Engaging Communities in Offshore Wind

Case Studies and Lessons Learned from New England Islands

Sarah Klain
Suzanne MacDonald
Nicholas Battista

ISLAND INSTITUTE

December 2015

Table of Contents

Acknowledgements

The authors wish to thank our reviewers from Block Island, Martha's Vineyard, Monhegan, and the offshore wind and ocean planning sectors for their valuable feedback on the report. Special thanks also go to Island Institute staff (Brooks Winner, Rebecca Clark, Heather Deese, and Eric Wayne) for their contributions to the research and report development processes.

This report was created with the support of the U.S. Department of Energy's WINDExchange program and the Islanded Grid Resource Center; the University of British Columbia's Institute for Resources, Environment and Sustainability and BRITE Internship Program; the Gordon and Betty Moore Foundation; and private foundations. We would also like to acknowledge previous support from multiple private and public entities that enabled the programming and engagement efforts described in this report.

WINDExchange
U.S. DEPARTMENT OF ENERGY

Institute for Resources, Environment & Sustainability
University of British Columbia

UBC

Executive Summary

In an effort to diversify sources of energy, reduce carbon emissions, and meet growing demands for electricity, dozens of offshore wind farm sites are currently under consideration in the U.S. The Island Institute, a nonprofit community development organization based in Rockland, Maine, advocates for meaningful public engagement during decision-making processes, including those involving island communities and offshore wind. This organization engages local stakeholders, wind farm developers, scientists, engineers, state and federal agency decision-makers and others to learn from each other and carefully consider the trade-offs involved in developing an offshore wind farm.

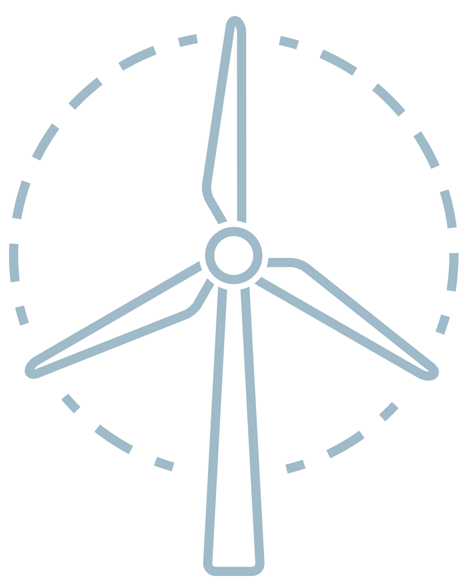
We highlight key insights on designing good stakeholder engagement processes in which local community members can help shape the offshore wind development process. This report is based on both the Island Institute's work with coastal and island communities on energy issues since 2008 and also a review of relevant literature. We recommend **making mutual learning accessible**. This entails providing readily available and appropriate information (e.g., fact sheets and interactive web portals that use language for a public audience), designing deliberative learning opportunities (e.g., iterative stakeholder meetings, inter-community exchanges), timing stakeholder engagement a year or more before site selection, and enlisting bridging organizations to act as liaisons between communities and developers. We also highlight the need for collaboratively developed **community benefits** as part of offshore wind farm development. Defining appropriate community benefits requires that developers, government authorities, and communities reach a common understanding of who the recipient communities should be, what kind of benefits are suitable, what the impacts are, and how communities, benefits and impacts relate to each other. We illustrate these lessons learned with three case studies: 1) a wind farm near Block Island, Rhode Island, which, as of 2015, is on track to be the first installed offshore wind project in the U.S.; 2) a proposed offshore wind farm near Martha's Vineyard, Massachusetts that is currently moving through regulatory processes; and 3) a proposed offshore wind project near Monhegan, Maine where developers are focusing on refining their floating turbine prototype.

Our findings are not a comprehensive guide for engaging communities impacted by potential wind farms in order to guarantee community consent. Instead, we seek to improve the decision process and the quality of the interactions between communities and project developers in the hopes of creating better outcomes. We strive to explain the lessons we learned in practical ways using case studies to help practitioners bring insight from decision theory into practice. We seek to share these lessons to improve decision-making processes associated with novel uses of the ocean, particularly for generating renewable energy.

On the cover: *Sited through a collaborative process and extensive local engagement, the ten offshore wind turbines surrounding Samsø Island, Denmark provided benefit in the form of investment opportunities for the municipality, island farmers, and private corporations.*

1

Introduction



Introduction

For millennia, wind has propelled sailboats for settlement and trade across the world. In the last century, fossil fuels replaced our economic reliance on offshore winds. Today we are harnessing them once again, this time to generate renewable electricity. The total installed capacity of offshore wind farms as of 2015 was 8,990 MW globally, most of which was built off the coast of Northern Europe. This may increase to 47,000 MW or more by 2020 based on the number and size of projects under consideration in Europe, North America, and Asia (Smith et al., 2015).

Careful community engagement is needed when considering offshore wind farms and other new ocean technologies in order to achieve multiple environmental and economic objectives in our increasingly crowded oceans. We write from the perspective of the Island Institute, a non-profit community development organization that contributes to such community engagement efforts. The Island Institute works to sustain Maine's island and remote coastal communities, and exchanges ideas and experiences to further the sustainability of communities in Maine and elsewhere. This mission is accomplished by working closely with communities, developers, and decision makers to support effective stakeholder engagement and outreach processes related to offshore wind and other coastal issues. Our work aims to ensure that local communities in close proximity to renewable energy developments derive benefits from these projects and harmful impacts are minimized.

Some island communities in the U.S. have found themselves at the forefront of offshore wind debates due to their locations near proposed wind farm sites, as well as economic and cultural connections to adjacent ocean spaces (e.g., reliance on fishing, sense of place reinforced by aesthetic views). Due to their proximity to the first offshore wind projects in North America, New England island residents are likely to be among the first positively and/or negatively impacted by this technology. Island community members may influence the future of this industry by obstructing (e.g., filing lawsuits), accommodating, or championing this new use of ocean space.

Renewable energy infrastructure is becoming increasingly common in and near where people live. Electricity production from non-hydro electric renewable energy sources is expected to increase by 25% from 2013 to 2018 (EIA, 2015). In 2015, the U.S. committed to increasing non-hydroelectric renewable energy generation to 20% of the U.S. total by 2030. This includes a projected 22,000 MW of offshore wind, which could power 4.5 million homes (DOE, 2015; OPS, 2015). Given that construction began in 2015 on the first U.S. offshore wind farm, and others are currently under consideration, we are motivated to reflect on and learn from how community engagement was conducted regarding wind projects proposed and underway near New England islands.

This report examines the experiences of three New England island communities to demonstrate key lessons about stakeholder engagement in offshore wind: Block Island, RI, where the construction of North America's first offshore wind farm is underway, as well as Martha's Vineyard, MA, and Monhegan, ME, where proposed offshore wind projects have yet to reach their final design, financing, or construction phases. We share these stories not in an attempt to provide a manual for engaging communities adjacent to potential offshore wind farms or to advocate for increased social acceptance of wind farms. Instead, our aim is to improve the decision process and the quality of the interactions among people with different objectives in the hopes of creating more equitable and acceptable outcomes. It is our hope that these insights will inform the project developers, communities, policymakers, and agency staff that are seeking to evaluate new, long-term, exclusive ocean uses so that stakeholders can learn from each other and carefully consider the challenging trade-offs involved in developing an offshore wind farm.

1.1

Lessons Learned for Engaging New England Coastal Communities

We highlight two overarching insights based on the Island Institute's direct and peripheral involvement with stakeholder engagement related to offshore wind proposals and relevant literature. First, we recommend **making mutual learning accessible**, including values and facts. Values can reflect community priorities, place attachments, and the significance that people associate with places. Facts can be derived from relevant science, engineering, and local knowledge. In contrast to scientific knowledge based on quantitative data and controlled experiments, local knowledge is based on personal observation, tends to be more holistic and less reductionist than Western science, and is rooted in the experience of place. Local knowledge tends to focus on time—and context-specific concerns rather than on deriving generalizable rules (Gregory et al., 2012).

Accessible learning opportunities involve proponents and local stakeholders learning from each other in a group setting, which can be described as deliberative learning (Gregory et al., 2012). Appropriately timing the engagement efforts is part of making this learning accessible. The character and soft skills of the chosen messenger(s) can have substantial consequences. If the values and manner in which proponents provide information offends community stakeholders, learning opportunities may disintegrate and stakeholders may be less likely to accept the project. Similarly, if community members withhold information about place attachments or other threatened values, developers cannot incorporate these into the project design. **Bridging organizations**, who are accountable to local communities and project proponents, can not only help translate facts and values but also create opportunities for the co-production and sharing of knowledge to inform decision making. As noted by Pomeroy et al. (2014), we recommend that offshore wind farm project proponents and others designing community engagement processes acknowledge and address potential power and economic imbalances between local community members and well-financed project proponents "from away," a colloquial Maine term for people who are not local residents and tend not to be familiar with local ocean uses and local values.

As identified by our case studies and Dietz (2013), creating an environment of respect and incorporating various types of knowledge (e.g., local, experiential, scientific) is critical for making learning accessible, improving the decision-making process, and potentially improving social acceptance of the outcome. These **mutual learning opportunities** are part of a consultative project design process, in which a wide range of facts and values are incorporated into the project outcome (e.g., the project is accepted or rejected, the scale of the farm is modified to accommodate social, economic, and environmental concerns, the location is shifted based on avoiding heavily fished areas important to local communities).

The second insight we highlight is the importance of creating appropriate **community benefits** for people living near and/or potentially most impacted by a development. Community benefits aim to address the mismatch between offshore wind farms' local costs (e.g., perceived, potential, or likely impact to views, the local environment, pre-existing activities like fishing, and anticipated future uses) and regional or global benefits (e.g., decreased carbon emissions, diversified electricity sources). Our experiences with community benefits in three case studies align with findings from researchers who have focused on offshore wind farm development in Europe. Aitken (2010) demonstrates how defining and creating suitable community benefits, including but not limited to opportunities for local ownership, investment, and/or control, can help improve public acceptance of projects in the UK. In order to build trust and perceptions of fairness, Walker et al., (2014) emphasizes that it is important that community benefits are not perceived as bribes for consent. Rather, as corroborated by our case studies and the literature on this topic, community benefits can build local support if they are "perceived as a means of creating greater equity" (Aitken, 2010, p. 68).

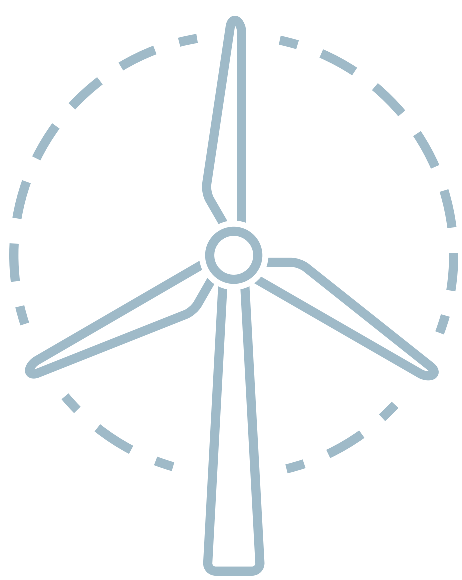
Various researchers and organizations have compiled best practices for stakeholder engagement related to both onshore and offshore wind (CanWEA, 2011; Ecology and Environment, Inc, 2015; IEA Wind, 2012). These publications explain how wind farm siting and development processes can benefit from meaningful engagement with local communities, draw on local knowledge, implement fair and transparent decision processes, and provide local benefits. The field of decision science demonstrates that interactive and iterative engagement processes involving deliberative learning (learning among all participants in a group setting) tend to lead to more acceptable outcomes, greater participant satisfaction, and lasting, innovative solutions (Gopnik et al., 2012; Gregory et al., 2012; Wondolleck and Yaffee, 2000). Engagement processes involving stakeholders, developers, and regulators can be designed to work through potentially conflicting priorities and values among participants as well as uncertainty about environmental impacts (e.g., will the development have a significant impact on lobsters) and social impacts (e.g., how many long-term local jobs will this development create).

