OCS Study
BOEM 2018-068

Methodology for Analyzing the Effects of the Block Island Wind Farm (BIWF) on Rhode Island Recreation and Tourism Activities

U.S. Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Analysis of the Effects of the Block Island Wind Farm (BIWF) on Rhode Island Recreation and Tourism Activities

December 2018

Authors:
Tiffany Smythe
Hollie Smith
Amelia Moore
David Bidwell
Jennifer McCann

Contributing authors:
Samuel Poli
Sarah Matherson

Prepared Under Agreement M16PC00016
By
University of Rhode Island
45 Upper College Rd.
Kingston, Rhode Island 02881

U.S. Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

DISCLAIMER

Study concept, oversight, and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Contract Number M16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage(http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

T. Smythe, H. Smith, A. Moore, D. Bidwell, J. McCann (2018). Methodology for Analyzing the Effects of Block Island Wind Farm (BIWF) on Rhode Island Recreation and Tourism Activities. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 84 pp.

ABOUT THE COVER

Photo: Dina Elias, Summer 2018

Acknowledgements

We would like to thank the Bureau of Ocean Energy Management for their ongoing support and assistance. We would like to thank the broader research team for their feedback, insights, and review. We would like to thank students who have contributed to this project: Claire Hodson, Jamie Buck, Christine Gilbert. We would like to extend a sincere thank you to the Advisory Committee: Grover Fugate, Aileen Kenny, Edward LeBlanc, Randy Gallien, Tom Dietz, Mario Teisl, Jessica Willi, Madeleine Hall-Arber, Changhua Weng, Lisa Colburn, Michael Jepson, Robert Pomeroy for volunteering their time to provide us with insight.

Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

BIWF	Block Island Wind Farm
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
MPA	Marine Protected Area
NEPA	National Environmental Policy Act
URI	University of Rhode Island
WF	Wind Farm

EXECUTIVE SUMMARY

Although impacts to tourism from offshore wind energy development are widely cited as a concern by communities and policy makers, little work has sought to define what constitutes tourism and recreation impacts or provided empirical evidence of impacts from operating projects. It has been suggested that tourists and recreationalists may change their behavior in selecting destinations due to the visibility of offshore wind structures. This study was designed to collect and review empirical data from the Block Island Wind Farm (BIWF) in order to provide a methodology for developing indicators to track effects of the first U.S. offshore wind farm, which consists of five turbines located within three miles off the coast of Block Island, Rhode Island.

An interdisciplinary team of University of Rhode Island (URI) researchers used a multi-method approach to study the social dimensions of tourism and recreation to develop a suite of social indicators that will enable stakeholders, decision-makers, and researchers to measure and understand the effects of a wind farm on recreation and tourism. The URI team devised an integrated collection of research methods capable of examining multiple forms of place-based use and perceptions as well as multiple kinds of records over several years. The primary research methods included a content analysis of regional news media, literature review, ethnographic participant observation and open ended interviews, and focus groups with key stakeholder representatives. This study was developed and conducted with input and advice from an Advisory Committee with representation from community, industry, and academic experts in indicators to ensure previous work was utilized and indicators were applicable to both the BIWF and other offshore wind energy projects. This approach was utilized to aid in achieving the project goal to provide a generalized suite of indicators that may be appropriate for use in monitoring BIWF as well as other offshore wind energy projects.

The URI team used the results of the mixed-methods study to develop a suite of social indicators for use in understanding, measuring and monitoring the effects of the BIWF and other future offshore wind farms. URI's research team's goal was not to limit itself only to findings or themes that were common across the three phases of data collection. Importantly, the team did not expect to find many indicators supported by all three phases of research, because each research method was fundamentally different. Each method provided distinctly different insights into the effects of the wind farm on recreation and tourism, and thus contributed different insights into the indicator development process. Forty indicators were identified and organized into six categories. Indicator descriptions include guidance on how to measure these indicators and how to select and apply them in different locations. The team also proposed a set of priority indicators to implement for monitoring the tourism and recreational impacts of BIWF.

The URI team identified the following broad considerations for a methodology for analyzing the effects of the BIWF:

1. Access to the Wind Farm and Environs
Both physical and visual access to the wind farm affected tourists and recreationalists' capacity to interact with the wind farm. Physical access to the turbines - whether for sightseeing, navigation, or fishing- allows recreationalists and tourists to get close to the turbines and engage with the wind farm. Similarly, visual access to the turbines (both up close and at a distance) encourages recreationalists and tourists to interact with the wind farm. Operating closer than 3 miles from Block Island, the visual accessibility of the wind farm from the island may enhance existing tours and recreational experiences around the wind farm.

2. Availability of Information
Researchers found that tourists were not readily able to find information about the BIWF. The lack of information has, in some cases, supported negative perceptions about the wind farm. Despite developer efforts to provide information about the project, and local tour operators attempting to inform visitors about the facts of the wind farm, myths and misunderstandings about the efficiency and profitability of wind power persisted. Further, the BIWF presents an opportunity to communicate accurate information, and to market the wind farm as a benefit.

3. Lack of Baseline Data
URI's research team identified a lack of Rhode Island tourism and recreation data that would be appropriate as a baseline for monitoring indicators. While some data are available, they are either not relevant to this topic or not collected at a scale that would be appropriate for use in this context. Recreation and tourism data are context specific and their availability varies by location.

4. Public Process and Developer Involvement
Stakeholder perceptions of the wind farm are shaped by their experience with the public process through which the wind farm was planned, managed, sited, permitted, and constructed. For some stakeholders of the BIWF, perceptions of the wind farm may be shaped by the extent that the individual participated in the planning, siting, and permitting process. The BIWF's status as a hot button political issue continues to color current opinions of the project and its effect on recreational and tourist experiences.

5. Aesthetic/Visual Descriptions and Reactions
The visual fit and character of the BIWF was of particular importance to the recreation and tourism community, but responses to the wind farm varied from person to person. Findings revealed neutral to positive interest in the BIWF from visitors and recreationalists in the region. The extent that the wind farm fit with the landscape and the natural character of the surrounding area was the most prevalent criteria for stakeholders in evaluating visual, aesthetic, and experiential aspects of the wind farm. The associated electrical power and undersea cables need to be considered as an integral part of wind farm infrastructure with potential effects on tourism and recreation, although in this case the cable did not inflict noticeable harm on the tourism and recreation experience. Importantly, the cables illustrate the way that offshore energy infrastructure is about far more than just the visual impacts of distant turbines.

6. Interest in Wind Farm/Wind Farm as 'Attractant'
The BIWF acts as an 'attractant' for some tourists. Visitors to the wind farm site, or sites where the wind farm is visible, regularly engage with the wind farm as its own destination or as an auxiliary attraction to other recreationist or tourist activities.

7. Tourism and Recreation Marketing and Promotion

The BIWF provides the state, the wind farm developer, and private businesses with a unique opportunity for tourism and recreation marketing. Some recreation and tourism businesses already utilize the wind farm's status as an 'attractant' to promote their own products and services. However, many business owners are still trying to determine how best to address the wind farm in their marketing materials.

8. Weighing the Costs and Benefits

The recreation and tourism community often conceptualized the wind farm by weighing the project's costs and benefits over time. This informal individualized 'cost-benefit analysis' was considered in discussions of the wind farm's effect on tourism and recreation, as well as the wind farm's effect more broadly on the community and region.

The findings from this research are specific to the BIWF; its size, scale, and accessibility to existing tourist destinations influence its effect on recreation and tourism. URI's research team hypothesizes that the experience of mainland RI will be more similar to the majority of future wind farm developments in the coastal US, depending on their location and scale, than the Block Island experience. However, the team also hypothesizes that the Block Island experience is a magnified version of the impacts and opportunities associated with siting a wind farm adjacent to a tourism and recreation-dependent coastal community, and thus still provides valuable insights that can be applied to other locations.

1. Overview

Although impacts to tourism from offshore wind energy development are widely cited as a concern by communities and policy makers, little work has sought to define what constitutes tourism and recreation impacts or provided empirical evidence of impacts from operating projects. It has been suggested that tourists and recreationalists may change their behavior in selecting destinations due to the visibility of offshore wind structures. This study was designed to collect and review empirical data from the Block Island Wind Farm (BIWF)—the first U.S. offshore wind farm, which consists of five turbines located three miles off the coast of Block Island, Rhode Island. (For more information, see http://dwwind.com/project/block-island-wind-farm/.)

An interdisciplinary team of University of Rhode Island (URI) researchers used a multi-method approach to study the social dimensions of tourism and recreation to develop a suite of social indicators that will enable stakeholders, decision-makers, and researchers to measure and understand the effects of a wind farm on recreation and tourism. A project goal was to provide a generalized suite of indicators that may be appropriate for use in monitoring other offshore wind energy projects. The team also proposed a set of priority indicators to implement for monitoring the tourism and recreational impacts of the BIWF.

The BIWF provided an invaluable opportunity to study social perceptions of, interactions with, and impacts of offshore wind infrastructure in a dynamic coastal environment as events unfold in the public record and in real time. The URI team devised an integrated collection of research methods capable of examining multiple forms of place-based use and perceptions as well as multiple kinds of records over several years. The primary research methods included a content analysis of regional news media, literature review, ethnographic participant observation and open ended interviews, and focus groups with key stakeholder representatives.

This final report presents deliverables for each of the research methods, as well a description of key findings gleaned of the wind farm's effect on recreation and tourism. These products have been developed for use by ocean resource stakeholders. This may include BOEM as well as other federal agencies; state and local governments; local private or non-profit civic organizations; researchers; and others.

2. Summary of the Literature

When an offshore wind energy project is proposed, people in communities near the proposed site and other interest groups frequently raise concerns that the project will affect tourism and recreation (Gee 2010; Rudolph 2014). Although there is often a presumption that wind energy projects threaten tourism (via visual impacts and resource-use conflicts), people also raise the potential of offshore wind farms acting as an asset to the tourism industry (Parsons and Firestone 2018).

There is little empirical evidence for how wind energy projects have affected tourism and recreation; however, the literature suggests that wind farms do not negatively influence tourism to a substantial degree, and in fact, they may act as a minor attraction (Westerberg et al. 2013). Most work on wind farm tourism impacts examine the potential impacts of a proposed wind farm, based mostly on the responses of tourists or residents to visual simulations. These studies provided mixed results for whether a wind farm would dissuade or attract visitors to an area.

With relative consistency, researchers find that stakeholder concerns about visual impacts of offshore wind farms decrease as distances of the wind farm from shore are increased (Landenburg 2009; Landry et al. 2012; Lilley et al. 2010; Westerberg et al. 2013; Westerberg et al. 2015, Parsons et al. 2018). There is some evidence that more frequent visitors to an area may be most concerned about potential wind farms, based on their desire to preserve natural or pristine settings (Ladenburg 2009; Landry et al. 2012, Voltaire et al. 2017). Researchers stress that tourists are not a singular group, and that their attitudes towards wind farms are influenced by personal factors, beliefs about renewable energy and the environment, and motivations for tourism and perceptions about the landscape (Broekel and Alfken 2015; Ladenburg 2009; Westerberg et al. 2015, Smith et al. 2018). There is also evidence that wind farms can attract tourists or revitalize tourism sectors (Albrecht et al. 2013; Firestone et al. 2008; Frantál & Kunc, 2011; Frantál & Urbánková, 2014).

