

Stakeholder Workshop on Environmental Effects of Marine Energy: New Hampshire

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# Stakeholder Workshop on Environmental Effects of Marine Energy:

New Hampshire

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## Facilitators

PNNL

CSI

AMEC

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- Marley Kaplan

- Lindsay Dubbs
- Linda D'Anna
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# Background

Marine energy is defined as the energy harvested from the movement of water in the oceans or large rivers and from ocean gradients. As marine energy project deployments are increasing around the world, there is a need to monitor for potential effects on the marine environment. Based on studies in the U.S. and internationally, responsible development of low carbon sustainable and renewable energy from the ocean can be developed along our coasts without harming the environment and the uses that support the region.

The Atlantic Marine Energy Center (AMEC) is a university-led consortium created to address the ongoing needs for research, development, and testing on the Atlantic coast to advance utility-scale marine energy technologies towards commercialization, and to develop smaller-scale off-grid applications. To support AMEC's effort, researchers from Pacific Northwest National Laboratory (PNNL) and the North Carolina Coastal Studies Institute (CSI) have developed a focused outreach and engagement process around the science of what we know about environmental and social effects of marine energy development, as they pertain to project permitting and development. In 2023 and 2024, the project team is conducting in-person stakeholder workshops to specifically deliver the state of knowledge regarding potential environmental and social effects of marine, focused on tidal energy, and in North Carolina, focused on wave energy.

This New Hampshire workshop discussed what is known about effects of tidal energy on the marine environment, marine animals, and the habitats that support them, as well as the human activities that rely on them, with a focus on the New England area. The workshop was specifically designed for community members interested in marine energy development. In addition to gaining insight into the current state of the science of marine energy environmental and social effects, attendees were able to ask questions and express their interest and concerns about marine energy projects. While no tidal projects are presently planned for New England and the surrounding area, these waters may be ideally suited for supplying secure locally generated power from tidal energy in future.

The workshop included a presentation with an introduction to marine energy development on the U.S. east coast and some of the challenges it faces; a high-level summary of marine energy environmental and social effects and how they differ from those of offshore wind; and an overview of resources developed to assist with permitting and stakeholder engagement. The presentation also included the description of a fictitious Massachusetts tidal energy use case that was leveraged in the group discussion to trigger questions including the following discussion points:

- what word comes to mind when mentioning marine energy?
- which of the environmental effects presented is of greatest concern? and
- what was missed, what topics of interest were not mentioned?

Seven persons attended the event, most from New Hampshire but also some from Massachusetts and Rhode Island. The attendees' list and responses to an online post-workshop survey are provided as appendices, along with the workshop agenda and photos of the flipcharts with the notes.

## Discussion

The attendees were able to ask clarifying questions throughout the workshop presentations, as well as participate in the group discussion that centered around targeted questions. This section presents those questions and a summary of the discussion.

## What word comes to mind when mentioning marine energy?

This question was asked to the participants at the beginning of the workshop to understand their initial perception of marine energy. This allowed the team to adjust the appropriate level of information provided to the audience on the potential environmental effects of marine energy and the differences with offshore wind. Below (Figure 1) is a word cloud with the answers to the question:



Figure 1. Words that came to the participants' mind when mentioning marine energy.

#### Which of the environmental effects presented is of greatest concern?

- Collision risk:
  - For large fish like sturgeon and marine mammals

- Questions whether turbine designs could be modified with risk-protected blade tips.
- Marine life in general.
- Mooring lines in whale migration paths.

#### What was missed, what topics of interest were not mentioned?

- Effects on navigation:
  - Recreational, primarily
  - Need to be cognizant of others' use and access, good faith use of space.
- Effects on shellfish:
  - Shellfish are primarily wild-harvested in southern New England
  - Directionally drilling for cables would avoid/minimize disturbance to shellfish
  - Questions remain regarding how marine energy devices would modify local hydrodynamics and sediment transport, and potentially affect shellfish food supplies.
- Ability to conduct fisheries surveys:
  - Long-term fisheries datasets might be disrupted by loss of access as offshore renewables are developed
  - Offshore wind developers missed the opportunity to collaborate early with fishers; perhaps marine energy could do better.
  - Impacts will depend on project siting and the scale/footprint, which will be smaller than that of wind.
- Experience from offshore wind:
  - Has set a precedent by compensating fishers for any loss of access
  - The Cape Wind project has eroded trust from local tribal communities in working with government agencies and researchers.
- Wave and tidal technologies:
  - MW-scale tidal turbine projects in the middle of channels may not experience pushback
  - Large diversity of wave energy devices (clamshell like, and others)
  - Wave energy devices may provide erosion prevention, which can be a benefit in some places and a concern in others, needs to be addressed in siting
  - Currently devices are not cost competitive and much of the marine energy sector relies on public funds for research, development, and testing.
- Energy equity:
  - Fair access to energy is a concern for some local tribal communities
  - Indigenous thought-processes needs to be considered: holistic approach that removes individual gains and thinks instead about larger community and longer time scales, and how any action will affect the world.
  - Constant need to weigh local benefits and costs.
- Impacts to consider when replacing fossil fuels with renewables:
  - Impacts on energy prices for local communities
  - Ancillary benefits like improved air quality, reduced risk of oil spills, etc.
- Safety and security of marine energy projects, mostly from vandalism:
  - o It's a concern but most projects are close enough to shore to be protected
  - National labs are also working on cybersecurity threats associated with marine energy.