Participatory processes involving extensive stakeholder engagement can be resource and time-intensive, but this initial investment can result in lower long-term costs with potentially fewer delays and it may reduce the risk of litigation costs (Irvin and Stansbury, 2004; Randolph and Bauer, 1999). We explain our lessons learned in practical ways using case studies to help practitioners bring insight from decision theory into practice. Our literature review and case studies highlight two overarching lessons we have learned about community engagement and community benefits.

Maine stakeholders including fishermen and community members discuss how offshore wind might create economic development opportunities during this 2011 informational tour.

2

Background



Background on Offshore Wind Projects

Offshore wind power is a renewable energy source that many policymakers and energy companies are considering as a way to produce low-carbon electricity at scale. Scientists estimate that U.S. offshore winds have the potential to generate hundreds of gigawatts of power (Schwartz et al., 2010). Tapping into this potential could reduce reliance on fossil fuel-based electricity generation (Snyder and Kaiser, 2009). In Europe, the offshore wind industry has dramatically expanded in the last two decades as governments have subsidized this industry as part of achieving carbon emission reduction goals while providing employment opportunities (Green and Vasilakos, 2011; Toke, 2011). At the beginning of 2015, 2,488 turbines were installed and grid connected in Europe with 8 GW of installed capacity in 74 wind farms located off the shores of 11 European countries. Europe has 26.4 GW of anticipated installed capacity from consented offshore wind farms and 98 GW from offshore wind farms in early planning stages (EWEA, 2015).

In contrast to the wind-swept but sparsely populated Midwest plains in the U.S., Atlantic offshore wind resources are close to densely populated areas where electricity is needed. Also, offshore wind resources tend to be stronger and steadier than onshore wind (Kaldellis and Kapsali, 2013).

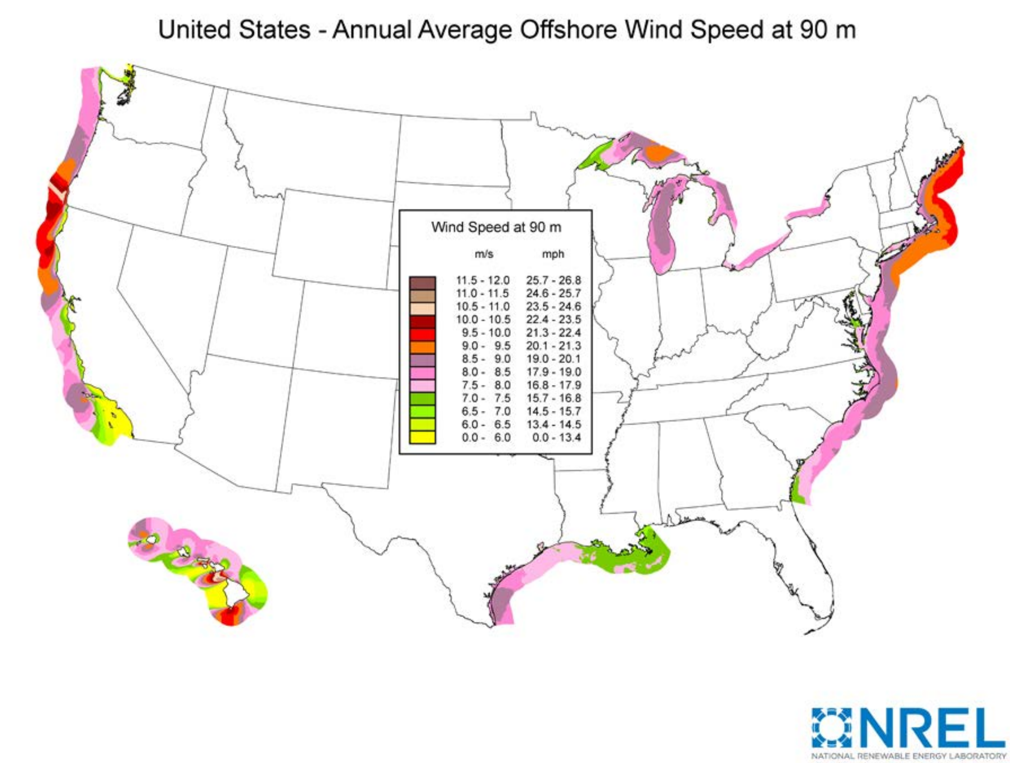


Figure 1. The Northeast United States has strong offshore wind resources capable of providing renewable power generation for major population centers along the East Coast. Source: U.S. Department of Energy

2.1

Concerns Associated with Offshore Wind Projects

In Europe and North America, many wind developers initially and incorrectly presumed that offshore wind farm proposals would not be controversial as compared to onshore because these farms are farther from where people live and therefore less visible and audible (Devine-Wright and Howes, 2010; Phadke, 2010; Whitcomb and Williams, 2007). Offshore wind farm development, however, has not been smooth sailing.

Cost is a major concern when it comes to offshore wind farms. The levelized cost of offshore wind — the cost per megawatt generated, including construction and operating costs over the project's lifetime — is approximately two to five times more expensive than electricity from onshore wind, hydroelectric dams, or natural gas plants (EIA, 2015). Wind farm engineers and some economists anticipate this cost will decline as the technology develops. A 2015 report based on UK wind farms calculated that the levelized cost of offshore wind decreased 11% from 2010 to 2014 (EY, 2015).

Northern European countries created energy policies with financial incentives that spurred the development of large-scale offshore wind farms. These include feed-in tariffs (a guaranteed rate per kWh for electricity from a renewable energy source), certainty over the right of renewable energy projects to access the grid, obligations to source an increased proportion of electricity from renewables and other policies that provide long-term financial security for investment in offshore wind (Firestone et al., 2015a; Toke, 2011). In the U.S., financing problems have impeded proposed offshore wind farms including Cape Wind and Bluewater Wind's Delaware project (Firestone et al., 2015a).

Early U.S. offshore wind projects, including Cape Wind, were hindered by a lack of regulatory clarity. In 2011, the federal government established the Bureau of Ocean Energy Management (BOEM) to improve and streamline the management of offshore conventional and renewable energy as well as marine mineral resources. Some states, such as Massachusetts and Rhode Island, have worked to facilitate the appropriate siting of offshore wind near their shores by engaging in ocean planning efforts designed to identify environmental issues and reduce conflicts between offshore wind and other users (Nutters and Pinto da Silva, 2012).

Like all sources of electricity, wind farms have social and environmental impacts. While some proponents perceive wind turbines as high tech symbols of a clean, green future (Firestone et al., 2015b), others see this technology as too expensive and, even may view it as, a bird-killing, industrial intruder (Pasqualetti, 2011). Some people critique corporations that build offshore wind farms as seeking to privatize or "fence in" the ocean (Devine-Wright and Howes, 2010), which has long been considered a public space (Firestone et al., 2009; Shellenberger and Nordhaus, 2009). Additional concerns include noise pollution as well as impacts to marine life and diminished visual qualities of a seascape (i.e., the change in view). Potential restrictions on access to commercial and recreational fishing grounds are also prominent concerns (Gee and Burkhard, 2010).

New England fishermen are concerned about potential changes in access to fishing grounds as the nascent offshore wind industry develops. Currently, several commercial fisheries provide economic, social, and cultural value to coastal New England residents. In 2014, New Bedford, MA had the highest landings value of any seafood port in the country at $329 million dollars. In that same year, Maine lobstermen landed 84% of the total U.S. American lobster harvest, worth $487 million (Van Voorhees, 2015). This economic value

Image courtesy of Aaron, @zipzooka, via flickr.

> As [offshore] wind farms become a reality in the US, communication will be key to making them 'fishery friendly' and minimizing disruptions."
>
> *—John Williamson, Commercial Fisheries News (2013).*

becomes even more pronounced at the level of individual coastal communities, where up to 40% of residents hold a lobster license (Island Institute, 2012). Fishing provides the foundation for secondary businesses such as processing, dining, and tourism, and active working waterfronts are important for retaining a sense of pride and tradition, the value of which cannot be accounted for numerically.

Consequently, fishermen have raised concerns about the extent to which offshore wind could threaten their livelihoods and wanted to know if they would be compensated for potential losses (Battista et al., 2013; Island Institute, 2012a). Best practices and tools for reconciling commercial fishing interests with offshore wind development have been compiled (Moura et al., 2015). Also, BOEM developed a set of best management practices to minimize and mitigate the potential impact of an offshore wind industry on commercial fisheries (Ecology and Environment, Inc, 2015). We focus on community engagement efforts with a wide range of stakeholders, including but not limited to commercial fishing interests.

> Many lobstermen are concerned about multiple threats to their fishery, not just offshore wind farms. Regarding Maine island communities, disruption of lobstering, 'wouldn't be the nail in the coffin, it would be the lid on the coffin and the beginning of the end.... If there were no lobsters, there would be no year-round residents along the coast of Maine because nobody could afford it... if you take the lobsters away, you've got a different equation.'"
>
> *—Island Fishermen from Islesford, Maine*
> *(A Climate of Change: Warming Waters in Gulf of Maine, 2014)*

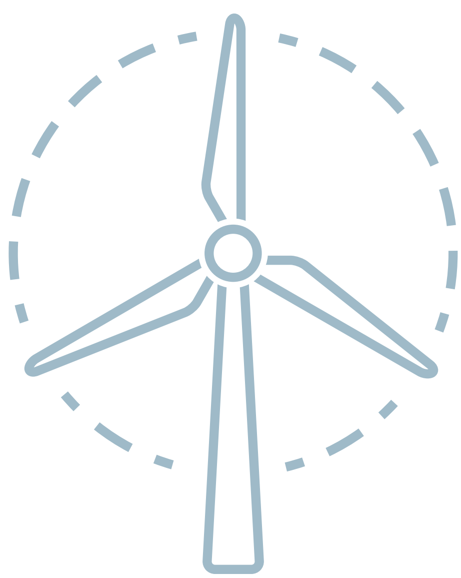
2.2 Why Does Stakeholder Engagement Matter?

Siting energy infrastructure tends to be controversial. Stakeholder engagement can influence social acceptance, which plays an important role in the long-term success or failure of infrastructure proposals, including technologies like offshore wind farms. One of the most significant challenges to the development of offshore wind power, particularly in the U.S., has been social acceptance of proposed sites, a common feature of media coverage (Economist, 2010; Espinoza, 2015).

Local disapproval of a proposed wind farm is often labeled as NIMBYism (not in my backyard), which is defined as "an attitude ascribed to persons who object to the siting of something they regard as detrimental or hazardous in their own neighborhood, while by implication raising no such objections to similar developments elsewhere" (Simpson and Weiner, 2003, as quoted in Kempton et al., 2005, p. 125). Studies based on national and state polls demonstrate high and stable levels of public support for developing renewable energy in general (Ansolabehere and Konisky, 2014) and offshore wind in particular (Acheson, 2012; Firestone et al., 2009; 2012). Other studies demonstrate intense local opposition to specific projects (Kempton et al., 2005; Wolsink, 2010). Labeling opposition as NIMBY-isms can brush over important site-specific characteristics, stakeholder's values linked to place and legitimate dissatisfaction with the siting process (Devine-Wright, 2009; van der Horst, 2007; Wolsink, 2000). In order to address economic, social, and environmental concerns, we highlight two major lessons we have learned from how community engagement processes have played out on New England islands near proposed offshore wind farm sites.

3

Lesson 1:
Make Mutual Learning Accessible



Tapping into local knowledge can help build rapport between community members and project proponents: "A lot of things like being involved in the export cable route, the fishermen are very good at knowing what's on the ground under the water. If the fishermen can tap into that, it can make for a far better relationship between the two."

—Merlin Jackson, fishing representative for London Array offshore wind farm (Field, 2014)

Lesson 1: Make Mutual Learning Accessible

Our first lesson, make mutual learning accessible, means creating an environment in which stakeholders' values as well as local, scientific, and political knowledge can be shared, understood, considered, and used in the decision process. We illustrate some key attributes of how to make learning accessible. This includes making information easily available and understandable to the intended audiences. Structuring deliberative learning opportunities where different stakeholders learn from one another can also make learning more accessible. Developers and other organizations involved need to pay close attention to who they choose as messengers for communicating their values and knowledge so they avoid alienating stakeholders. We also see timing as an important and challenging attribute of accessibility. The following subsections provide details on ways to make mutual learning accessible.