There is substantial literature about general public attitudes towards wind energy (on- and offshore), which provides further insights into how offshore wind farms could affect tourism. While the public routinely expresses concerns that offshore wind farms will negatively influence tourism (Gee 2010), the literature also highlights potential impacts that may have indirect effects on tourism, such as attitudes toward renewable energy in general. Again, public attitudes are related to personal characteristics and general beliefs about renewable energy (Krohn and Damborg 1999; Ladenburg 2009). Evidence suggests that people who live further away from wind farms may be less supportive than those who have become more accustomed to them (Ladenburg and Moller 2011, Firestone et al. 2018); however, most of the research is based on expectations of potential developments. While the public expresses concerns about the visual impacts (Haggett 2008), there is evidence that individuals are most concerned about impacts on marine life (Firestone et al. 2009; Firestone and Kempton 2007; Koundouri et al. 2009). These concerns may be based on attitudes towards the sea as a natural space (Bidwell 2017, Gee 2010; Haggett 2008) and attachment to sites (Pasqualetti 2011). The public does express some concern about potential negative impacts towards recreational activities, particularly fishing and boating (Firestone et al. 2009).

We have also reviewed literature focused on the oil and gas industry (as well as other energy sources), which have longstanding experiences with offshore structures. While much of this literature concerns the risks of petroleum spills to tourism and recreation, there are some lessons applicable to offshore wind energy. Depending on their distance from shore, oil and gas structures can negatively affect property values (Industrial Economics 2015b). However, there is also evidence that for some members of the public, oil and gas developments meeting particular criteria are perceived as visually attractive (Nassauer and Benner 1984). The public expresses some concerns about maintaining access to recreational fishing areas and potential biological impacts (Voss et al. 2013), but there is strong evidence that offshore structures are perceived as beneficial to fishing (by providing habitat that increases fish abundance) and recreational diving (Hiett and Milon 2002; Fikes 2013). An older study of public attitudes towards potential offshore nuclear facilities revealed a small possible decrease in beachgoers, but evidence from actual facilities did not reveal any adverse impacts (Baker et al. 1980).

The anthropological literature on tourism reviewed offers broad tourism considerations that may provide useful context. The tourist's choice of destination and enjoyment of that location is shaped by both place and space - both the physical aspects of a space and intangible aspects informed by history, culture and other factors (Boissevain and Selwyn 2004; Hall and Page 2014). The distinction between tourism and recreation was once shaped by the focus of recreation on local, outdoor, non-commercial activities, but Hall and Page (2014) note that integrated research is now needed in part because new forms of tourism, such as nature-based and ecotourism, blur this distinction. Other types of tourism may include ethical, cultural, historical, environmental, and recreational (Smith 2012) and draw attention to the diversity of factors shaping tourism. Stronza (2001) and MacCloud and Carrier (2010) note that tourism is shaped by linkages and interactions between tourists, guests, and local residents, and Stronza (2001) calls attention to the need for a holistic approach to consider both locals and tourists as well as both incentives and impacts of tourism. Two of these tourism papers provide relevant information for this project based on empirical data analysis. Deidrich and Garcia-Buades (2009) tested a theory related to tourism destination decline in a Belizean community and noted how local perceptions and reactions to tourism are important in devising indicators of tourism sustainability. Ditton et al. (2002) examined recreational fishing as a form of tourism when anglers crossed state lines, and evaluated survey data to understand the extent to which anglers travel to other states to fish. They noted that little is understood about how and why states gain and lose angler tourists and pointed out that fishing tourism and fisheries management should be better linked to better manage and promote fisheries tourism.

3. Synthesis of Findings

In this section, the researchers report the larger findings and themes that were most prominent in URI's research team's findings. It functions as a broader collection of findings derived from Appendices II, III, IV, and V.

It should be noted that these findings are context-specific. The BIWF is a small-scale "demonstration" wind farm in that it consists of only 5 turbines, evenly spaced off of Block Island, parallel to the southern shore, in a placement that is readily accessible by boat and visible from the southern shore of the island. In this sense, a larger-scale project further offshore may not produce the same effects observed by URI's research team in this study.

The data collected by URI's research team reveals the diverse interests and perceptions of tourists and recreationalists, as well as the professionals providing tourism and recreation services, in coastal Rhode Island and on Block Island. Overall, there was little evidence that the BIWF has adversely affected participation in tourism and recreation in the area. It appears that, instead, the wind farm has enhanced some experiences on the water and the island, and that the wind farm has had little impact on tourism and recreation on the mainland, which is 16 nautical miles from the BIWF. Although many recreationalists and tourists acknowledge pros and cons when thinking about the wind farm, this study found that, outside of a few individual instances, the wind farm's overall effect is relatively benign and, in some cases, positive. Still, the wind farm is young, and some effects, either positive or negative, may not have fully developed or been realized. Therefore, it is critical to continue to monitor effects that are of greatest concern to the diverse tourism and recreation community.

3.1 Content Analysis

Content analysis was conducted of newspaper coverage, meeting and hearing transcripts, and public comments related to the BIWF in Rhode Island. The content analysis was performed with intent to identify thematic trends and potential indicators across time beginning in 2008, when the wind farm was first proposed, to March 3, 2017. Newspaper articles discussing the BIWF, transcripts for the Coastal Resource Management Council meetings where the BIWF was mentioned in the agenda, and public comments transcripts from public forums held throughout 2013 were reviewed. Using traditional thematic analysis, a codebook of themes was developed based on previous media analysis research and other media studies of wind energy.

First offshore wind farm in the nation The nature of the BIWF as the first offshore wind farm in the United States dominated newspaper coverage. The level of emphasis placed on this "first in the nation theme" as a strong trend in newspaper coverage appears to be important in understanding the broader discourse around the BIWF.

Connecting Block Island via underwater cable Newspaper coverage noted the unique position of Block Island to gain an underwater cable connecting the island to the mainland through the construction of the BIWF, decreasing electricity prices. Newspaper coverage also noted the cable's promise of bringing high speed internet to the island, which frequently had been unable to run tourists' credit cards because of internet outages and rolling summer brown-

outs.

Frequent economic framing of the BIWF Newspaper coverage frequently relied on presenting the BIWF as an economic risk or benefit; this framing was more common in newspaper coverage than environmental framing or aesthetic framing. Supporters of the BIWF were quoted in newspaper coverage as promoting the BIWF as an opportunity for high-paying jobs and as an avenue for Block Island residents to obtain lower electricity cots. Opponents noted the financial risk of supporting the first offshore wind farm and the increase in electricity costs for mainland Rhode Island. Concerns of economic effects mirrored concerns stated in the newspaper coverage, with the majority of participants concerned about electricity rate increases to the mainland while recognizing the opportunity for Rhode Island to become an economic leader for the offshore wind industry.

There were more direct mentions of concerns to tourism and if the aesthetic impact would negatively affect Narragansett. Importantly, the wind farm's visibility from a given location is not an impact or benefit in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view.

Climate change was directly addressed as the primary driver for needing to install the wind turbines. The argument using climate change as the driving factor seemed to outweigh any costs possibly associated with the wind farm.

Review of newspaper coverage and hearing transcriptions indicated a strong and diverse conversation about the BIWF. The economic focus revealed through newspaper coverage of the BIWF is mirrored in the public forum conversations related to reduced (expected on Block Island) or increased energy rate prices (mainland Rhode Island). Recreation and tourism, while not a strong theme in the sources analyzed, is mentioned, often in regards to the offshore wind turbines being a potential *benefit* for drawing tourists to Rhode Island—particularly under the first wind farm in the nation theme.

3.2 Participant Observation

URI conducted participant observation on Block Island and mainland Rhode Island among tourists, residents, tourism businesses, and recreational communities. In year one, formal participant observation began in June of 2017 and ended in October of 2017. Year two participant observation began in May of 2018 and ended in September of 2018. Participant observation was conducted at a number of sites, due to their proximity to the BIWF, their view of the BIWF, and/or their connection to BIWF related tourism business. The goal of the participant observation was to document how people engaged with the BIWF in real time by collecting observations of the facility’s effects on the local tourism and recreational experience.

Block Island The effects of the BIWF are more apparent on Block Island itself due to the proximity of the wind farm to the southern shore of the island. Most of the observed reactions expressed a range from positive to neutral to curious, with a vocal minority disapproving of the presence of the BIWF and the rare aesthetic sense that it does not belong in this area. Some

retailers have begun to sell BIWF related merchandise like T-shirts or stickers, and several businesses experimented with tours of the BIWF. After two years of operation the BIWF is well on its way to becoming an accepted part of the scenery and a useful addition to the tourism and recreational suite of activities in the region.

Mainland Rhode Island Observers could not discern any significant coastal recreation behaviors tied to the presence of the BIWF. The BIWF is a background object, with unsolicited comments about the BIWF rare as people went about their recreational activities. Solicited comments revealed a strong sense of approval from some recreationalists, a sense of indifference from many others, and a small but vocal minority expressing strong negative reaction.

Regional Waterways From the water, the BIWF is experienced very differently than on the shore. From a small fishing or charter vessel, the turbines are enormous and getting close to them can be exhilarating due to the rushing sound they make as they turn. Ferry tours are similar, although the vantage is higher off the water, the height of the turbines is not as dramatic, and the group dynamics are less intimate. Boat tours provide the most detailed information about the BIWF and its history, with information provided to tour operators primarily from Deep Water Wind, although the ferry boat tour narrators conducted their own interviews to collect information they find pertinent.

Wind Farm Tourism Business A few businesses experimented with tours of the BIWF in the two year period. These businesses plan to continue to offer tours indefinitely, although there is the general sense that business is down overall in the region in year two, however, the downturn is attributed to factors unrelated to the BIWF.

No Change In Electricity Costs No individuals or businesses encountered in this study reported that their electrical bills had gone down in any significant way as a result of the BIWF.

Unearthing of the Power Cable The largest difference between year one and year two on BI was the unearthing of the power cable off the shore at the Town Beach in year two. This gradual unearthing required that twelve buoys be placed off shore of the beach to warn swimmers and boaters away from the site. After initial concerns that these buoys would deter people from enjoyment of the beach, the summer season proceeded as usual, with no noticeable adverse effects, except a few residents who feared that the power cable might be sending unhealthy vibrations or currents into the surrounding area.

Lack of Fiber Optic Capacity The lack of high speed internet, which had been sold as a benefit of the project, remains a point of contention. Tourism businesses expressed a continued need for more internet bandwidth. The local government had negotiated with Deep Water Wind to bring a fiber optic cable for broadband internet to the island along with the power cable connected to the mainland. However, distribution of the broadband around the island was not part of the negiotation and the government must now pay for that themselves.

Confusion One common observation is that visitors on both the mainland and BI often express confusion over how the BIWF functions, and there is still no information readily available to inform them once they are on the coastline.

Participant observation findings reveal a continued neutral to positive interest in the BIWF from visitors and recreationalists in the region. These findings provide a detailed glimpse into the dynamics of coastal tourism and recreation in the region, showing that stakeholder relationships to energy infrastructure are complex and understanding these dynamics often means considering existing social relationships, social memories, and social divisions tied to place and history that inform practices of value generation (enjoyment and livelihood) in the landscape. However, in terms of residents in the area and especially on Block Island, the BIWF is less of a hot button political issue today than it was in the planning phase. Current concerns about the unearthed power cable and fiber optic cable distribution are more commonly brought up in conversation than the appearance of the BIWF which is rapidly becoming a part of the seascape that many people admire.

The issue of the unearthed power cable at the Town Beach and the lack of fiber optic cable distribution are examples of how the concerns associated with offshore energy infrastructure are complex and can be distant from the actual energy platforms. Engagement with energy infrastructure occurs on parts of the island where the BIWF is barely visible, and cables can produce fears about social inequities around access and exposure to infrastructure. In the Block Island case, these fears are fairly benign overall, but that may not be the case everywhere.

