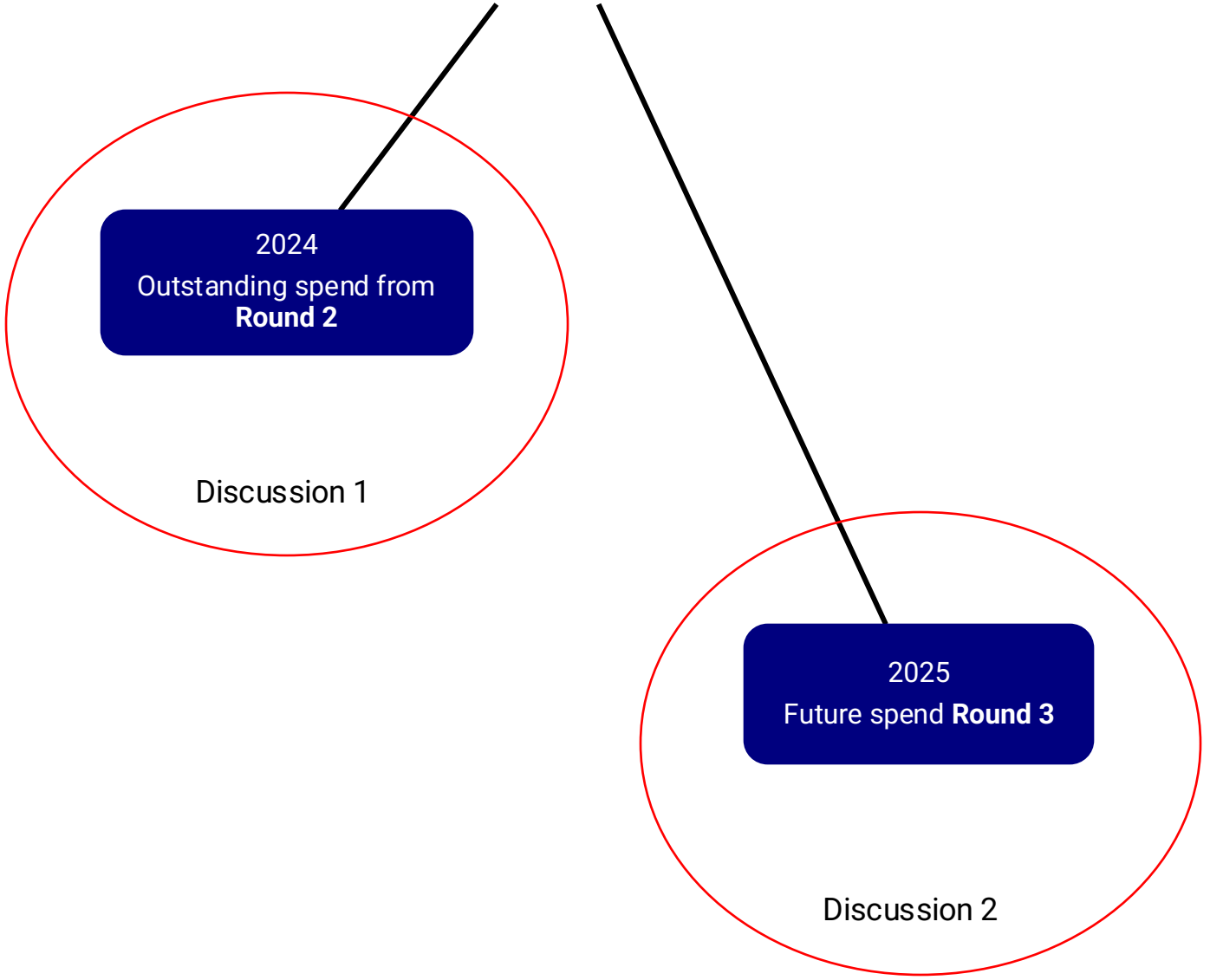
SC reviews request and aims to reach consensus