3.1 Readily Available and Appropriate Information

In order to have informed opinions about a proposed wind farm, people in adjacent communities need easy access to information about wind farm technology in general, the specifics of the project, and how this development could impact individuals and their communities. New information can influence opinions, especially when there are high levels of uncertainty related to a proposed project (Dietz and Stern, 2008). This information should be readily available (e.g., published in locally popular newsletters, posted on bulletin boards, paper copies in public places, easy to find online) and communicated using language for a public audience (e.g., translate megawatts generated into how many average households' electricity needs will be met in a year, explain what a cable to the mainland means for island residents, explain a power offtake agreement). Local knowledge and priorities often need to be translated so that developers understand local expertise and values, such as fishermen's expertise on suitable routes to lay the cable and the location of prime fishing areas to be avoided (Field, 2014).

3.2 Deliberative Learning

Deliberative learning is the exchange of both knowledge and values in a group setting, which is important for developing trust, mutual respect, and reaching more satisfying outcomes among those engaged in decision-making processes (Gregory et al., 2012). Deliberative learning opportunities can improve stakeholder engagement in offshore wind project consideration and site development. These learning opportunities can involve joint fact-finding, such as Rhode Island's Special Area Management Plan process, and values clarification, such as the prioritization of sustainability issues and potential solutions in the Martha's Vineyard Island Plan. The proceeding Case Studies section unpacks these and other examples of deliberative learning in relation to New England offshore wind farms.

Collating different types of knowledge and sharing facts and values can help address a potentially unequal power dynamic between project proponents "from away" and local communities. Wind farm proponents benefit from designing community engagement strategies in which they can learn from and value the relevant experiences and knowledge of people who could be directly impacted if the proposed development moved forward (see Field, 2014).

During the siting process, project planners could benefit from recognizing the validity and significance of symbolic and affective dimensions of seascapes in the siting process (Devine-Wright and Howes, 2010; Wiersma and Devine-Wright, 2014). For instance, a fisherman's identity and a sense of heritage may be linked to using a particular area of the ocean slated for an offshore wind farm, particularly in Maine where lobstering territory is often exclusive and handed down from one generation to the next (Acheson, 2003). Island community members may see a wind farm as a threat to material (e.g. economic livelihood) and non-material (e.g., place attachment, heritage, and identity) benefits they associate with a place (Gee, 2010). Project developers should recognize and accommodate such concerns, which could be done within a deliberative learning setting.

3.3 Mindful of the Messenger

The individual or group who shares and translates facts and values among stakeholders and proponents can strongly influence the decision process. If the technology and its costs and benefits are not appropriately translated or people distrust the source of the information, stakeholders may feel alienated or disengage from the decision process (Wynne, 1992; 1989), and potentially become entrenched in their opinion regardless of new information that arises (Kahan, 2010). Information, facts and, scientific literacy alone have a limited influence on opinions (Kahan et al., 2012). People tend to "endorse whichever position reinforces their connection to others with whom they share important commitments" (Kahan, 2010, p. 297). Arguably more important than technical information, the social context in which information is shared and the person presenting it (the messenger) can exert substantial influence on attitudes, opinions, and behavior (Cialdini and Goldstein, 2004; Kahan, 2010). This encompasses the personalities, communication styles, and values of people sharing information and facilitating community meetings and dialogues. Skill is needed to translate technical scientific and engineering facts in language that helps people learn rather than alienates non-specialists. Also, in many circumstances, local knowledge and values need to be translated for project proponents and others working at regional and larger scales to better understand the salience, credibility, and legitimacy of local perspectives.

3.4 Bridging Organizations

Shifting local stakeholders from playing the role of recipients of information to producers of information that developers and government officials can understand, respect, and use can be an empowering experience for local stakeholders (Tobias, 2009). Boundary or bridging organizations, such as the Island Institute, SeaPlan, Gulf of Maine Research Institute, and NOAA's Sea Grant program, can assist in this co-production and sharing of knowledge to inform decision making (Cash et al., 2006). **Boundary** or **bridging organizations** can be defined with the following characteristics (Cash et al., 2003):

- Accountability to both sides of a boundary, e.g., local communities and project proponents.
- Use of "boundary objects," e.g., maps reports, and forecasts, which actors on different sides of a boundary co-produce.
- Participation across the boundary involving
  - Convening
  - Translation
  - Coordination of complementary expertise
  - Mediation

This boundary/bridging organization serves as a **neutral convener** (IEA Wind, 2012). This (more) objective third party can help run the community engagement and public outreach process but does not push for a specific outcome, nor do they stand to benefit based on a particular outcome. This can help to build credibility regarding the planning process with communities (IEA Wind, 2012). Ideally, project proponents retain an organization or person with excellent communication and facilitation skills that the community already trusts. Also, stakeholders are more likely to be open to learning new information if the values of the messenger and/or bridging organization resonate with them (Kahan, 2010).

3.5 Timing: Substantial Public Engagement Before Site Selection

Public mistrust, skepticism, and opposition to renewable energy proposals can be reduced if people have meaningful and timely opportunities to voice their concerns in decision-making (Bell et al., 2005). Literature on planning processes and environmental management stresses the importance of engaging communities early and often (Dietz and Stern, 2008; Gregory et al., 2012), yet this can be challenging due to uncertainties inherent in early stages of project development. Wind farm developers often spend years collecting the requisite information to comply with regulatory requirements and determine optimal sites. Developers may be reluctant to share uncertain details, such as the specific location of a site, before they are confirmed. During this early stage, developers tend to share incomplete information when they engage in community meetings, which can be frustrating for local stakeholders who may perceive the developer as being dishonest by withholding information. The uncertainty of the impacts can also frustrate stakeholders.

Upstream research can help navigate uncertainties associated with a new technology and the impacts it may have. When conducting upstream research, scientists, government authorities, bridging organizations, and/or developers can discuss a new technology with citizen groups before any choices are made regarding if and where the technology may be used. Upstream research can help scientists and developers to "open innovation processes at an early stage to listen, respond, and value public knowledge and concerns related to risks and ethical dilemmas," (Wilsdon and Willis, 2004, p. 28). This type of research can help answer people's questions, including, "Why this technology? Why not another? Who needs it? Who is controlling it? Who benefits from it? Can they be trusted? What will it mean for myself and my family? What are the outcomes that this technology seeks to generate? Could we get there in another, more sustainable and cost-effective way?" (Wilsdon and Willis, 2004, p. 28).

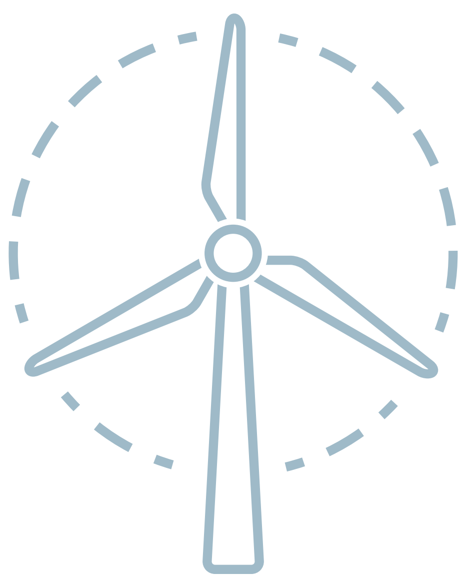
State, tribal, and federal agencies can initiate ocean planning to facilitate upstream research. Ocean planning involves coordinating regional planning for current and future ocean industry, conservation, and recreation. Before areas are designated for specific ocean uses, such as offshore renewable energy development, ocean planning initiatives have provided opportunities for data collection, dialogue on various uses, and values and sharing of information. This early engagement can help stakeholders learn about technologies and how they could be managed without triggering place-protective opposition. Such opposition can stem from perceived threats to specific places that may be important to people's sense of identity and to which they may have other strong attachments (Devine-Wright, 2009).

In addition to being included in ocean planning processes, BOEM also has the potential to facilitate upstream research as the agency interacts with state, tribal, and local governments through task force meetings on specific offshore resource issues. This helps in providing transparency regarding issues at different levels of government and provides opportunities for stakeholders to learn and ask questions about areas of federal waters or specific projects. BOEM has the authority to collect and share data on and then define boundaries of offshore ocean areas that are available via leases to wind farm developers (Firestone et al., 2015a). Through BOEM's task force meetings, information is directed to the specific set of stakeholders that an offshore renewable energy project may affect. This type of early engagement with stakeholders is critical in any ocean development project.

Early engagement can dispel community member's potential fears of finding out too late to become meaningfully involved in a decision process. Clearly outlining the steps of the process and the timeline for making the decision can allow stakeholders to understand how best to engage in the process. We recognize time and resource challenges around iterative and potentially multi-year stakeholder involvement in a decision process. The benefits of frequent engagement can be substantial, however. Building trust among proponents, the selected "messengers" and communities, takes time as does allowing for new information and questions to arise. Timely deliberation on identifying and procuring community benefits can also build trust.

4

Lesson 2: Provide Community Benefits



Lesson 2: Provide Community Benefits

Community benefits are additional and distinct funds or investments that the developer provides to communities, often near project sites (Walker et al., 2014). Benefits associated with the generation of renewable electricity, such as carbon reduction, are diffuse and tend to accrue at a global scale while several environmental, economic, and landscape impacts are concentrated and local. Providing community benefits above and beyond tax revenues can play an important role in managing renewable energy scale-related distributional conflicts (Wolsink, 2007; Zografos and Martínez-Alier, 2009).

Community benefits can help balance the provision of private and public benefits associated with an offshore wind farm. Some perceive offshore wind development as privatizing the ocean, which historically has been a public space for fishing, recreating, and other activities (Devine-Wright and Howes, 2010; Firestone et al., 2009; Pomeroy et al., 2014). The federal management agency overseeing the development of offshore wind, BOEM, has public good-oriented goals, but they use market-based tools to achieve these (e.g., auctions involving private developers). Part of BOEM's mission is to, "promote energy independence, environmental protection, and economic development," via delineating and auctioning areas of the ocean for different purposes, including offshore wind farms (BOEM, 2015). BOEM's public good-oriented goals may be less salient to residents of communities adjacent to wind farm sites compared to local concerns, such as displacement of fishermen from fishing grounds. Developers may provide local, salient community benefits for various reasons, such as to help earn the public's trust and create a sense of fairness associated with the project (Aitken, 2010; Cowell et al., 2011; Rudolph et al., 2015). However, as noted in European case studies, the formation and provision of community benefits can erode or build trust and perceptions of fairness (Aitken, 2010). Establishing trust and perceptions of fairness rests on both the process of coming up with appropriate benefits as well as the models and mechanisms used to deliver the benefits.

Local impacts, such as displacement of fishermen from fishing grounds, can be minimized through accessible mutual learning and balanced through community benefit agreements.