The mainland experience of the BIWF, from a beach and coast-bound (non-marine) tourism and recreation standpoint, is far less dramatic and far less lucrative than the Block Island experience. The wind farm does not appear to be functionally detrimental to coastal business or enjoyment of place. This finding is significant given that the majority of future offshore wind farm installations in the US may be more similar in terms of distance to the mainland Rhode Island experience of the BIWF than the Block Island experience, where the wind farm is close and yields a fairly unique experience. Albeit, cable considerations will apply to mainland sites as much as to Block Island, and there may still be public interest in touring larger offshore wind farms.

3.3 Focus Groups

Focus groups were conducted to discuss the interaction of tourism and recreation activities on Block Island and Coastal Rhode Island with the BIWF. URI engaged five sectors: recreational boating and sailing, recreational fishing, charter excursions (e.g., fishing charters), Block Island tourism and recreation, and mainland coastal tourism and recreation.

Aesthetic/Visual Descriptions and Reactions The aesthetic and visual aspects of the BIWF and its fit into the coastal environment were a consistent theme. Participants used a broad range of words to describe the sight of the BIWF and described the view of the BIWF from different vantage points; in different weather conditions; during the day and at night; and in relation to other features on the surrounding land and seascape.

Windfarm as "attractant" Participants discussed BIWF as an 'attractant' - in many cases drawing tourists or recreationalists to the site in some way, particularly in the case of boat-based activities. This was in many cases described in positive terms, such as tourist interest in the

wind farm "*attraction*", however, this may only be due to its current status as a "*novelty*" - a brand-new development and the "*first in the nation*" - which may fade with time.

Physical and Visual Access to the Wind Farm and Environs Participants spoke in largely positive terms about the BIWF specifically because they have access to it in some way - either physically, to the waters immediately surrounding it, or visually, due to its close proximity to shore and to nearby ports and harbors.

Public Process Participants spoke about aspects of the public process resulting in the BIWF. Participants, most of whom were Rhode Island residents, expressed that their views of the BIWF's effect on tourism and recreation were informed by their views and broader experiences as Rhode Islanders. And, that their views and experiences were shaped by the extent to which they had participated in the BIWF planning, siting, and permitting process, particularly seasonal residents.

Wind Farm Information and Misinformation A demand for wind farm information, especially about how the wind farm works and how electricity is distributed, was often discussed. This demand could be an opportunity for tourism and recreation industries to capitalize on wind farm interest. Discussions on this topic also covered "*misinformation*", inaccurate information which appears to be deliberately spread.

Tourism and Recreation Marketing and Promotion Focus group participants felt that the wind farm provides a unique opportunity for tourism and recreation marketing (particularly for recreational fishing), but that neither the developer nor the state has seized upon this opportunity thus far.

Weighing the Costs and the Benefits A common theme in the focus group discussion was the informal individualized 'cost-benefit analysis' considered in discussions of the wind farm's effect on tourism and recreation, as well as the wind farm's effect more broadly on the community and region.

Focus group participants reported largely positive tourism and recreation impacts of the BIWF, although there are certainly critics of the wind farm and some drawbacks were acknowledged (e.g., crowding with more recreational fishermen).

3.4 Overarching Themes

This section highlights broader key findings that URI's research team identified from this study. Please see section 4.5, "The Suite of Indicators" for further synthesis of these findings.

3.4.1 Access to the Wind Farm and Environs

Both physical and visual access to the wind farm affected tourists and recreationalists' capacity to interact with the wind farm. Physical access to the turbines- whether for sightseeing, navigation, or fishing- allows recreationalists and tourists to get close to the turbines and engage with the wind farm. Recreational fisherman in particular emphasized that the ability to access

fishing grounds heavily influenced their perceptions of the project. Similarly, visual access to the turbines (both up close and at a distance) encourages recreationalists and tourists to interact with the wind farm. Operating closer than 3 miles from Block Island, the visual accessibility of the wind farm from the island enhanced existing tours and recreational experiences around the wind farm. URI's research team also found that the proximity of the wind farm to existing tourist attractions (i.e. clustering) may play a role in enhancing existing experiences.

3.4.2 Availability of Information

Researchers found that tourists were are not able to readily find information about BIWF. The lack of information has, in some cases, supported negative perceptions about the wind farm. Despite developer efforts to provide information about the project, and local tour operators attempting to inform visitors about the facts of the wind farm, myths and misunderstandings about the efficiency and profitability of wind power persisted. Factually incorrect news reports and rumors, often spread by social media, created confusion among some members of the recreation and tourism community as to how the BIWF functions, especially when some turbines are not spinning. Misinformation has presented similar challenges for offshore wind farms in Europe (Waldo 2012). Further, the BIWF presents an opportunity for the offshore wind industry, and local and state government to communicate accurate information, and to market the wind farm as a benefit. People in the tourism industry, especially charter boat operators, can use the wind farm as a marketing tool.

3.4.3 Lack of Baseline Data

URI's research team identified a lack of Rhode Island tourism and recreation data that would be appropriate as a baseline for monitoring indicators. While some data are available, they are either not relevant to this topic or not collected at a scale that would be appropriate for use in this context. The broad lack of data was confirmed by representatives of the Block Island Tourism Council (J. Willi pers. comm. Jan 2017). Recreation and tourism data are context specific and their availability varies by location. In Rhode Island, most relevant baseline data are collected at the state or local level, by universities, or by private businesses or associations (e.g. chambers of commerce). Please see section 4.8, "The Need for Baseline Data Collection" for additional information regarding baseline data collection.

3.4.4 Public Process and Developer Involvement

Stakeholder perceptions of the wind farm are shaped by their experience with the public process through which the wind farm was planned, managed, sited, permitted, and constructed. For some stakeholders of the BIWF, perceptions of the wind farm may be shaped by the extent that the individual participated in the planning, siting, and permitting process. Dwyer and Bidwell (2019) found that individuals who were engaged in the process of planning, siting and permitting the BIWF gained a sense of trust in leaders which helped build support for the outcome. URI's research team also found that the developer of the BIWF, Deepwater Wind, was a commonly cited source of information about the wind farm by both the media and the recreation and tourism community. Community outreach by the developer during the planning and permitting stages of the project was viewed as largely positive; however, engagement of the

tourism and recreation sector was inconsistent. The BIWF's status as a hot button political issue continues to color current opinions of the project and its effect on recreational and tourist experiences.

3.4.5 Aesthetic/Visual Descriptions and Reactions

The visual fit and character of the BIWF was of particular importance to the recreation and tourism community, but responses to the wind farm varied from person to person. The extent that the wind farm fit with the landscape and the natural character of the surrounding area was the most prevalent criteria for stakeholders in evaluating visual, aesthetic, and experiential aspects of the wind farm. Some recreationalists and tourists reacted to the wind farm in a positive or neutral manner, often expressing curiosity about the structure's design and function or approving of the impressive scale of the turbines. Conversely, some recreationalists and tourists reacted to the wind farm in a negative manner, expressing distaste for the turbine's existence in a previously unobstructed ocean view and/or the impact of turbine lights on the night sky. In this sense, the wind farm's visibility or experiential effects from a given location are not impact or benefit in themselves, but they could result in potential tourism benefits, negative tourism impacts, or no effect depending on individuals' reactions to the view or experience.

3.4.6 Interest in Wind Farm/ Wind Farm as 'Attractant'

The BIWF acts as an 'attractant' for some tourists. Visitors to the wind farm site, or sites where the wind farm is visible, regularly engage with the wind farm as its own destination or as an auxiliary attraction to other recreationist or tourist activities. Some tourists and recreationalists are interested in seeing the wind farm up close or at a convenient vantage point, learning about its features, or taking advantage of the perceived benefits of fishing near it. This finding is not unique to the BIWF: European offshore wind farms such as The Middelgrunden Offshore Wind Farm, Nysted Offshore Wind Farm, and Scroby Sands Wind Farm satisfy visitor interests by providing them with lectures, presentations, and boat tours (Albrecht et al. 2013).

3.4.7 Tourism and Recreation Marketing and Promotion

The BIWF provides the state, the wind farm developer, and private businesses with a unique opportunity for tourism and recreation marketing. Some recreation and tourism businesses already utilize the wind farm's status as an 'attractant' to promote their own products and services. In general, business was perceived to be good in the first year of operation for those that developed wind-farm related promotions for their products or services. However, many business owners are still trying to determine how best to address the wind farm in their marketing materials. Representatives of some tourism and recreation sectors feel that the state of Rhode Island has not fully realized the marketing opportunities provided by the wind farm. Other business owners are waiting to see if the wind farm will retain its value as an attractant over time before investing in new promotional materials.

3.4.8 Weighing the Costs and Benefits

URI's research team found that the recreation and tourism community often conceptualized the wind farm by weighing the project's costs and benefits over time. This informal individualized 'cost-benefit analysis' was considered in discussions of the wind farm's effect on tourism and recreation, as well as the wind farm's effect more broadly on the community and region. The long term effects of climate change, visual impacts, changes in electricity rates and reliability, access to broadband internet via the undersea power cable, and the economic opportunities associated with being the first offshore wind farm in the United States (i.e. tourists visits, manufacturing jobs, clout as an industry leader) were often considered in these informal cost-benefit analyses. Trade-offs related to clean energy, environmental ethics, fishing grounds, and the possibility of larger-scale wind farm developments were also common factors that were considered. This finding aligns with Pasual's (2004) description of individual fishermen weighing costs and benefits related to tourism in the Canary Islands.

4. Indicators

4.1 Overview

The final component of this two-year, mixed-methods study entailed the development of a suite of social indicators for use in understanding, measuring and monitoring the effects of the BIWF and other future offshore wind farms. This section of the report provides insight into the field of indicator development. It then details the methods by which these indicators were developed as well as the definitions, assumptions, and context shaping their development.

This is then followed by a detailed description of the 40 indicators themselves, which are organized into six categories, each introduced by an overarching question and description of why this category is important. Each of the 40 indicators is described and followed by an explanation of how the indicator is supported both by the literature and by the empirical data collected as part of this mixed-methods study. The indicator descriptions are then followed by guidance for on how to measure these indicators and how to select and apply them in different locations. Last, the report concludes with some recommendations for data that should begin being collected for places where offshore wind farms may be developed in the future, as the team found in the Rhode Island case that there is far too little appropriate recreation and tourism data available, and baseline data will strengthen indicator implementation or any assessment of the effects of a wind farm on recreation and tourism.

Fundamentally, these indicators were intended to be grounded in the team's empirical research on the BIWF, and relevant to the National Environmental Policy Act (NEPA) process. Further, as is detailed in the following sections, this final stage of our research was inherently integrative, participatory, and applied. First, the indicator development process involved integrating findings from the content analysis, participant observation, and focus group components of the study, and shaping indicators to address themes that emerged from our research. Second, this process was participatory, involving stakeholders and the project Advisory Committee, in the process of vetting and refining the indicators. The Advisory Committee was made up of federal and state regulators; members of the Block Island community; representatives from fishing, tourism, recreation, and offshore renewable industries; researchers; development professionals; and experts in indicators, and its role was to ensure the indicators were applicable both to the BIWF and to other offshore energy projects. Third, this process was applied. In preparation for and in response to feedback from the project Advisory Committee, the team prepared materials to ensure that the indicators could be clearly communicated to and used in a range of different settings. The following sections illustrate these aspects of the indicator development process.