If SC decides to commit funds, PM team sends memo to the AB

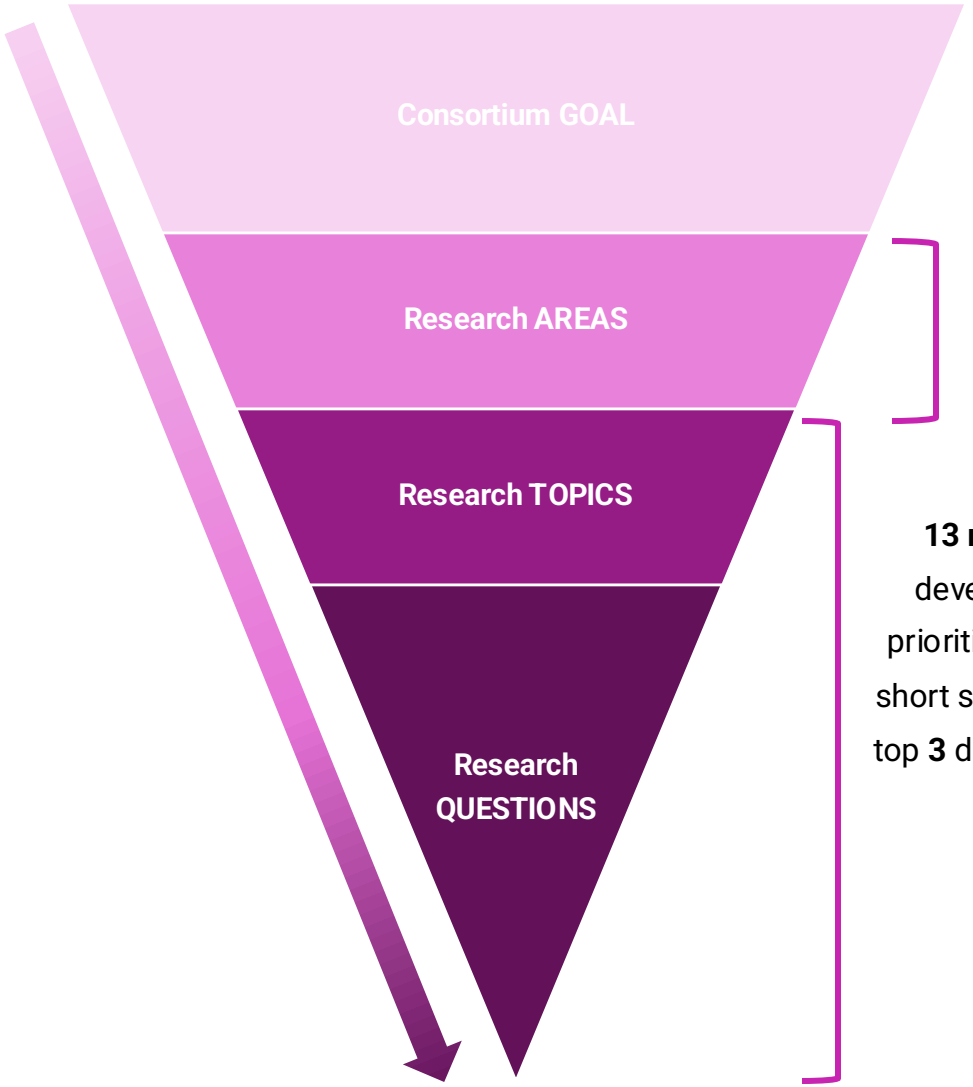


Prioritization Next Steps

Research funding prioritization next steps



Reminder on the research prioritization Process



*"The 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."*

We established **4** cross cutting **research areas** which addresses the **goal**

Reduce co-use conflicts
Impact on ecosystems
Socio-economic impacts and community benefit
Technology development

13 research topics developed and were prioritized, resulting in **5** short summaries with the top **3** developed into **RfPs**

1	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.
2	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).
3	Technology assessment/methods to reduce co-use conflicts
4	Develop techologies to monitor and minimise impacts to wildlife.
5	Socio-economic impacts of offshore wind industry development on Maine coastal communities
6	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 minimised.
7	Methods to integrate and advance wildlife deterrent and ecological monitoring technology with floating offshore wind projects to minimize impacts.
8	Consider methods to optimize integration of renewable energy into the grids.
9	Necessary preparation for Maine's supply chain and workforce to support floating offshore wind.
10	Assess shoreside infrastructure and other requirements to advance industrialization of the floating supply chain.
11	Explore advancements in mooring and anchoring concepts for floating foundations.
12	Autonomous systems and validation of new technology
13	Floating wind operations and maintenance approaches to reduce costs, improve safety and increase efficiency.