4.1

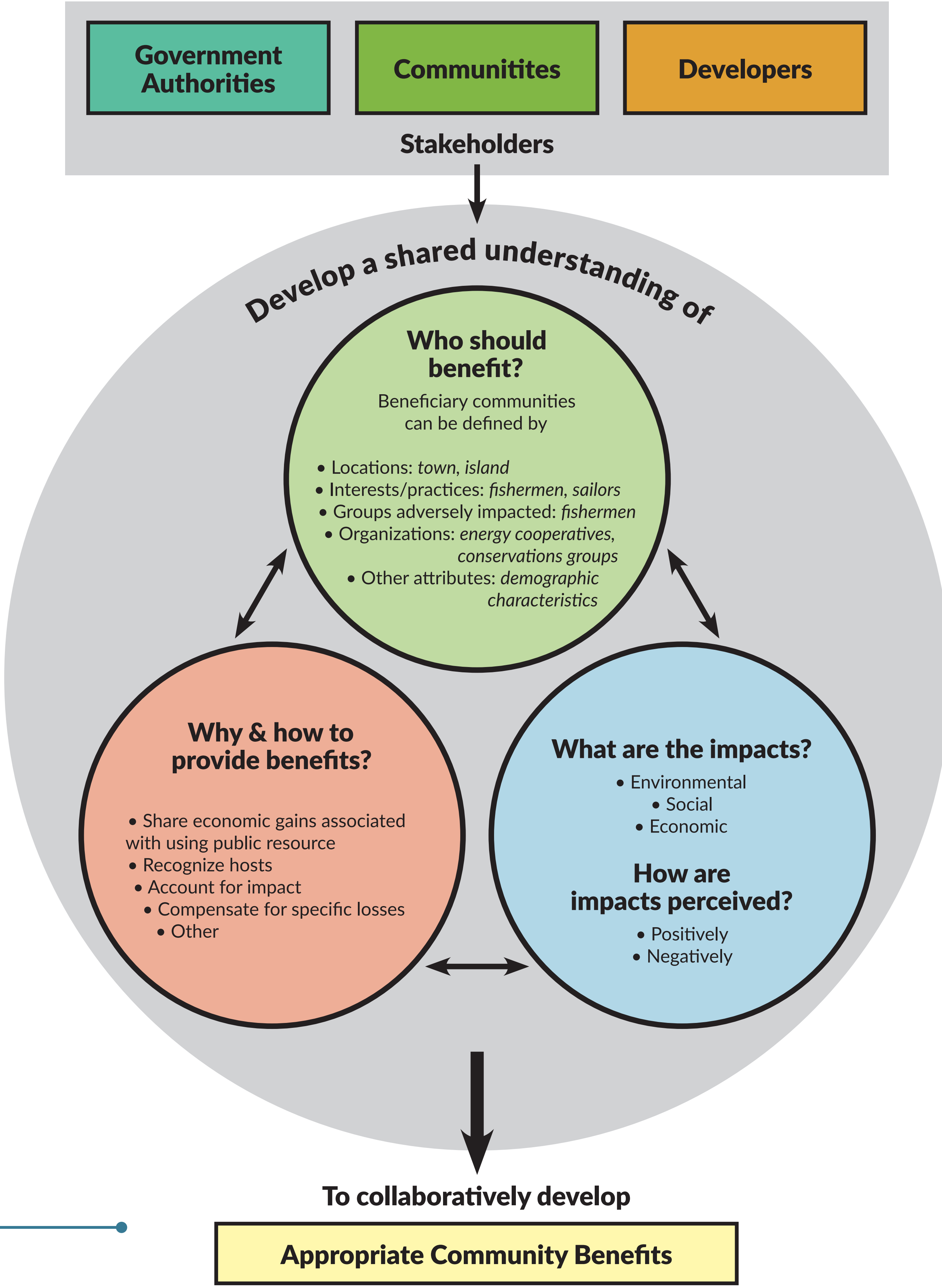
Timing: Substantial Public Engagement Before Site Selection

Community benefits are required by law in some contexts and are voluntary in others. For example, land-based wind developers in Maine must pay host communities according to the number of installed turbines (Maine State Legislature, 2010), but offshore wind developers are not required by law to provide community benefits in the UK (Aitken, 2010). Relevant literature and our case studies point to the importance of collaboration among developers, communities, and government agencies to identify and provide community benefits rather than only respond to government mandates about benefits (Aitken, 2010; Rudolph et al., 2015).

Early discussions among government authorities, developers, and communities are needed to arrive at acceptable definitions and understandings of communities, benefits, impacts, and how they relate to each other (see Figure 2). **Communities** can be based on location (e.g., a town), interests (e.g. recreational boaters), groups who are adversely impacted (e.g., commercial fishermen), organizations (e.g., an energy cooperative) and/or other shared characteristics. **Benefits** can be understood as sharing economic gains associated with tapping into a public natural resource (i.e., wind), recognition of hosts (e.g., developer seeks to be a good neighbor, communities receive benefits for hosting substation infrastructure), increasing local support (e.g., community groups or energy cooperatives who receive benefits commit to supporting wind farm), accounting for impact (e.g., recognition of local negative impacts), compensation for agreed upon and specific losses (e.g., funds to improve habitats for birds at high risk of collision with turbines). **Impacts** can be perceived as positive (e.g., provision of jobs and carbon neutral electricity) and/or negative (e.g., bird mortalities, decreased visual amenities). Identifying preferred **interactions** among communities, benefits, and impacts can help determine effective community benefits (Rudolph et al., 2015).

Establishing locally appropriate community benefits involves clearly identifying their scale, role, and purpose (Cowell et al., 2011). Otherwise, these community benefits could be seen as a bribe that displaces civic duty (Sandel, 2012; Walker et al., 2014). Co-creating community benefits may reduce the perception among stakeholders of benefits as bribes. This process can also improve clarity and diminish uncertainty about what will be provided so developers can discuss them earlier in the planning stages. Rudolph et al. (2015) recommend that developers and authorities negotiate with communities about various benefit models during early stages of wind farm planning, ideally before submitting planning applications.

Figure 2. A robust approach to developing community benefits. This requires reaching a common understanding of communities, benefits, impacts, and their interactions among developers, communities, and government authorities. Italics denote examples. Adapted from Rudolph et al. (2015).


Government Authorities
Communitites
Developers
Stakeholders
Develop a shared understanding of
Who should benefit?
Beneficiary communities can be defined by
• Locations: *town, island*
• Interests/practices: *fishermen, sailors*
• Groups adversely impacted: *fishermen*
• Organizations: *energy cooperatives, conservations groups*
• Other attributes: *demographic characteristics*
Why & how to provide benefits?
• Share economic gains associated with using public resource
• Recognize hosts
• Account for impact
• Compensate for specific losses
• Other
What are the impacts?
• Environmental
• Social
• Economic
How are impacts perceived?
• Positively
• Negatively
To collaboratively develop
Appropriate Community Benefits

4.2 Flexible Models for Custom Tailored Benefits

Community benefits have taken many forms in different places. They can be integrated into various stages of a project, such as the planning, permitting, mitigation, operational, and decommissioning stages. We add to Rudolph et al.'s (2015) overview of common offshore wind community benefit models and mechanisms:

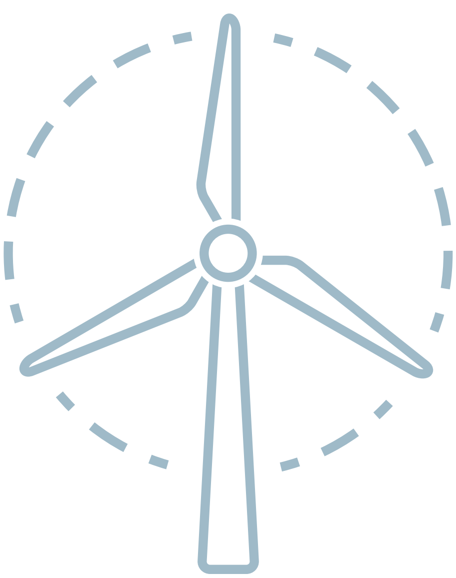
- Community funds (most common)
- Other and pre-existing funds
- Community ownership
- Equal distribution of revenues
- Direct investment and project funding (e.g., paying for infrastructure improvements)
- Jobs, apprenticeships and studentships
- Educational programs
- Electricity discounts
- Community benefit agreements
- Indirect benefits from the supply chain
- Indirect benefits via tourist facilities

In Denmark and regions of Germany, community benefits are often based on cooperative models in which members own the business and all profits after taxes are given back to members (Breukers and Wolsink, 2007). In the UK, energy developers annually pay into a fund proportional to the megawatts (MW) of installed capacity for community organizations to spend on local initiatives (Cowell et al., 2011). For more detailed descriptions of different types of community benefits, see Rudolph et al. (2015).

Søren Hermansen of the Samsø Island Energy Academy briefs Maine island leaders on how the Danish island's energy plan included cooperatively sited and owned offshore wind turbines.

5

Case Studies



Case Studies

We derived our key findings on making mutual learning accessible and providing community benefits from relevant publications and three New England island case studies (see Figure 3). During our literature review, we found a dearth of academic studies focusing on community engagement and offshore wind in New England beyond the proposed Cape Wind farm. We see this lack of academic publications as an opportunity for social science research to inform the development of this industry in this region.

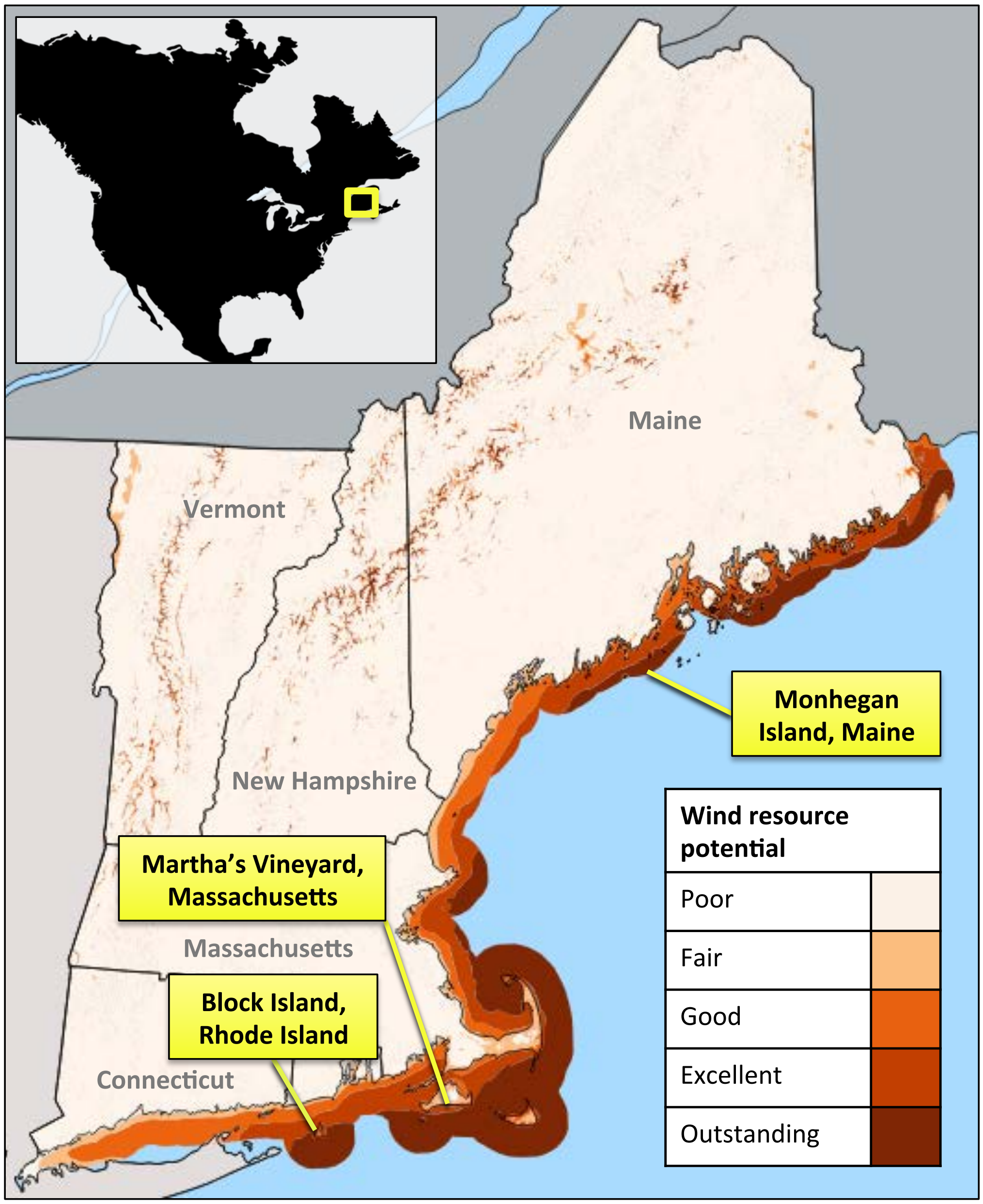


Figure 3. Map of Case Study Islands. Wind data and categorization from NREL (2015).