4.2 Review of the Indicator Literature

Some scholars have proposed indicators for monitoring offshore wind energy facilities and related infrastructure (e.g. Shiau & Chuen-Yu, 2016). However, no such indicators or assessment framework have been developed to date based on empirical observations and experiences with U.S.-based offshore wind facilities. Further, contemporary public discourse about proposed U.S.

offshore wind energy projects often includes concern about tourism and recreation impacts, such as in the recent case of a proposed wind farm off the coast of Ocean City, Maryland (Collins, 2017; Fritz, 2017). Yet there is no existing framework, dataset, nor base of experience available to help stakeholders and decision-makers identify or measure such impacts. The indicator development process and suite of indicators described herein is intended to fill these gaps.

Indicators are parameters whose measurements provide insight into a given phenomenon. Put differently, an indicator is a reference tool that can be used to update status, measure change, or track trends of a phenomenon using measured data, modeled data, or an index. Indicators can advance scientific understanding, communicate, inform decision-making, or record progress toward management objectives (Kenney et al. 2016). Indicators can thus guide decision-makers, stakeholders, and researchers not only in measuring and evaluating management issues but in communicating and thinking about these issues. In recent years, social indicators have been used to assess marine issues including the vulnerability of fishing communities to regulatory and economic change (e.g. Colburn & Jepson, 2012), coastal communities' vulnerability to coastal hazards (e.g. Cutter et al., 2003), sustainability initiatives (Greene and Geisken 2013), and the performance of marine protected areas (MPA) (Heck et al. 2011, Himes 2007, Ojeda-Martinez et al. 2009) and marine plan policies (Marine Management Organization 2013).

Social indicators have also been used to assess the sustainability of energy technologies (Carrera & Mack, 2010; Vera et al. 2005), including fossil fuel development (Uhlmann et al. 2014), onshore wind farms (Polecon Research 2013), and offshore wind farms (Shiau & Chuen-Yu, 2016). Further, indicators have been developed to measure tourism within a sustainable development framework (Choi & Sirakaya, 2006), the quality of recreational experiences (Goossen and Langers 2000), and tourism and recreation around the Great Barrier Reef (Moscardo and Ormsby 2004). In their UNESCO guidance document on coastal management indicators, Belfiore et al. (2003) list coastal tourism and recreation indicators including but not limited to: importance of tourism to the economy; tourist arrivals; tourist frequency during peak periods; trends in the use of the coastal zone in relation to economic value; number of parking spaces and associated income; number of hotels and similar facilities (and/or bed spaces); number of recreational amenities and opportunities; and intensity of use of recreational activity (land- and water-based). These examples illustrate how social indicators can include quantitative metrics which may utilize existing datasets (e.g. employment or number of visitors), but can also include qualitative metrics which may require additional social data collection and analysis (e.g. social and cultural values and experience).

A broad range of methodological approaches have been used to develop social indicators within the context of energy infrastructure, tourism and recreation, and sustainable development planning (Reed et al. 2006; Genskow & Prokopy, 2009). Stakeholder input has been generally identified as an important input to indicator development in order to develop locally relevant indicators (Reed et al., 2006; Fraser et al., 2006). Methods such as content analysis (e.g. Jordan & Javernick-Will, 2013) and focus groups (Reed et al. 2006; Reed et al. 2008) have been used in separate cases to inform indicator development.

Reed et al. (2006) examined the literature on developing and applying sustainability indicators and identified two methodological paradigms: the expert-led, top-down approach, and the

community-based, bottom-up approach. Reed et al. (2006) then propose an adaptive learning process for indicator development integrating elements of both approaches, including community participation in addition to expert input. This project builds upon this process by using an iterative approach that allows for identification and continual refinement of social indicators through stakeholder input and through the suggestions and feedback of the project Advisory Committee (comprising both experts and stakeholders). In particular, this project placed specific emphasis on involving stakeholders and the Advisory Committee in the indicator development process in order to ensure that final indicator products are relevant, useful, and meaningful to the local community who may work with that community. This reflects the findings of Reed et al. (2006, p. 415) who found that "although [the identification of potential indicators] is often the domain of researchers and policy-makers, all relevant stakeholders must be included if locally relevant indicator lists are to be provided."

4.3 Methods

4.3.1 General Approach

URI's research team's indicator development approach built on Reed et al. (2006), which combined the expert-led, top-down approach with the participatory, stakeholder-driven approach. Expert-led components include the broad literature review and use of empirical data gathered by our team of social scientists who employed a range of methodological approaches (i.e., participant observation, focus groups, content analysis) to assess the effects of the BIWF on recreation and tourism. Participatory, stakeholder-driven components included the research focus groups (see Appendix V Focus Group Report), a subsequent round of stakeholder meetings described below, and the input of the project Advisory Committee.

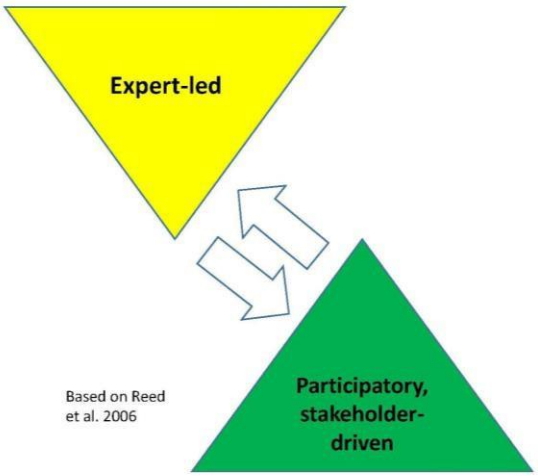


Figure 1. Indicator development approach informed by Reed et al. 2006

Further, URI's research team's overall approach was fundamentally grounded in the empirical research conducted by the project team. Empirical data collected through the content analysis, participant observation and focus groups was synthesized and used to identify a suite of indicators. The team viewed the use of these data as foundational to the indicator development process because these are the first such data collected from first offshore wind farm in the United States.

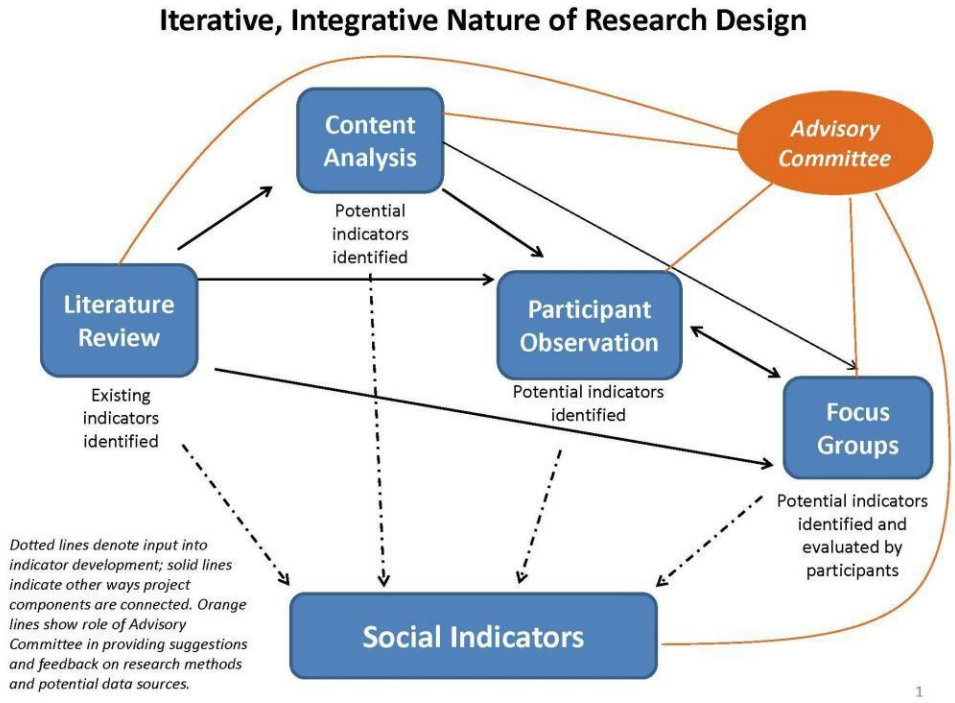


Figure 2. Iterative, Integrative Nature of Research Design

Finally, URI's research team sought to develop a suite of indicators that is relevant to the NEPA process and thus useful to BOEM and other regulatory agencies. Specifically, NEPA analyses must consider criteria including aesthetic, historic, cultural, economic, social, and health effects; who is affected, where, and when; the intensity and duration of effects; and the sensitivity or uniqueness of the affected resource or place (CEQ Regulations for Implementing the Procedural Provisions of NEPA, 2005).

4.3.2 Steps in the Indicator Development Process

Table 1. Steps in the indicator development process

1	Define vision and indicator selection criteria	Summer 2017
2	Review the literature to develop draft list of possible indicators and draft indicator framework	Summer 2017
3	Define terms, assumptions and context	Winter 2017-18

4	Review and synthesize empirical data to develop Draft Indicators 1.0	Winter 2017-18
5	Convene stakeholder meetings to review and vet Draft Indicators 1.0	Spring 2018
6	Draft Indicators 2.0, Indicator Sets Worksheets, and Guidance on Use	Spring 2018
7	Convene Advisory Committee meeting to review and vet Draft Indicators 2.0, Indicator Sets Worksheets, and Guidance on Use	Summer 2018
8	Identify Priority Indicators for Rhode Island and Other Locations	Summer 2018
9	Develop Final Products	Summer/Fall/ Winter 2018

Step 1. Develop draft vision and indicator selection criteria

First, employing elements of the approach used by Kenney et al. (2016), URI's research team began by developing a draft vision, or statement of purpose, for our indicators as well as a set of potential criteria for selecting final indicators. This draft vision and criteria were shaped by objectives stated in the original project proposal, review of the indicator literature, and subsequent discussions with BOEM. These were drafted early in the project but updated along the way as part of the team's integrative, iterative research process.

URI's research team's vision statement was: *A suite of social indicators that will enable stakeholders, decision-makers, and researchers to measure and understand the effects of a wind farm on recreation and tourism. This will include a generalized suite of indicators appropriate for possible use in other projects or regions. It will also include a set of priority indicators recommended for monitoring the Block Island Wind Farm.*

URI's research team then decided upon indicator selection criteria. Examples of indicator selection criteria which have been used in other settings include level (e.g. global, regional), importance, availability of information/data, cost effectiveness, ease of use, and linkage value (Belfiore et al. 2013) as well as scientifically defensible, useful, having a conceptual basis, nationally important, and encompassing lagging, coincident, and leading indicators (Kenney et al. 2016). The team evaluated these potential indicators given the project's goal on developing social indicators, to be based on qualitative empirical data collected at the United States' first offshore wind farm, and to be used in the very specific setting of an offshore wind farm sited in proximity to tourism and recreation-dependent communities and economies. Given this focus, the team decided upon the following criteria with the goal of applying them qualitatively in the indicator selection process.

- Is it measurable (either quantitatively or qualitatively)?
- Is it meaningful to stakeholders and the local community?

- Is it usable by decision-makers and researchers?
- Is it grounded in the team's Block Island-specific empirical research?
- Is it supported by the scientific and technical literature?
- Are data available or relatively simple to collect?

Importantly, although the team considered data availability as *part* of one criteria, it did not use this to eliminate potential indicators. This decision was made for two reasons. First, in conducting the Literature Review for this project (see Appendix I), the team identified a lack of Rhode Island tourism and recreation data that would be appropriate as a baseline for monitoring indicators. While some data are available, such data are collected at an inappropriate scale or not publicly available. Second, recreation and tourism data are context specific and their availability varies by location.