## **Next Steps**

- Organize the AMEC North Carolina wave energy stakeholder workshop to be held by PNNL & CSI in early 2024.
- Identify stakeholder groups and participants to be invited to the North Carolina workshop.
- Summarize outcomes from both workshops.

Start Time	Agenda Topic
1:00 pm	Arrivals
1:15 pm	Introductions, objectives of the workshop
1:30 pm	Marine energy environmental effects and stakeholder engagement
2:30 pm	Break
2:45 pm	Tidal use case presentation
3:00 pm	Group discussions
4:15 pm	Conclusion

## Appendix 1: Workshop Agenda

# Appendix 2: Workshop Attendees

Name	Affiliation	State
Denise Pouliot	Cowasuck Band of the Pennacook Abenaki	New Hampshire
Paul Pouliot	Cowasuck Band of the Pennacook Abenaki	New Hampshire
Susan Conant	Blue Ocean Society for Marine Conservation	New Hampshire
Dianna Schulte	Blue Ocean Society for Marine Conservation	New Hampshire
Kevin Madley	NOAA Fisheries	Massachusetts
Bill Staby	Bluewater Network LLC	Rhode Island

# Appendix 3: Online Survey

Three workshop participants responded to the online survey that was offered at the end of the workshop. The questions and answers are presented below.

- 1. How would you rate the workshop?
  - Excellent: 1/3
  - Very good: 1/3
  - Good: 1/3
- 2. What did you like about the workshop?
  - I learned about the differences of marine energy and offshore wind and what factors/stressor were being evaluated
  - Open and honest discussion. Particularly happy that tribal representatives were present.
- 3. What did you dislike about the workshop?
  - It seemed biased to the pros of marine energy. Even though the speedometer visuals were noted, there was no data to back up the evaluations. I feel much more data need to be collected to determine the pro/con of operations.
  - Nothing.
- 4. What other topics would you like to see addressed in future workshops?
  - Offshore wind impacts on marine wildlife; local marine energy projects and their impacts (+ & -); proposed areas for future marine energy projects.
  - I think you covered it!

- 5. Do you have any additional feedback for the team?
  - No.

## Appendix 4: Workshop Notes

- Topical marssed Concerns & discussion - Ouestions regarding good faith use of space - Navigation (recreational primarily) - Fisheries are receiving compensation from offshore wind -> sets precedent - Issue of scale - MW experienced no pushback for a tidal turbine in the middle of a channel Cape Wind changed the way that tribes interact with the government - trust was croded (also trust was croded in working with researchers) Uscientists were not honest brokens; they shared information would scientific merit and passed it off as science Shellfish issues - this region is primarily used harvest +directionally drilled cables avoid/minimizes shellfish disturbance there are still some questions about hydrodynamic changes i sedime i food supplies; disturbance of surface sediments is rectified size of turbines - 16m span - Concern about marine mammal strike -design changes to address risk - protected tips? + losses

Concerns, questions, & discussion - What do wave devices look like ? - Over clam-shall device still except thes, so many different types of devices -Ancillary benefits in some places (evenion prevention) may be a concern in other places -> sitting matters! What is the cost of the devices? > Right now, they are not cost competitive """, "very, very cipensive" because they have to be very robust > MW-Copacity doesn't directly translate to how much energy is provided, that is dependent on the resource (and other resources in the region) > Right now, much ME sector relies on public funds for research, development, and testing - Ability to conduct fisheries surveys -> siting -missed wi & smaller scale/footprint - missed with offshore wind development - long-term dataset is disrupted by loss of access Energy prices for local communities? > this is example of question that should continue to be asked regarding experienced benefits and costs there are other local factors that are important to consider incl. improved air quality, reduced risk of oilE spill etc. when replacing dissel generator w/ renewable (more expensive monetarily)

Concerns, questions, and discussion Security-who is going to protect these devices? tophersecurity - cybersecurity won't work for missiles > it is a concern! Energy Equity - different responses from different groups (tribal communities) - access to energy for some is concern -tradigenous thought process - remove individual gain & thinking about larger community & time-scales - holistically, how will any action affect the world -) weighing local benefits and costs Wrap up Is there any projection of how much ME may be planned for this region? -> not for this region - many small tidal devices or may make souse > NW-Small turbines (tidal) - 1 m. scale