Table 1. Key differences between New England Island case study sites and mainland communities relevant to engagement on energy issues. Although the population and economy characteristics apply to many small towns, we highlight how energy costs on islands tend to be higher than on the mainland.

Table 1

Characteristic	Description	Consequences
Year-round Population	Small compared to adjacent mainland communities • Block Island: 1,051 • Martha's Vineyard: 16,535 • Monhegan: 69 (U.S. Census, 2010)	Few technical experts Local leadership positions are often part time or volunteer positions
Economy	Strong dependence on fishing and tourism	Relatively vulnerable due to low economic diversification
	Highly seasonal	Year-round residents are likely more available to participate in engagement efforts during low season while seasonal residents and visitors are more likely to engage during the summer
Energy Costs	Can be higher than mainland, e.g., residential electric rates on Monhegan Island are ~\$0.70 per kWh and ~\$0.15 on the mainland	Strong interest in alternatives that could reduce energy costs, particularly on islands without a grid connection

Our case study communities differ from those connected by bridges or on the mainland largely based of their relative isolation. We summarize basic island community characteristics in Table 1 associated with our three case studies.

Table 2. Summary of good practices highlighted in this report related to community engagement in three proposed offshore wind farm sites. For more detail, see case study descriptions.

Table 2

Case Studies

Create Accessible Learning Opportunities

	Block Island, RI	Martha's Vineyard, MA	Monhegan Island, ME
Readily Available & Appropriate Information	• Town hired consultants to listen, translate and represent community interests • Developer reimbursed town for consultants • Developer prioritized outreach to community (Island Institute, 2012b)	• Vineyard Power Cooperative hosted interactive offshore wind map viewer to inform participants about environmental, human use and visual impacts	• Island Institute developed peer-reviewed fact sheets to address the questions raised during community meetings (Island Institute, 2012c)
Deliberative Learning Opportunities	• Project preceded by RI Ocean Special Area Management Plan (SAMP) process, which was funded and supported by federal, state and private entities (Nutters and Pinto da Silva, 2012) • Engagement with fishing industry continued after SAMP completed • Community meetings from 2009-2012 to create and adopt comprehensive energy plan for Block Island (IEC, 2012)	• Process to create Martha's Vineyard Island Plan and energy coop entailed substantial learning and sharing of information and values • Coop used online wind map viewer to solicit resident preferences for farm location	• Information Exchange site visits enabled diverse stakeholders to meet repeatedly and exchange information and experiences • Mapping Working Waters project engaged fishermen to share local knowledge and provided opportunity for them to learn about wind farms (Island Institute, 2009) • University of Maine collected information on turbines' proximity to fishing areas, created and shared visualizations, and conducted tourism impacts study
Timing of Engagement	• SAMP process made information about state waters readily available before OSW farm was considered (Nutters and Pinto da Silva, 2012) • Having participated in SAMP process, offshore wind was not a new topic to local leaders when project was proposed	• Formal community engagement from 2006 to 2010 to create comprehensive, proactive Island Plan on various sustainability issues • Recruited energy coop members over multiple years starting in 2009	• Over a year of engagement before state and federal sites announced • Timing of engagement around state waters test site activities created challenges from which the community organized Monhegan Energy Task Force emerged • Presentations about OSW in both winter and summer to reach year-round and seasonal residents
Mindful of Messenger	• Developer hired local liaison to lead outreach	• Cooperative founders and members are island residents	• Leaders in Monhegan Energy Task Force assumed role of messengers
Reliance on Bridging Organization	• Consultants helped to bridge town and developer	• Partnership between local cooperative and developer provides a bridge to the community	• Island Institute served as bridging organization between developer and communities

Case Studies (Cont.)

Provide Community Benefits

	Block Island, RI	Martha's Vineyard, MA	Monhegan Island, ME
Community Benefits	• Provides mainland grid connection • Reduction in electricity rates • Ends need to import 1 mill gallons of diesel annually (Economist, 2015) • On-island infrastructure improvements • Fiber optic strands in cable bundle provided to increase internet speed • Local jobs provided: mariners and fishermen hired to provide security during construction	• Embedded in Vineyard Power Cooperative's mission and organizational structure • Coop members steer siting decision (VPCOMW, 2015) • Community Benefit Agreement enabled developer to get discount on lease of ocean space	• Island fishermen were hired to assist with environmental monitoring and site assessment • Preliminary discussions have included possibility of mainland grid connection, reduced electricity rates, improved broadband internet

As summarized in Table 2, we provide an overview of our case studies demonstrating the lessons that the Island Institute has learned pertinent to community engagement adjacent to proposed offshore wind farms. At the time of writing, each case study is at a different stage of project development. Construction began on the Block Island Wind Farm in the summer of 2015. The Vineyard Power Cooperative officially partnered with a European wind farm company in January of 2015 and won a lease from the Bureau of Ocean Energy Management (BOEM) to develop their project in federal waters South of Martha's Vineyard. The University of Maine was not successful in its 2014 bid for funding from the U.S. Department of Energy (DOE) to develop a deep-water floating offshore wind test site near Monhegan Island, but they have since received two additional DOE grants to continue refining the design of their turbines.

5.1 The Ocean State's Offshore Wind Farm Pioneers, Block Island, RI

Construction began on Deepwater Wind's 30 MW, five-turbine wind farm three miles off the coast of Block Island in the summer of 2015 after a relatively smooth project development process compared to the nearby Cape Wind proposal. This can be attributed to many factors, including the groundwork established by the Rhode Island Coastal Resources Management Council's Rhode Island Ocean Special Area Management Plan (SAMP) shortly before the project was proposed (Nutters and Pinto da Silva, 2012). Also, the relatively small scale of the Block Island project likely contributed to its ability to move forward first. The Block Island Wind Farm consists of five turbines compared to Cape Wind's 130, the anticipated economic impact on electric rates is smaller than Cape Wind's, and it is a multi-million dollar project while Cape Wind is a multi-billion dollar project (Smith et al., 2015). The Block Island Wind Farm also benefited from the state's long-term contracting legislation, as well as minimal federal regulatory review due to the project's location within state waters. While not without its opponents (McGlinchey, 2013), this project has been met with support from island leaders, a local Indian tribe, environmentalists, and fishermen, in part due to well-defined benefits (Economist, 2015).

We argue that **timing** also played a key role in the success of this project. Creating and disseminating the SAMP before the wind farm was proposed meant that information about state waters was already **readily available and accessible** and had been discussed with key stakeholders (Nutters and Pinto da Silva, 2012), including the town council of New Shoreham on Block Island, which actively followed and contributed to the SAMP process. When Deepwater Wind proposed a wind farm in Rhode Island's state waters, the New Shoreham Town Council was tasked with reviewing the proposal and representing the community's interests and concerns. The town council recognized that it did not have energy experts on staff to review the associated technical documents within the structure of the regulatory process. To prevent a defensive David versus Goliath mentality (i.e., the small island community standing up to a large, well-financed development corporation), Deepwater Wind and the town council discussed the town's need for additional technical capacity to make the proposed project more accessible and understandable to residents. The town selected and hired consultants to represent their interests, and Deepwater agreed to reimburse the town for the expense of these consultants (Island Institute, 2012c).

These consultants served the function of a **bridging organization** between the developers and the island community members. The consultants translated pertinent technical details and locally relevant information to the town council. They shared information with the broader community, fielded questions at community meetings, listened to community concerns, and translated these concerns into comments during the formal regulatory processes. The expertise of the consultants provided the town council with greater confidence that community concerns would be better integrated into the wind farm planning processes.

The community [of Block Island] benefited greatly from the sharing of information via the Ocean SAMP process, and by Deepwater Wind's commitment to putting in place a **trusted liaison** as conduit for information... By employing [the liaison] and locating his office on Block Island, Deepwater Wind was able to provide "up to the minute" information and **build relationships of trust.** This was critical to success. By negotiating with the developer a number of key **community benefit** items, the Town of New Shoreham became a partner (albeit small) in the project, not just a passive venue to be utilized/exploited... We became educated, conversant, increasingly confident, and responsible citizens as we faced each phase of the process... We learned that even a small island community can lead by example... There is no end to what needs to be learned and stewarded.

—Kimberley Gaffett, long-time New Shoreham Town Council Member

We see locally-relevant **community benefits** playing an important role in the success of this project. Once the farm is built, Block Island will for the first time be connected to the mainland grid. Deepwater Wind anticipates that this wind farm and the submarine transmission cables connecting the turbines and the island to the mainland electricity grid will lower the island's electricity costs by 40% (Economist, 2015), which was a driver in garnering local support for the project.[1] The project developer, Deepwater Wind, anticipates that this wind farm and the submarine transmission cables connecting the turbines and the island to the mainland electricity grid will reduce the island's electricity costs (Smith et al., 2015). As a result, once the wind farm is completed, Block Island will no longer need to transport and burn approximately one million gallons of diesel fuel to power the island's generators (Economist, 2015). The town negotiated to have fiber optic strands included in the electricity cable bundle that were provided for the town. Faster internet will benefit residents and businesses that have struggled with the slower microwave-based broadband, particularly during the busy summer months. Deepwater Wind and New Shoreham have also developed a formal Community Benefit Agreement (CBA) in which the wind farm company will pay for improvements to town infrastructure where the cable comes ashore. Further, the project is expected to generate three hundred jobs during the construction phase, including opportunities for local mariners and fishermen (Smith et al., 2015).

[1] This anticipated cost reduction estimate did not account for the 2014 dip in oil prices. The offshore wind farm, however, is anticipated to reduce the volatility of electricity prices on the island. In the long term, natural gas and oil prices are expected to rise (EIA, 2015).

5.2 A Cooperative Approach to Offshore Wind on Martha’s Vineyard, MA

Vineyard Power was an outgrowth of Martha’s Vineyard’s Island Plan, a sustainability strategy that the Martha’s Vineyard Commission completed based on input from thousands of island residents in 2009 to “create the future we want rather than settle for the future we get” (MVC, 2009, p. 1). Eight years after the controversial Cape Wind offshore wind project had been proposed, the plan included a recommendation to create a community-owned renewable energy cooperative so islanders could have more autonomy over their energy production and better ensure community benefits associated with renewable energy development. To date, Vineyard Power has developed five commercial-scale solar photovoltaic projects on Martha’s Vineyard and continues to look to multiple renewable energy technologies going forward, including offshore wind.

In 2009, Vineyard Power began recruiting members. The price of a membership in the coop escalates over time, beginning at $50 and currently at $200 in 2015. People joined for social benefits such as inclusion in the decision making processes in an island-owned, action-oriented group to create a more sustainable energy future for their community, and financial rewards like ownership and control of local renewable energy projects and stabilized electricity prices once a large-scale renewable energy project is developed (Nevin, 2010). The **cooperative’s community benefits** are embedded in the cooperative’s mission: “to produce electricity from local, renewable resources while advocating for and keeping the benefits within our island community” and the organization’s vision “to be Martha's Vineyard's community-owned energy cooperative” (VPC, 2015).

Vineyard Power members have made community benefits a central theme in the development of this offshore wind farm. Lack of perceived community benefits, arguably, played a more minor role in Cape Wind, an earlier Massachusetts-based offshore wind farm proposal that has stalled due to lawsuits, regulatory issues, and problems with its Power Purchase Agreement (PPA). Learning from the Cape Wind experience, Vineyard Power initially developed a wind farm ownership model influenced by the project design and financing structure of the community-owned Fox Islands Wind Project on Vinalhaven Island, Maine where the size of the project was linked to the amount of power consumed by the island (personal communication Peckar, 2015). The complexity, scale, and scope of the currently proposed offshore wind farm, which could be as large as two thousand MW (Smith et al., 2015), vastly exceeds the three-turbine Fox Islands Wind Project, yet the focus on local control and benefit remains.

In January, 2015, BOEM auctioned the rights to lease offshore wind in areas in federal waters south of Martha’s Vineyard. Offshore MW received a 10% discount on their bid price because they had executed a **Community Benefit Agreement** with Vineyard Power. The CBA outlined opportunities to investigate local benefits to the island including job creation, an operations and maintenance facility, and local equity ownership in the project (VPCOMW, 2015).