Step 2. Review the literature to develop draft list of possible indicators and indicator framework

URI's research team then conducted an extensive literature review which included studies from around the world on the impacts of offshore wind farms in a variety of contexts. This review also included studies of other types of energy infrastructure, studies of recreation and tourism, and other examples of indicators. This involved a qualitative review of nearly 100 journal articles and technical documents, and included those papers summarized in the project Literature Review (see Appendix I).

From this review we identified a draft list of 169 potential indicators as well as a potential framework for organization. The potential framework for organization comprised a simple matrix that organized indicators into an 'overarching' category or by recreation and tourism sector, and by whether the indicator sought to measure a tangible or intangible aspect of tourism and recreation. Potential indicators included both overarching and sector-specific indicators (e.g. *perceived community impact or benefit of project* and c*hanges in fishing or boating access around wind farm structures*); both tangible and intangible indicators (e.g. *number of visitors* and *sense of local aesthetic*); and both quantitative and qualitative indicators (e.g. *number of visitors to nearby iconic sightseeing location* and *quality of visitor experience at destination*). It is important to note that many of the potential indicators identified through this literature review had not previously been used as indicators, but rather were identified as potential impacts associated with an offshore wind farm or similar infrastructure. Further, those few which had been used as indicators were used in a very different context (unrelated to offshore wind or to tourism and recreation).

Step 3. Define terms, assumptions, and context

Next, URI's research team realized that the indicator development process needed to be shaped and focused by clearly articulated definitions of key terms, assumptions, and an explanation of the BIWF context. Key terms included tourism and recreation professionals, participants, and activities, as well as a definition of tourism and recreation impact. Following an initial review of

the academic and grey literature, it was determined that neither academic nor industry definitions for terms like tourism and recreation were appropriate for this project as they were neither sufficiently practical and applied, nor sufficiently nuanced to capture the unique context of this study. Thus, the team generated its own definitions. Please see section 4.4, "Definitions and Contextual Information," below for the outcome of this process.

Step 4. Review and synthesize empirical data to develop Draft Indicators 1.0

URI's research team then reviewed empirical data collected for this study to identify possible indicators. This process took place through a series of research team working sessions. The team began with an initial brainstorm of key findings and research themes that had emerged through the research. The team then worked back through findings from each of the empirical research phases, identifying possible indicators from the content analysis, participant observation, and focus groups. This information was then organized into a draft indicator matrix, incorporating elements of the initial indicator framework drafted through the literature review process (Step 2 above). The matrix included columns to indicate whether the potential indicator had been identified through the content analysis, participant observation, and/or focus group research.

URI's research team's goal was not to limit itself only to findings or themes that were common across the three phases of data collection. Rather, this process ensured that the team worked systematically back through all phases of the research to consider all possible types of indicators. Importantly, the team did not expect to find many indicators supported by all three phases of research, because each research method was fundamentally different. The content analysis focused only on general news media and public hearings for the time period of 2008 to 2017, which includes very little coverage of the wind farm during the time in which it was operational. Participant observation was primarily limited to observations and informational discussions of land- based activities, and thus provided somewhat more insight into coastal and marine tourism activities and communities than into recreational boating, fishing, and charter excursions. Finally, focus groups were the only method in which participants were specifically prompted to discuss how the wind farm has affected tourism and recreation. Thus, each method provided distinctly different insights into the effects of the wind farm on recreation and tourism, and thus contributed different insights into the indicator development process.

The potential indicators identified through the literature review (Step 2) were not used to limit the indicators identified through this process; rather, they were used to facilitate discussion, prompting researchers to consider whether a given topic or potential impact had emerged through their research and merited inclusion in this suite of indicators. The literature was then used to support the team's rationale for including each potential indicator (see final justifications in Section 4.5, Indicators, below). The outcome of this process was a suite of 40 indicators which were titled "Draft Indicators 1.0."

Step 5. Convene stakeholder meetings to review and vet Draft Indicators 1.0

URI's research team then convened a series of recreation and tourism stakeholder meetings for the purpose of vetting these draft indicators. Two meetings were convened at the URI Narragansett Bay Campus and one was held on Block Island. A final focus group with

representation from each of the five tourism and recreation sectors (recreational boating and sailing; recreational fishing; charter excursions; Block Island tourism; and mainland Rhode Island tourism) occurred in Fall 2017.

Participants reviewed the draft indicators along with a brief explanation of the question(s) each indicator was intended to address. (Please see Appendix VI for the meeting agenda and worksheet handout.) URI's research team then facilitated discussion about the indicators, inviting participants to provide input on: any topics or issues that were missing; any indicators that were unclear or confusing; and any indicators that seemed very important or very unimportant to them, and the research team noted suggestions of indicator revisions, clarifications, and new indicators.

Following the stakeholder meetings, the research team systematically reviewed and synthesized stakeholder feedback from the three meetings. These notes were organized by individual indicator, and then reviewed by the research team to narrow down to specific revisions to consider for the next stage in indicator development.

Step 6. Draft Indicators 2.0, Indicator Sets Worksheets, and Guidance on Use

Next, URI's research team developed Draft Indicators 2.0 as well as two new draft documents: "Indicator Sets" and "Guidance on Use" worksheets. The research team made minor revisions to the original 40 indicators to incorporate stakeholder feedback (see Step 5 above) resulting in adjustments to existing indicators as well as the incorporation of new indicators. Revisions included folding together some very similar indicators and writing simple explanations of what each indicator is intended to measure. Revisions also included changes to the indicator matrix, such as grouping indicators under simplified indicator categories which were accompanied by explanations of why each indicator category is important and what questions it is intended to answer.

At this stage, the team also drafted documents which were designed to simplify indicator presentation and communication and to prepare for indicators' use. First, a series of "Indicator Sets" worksheets were designed. Each worksheet included a basic explanation of the indicator category, including a statement of why it is important and the questions it is intended to answer. Each also includes a list of indicators, which are presented as options for measuring this particular category, along with a brief explanation of how each indicator could be measured. Last, the team wrote a draft guidance for using the indicators (section 4.6 in this document) to assist in selecting from among the suite of indicators a priority list for use at their particular location.

Step 7. Convene Advisory Committee meeting to review and vet Draft Indicators 2.0, Indicator Sets Worksheets, and Guidance for Use

Next, URI's research team convened a final Advisory Committee meeting for the purpose of vetting these semi-final products - Draft Indicators 2.0, Indicator Sets Worksheets, and a draft instructional document. Participants included a subset of the full Advisory Committee representing managers, social and natural scientists, recreation and tourism stakeholders, the

offshore wind industry, scholars with expertise in indicator development, and representatives from BOEM. The Advisory Committee was given a brief presentation on the indicator development process and was introduced to the draft products, with a particular focus on Draft Indicators 2.0 and Indicator Sets Worksheets. The team then facilitated a discussion, focusing on the Indicator Sets Worksheets, walking through a variety of scenarios to ensure that the suite of indicators meaningfully captured potential topics and issues of concern to each tourism and recreation sector.

Following this meeting, URI's research team reviewed and synthesized notes to consider for the final step of indicator refinement.

Step 8. Identify Subset Indicators for the BIWF and Other Locations

The URI research team selected a subset of indicators recommended for monitoring the BIWF. Criteria for selection was partially derived from the indicator development process. For example, the usability of these indicators for government agencies, recreation and tourism associations, other stakeholder organizations, and researchers in southern Rhode Island were important considerations for selection. The anticipated financial/time commitments of measuring certain indicators also helped to define their usability for evaluating the BIWF. Finally, the URI research team considered indicators that were most appropriate with consideration to the size and scale of the wind farm.

Step 9. Develop Final Products

To finalize indicator products, URI's research team made revisions to Draft Indicators 2.0 and the Indicator Sets worksheets to incorporate feedback from the Advisory Committee. These final products are "Draft Indicators 3.0," "Final Indicator Sets Worksheets" (see Appendix VII) and Section 4.5, "The Suite of Indicators," a detailed explanation of each indicator.

4.4. Definitions and the Contextual Information Shaping the Indicator Development Process

4.4.1 Defining Key Terms

URI's research team's review of the literature indicates that it is difficult to define, as well as to distinguish between, recreation and tourism (Please see section 2, "Summary of the Literature" and Appendix I, "Final Literature Review Report" for more detail). Indeed, the distinction between recreation and tourism is arguably quite blurry, especially in a region like coastal Rhode Island whose communities, economies, and culture are intrinsically shaped by coastal and marine recreation and tourism. That said, we have drafted the following working definitions for our use in this study:

1. Affected Population

***a. Recreationalists*:** Those who participate in a leisure or sports activity for pleasure, not for income or professional purposes. These participants can but do not need to spend money through their recreation activities. Many recreationalists also work as recreation professionals. Many, but

not all, recreationalists are also Rhode Island residents and were or are observers of or participants in the BIWF planning, permitting, and construction process, and therefore may have a longstanding relationship to the project or region. This can include full-time and seasonal Rhode Island residents. Depending on the context, recreationalists can in some cases be considered tourists.

b. Tourists: Those who engage in what the local community considers a tourism activity and/or a part of the tourism economy; this is context-specific. Tourists typically spend some amount of money and contribute to the community's tourism economy. For the purposes of our study we are not limiting the definition of tourism by distance traveled or time spent at a destination, as is done in some other contexts. Importantly, our tourism definition *does not exclude* Rhode Island residents, and it *includes* seasonal residents (those whose primary residence is elsewhere). Tourists can participate in recreational activities, but not all recreationalists are tourists.

***c. Recreational Professionals*:** Those who work in or operate businesses providing services to recreationalists (includes fishing charter boat captains, fishing tackle stores, dive shop owners, marinas, paid yacht racing organizers, etc.). Many, but not all, recreation professionals are also Rhode Island residents and were or are observers of or participants in the BIWF planning, permitting, and construction process, and therefore may have a longstanding relationship to the project or region. This can include full-time and seasonal residents. Others may reside outside of Rhode Island.

d. Tourism Professionals: Those who work in the tourism industry, whether full-time or part-time, or who operate tourism businesses. Examples include hotel or restaurant owners or staff, taxi drivers in tourist destinations, land- or boat-based tour operators, and professionals with tourism councils and chambers of commerce. Many, but not all, professionals are also Rhode Island residents - Block Island or the mainland - and were or are observers of or participants in the BIWF planning, permitting, and construction process, and therefore may have a longstanding relationship to the project or region. This can include full-time and seasonal residents. Others may reside outside of Rhode Island.

2. Affected Activities

***a. Marine Recreation and Tourism Activities and Businesses*:** Our study pays particular attention to the boat-based or "marine" recreational sectors of recreational boating; recreational angling; and charter excursions. *Recreational boating* includes boating or sailing aboard private sail or power vessels, for any length of time or distance, whether independently or as part of an organized event (such as a yacht race or multi-vessel cruise). *Recreational angling* includes fishing from shore or from a boat, whether a private boat or a charter or party boat (including paying passengers). The types of recreational fishing that may take place from aboard one of these boats may include rod-and-reel fishing, spearfishing, and other methods. *Charter excursions* includes for-hire boats or aircraft, in this case party boats, charter boats and helicopters. Participants in these charter activities include recreational anglers and tourists. Professionals running these activities include professional charter boat captains and helicopter pilots.

b. Coastal Recreation and Tourism Activities and Businesses: Coastal recreation and tourism

activities included in this study are land-based, or take place predominantly in the inshore environment, and take place from Block Island or from the south coast of Rhode Island. Coastal recreation activities include but are not limited to beach-going; surfing; use of small craft like kayaks, canoes, and stand-up paddle boards; bicycling; hiking, wildlife viewing, fishing from shore, and related nature tourism; visits to historic or scenic sightseeing destinations; and taxi tours.