Projects funded or currently out for RFA

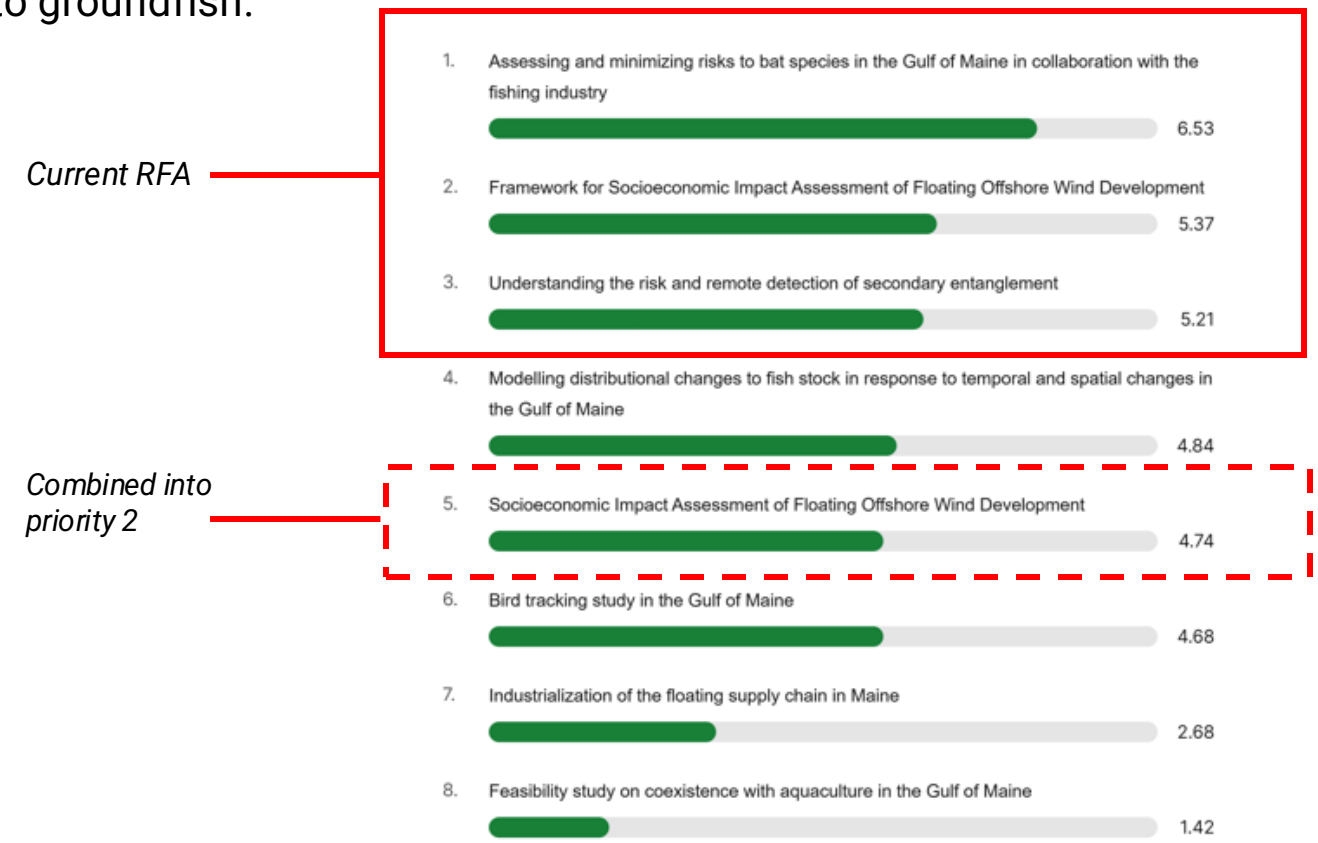
	Reduce co-use conflicts	Socio-economic impacts and community benefit	Impact on ecosystems	Technology development
Year 1 (2023)	Exploring approaches to fisheries' coexistence with floating offshore wind	Socioeconomic data inventory	Seafloor Mapping in the Gulf of Maine	
Year 2 (2024) ***(current RFA- Deadline January 17 2025)***		*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	

Discussion 1: How to allocate the remaining spend

- From 2024's funding we have the top three projects prioritized by the Advisory Board, and out for proposals.
- After scoping and agreed decisions on stepped approaches to some of the research projects, we have remaining research funds and an opportunity to scope an additional 1-2 projects/activities.
- We would like to have **a discussion today on a proposed approach.** Following the summer prioritized list, we could agree to scope out a project in the topic area relating to groundfish.

<u>Considerations</u>:

- Recent discussions with Tribal representatives.
  - Ensure priorities are reflected in the selection and design of Consortium research projects (either existing or future)
- If we run and fund one project, could we use some of the funds for outreach and communication?



Discussion 2: Round 3 project prioritization

- New funds will be available from July 1 2025
- **Step 1: Funding research and research gap review**
    - Consider funding sources, potential alignment with other initiatives (e.g. RWSC/ROSA)
    - Types of project work e.g. proposal for match funding set aside and dissemination/engagement
    - How project fits with other Maine OSW initiatives

- **Step 2: 4 x Mini workshops across the topic areas (Advisory Board and Collaborators)**
    - Use previous discussions as a starting point + information from Step 1
    - Prioritize urgent research gaps

- **Step 3: Follow-up discussions**
    - 1&1s and development of project one pagers
    - Advisory Board prioritization and decision

- **Step 5: Full scoping**

Mini workshops 2025

- Mini workshops in each of the four research areas
- Revisit the 13 topics. These are mainly aimed at guiding the discussions towards project ideas and may need updating
- Discuss the current scoped projects and next steps
- Engage with new Advisory Board members to ensure priorities are reflected in the discussions
- Align with outcomes from proactive funding opportunity review