In earlier stages of the project's development, the cooperative hosted an interactive offshore wind map viewer on its website to not only inform but also solicit preferences from coop members and other engaged island residents to find a suitable location for the wind farm. This website provided **readily available and appropriate information** while encouraging participation in sharing local values related to proposed locations. The website provided information about visual, ecological, and human use impacts based on various proposed sites, including data collected from local sources such as island fishermen. The cooperative also hosted a series of community meetings to share wind farm visualizations and solicit feedback (Studds, 2010).

> "Vineyard Power has always advocated for an open, community-based approach in the development of renewable energy projects. We have been an extremely active participant throughout the BOEM offshore wind leasing process and provide updates and information to local municipalities, businesses, and residents of our island to ensure our community and stakeholders remain engaged. We also believe that any offshore wind farm development in our surrounding waters should provide **local benefits.** We took control of our energy future and decided to be an active participant in the process. Through years of outreach with our members, local legislators, and the local municipalities, BOEM recognized the nation's first **Community Benefit Agreement** between our organization and Offshore MW. Through this CBA, we will ensure that our island community's local economy will remain strong through local ownership and job creation."
>
> *— Richard Andre, President of Vineyard Power*

5.3 Confronting Deep Water Challenges on Monhegan Island, ME

While offshore wind has followed a tumultuous path in Maine, its history provides us with important insights regarding mutual learning, timing, and accessibility of information. In 2009, Maine set ambitious goals to become a national leader in ocean energy (MCP, 2009) and created opportunities for development of offshore wind and tidal energy demonstration projects in both state and federal waters (MPUC, 2010). In each of these jurisdictions, discussions of offshore wind had implications for the island of Monhegan, a remote community twelve miles out to sea with a year-round population of about sixty and some of the highest energy costs in the nation at ~$0.70 kWh vs. ~$0.15 kWh for mainland residential electricity in Maine (MPUC, 2015).

In state waters, Maine made positive initial steps to engage stakeholders in its strategy to expedite the development of the industry by designating three research and demonstration "test" sites within state waters. Representatives of Governor Baldacci's Ocean Energy Task Force worked with the Maine Coastal Program (MCP) within the Maine State Planning office to host a series of public meetings and "kitchen table" (i.e., small and informal) discussions along the Maine coast where sites were being considered. They incorporated scientific data and local knowledge into their assessment process by **making mutual learning** accessible. For example, when MCP and other state agency staff traveled to Monhegan to gather feedback on the potential to create a site two miles from the island, they met with fishermen in a local fish house. They asked fishermen to rank their fishing activity effort around the island in order to identify a site of least impact.

Efforts to site offshore wind in nearby federal waters underscored the importance of timing and availability of information. On September 1, 2010, the Maine Public Utilities Commission (PUC) began a sixteen-month process during which they solicited and reviewed bids for and public comments on a long-term power purchase agreement. This extended period of time provided an opportunity to engage stakeholders prior to the announcement of a developer and the location of a site. During this time, the Island Institute worked as a **bridging organization** to **facilitate mutual learning** through the Offshore Wind Energy Information Exchange, an outreach and education initiative to inform and engage coastal and marine stakeholders, developers, and decision-makers on the potential for offshore wind energy development in the Gulf of Maine. The initiative included **deliberative learning experiences** such as exchange trips to fishing communities as well as a wind farm, the human use mapping project Mapping Working Waters (see Appendix A), information sessions at the annual Fishermen's Forum in Maine (Island Institute, 2009), and readily available and understandable fact sheets (Island Institute, 2012c). These efforts provided coastal stakeholders and industry representatives with a baseline understanding of community priorities as well as the offshore wind industry, while creating an opportunity for stakeholders to meet each other informally and build relationships.

> "As a lobstermen from Maine who was part of information exchanges, I took the time to learn more about offshore wind, the offshore wind industry, and share what I know with people involved in the wind industry. I was able to substantively engage with Statoil in detailed conversations about the potential impacts and concerns surrounding their proposed project."
>
> *— Dave Cousens, President of the Maine Lobstermen's Association*

A fisherman shows offshore wind developers where he fishes using a map produced by the Island Institute as part of its Mapping Working Waters program.

In January 2013, Maine PUC announced its selection of an unsolicited proposal from Statoil – a multinational corporation specializing in offshore energy infrastructure – for testing floating turbine technology in federal waters in the state's Midcoast region. By this time, marine users and other stakeholders in the area had already participated in education and information exchange opportunities, preparing them to more proactively and constructively engage in discussions with the developer and decision-makers (Island Institute, 2015).

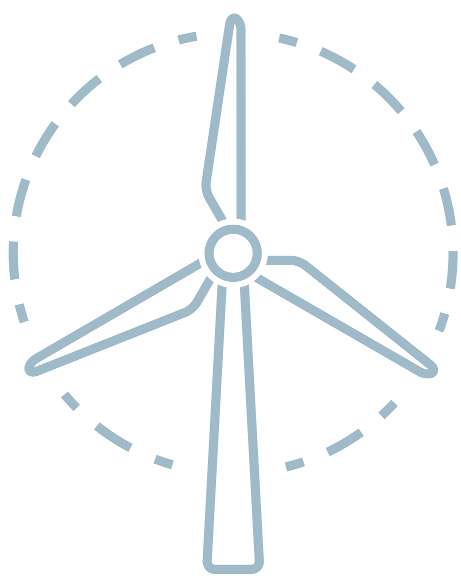
Later in 2013, the University of Maine entered a federal funding competition with a new scope of activities at the Monhegan test site. Subsequently, the Maine Legislature directed the PUC to reopen the bidding process so that the University of Maine could submit a proposal on an accelerated timeline, and Statoil withdrew its proposal for a project in federal waters. While these developments had statewide implications, this impacted Monhegan by significantly limiting the timeframe in which the community could learn about the change in scope from small-scale portable to large-scale, semi-permanent turbines. The PUC opportunity, which prompted many islanders to learn of the change in project scale, was announced during the summer, which is the island's busiest time of year.

The accelerated timeline and need for information initially strained relations between the island community and Maine Aqua Ventus (MAV), the University-led consortium developing the larger project, but both parties quickly committed to improve communications. The first step was to clarify points of contact and expectations for communications so that MAV could be certain that project updates were being shared widely. Island leaders created the Monhegan Energy Task Force (METF) as a way to prioritize information that the community needed and facilitate discussion of community benefits associated with the proposed offshore wind project. METF and MAV engaged in weekly phone calls to enhance the flow of information and worked to develop an expectations document to ensure timely project communications. During this time, both parties looked to Block Island for examples of how information was shared and community benefits arranged. MAV also began to host semi-regular open house sessions on the island during which residents and visitors could have more extended discussions about aspects of the project. In late 2015, MAV received additional federal funding ($3.7 mill) to continue refining their floating turbine designs (Turkel, 2015). Some residents still have concerns about the project but the developer and community have laid a more solid foundation upon which future communication can take place.

> “As we try to keep our very small community running, it is easy to get lost in the “doing” and not the “talking.” While dealing with Maine Aqua Ventus, the greatest challenge we faced was how to quickly get correct information to the community. The key for Monhegan Energy Task Force was to develop a plan for **sharing information** and for **making research resources accessible**. We co-authored a communications MOU with Maine Aqua Ventus, developed a website, sent mailings, and created an email list of stakeholders – making it possible to “tell” while we were doing. Open communication between the community and Monhegan Energy Task Force paired with open communication between Monhegan Energy Task Force and Maine Aqua Ventus helped all parties keep up to date and kept misinformation to a minimum.”
>
> *— Marian Chioffi, Co-chair, Monhegan Energy Task Force*

6

Recommendations



Recommendations

Based on our community engagement and community benefit literature review and our three offshore wind farm case studies in New England, we make the following three recommendations:

1. Make mutual learning accessible

Develop community engagement strategies that solicit and incorporate local knowledge as well as the best available science. Mutual learning can include information exchanges, iterative community meetings, interactive web-based portals, and “kitchen table” meetings. In particular, inter-island exchanges of experience have contributed to island residents sharing their experiences and expertise relevant to offshore wind farm development processes. As the industry continues to develop, relationship building and information sharing should be encouraged not only within projects but across them, enabling host communities, developers, and other stakeholders to share what works and strengthen the community engagement process throughout the industry. Government authorities and bridging organizations should engage local stakeholders near sites suitable for this technology before particular offshore wind projects are proposed.

2. Custom tailor community benefits

Community benefit models and mechanisms are diverse. They are most effective when developers, communities, and government authorities work collaboratively to come to a shared understanding of the definitions of community, benefits and impacts as well as how these components relate to each other. This process of clarification can help determine appropriate community benefits.

Monhegan Island residents brief state leaders on local energy challenges, including the high cost of diesel-generated power.

3. Invest in social science research and communication on offshore wind farms

To date, energy research has downplayed the role of choice and social dimensions of energy systems (Sovacool, 2014). Applying more human-centered research methods (e.g., surveys, interviews, focus groups) can reveal underlying factors motivating or hindering adoption of offshore wind infrastructure, and why attitudes and behaviors towards technology change. Pre and post surveys and other research methods could help us understand energy-related attitude and behavior changes over time and anticipate future changes. Extensive social science literatures provide insights on stakeholder engagement with regards to proposed infrastructure development, but relatively few academic studies have focused on community engagement with the nascent offshore wind industry in the US. More extensive and longer-term research into the New England case studies and concepts highlighted in this report may lead to additional insights. Concurrently, we recommend that greater effort should be invested to communicate social science outputs in order to enhance their accessibility to communities, developers, and other offshore wind stakeholders. A wide range of activities and events – possibly including trainings, toolkits, experiential learning, webinars, and conference presentations – would help to ensure that robust research is at the fingertips of those actively involved in shaping the future of the industry.

Offshore wind farms have the potential to play an important role in shifting to low-carbon energy systems. The ways in which we approach, manage, and respond to inevitable controversy over these technologies impacts the pace and efficacy of addressing climate change and transiting to low carbon energy sources (Roberts et al., 2013). As with any infrastructure decision, it is essential that offshore wind developers and decision makers engage local communities and address concerns about impacts and benefits of such projects. Based on what we have learned from the experiences of Block Island, Martha's Vineyard, and Monhegan Island, building a foundation of both knowledge and trust is crucial for the success of an offshore wind farm. Making mutual learning accessible and providing clear community benefits can help ensure that 1) the decision-making processes around these projects are inclusive, effective, and perceived as fair; 2) local, scientific and political knowledge is considered; and 3) that projects deemed worthy of moving ahead are properly sited.