Our study also includes activities and supporting businesses typically associated with tourism on Block Island or the mainland. *Block Island land-based tourism* activities take place on the island and include but are not limited to use of hotels, inns, and seasonal rentals; and patronage of tourism-related businesses ranging from restaurants, bars and retail shops, to taxis and ferries, to tourism visitor centers. *Mainland land-based tourism activities* include this same range of activities but focus on Rhode Island's south coast communities from Westerly/Watch Hill to the west to Little Compton in the east.

3. Other Definitions and Assumptions

a. Wind Farm: In this study, we are focused on a wind energy system built in a marine environment, typically referred to as an *offshore wind farm*. The most visible portion of a wind farm are the turbines, which include a tower, the nacelle, and the blades. However, the wind farm is an integrated infrastructure of the turbines, the foundations that anchor the turbines to the seafloor, undersea cables which interconnect the turbines and transmit electricity to the shore, and substations that transform voltage for transmission or distribution. While much of this study focused on the effects of the turbines and foundations, it also considers impacts caused by the undersea cables and onshore substations. Note that the cables used to transmit electricity can be bundled with other infrastructure--in this case, fiber optic cables for delivery of high-speed internet from the mainland to the island.

***b. Overlap between sectors*:** Categories outlined here are not mutually exclusive. For example, recreational anglers fishing from their own boats and charter boat captains running fishing trips for profit are all fishermen, in many cases pursuing the same species with the same gear types. Additionally, many individuals participate in multiple types of recreation, whether as private citizens or as professionals in multiple sectors.

c. Recreation and tourists and professionals are, in many cases, Rhode Island citizens too: Recreation and tourists and professionals who are also Rhode Island (or Block Island) residents must be treated as such. For example, a Block Island tourist could be a coastal Rhode Island resident, and a Block Island tourism professional may also be a Block Island or Rhode Island resident. These individuals cannot be expected to separate their views and experiences as citizens from their leisure or professional activities, and their citizen views of and experiences with the wind farm planning, permitting and construction process and outcomes may affect their perception of impacts to recreation and tourism.

d. Affected population*:* Recreation and tourists and professionals who are full-time and seasonal residents are of special importance as they are members of the local community and therefore part of the affected population to be considered as part of a NEPA analysis. NEPA requires

consideration of the cultural, economic and social, impacts of a project as well as both direct and indirect effects of a project, including on land use, population density or growth rate (40 CFR 1500-1508). Local recreation and tourists and professionals may be affected because their livelihoods and identities depend on robust tourism and/or recreation activities.

e. Definition of Impacts: Based on these definitions, we therefore assume that "impacts of the wind farm on recreation and tourism" includes impacts on recreation and tourists AND professionals, as well as recreation and tourism activities, within these sectors. It may also include - as a form of secondary or indirect social impact - the ways in which recreation and tourism professionals and participants who are also Rhode Island, and especially Block Island, residents perceive the broader wind farm planning, permitting and construction process and outcome.

4.4.2 Defining the Regional Context

1. Block Island and Southern Rhode Island

a. Coastal and marine recreation and tourism is foundational to Rhode Island's economy, social and cultural fabric, and quality of life. This is particularly the case on Block Island (the town of New Shoreham) and in Rhode Island south-facing coastal communities such as Newport (Other south-facing Rhode Island towns are Westerly, Charlestown, South Kingstown, Narragansett, Jamestown, Middletown and Little Compton), where the seasonal tourist season is a defining characteristic of coastal life. In the summer months, the culture of the coastal region is dominated by coastal tourism and recreation related traffic, heavy beach use, recreational fishing and boating, sailing, seasonal business and employment for all ages, and an expansive summer home rental market. In sum, coastal RI is a good example of a classic seasonally dependent, tourism-based society in which visitors and residents participate in a host of recreational activities together at specific times of the year.

b. Block Island is unique both as an island tourism destination and as a coastal community adjacent to a wind farm. The island's distinct dependence on tourism, marine activities, and reputation for natural landscapes make it a hotspot of local-level sensitivity to wind facility development (ICF 2012). The island's natural character appeals to many tourists: Over 40% of Block Island is preserved as open space in perpetuity, and the undeveloped sandy beaches, high cliffs, and coastal wetlands make up the island's characteristic landscape (ICF 2012).

Tourism is essential to Block Island's local economy. Approximately 32% of businesses on the island are solely dedicated to leisure and hospitality, and approximately 69% of all houses are for seasonal, recreational, or occasional use. Direct and indirect tourism expenditures on the island are worth over $259 million and employ over 2100 workers (ICF 2012).

Prior to the completion of the wind farm project, Block Island produced its own electricity via diesel generators. These generators used nearly one million gallons of diesel fuel annually to provide electricity to the island. As electricity prices were tied to diesel costs, customers on the island had difficulty projecting future utility costs (Block Island Power Company 2017).

c. Marine recreation goes hand in hand with coastal tourism: tourists from throughout the region travel to Rhode Island to engage in recreational boating, fishing, and wildlife viewing. These activities are key contributors to the state's economy: in 2013, Rhode Island's recreational fisheries supported over 2,500 jobs, over $226 million in sales and $102 million in income (NOAA 2013); and in in 2012, the Rhode Island marine trades businesses that supports the state's recreational boating and yacht-racing industries supported 14,700 jobs, $2.6 billion in sales, and $598 million in wages (Planning Decisions 2014).

2. Comparison to Other Locations

Block Island and the Block Island Wind Farm are unique*:* The study team characterizes the BIWF as a "boutique wind farm" in that it consists of only 5 turbines, evenly spaced off of Block Island, parallel to the southern shore, in a placement within state waters that is readily accessible by boat and visible from the southern shore of the island. Moreover, prior to operation of the wind farm, Block Island generated its own electricity via diesel generators and was not connected to the mainland grid. Thus the project with its transmission cable to the mainland provided benefits, such as stable electricity production, cleaner and quieter electricity generation, and forecasted lower power prices.

The BIWF may become unique in the region because of its compact scale, accessibility, and symmetry, and the fact that the wind farm is potentially becoming part of the collection of symbols used to brand the island and to solidify the island's identity as a distinct location within the state. The potential for the community to become the caretakers of a potent regional icon contributes to the unique "sense of ownership" of the wind farm that some Block Islanders experience. Conversely, some seasonal residents and others still experience the wind farm's proximity and accessibility negatively, viewing it as an unwelcome change to the land and seascape and the island's character. Again, the potential for the community to embrace the BIWF as a symbol may be unique to Block Island and the wind farm's "first in the nation" status.

Comparability*:* Despite Block Island's unique attributes, Rhode Island's recreation and tourism landscape is comparable to that of many other locations both throughout New England and the broader Northeast and mid-Atlantic regions. There are a number of seasonally dependent coastal tourism communities and economies throughout New England, such as Cape Cod and the Islands, MA and Bar Harbor, ME, that may be more nationally recognized than coastal RI. In the mid-Atlantic, comparable destinations include the Hamptons on the eastern end of Long Island, NY; Cape May, NJ; and Ocean City, MD. Outside of this region, many other parts of the US can also be defined in part by their coastal tourism economies; examples include the Florida Keys (and much of South Florida in general), the Gulf coast, and coastal destinations in Southern California. However, New England's coastal tourism economy is particularly seasonal, experiencing extreme patterns that are not shared in warmer regions.

Island vs. mainland*:* URI's research team has found that the impact and experience of the BIWF is distinctly different when compared between Block Island, coastal Rhode Island (the mainland), and on-water activities. From the mainland (16 nautical miles), the wind farm appears to be much smaller, more indistinct, and is often times difficult or impossible to see in overcast or hazy weather conditions - skies around Block Island are only clear (0-30% cloud cover) for about 27% of the year. While mainland boaters and recreational anglers are able to access the wind farm

through their on-water activities, coastal tourists and recreationalists remain largely unaffected in terms of their coastal activities and business operations, and the impacts of the wind farm have less to do with direct engagement with or ownership of the turbines than with more indirect sentiments or perceptions of the role of the wind farm in the regional economy and ecology. URI's research team hypothesizes that the experience of mainland RI will be more similar to the majority of future wind farm developments in the coastal U.S., depending on their location and scale, than the Block Island experience. However, the team also hypothesizes that the Block Island experience is a magnified version of the impacts and opportunities associated with siting a wind farm adjacent to a tourism and recreation-dependent coastal community, and thus still provides valuable insights that can be applied to other locations.

For these reasons, these indicators are derived from the unique context of the BIWF and its setting, but include variables which may be applied to comparable locations in New England and other parts of the country characterized by similar coastal recreation and tourism landscapes. We will also provide a subset of indicators for assessing tourism and recreation impacts of the BIWF, given its unique characteristics.

4.5 The Suite of Indicators

4.5.1 Overview

1. Caveats

Presented below are the 40 social indicators identified through the process outlined above. These represent a suite of indicators, all of which are applicable to Block Island and southern Rhode Island, and potentially to other future offshore wind farm locations. Evaluators using the indicators may choose from among this range of options a list of priority indicators to monitor at a particular location. Upon selecting priority indicators, evaluators must then develop a plan for measuring those indicators given the local context and availability of local data. For more information, see "Guidance for Use" below.

The below descriptions include discussion of the ways in which URI's research team's empirical research justifies inclusion of each indicator. Each indicator is supported by at least one, but not necessarily all three, research components (content analysis, participant observation and focus groups).

While the indicators presented herein are social indicators - in that they measure social impacts - not all indicators may be measured by social data. For example, research revealed that recreational anglers and wildlife viewers are very concerned with the abundance and distribution of the fish, marine mammal and bird species that shape their recreational experiences. Thus, changes in measurable biological data (e.g. fish or wildlife abundance) as well as changes in perceived abundance may correspond to changing recreationist and tourism experiences. Similarly, other social indicators may potentially be measured by economic data (e.g. electricity rates) in addition to social data.

Importantly, indicator selection and measurement are case- and context-specific. Future offshore

wind farms will vary in size, distance from shore, and proximity to tourism and recreation-dependent communities and economies. Those communities may differ from Block Island/southern Rhode Island and from each other in terms of length of season and types of tourism and recreation activities and experiences. Further, data availability is context-specific. As stated above, recreation and tourism data availability varies by location. As evidenced in Rhode Island, such data - if collected at all - are collected at the state or local level, by universities, or by private businesses or associations (e.g. chambers of commerce). Further, the data that are available may not be collected at a scale that would be appropriate for use in this context.

For these reasons, indicators are presented in a generalized form accompanied by general examples of how to measure each indicator. This project does not recommend specific indicators for use in other locations, nor does it prescribe detailed instructions for how to measure each indicator, as this would limit the indicators' transferability to other settings. For more information, see "Guidance for Use" below.

2. Description of Indicator Framework and Associated Appendixes

The 40 indicators are organized into six categories (recreational boating/sailing; recreational fishing; boat and aircraft charters; coastal and marine tourism; tourism and recreation-dependent communities and economies; and visual effects). Each category, or "Indicator Set," is introduced by an overarching question and description of why this category is important. Each of the 40 indicators is then accompanied by a description of what it is; examples of how it can be measured; and a justification for inclusion of this indicator based on both the literature and URI's research team's findings from the content analysis, participant observation and focus groups. This information is provided in the narrative text below.

The indicators described below are also presented as a set of Indicator Sets Worksheets (see Appendix VII). Both documents also organize the indicators by category, and include the indicator question and explanation of why that category is important. These documents also include a description of each indicator as well as a separate column with additional examples of how each can be measured.

The Indicator Sets Worksheets are designed for the purposes of indicator communication and are intended for use in their indicator selection process. See further discussion below in Guidance for Use.