1	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.
2	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).
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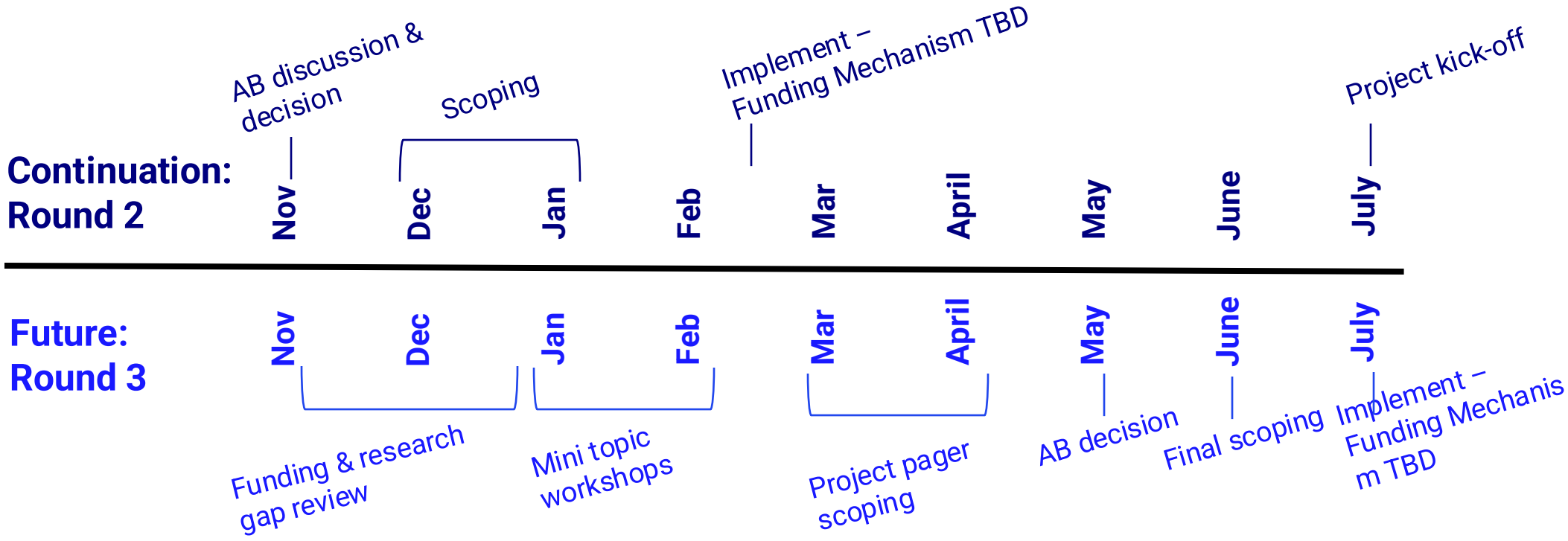
Summary of proposed timeline



NEXT STEPS

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

Contact

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

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

Terms of Reference (link)

2. Role of the Advisory Board

The Advisory Board serves to create an open forum for dialogue among a broad cross-section of stakeholders and allow for co-generation of ideas, prioritization of research and joint learning **to support responsible development of this nascent industry in the Gulf of Maine.**

The specific objectives include:

- Advise the state on the development and execution of the components of the research strategy for the Consortium.
- Understand and identify which data gaps and research questions are most important to address for Maine and prioritize projects accordingly.
- Identify projects that are most likely to address data gaps and research priorities in a suitable way.
- Support and clearly influence the project selection and prioritisation process.

Terms of Reference (link)

Role of the Advisory Board, continued...

- Ensure projects meet one or more of the Consortium objectives, including supporting co-existence with the fishing industry, avoiding and minimizing impacts to Maine's ecosystem and ocean users, and/or contributing to the cost reduction of floating offshore wind in Maine.
- Provide advice on defining the scope and requirements of studies.
- Share knowledge, data or outcomes of existing studies in order to have an accurate reference for the Consortium's work.
- Offer input and guidance on ways to communicate research findings, data and outcomes of Consortium-supported research to key constituencies and the public.
- Guide projects by providing review and comments on project deliverables.

Terms of Reference (link)

7. Steering Committee

The Research Consortium will be guided by a Steering Committee to provide overall direction and oversight to the Consortium based on the input of the Advisory Committee. The Steering Committee provides general guidance to the Consortium consultants and/or staff in support of the objectives.

Specific functions include:

- Review budget and any associated changes, in accordance with fiduciary responsibilities for public funds.
- Ensure research portfolio meets Consortium's objectives.
- Approve final research portfolio.
- Be responsible for the effective operation including providing or hiring project management services.
- Provide advice and guidance on state, federal and private fundraising efforts for the Consortium.