7

References

Acheson, J., 2012. Attitudes toward Offshore Wind Power in the Midcoast Region of Maine. Maine Policy Review 21, 1–15.
Acheson, J.M., 2003. Capturing the Commons. University Press of New England.
Aitken, M., 2010. Wind power and community benefits: Challenges and opportunities. Energy Policy 38, 6066–6075. doi:10.1016/j.enpol.2010.05.062
Ansolabehere, S., Konisky, D.M., 2014. Cheap and Clean. MIT Press.
Battista, N., Cygler, A., Lapointe, G., 2013. Commercial Fisheries Spatial Characterization. Northeast Regional Ocean Council, Rockland, Maine.
Bell, D., Gray, T., Haggett, C., 2005. The "Social Gap" in Wind Farm Siting Decisions: Explanations and Policy Responses. Environmental Politics 14, 460–477. doi:10.1080/09644010500175833
BOEM, 2015. About BOEM [WWW Document]. httpwww.boem.govAbout-BOEM. URL http://www.boem.gov/About-BOEM/ (accessed 11.30.15).
Breukers, S., Wolsink, M., 2007. Wind power implementation in changing institutional landscapes: An international comparison. Energy Policy 35, 2737–2750. doi:10.1016/j.enpol.2006.12.004
CanWEA, 2011. Wind Energy Development Best Practices for Community Engagement and Public Consultation Best Practices.
Cash, D.W., Adger, W.N., Berkes, F., Garden, P., Lebel, L., Olsson, P., Pritchard, L., Young, O., 2006. Scale and cross-scale dynamics: governance and information in a multilevel world. Ecology and Society 11, 8.
Cash, D.W., Clark, W.C., Alcock, F., Dickson, N.M., Eckley, N., Guston, D.H., Jäger, J., Mitchell, R.B., 2003. Knowledge systems for sustainable development. Proceedings of the National Academy of Sciences 100, 8086–8091. doi:10.1073/pnas.1231332100
Cialdini, R.B., Goldstein, N.J., 2004. Social influence: compliance and conformity. Annu. Rev. Psychol. 55, 591–621. doi:10.1146/annurev.psych.55.090902.142015
Cowell, R., Bristow, G., Munday, M., 2011. Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development. Journal of Environmental Planning and Management 54, 539–557. doi:10.1080/09640568.2010.521047
Devine-Wright, P., 2009. Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. J. Community. Appl. Soc. Psychol. 19, 426–441. doi:10.1002/casp.1004
Devine-Wright, P., Howes, Y., 2010. Disruption to place attachment and the protection of restorative environments: A wind energy case study. Journal of Environmental Psychology 30, 271–280. doi:10.1016/j.jenvp.2010.01.008
Dietz, T., 2013. Bringing values and deliberation to science communication. Proceedings of the National Academy of Sciences 110, 14081–14087. doi:10.1073/pnas.1212740110
Dietz, T., Stern, P.C., 2008. Public Participation in Environmental Assessment and Decision Making. Panel on Public Participation in Environmental Assessment and Decision Making, National Research Council.
DOE, 2015. Wind Vision: A New Era for Wind Power in the United States. Office of Scientific and Technical Information, Oakridge, TN.
Ecology and Environment, Inc, 2015. Development of Mitigation Measures to Address Potential Use Conflicts between Commercial Wind Energy Lessees/Grantees and Commercial Fishermen on the Atlantic Outer Continental Shelf (No. BOEM Award M12PB00006). Bureau of Ocean Energy Management, Herndon, VA.
Economist, 2015. Wondering about wind. The Economist 1–5.
Economist, 2010. Wind energy and politics. Not on my beach, please [WWW Document]. URL (accessed 5.22.15).
EIA, 2015. Annual Energy Outlook 2015 with projections to 2040. U.S. Energy Information Administration, Washington, D.C.
Espinoza, A., 2015. Block Island Wind Farm [WWW Document]. httpripr.orgpostblock-island-wind-farm-delicate-topic-year-round-island-residents. URL http://ripr.org/post/block-island-wind-farm-delicate-topic-year-round-island-residents (accessed 8.25.15).
EWEA, 2015. The European offshore wind industry - key trends and statistics 2014. European Wind Energy Association.

EY, 2015. Offshore wind in Europe. Ernst & Young Global Limited.
Field, J., 2014. UK Fishermen Offer Maine Counterparts Offshore Wind Advice.
Firestone, J., Archer, C.L., Gardner, M.P., Madsen, J.A., Prasad, A.K., Veron, D.E., 2015a. Opinion: The time has come for offshore wind power in the United States. Proceedings of the National Academy of Sciences 201515376–4. doi:10.1073/pnas.1515376112
Firestone, J., Bates, A., Knapp, L.A., 2015b. See me, Feel me, Touch me, Heal me: Wind turbines, culture, landscapes, and sound impressions. Land Use Policy. doi:10.1016/j.landusepol.2015.02.015
Firestone, J., Kempton, W., Krueger, A., 2009. Public acceptance of offshore wind power projects in the USA. Wind Energy 12, 183–202. doi:10.1002/we.316
Firestone, J., Kempton, W., Lilley, M.B., Samoteskul, K., 2012. Public acceptance of offshore wind power across regions and through time. Journal of Environmental Planning and Management 55, 1369–1386. doi:10.1080/09640568.2012.682782
Gee, K., 2010. Offshore wind power development as affected by seascape values on the German North Sea coast. Land Use Policy 27, 185–194. doi:10.1016/j.landusepol.2009.05.003
Gee, K., Burkhard, B., 2010. Cultural ecosystem services in the context of offshore wind farming: A case study from the west coast of Schleswig-Holstein. Ecological Complexity 7, 349–358. doi:10.1016/j.ecocom.2010.02.008
Goodale, M.W., Milman, A., 2014. Cumulative adverse effects of offshore wind energy development on wildlife. Journal of Environmental Planning and Management 1–21. doi:10.1080/09640568.2014.973483
Gopnik, M., Fieseler, C., Cantral, L., McClellan, K., Pendleton, L., Crowder, L., 2012. Coming to the table: Early stakeholder engagement in marine spatial planning. Marine Policy 36, 1139–1149. doi:10.1016/j.marpol.2012.02.012
Green, R., Vasilakos, N., 2011. The economics of offshore wind. Energy Policy 39, 496–502. doi:10.1016/j.enpol.2010.10.011
Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., Ohlson, D., 2012. Structured Decision Making. John Wiley & Sons.
IEA Wind, 2012. IEA Wind Task 28 Social Acceptance of Wind Energy Projects. International Energy Agency Wind Implementing Agreement.
IEC, 2012. Energy Component, Comprehensive Plan Town of New Shoreham, Rhode Island. Island Energy Committe, New Shoreham Planning Board, New Shoreham, RI.
Irvin, R.A., Stansbury, J., 2004. Citizen Participation in Decision Making: Is It Worth the Effort? Public Administration Review 64, 55–65. doi:10.1111/j.1540-6210.2004.00346.x
Island Institute, 2015. Ocean Renewable Energy [WWW Document]. httpwww.islandinstitute.orgocean-renewable-energy. URL http://www.islandinstitute.org/ocean-renewable-energy (accessed 12.4.15).
Island Institute, 2014, A Climate of Change: Warming Waters in Gulf of Maine, Video.
Island Institute, 2012a. Offshore Wind Energy Session at the Maine Fishermen's Forum. Rockland, Maine.
Island Institute, 2012b. Community Benefit Agreements and Offshore Wind Energy. Rockland, Maine.
Island Institute, 2012c. Offshore Wind Fact Sheet Series for Northeast Coastal Communities [WWW Document]. httpwww.islandedgrid.orgoffshore-wind-fact-sheets. URL http://www.islandedgrid.org/offshore-wind-fact-sheets/ (accessed 8.24.15c).
Island Institute, 2009. Mapping Working Waters [WWW Document]. httpwww.islandinstitute.orgprogrammarine-programsocean-planningmww. URL http://www.islandinstitute.org/program/marine-programs/ocean-planning#mww (accessed 8.25.15).
Kahan, D., 2010. Fixing the communications failure. Nature 463, 296–297. doi:10.1038/463296a
Kahan, D.M., Peters, E., Wittlin, M., Slovic, P., Ouellette, L.L., Braman, D., Mandel, G., 2012. The polarizing impact of science literacy and numeracy on perceived climate change risks. Nature Climate Change 2, 732–735. doi:10.1038/nclimate1547
Kaldellis, J.K., Kapsali, M., 2013. Shifting towards offshore wind energy—Recent activity and future development. Energy Policy 53, 136–148. doi:10.1016/j.enpol.2012.10.032

Kempton, W., Firestone, J., Lilley, J., Rouleau, T., Whitaker, P., 2005. The Offshore Wind Power Debate: Views from Cape Cod. Coastal Management 33, 119–149. doi:10.1080/08920750590917530

Maine State Legislature, 2010. An Act To Provide Predictable Benefits to Maine Communities That Host Wind Energy Developments. Second Regular Session.

McGlinchey, D., 2013. The Cable is the Key: Block Islanders Debate Industrial Wind. Island Journal 1–2.

MCP, 2009. Final Report of the Ocean Energy Task Force to Governor John E. Baldacci (No. 020-07B-008205). Maine Coastal Program, Maine State Planning office, Augusta, Maine.

Moura, S., Lipsky, A., Morse, M., 2015. Options for Cooperation between New Bedford-based Fishing and Offshore Wind Energy Industries. SeaPlan.

MPUC, 2015. Delivery Rates, Electricity Statistics.

MPUC, 2010. Request for Proposals for Long-term Contracts for Deep-Water Offshore Wind Energy Pilot ProjectsandTidal Energy Demonstration Projects. Maine Public Utilities Commission, Augusta, Maine.

MVC, 2009. Island Plan. Martha's Vineyard Commission.

Nevin, J.A., 2010. The power of cooperation. Behav Anal 33, 189–191.

NREL, 2015. NREL Dynamic Maps, GIS Data, and Analysis Tools - Wind Data.

Nutters, H.M., Pinto da Silva, P., 2012. Fishery stakeholder engagement and marine spatial planning: Lessons from the Rhode Island Ocean SAMP and the Massachusetts Ocean Management Plan. Ocean and Coastal Management 67, 9–18. doi:10.1016/j.ocecoaman.2012.05.020

OPS, 2015. Fact Sheet: White House Summit on Offshore Wind 1–4.

Pasqualetti, M.J., 2011. Opposing Wind Energy Landscapes: A Search for Common Cause. Annals of the Association of American Geographers 101, 907–917. doi:10.1080/00045608.2011.568879

Peckar, E., 2015. Influence of Fox Island Wind Farm on Vineyard Power.

Phadke, R., 2010. Steel forests or smoke stacks: the politics of visualisation in the Cape Wind controversy. Environmental Politics 19, 1–20. doi:10.1080/09644010903396051

Pomeroy, C., Hall-Arber, M., Conway, F., 2014. Power and perspective: Fisheries and the ocean commons beset by demands of development. Marine Policy. doi:10.1016/j.marpol.2014.11.016

Randolph, J., Bauer, M., 1999. Improving Environmental Decision-Making Through Collaborative Methods. Policy Studies Review. doi:10.1111/j.1541-1338.1999.tb00882.x/pdf

Roberts, T., Upham, P., McLachlan, C., Mander, S., Gough, C., Boucher, P., Ghanem, D.A., 2013. Low-Carbon Energy Controversies. Routledge.

Rudolph, D., Haggett, C., Aitken, M., 2015. Community Benefits from Offshore Renewables: Good Practice Review, ClimateXChange.

Sandel, M.J., 2012. What Money Can't Buy. Penguin UK.

Schwartz, M., Heimiller, D., Haymes, S., Musial, W., 2010. Assessment of Offshore Wind Energy Resources for the United States (No. TP-500-45889). Golden, Colorado.

Shellenberger, M., Nordhaus, T., 2009. Break Through. Houghton Mifflin Harcourt.

Smith, A., Stehly, T., Musial, W., 2015. 2014-2015 Offshore Wind Technologies Market Report, National Renewable Energy Laboratory. NREL, Oakridge, TN.