4.5.2 Considerations for Planning

Key Question: What should be considered when planning to develop and implement an offshore wind farm?

Why is this important? Fishing charter operators, recreational fishermen, and other charter excursions are economic drivers for coastal dependent tourism communities. The construction and operation of an offshore wind farm at too great a distance may inhibit the potential economic benefits to their business due to practicality or cost-effectiveness. Additionally, the wind farm's visibility from tourism and recreation destinations, locations, and activity areas may affect

individuals' choices of whether or how frequently to visit these sites and engage in related activities, potentially having positive, negative or neutral effects on the recreation and tourism sector.

1. DISTANCE FROM PORTS/HARBORS TO WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The effects of a wind farm on fishing are related to its distance from ports and harbors both for fishing charter operators and private anglers.	Threshold based on average charter boat speed; could also involve fuel costs/fuel efficiency.	Post (one-time measurement)	Quantitative

The effects of a wind farm on fishing are related to its distance from ports and harbors. Fishing charter operators or private anglers may not experience potential benefits to fishing or to their business if the wind farm is too far to travel from ports/harbors than is practical or cost-effective. A metric for this indicator can be a threshold calculated using a one-time measurement of the distance considered too far to travel using average charter and fishing boat speeds, fuel costs, and fuel efficiency. This metric will be a one-time, quantitative measurement of the threshold distance after the plan for the wind farm is developed. Focus group participants identified this indicator.

Research has shown that the ability to reach offshore sites "in an acceptable time and with reasonable effort" can influence an offshore wind farm's usability to stakeholders (Albrecht et al. 2013, p. 43). Furthermore, both Hiett and Milon (2002) and Brody et al. (2006) identified the distance from boat launch sites or marinas to offshore structures as possible indicators of an offshore facility's recreational usage. Similarly, Goossen and Langers (2000) found that distance from home to a boating area (less than approximately 12.5 miles) was an indicator of a quality recreational boating experience. Gordon (1993)'s survey of marine angler preferences for offshore energy structures also recognized proximity to shore as a consideration of fishing site selection.

Findings from the focus groups highlight the importance of the distance from ports and harbors to the wind farm. Research revealed that at 16 nautical miles from the mainland shore, many mainland charter boat captains consider the BIWF too far for running a dedicated charter given time and fuel costs. Additionally, charter excursion focus group participants suggested that wind farms further offshore may not be destinations due to fuel cost and vessel wear and tear.
The high boat traffic by the BIWF suggests that its location within three miles of the island makes it easily accessible to fishermen and charter operators.

*2. DISTANCE FROM PORTS/HARBORS OR AIRPORTS TO WIND FARM**

**Note that this is very similar to the indicator presented above, but is presented separately to emphasize its relevance to non-fishing related charters*

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The effects of a wind farm on charters are related to its distance from ports, harbors and airports.	Threshold based on average charter boat speed; could also involve fuel costs/fuel efficiency.	Post (one-time measurement)	Quantitative

The effects of a wind farm on charters are related to its distance from ports, harbors and airports. Charter operators may not experience potential benefits to charter businesses if the wind farm is too far to travel from these locations than is practical or cost-effective for a charter trip. A metric for this indicator can be a threshold calculated using a one-time measurement of the distance considered too far to travel using average boat and aircraft speeds, fuel costs, and fuel efficiency. This metric will be a one-time, quantitative measurement of the threshold distance after the plan for the wind farm has been developed. Focus group participants identified this indicator.

The ability to reach offshore sites "in an acceptable time and with reasonable effort" can influence an offshore wind farm's usability to stakeholders (Albrecht et al. 2013). Furthermore, both Hiett and Milon (2002) and Brody et al. (2006) identified the distance from boat launch sites or marinas to offshore structures as possible indicators of an offshore facility's recreational usage. Additionally, Goossen and Langers (2002) found that short distances between home and a boating area (no more than approximately 12.5 miles) is an important indicator for measuring the quality of a boat recreation experience.

Findings from this study highlight the importance of considering the distance from ports, harbors and airports to the wind farm. At 16 nautical miles from shore, many charter captains who participated in the focus groups reported that the BIWF is too far for running a dedicated charter given time and fuel costs. Further, they reported that wind farms further offshore will not be destinations due to fuel cost and vessel wear and tear. The high boat and aircraft traffic by the wind farm suggests that its location within three miles of Block Island is not a deterrent, but this raises the question of how charter boat and aircraft charter operators may consider wind farms built further offshore as destinations for their trips.

3. VIEW FROM TOURISM AND RECREATION DESTINATIONS, LOCATIONS AND ACTIVITY AREAS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The sight of the wind farm may affect tourists and recreationalists' choices of where to go and what to see. The wind farm's visibility from tourism and recreation destinations, locations, and activity areas may affect individuals' choices of whether or how frequently to visit these sites and engage in related activities.	Number of sites/activity areas from which turbines are visible; number of days visible in a given season; distance of wind farm (WF) from locations and activity areas; visibility in different weather; light characteristics at night	Post (one-time measurement)	Quantitative or Qualitative

The sight of the wind farm may affect tourists and recreationalists' choices of where to go and what to see. The wind farm's visibility from tourism and recreation destinations, locations, and activity areas may affect individuals' choices of whether or how frequently to visit these sites and engage in related activities. Importantly, the wind farm's visibility from a given location is not an impact or benefit in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view. This indicator is best used in combination with others that directly measure individuals' reactions to the wind farm and/or tourism and

recreation choices.

Quantitative metrics for this indicator can be the number of: 1. sites/activity areas from which turbines are visible; 2. days in which the turbines are visible in a given season; and/or 3. distance of the wind farm from sites/activity areas. Qualitative metrics for this indicator can be turbine visibility in different weather and/or light characteristics at night. This metric will be a one-time, quantitative or qualitative measurement after the wind farm is developed. This indicator was identified by content analysis, participant observation and by focus group participants.

Borger et al. (2015)'s valuation of offshore wind impacts considers turbine height and visibility as a primary variable for assessing visual impacts. In a similar context, Lutzeyer et al. (2017) examines the impact of day and night visibility while surveying stakeholders in potential wind farm development areas. Nassauer and Benner (1984) also supports the notion that the visual quality of offshore energy facilities is highly related to stakeholder acceptance of offshore structures. In writing about recreational fishing in particular, Train (1998) found that aesthetics is an important factor that can control the site choices of anglers. Finally, Dalton (2013) found that Rhode Island boaters preferred settings with less human influence and more natural features, noting that scenic value did not depend on the complete absence of human influence.

Findings from this study reveal that the sight of a wind farm can affect tourism and recreationalists. This was an overarching theme throughout focus group research, in which participants provided various perspectives about how the visual elements of the wind farm had the potential to enhance, diminish, or not affect visitor experiences. Participant observation research also found that the wind farm's visual prominence in certain tourism and/or recreation areas affects visitors' experiences. In addition to these findings, content analysis research generally identified turbine visibility and aesthetic impacts as concerns about the wind farm prior to its construction.

4.5.3 Recreational Boating/Sailing

Indicator Question: How is the wind farm affecting recreational boating and sailing activities and participants' experiences?

Why Is This Important? Recreational boating and sailing is economically, socially, and culturally important to many coastal tourism-dependent communities. The construction and operation of an offshore wind farm may disrupt or enhance these activities due to its physical location, may positively or negatively affect boaters' recreation experiences, or may have no impacts. In Rhode Island, stakeholder input and social science research confirmed that a wind farm may have a range of effects on recreational boating and sailing.

4. DIVES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The wind farm may positively or negatively affect recreational diving access or the quality of diving in that area, or it may become a popular new diving destination.	Number and/or type and/or quality of dive trips (e.g. spearfishing, general recreation)	Longitudinal (before/ after)	Quantitative or Qualitative

Recreational diving is a popular coastal activity that may take place at an offshore wind farm site. The wind farm may positively or negatively affect diving access or the quality of diving in that area, or it may become a popular new diving destination. There may also be no effect.

Metrics related to the number and type of dive trips (e.g. spearfishing, general recreation) in the area over time can quantitatively determine if there is a change in the number of tourists or recreationalists that are choosing to dive near and around the wind farm. Divers' perceptions of dive trips and quality of dive trips in the area over time can also qualitatively determine if there is a change. Focus group participants identified this indicator.

Previous BOEM research about coastal recreationalists (Voss et al. 2013; Hiett and Milon. 2002) considered dive communities to be key tourism practitioners in wind energy call areas. Studies have found that many recreational divers choose to dive artificial reef sites created by offshore energy facilities (Ditton et al. 2002). Additionally, Ojeda-Martínez et al. (2008) identified the potential use of several dive metrics (numbers of divers, number of diving clubs, income produced by dive activities) to evaluate changing stakeholder uses of offshore waters.

Research findings from this study underscored the importance of diving in the area. In particular, charter excursion and recreational fishermen focus group participants noted the new popularity of spearfishing diving activities around the turbines despite challenges presented by strong currents.

5. NAVIGATIONAL ACCESS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Recreational boaters and sailors rely on navigational access around the wind farm and cable route. Open access and wind farm placement could enhance boating and sailing, while area closures or navigation limitations could negatively affect these activities.	Presence/absence of boats in the area, acreage of closure, or length of closure; height limitations; anchoring limitations	Longitudinal (before/after)	Quantitative

Recreational boaters and sailors rely on navigational access around the wind farm and cable route. Open access and wind farm placement could enhance boating and sailing, while area closures or navigation limitations could negatively affect these activities. Alternatively, it may have no effect. Evaluating navigational access by considering the presence or absence of boats in the area, the acreage or length of a closure, height limitations (clearance under blade tip), or anchoring limitations (around the turbine base or along the cable route) provide insight into the wind farm's impact on boat-based recreation and tourism. Navigational access can be monitored quantitatively over time, beginning prior to construction of the wind farm to determine if there is a change. Focus group participants identified this indicator. This indicator is related to, but distinguished from, fishing access because fishing access relies on access to the benthos and the entire water column.

Case studies by Alexander et al. (2013) and Rudolph (2014) both identify the presence or absence of user access around wind turbines as a crucial impact to consider when evaluating offshore wind installations. Albrecht et al. (2013)'s study of European offshore wind farms also

surmises that use of ocean spaces for wind farms may pose accessibility problems for boat-based tourism due to restrictions on boat traffic in an area previously freely accessible. Additionally, Heck et al. (2011) identified "no access areas" as a performance indicator for evaluating the management of MPA; while an offshore wind farm is very different than an MPA, this provides an example of using this metric as an indicator.

Findings from this study highlight the importance of navigational access to boaters and sailors. Recreational and charter boat excursion focus group participants stressed that access was essential for their positive acceptance of the wind farm. In several cases, participants discussed how the ability to "get close" to the turbines enhanced recreation and tourism experiences (Focus Group Report section 3.3.2).

6. NAVIGATIONAL EFFECTS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Boating safety and convenience are important to boaters and sailors. The wind farm may cause safety concerns, or may cause boaters to detour from traditional routes. Wind farm location and charting could also enhance boating by functioning as additional navigational aids.	Number of marine incidents directly related to WF; location of WF along predominant boating routes; length of detour from these routes.	Longitudinal (before/after)	Quantitative or Qualitative

Boating safety and convenience are important to boaters and sailors. An offshore wind farm may cause safety concerns, or may cause boaters to detour from traditional routes. Wind farm location and charting could also enhance boating by functioning as additional navigational aids. There may also be no effect. Measuring the number of marine incidents related to the wind farm, the location of the wind farm along predominant boating routes, and the length of detour around the wind farm can indicate how the wind farm affects boating and sailing safety. Measuring changes in navigational routes quantitatively and qualitatively over time can assess the actual or perceived inconvenience to boaters and sailors of conducting their traditional recreational activities in the vicinity of the wind farm. Focus group participants identified this indicator.