Snyder, B., Kaiser, M.J., 2009. Ecological and economic cost-benefit analysis of offshore wind energy. Renewable Energy 34, 1567–1578. doi:10.1016/j.renene.2008.11.015

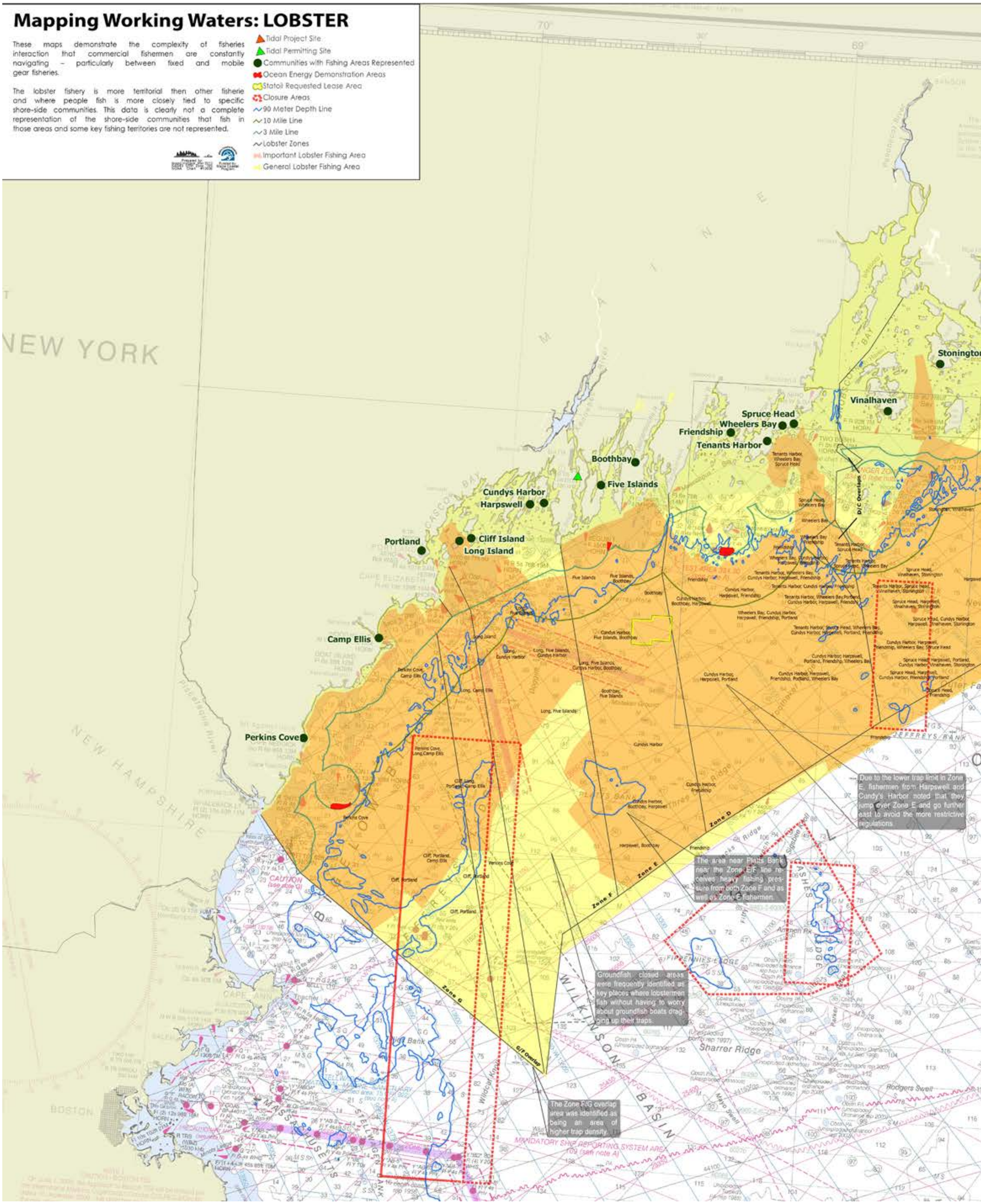
Sovacool, B.K., 2014. What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda. Energy Policy 1, 1–29. doi:10.1016/S0301-4215(99)00012-9

Tobias, T.N., 2009. Living Proof. Union of BC Indian Chiefs and Ecotrust Canada, Vancouver, BC.

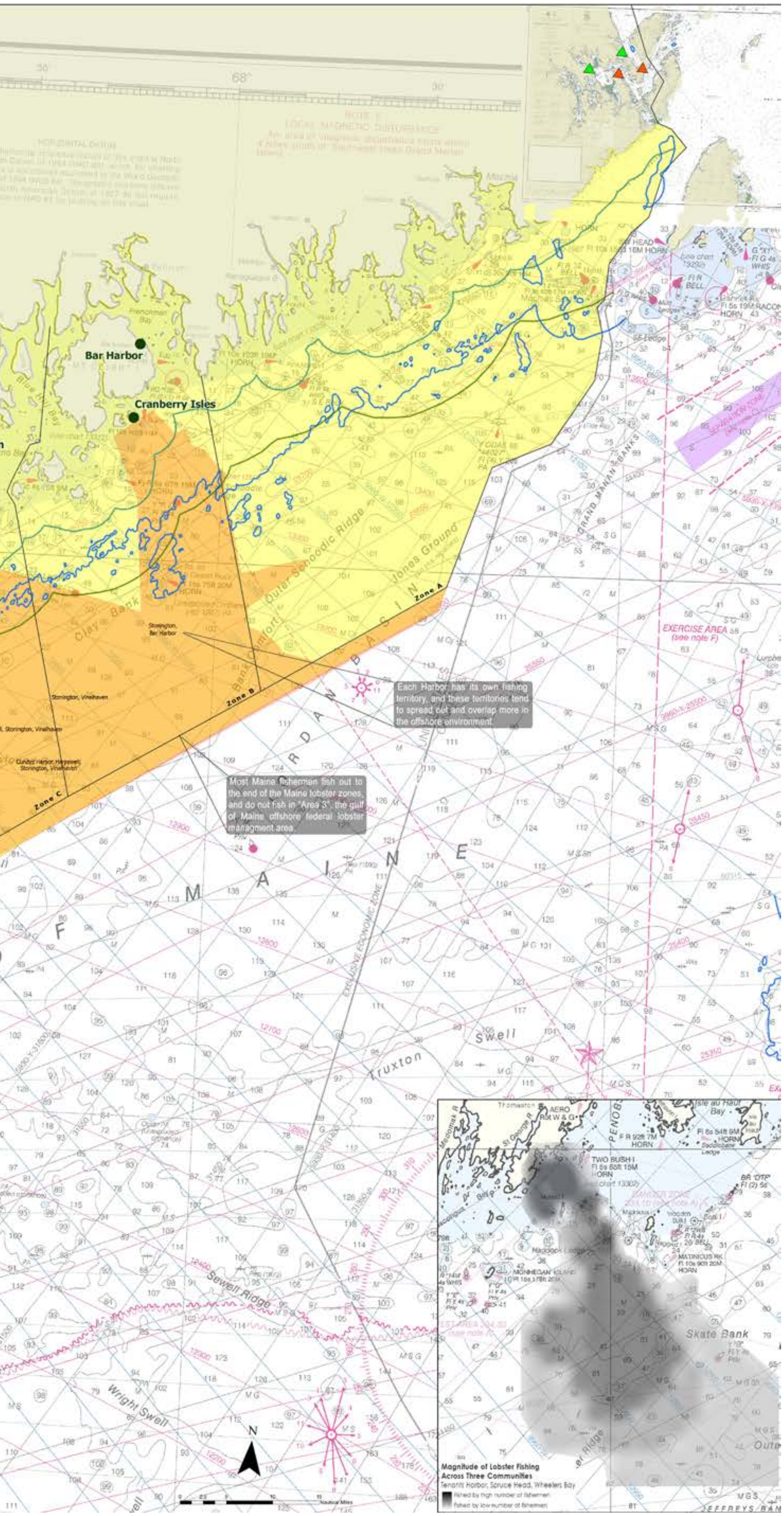
Toke, D., 2011. The UK offshore wind power programme: A sea-change in UK energy policy? Energy Policy 39, 526–534. doi:10.1016/j.enpol.2010.08.043

Turkel, T., 2015. Maine offshore wind project still faces money hurdles, despite federal grant. Portland Press Herald 1–6.

U.S. Census, 2010. 2010 Census Data.
van der Horst, D., 2007. NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. Energy Policy 35, 2705–2714. doi:10.1016/j.enpol.2006.12.012
Van Voorhees, D., 2015. Fisheries of the United States 2014. Silver Spring, MD.
VPC, 2015. Vineyard Power Cooperative [WWW Document]. httpwww.vineyardpower.com. URL (accessed 8.22.15).
VPC, OMW, 2015. Community Benefits Agreement Summary, Vineyard Power Cooperative and Offshore MW. Vineyard Power Cooperative.
Walker, B.J.A., Wiersma, B., Bailey, E., 2014. Community benefits, framing and the social acceptance of offshore wind farms: An experimental study in England. Energy Research & Social Science 3, 46–54. doi:10.1016/j.erss.2014.07.003
Whitcomb, R., Williams, W., 2007. Cape Wind. Public Affairs, New York.
Wiersma, B., Devine-Wright, P., 2014. Public engagement with offshore renewable energy: a critical review. WIREs Clim Change n/a–n/a. doi:10.1002/wcc.282
Wilsdon, J., Willis, R., 2004. See-through Science. Demos, Londong.
Wolsink, M., 2010. Near-shore wind power—Protected seascapes, environmentalists' attitudes, and the technocratic planning perspective. Land Use Policy 27, 195–203. doi:10.1016/j.landusepol.2009.04.004
Wolsink, M., 2007. Planning of renewables schemes: Deliberative and fair decision-making on landscape issues instead of reproachful accusations of non-cooperation. Energy Policy 35, 2692–2704. doi:10.1016/j.enpol.2006.12.002
Wolsink, M., 2000. Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support. Renewable Energy 21, 49–64.
Wondolleck, J.M., Yaffee, S.L., 2000. Making Collaboration Work. Island Press.
Wynne, B., 1992. Misunderstood misunderstanding: social identities and public uptake of science. Public Understand Science 1, 281–304. doi:10.1088/0963-6625/1/3/004
Wynne, B., 1989. Sheepfarming after Chernobyl: A case study in communicating scientific information. Environment: Science and Policy for Sustainable Development 31, 10–39.
Zografos, C., Martínez-Alier, J., 2009. The politics of landscape value: a case study of wind farm conflict in rural Catalonia. Environ. Plann. A 41, 1726–1744. doi:10.1068/a41208



Mapping Working Waters: LOBSTER
These maps demonstrate the complexity of fisheries interaction that commercial fishermen are constantly navigating – particularly between fixed and mobile gear fisheries.
The lobster fishery is more territorial then other fisherie and where people fish is more closely tied to specific shore-side communities. This data is clearly not a complete representation of the shore-side communities that fish in those areas and some key fishing territories are not represented.
Tidal Project Site
Tidal Permitting Site
Communities with Fishing Areas Represented
Ocean Energy Demonstration Areas
Statoil Requested Lease Area
Closure Areas
90 Meter Depth Line
10 Mile Line
3 Mile Line
Lobster Zones
Important Lobster Fishing Area
General Lobster Fishing Area
NEW YORK
NEW HAMPSHIRE
Stonington
Vinalhaven
Spruce Head
Wheelers Bay
Friendship
Tenants Harbor
Boothbay
Five Islands
Cundys Harbor
Harpswell
Cliff Island
Long Island
Portland
Camp Ellis
Perkins Cove
BOSTON
Zone D
Zone E
Zone F
Zone G
G/F Overlap
D/C Overlap
Due to the lower trap limit in Zone E, fishermen from Harpswell and Cundy's Harbor noted that they jump over Zone E and go further east to avoid the more restrictive regulations.
The area near Platts Bank near the Zone E/F line receives heavy fishing pressure from both Zone F and as well as Zone E fishermen.
Groundfish closed areas were frequently identified as key places where lobstermen fish without having to worry about groundfish boats dragging up their traps.
The Zone F/G overlap area was identified as being an area of higher trap density.



Appendix A. Example Output from Mapping Working Waters

Mapping Working Waters is an initiative that seeks to fill critical gaps in spatial information on human uses of the marine environment along the Maine coast, particularly commercial fishing, that the Island Institute launched in 2009. The project documents how island and coastal communities use and depend on marine areas with the intention of helping them to explain their relationship with the ocean decision and policy-makers. This project expands beyond the near-shore environment to include the spatial extent of some communities' commercial fishing activities in the offshore environment, 10 to 40 miles off the coast of Maine. Documenting this information enabled fishermen to better interact with offshore wind developers and to connect their individual story to the broader context of the fishing industry in Maine. The project has also helped inform how fisheries where characterized in the development of an ocean plan by the New England Regional Planning Body.

Mapping Working Waters has not only provided the opportunity for fishermen to share information on their marine uses but also for Island Institute staff to provide information on offshore wind technology, policy, project development, and potential interactions with their fishing activities. As such, the attached map overlays areas of interest for renewable energy development with lobster fishing activity, a nearly one billion dollar industry in Maine. This and other maps created during this project provide a starting point for conversations between fishermen and offshore wind developers about where fishing activity takes place, the trends that drive it, and who might be impacted.

For more information on this project, including other maps, please see: http://www.islandinstitute.org/resource/mapping-working-waters-offshore-fisheries

ISLAND INSTITUTE

386 Main Street, Rockland, ME 04841
www.islandinstitute.org/OSWreport