Schulman and Rivera (2009) observed stakeholders expressing concern that offshore turbines would interfere with safe transit near an offshore wind facility. Albrecht et al. (2013) identified vessel safety and navigational convenience as a possible problem for boat tourism, but their study also cited examples in which transit through offshore wind farms did not negatively impact boat traffic. Additional studies by Firestone et al. (2009), Gee (2010), Alexander et al. (2013), Mackinson et al. (2006), Teisl et al. (2015), and Industrial Economics (2015) also discuss vessel collisions as a potential impact of offshore energy facilities.

Findings from this study illustrate the applicability of this indicator. Boating and sailing focus group participants noted that they experienced very little difficulty in navigating the wind farm during yachting and sailing events. However, charter operators identified risks associated with navigating wind and sea conditions immediately around the turbines. Some charter operators adjusted their fishing techniques to practice caution in the wind farm area.

7. VESSEL TRAFFIC

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The quantity and character of boating traffic can affect boaters' and sailors' recreational experience. The wind farm may result in an increase or decrease of traffic, or a change of the types of vessels.	Number and/or type, and/or density, of vessels.	Longitudinal (before/after)	Quantitative

The quantity and character of boating traffic can affect boaters' and sailors' recreational experience. The wind farm may result in an increase or decrease of traffic, or a change of the types of vessels in the area. There may also be no effect. Measuring vessel traffic quantitatively over time by number and type of vessel, and overall density of use may show changes in vessel traffic in the area following the installation of an offshore wind farm. This indicator was identified by participant observation and by focus group participants.

Prior research (Industrial Economics 2015) indicates that offshore energy structures can cause periodic changes to vessel traffic in proximity to these structures. Additionally, UK Marine Management Organization (2013) identifies tourism ship traffic as an indicator for evaluating tourism-related marine plan policies.

Findings from URI' study underscore the importance of considering vessel traffic in proximity to an offshore wind farm as a tourism and recreation indicator. Charter excursion focus group participants stated their concern about the observed increase in boat activity in the wind farm area. They reported that the turbines have drawn more boaters to that area, resulting in a positive feedback loop of boats attracting more boats.

4.5.4 Recreational/Charter Fishing

Indicator Question: How is the wind farm affecting fishing activity and the fishing experience for recreational anglers and charter operators?

Why is this Important? Recreational and charter boat fishing is economically, socially, and culturally important to many tourism-dependent coastal communities. The construction and operation of an offshore wind farm may affect fishing activities due to its location and effects on the ecosystem, and may affect anglers' fishing experience, either positively or negatively. In Rhode Island, stakeholder input and social science research confirmed that a wind farm can have a wide range of positive, negative, or neutral effects on recreational and charter fishing.

8. BOAT-BASED TOURIST AND RECREATION TRIPS OR BUSINESSES RELATED TO WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Existing fishing charter businesses may offer new wind farm-related trips or packages or purchase new vessels to accommodate more clients, or new businesses may open.	Number of new businesses, or business investment in new boats, or tours/trips/packages offered by existing businesses; number of participants on tours/trips/packages; or percent of business revenue based on wind farm-related business.	Longitudinal (after)	Quantitative

A wind farm may directly affect fishing charter businesses. Existing fishing charter businesses may offer new wind farm-related trips or packages or purchase new vessels to accommodate more clients, or new businesses may open, suggesting a new market for tourism activities. There may also be no increase or only a temporary increase in business. Quantitatively evaluating the number of new businesses, business investment in new boats, or tours/trips/packages offered by existing businesses over time following wind farm construction can provide insight into this. Additionally, quantitatively evaluating the number of participants on tours/trips/packages or the percent of business revenue based on wind farm-related business over time may also reveal these effects. Measurement should consider scale differences between businesses and should be longitudinal to account for possible short-term effects to these businesses. This indicator was identified by participant observation and by focus group participants.

Lilley et al. (2010)'s study on wind power installations and coastal tourism found that an offshore wind farm could support new tourist activities and services as a novelty and an attraction. In addition, Arlinghaus (2006) found that the "non catch aspects" of recreational fishing can influence the satisfaction of recreational anglers. This suggests that the experience of viewing an offshore wind farm could enhance fishing charter businesses.

Research findings from this study found evidence illustrating the importance of boat or aircraft based touristic experiences related to the wind farm. In an interview conducted as part of participant observation research, a charter boat owner stated that people were still requesting to be taken out to BIWF as late in the season as October (2017, the first full year the wind farm was in operation), and that if his numbers doubled following year one he would buy another boat. Charter boat operators who participated in the focus groups further supported this: some commented that the wind farm had enhanced their charter business endeavors.

9. VISITOR INTEREST IN SEEING WIND FARM BY BOAT

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Existing and new clients may ask to see the wind farm as part of a fishing trip, or may request a special wind farm fishing trip, which could result in more clients or an enhancement of the client experience.	Number of requests to charter boat captains or charter businesses; client perception of charter experience/quality of trip	Longitudinal (after)	Quantitative or Qualitative

A wind farm may indirectly affect recreational fishing charter or party boat businesses. Existing and new clients may ask to see the wind farm as part of a fishing trip, or may request a special wind farm fishing trip, which could result in more clients or an enhancement of the client experience. Alternatively, there may be no effect. Quantitatively measuring the number of requests to charter boat captains or charter businesses as well as qualitatively monitoring client perceptions of charter experiences and the quality of their trip over time, such as through surveys, provides insight into visitor demand to view the wind farm up close. This indicator was identified by participant observation and by focus group participants.

Lilley et al. (2010)'s study on wind power installations and coastal tourism found that an offshore wind farm could support new tourist activities and services as a novelty and an attraction. Albrecht et al. (2013) also explored this topic by evaluating other factors influencing wind farm tourism, such as the wind farm's proximity to land and the potential for educational trips. Additionally, in writing about recreational fishing in particular, Train (1998) found that the aesthetics of fishing sites is an important factor that can control angler site choices.

Findings from this study underscore the importance of tracking visitor interest in seeing an offshore wind farm by boat. Participant observation research revealed that there is interest in seeing the wind farm. Conversations observed between tourists as part of participant observation research revealed tourists' interest in the turbines' appearance, the project's history, and how the installation works. Charter boat focus group participants discussed how the wind farm has enhanced their business (i.e. fishing charter participants discussed how their clientele want to see the wind farm as part of their trip - it is another destination of interest to clients).

10. FISH ABUNDANCE AND DISTRIBUTION AROUND WIND FARM AND CABLE ROUTE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm and cable may have actual or perceived effects on the abundance and distribution of recreationally popular species. Turbine base design and materials function as an artificial reef. In contrast, it could deter or negatively affect populations of popular species. Anglers/captains may perceive changes in abundance/distribution which would affect their fishing experience.	Changes as measured by fish surveys, or attitudes toward this topic	Longitudinal (before/after)	Quantitative or Qualitative

A wind farm and cable may have actual or perceived effects on the abundance and distribution of recreationally popular species. Turbine base design and materials function as an artificial reef. This could positively impact fish abundance and distribution through aggregating fish and increasing productivity. In contrast, it could deter or negatively affect populations of popular species. Anglers/captains may perceive changes in abundance/distribution which would affect their fishing experience. There may also be no effect. This is a social indicator which may be evaluated with social and/or biological data. Quantitatively evaluating changes as measured by fish surveys or qualitatively measuring attitudes toward this topic over time may determine how the wind farm impacts recreationally important species. This indicator was identified by participant observation and by focus group participants.

Several fishing studies near offshore wind farms found that turbine structure influenced fish abundance and distribution in the area (Wilhelmsson et al. 2006; Leonhard et al. 2011; Bergstrom et al. 2013). The potential role of offshore wind facilities as artificial reef structures, influencing fish abundance and distribution, may influence how fishermen interact with constructed offshore facilities (Alexander et al. 2013; Fayram and de Risi 2007; Voss et al. 2013). Additionally, in writing about recreational fishing in particular, Train (1998) found that fish abundance is an important factor that can control the site choices of anglers.

Findings from this study reveal the importance of considering actual and perceived fish abundance and distribution around the wind farm and cable route insofar as they affect recreational fishermen and charter operators' experiences. Recreational fishermen focus group participants described their belief that the BIWF functioned as an artificial reef, providing "structure." This was corroborated by participant observation research, in which a charter boat captain reported that the BIWF is said to attract fish to the area.

11. FISH DIVERSITY AROUND WIND FARM AND CABLE ROUTE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm and cable may affect the diversity of recreationally popular species. The structure provided by the wind farm and cable acts as an artificial reef and may attract popular species not previously found in the area, or deter popular species. Anglers/captains may also perceive changes in diversity which would affect their fishing experience.	Changes as measured by fish surveys, or attitudes toward this topic	Longitudinal (before/after)	Quantitative or Qualitative

A wind farm and cable may affect the diversity of recreationally popular species. The structure provided by the wind farm and cable acts as an artificial reef and may attract popular species not previously found in the area, or deter popular species. Anglers/captains may also perceive changes in diversity which would affect their fishing experience. There may also be no change. This is a social indicator which may be evaluated with social and/or biological data. Quantitatively evaluating changes as measured by fish surveys, or qualitatively measuring attitudes toward this topic over time may determine how a wind farm influences recreational and charter boat fishing. Focus group participants identified this indicator.

Leonhard et al. (2011) and Bergstrom et al. (2013) conducted comprehensive before-and-after surveys of fish species composition in proximity to offshore turbines. Both studies found that fish distribution and species diversity changed close to the turbines, but Leonhard et al. (2011) notes that seasonal variation in species richness and abundance affected fish communities both in the wind farm area and the control area. In examining indicators of a quality recreational experience, Goossen and Langers (2000) identified access to many different types of fish as important to recreational fishermen.

Findings from this study support the inclusion of fish species diversity around the wind farm and cable route as an indicator to monitor effects on tourism and recreation.
Participant observation research revealed that some fishermen believe there are mahi-mahi out by the wind farm, which is unusual in this region, and explained that the fish like the shelter of

the wind farm, which is what attracts them. Recreational fishing focus group participants further supported this in their reports of unusual species sightings around the wind farm, including one report of seeing a hammerhead shark.

12. FISHING ACCESS AROUND WIND FARM AND CABLE ROUTE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Anglers and captains rely on access to prime fishing areas. Official or de facto short- or long-term access limitations would limit anglers' ability to experience the potential benefits of fishing the wind farm.	Presence/absence, or acreage of closure, or length of closure; anchoring limitations.	Longitudinal (before/after)	Quantitative or Qualitative

Recreational anglers and charter captains rely on access to prime fishing areas. Official or *de facto* short- or long-term access limitations would limit anglers' ability to experience the potential benefits of fishing the wind farm. Quantitatively measuring the presence/absence of access, the acreage or length of closure, and anchoring limitations and quantitatively measuring perceptions of access over time could determine how the wind farm impacts fishing access around the wind farm and cable route. This is distinguished from navigational access because fishing access relies on access to the benthos and the entire water column. Focus group participants identified this indicator.

Previous BOEM research identified “access for fishing activities” as a primary concern of ecotourism stakeholders in wind energy call areas (Voss et al. 2013). Additional wind farm-related studies corroborate the importance of fishing access to a wide variety of stakeholder communities (Acheson 2012; Alexander et al. 2013). Fishing access is also identified as an indicator of a quality recreational experience by Goossen and Langers (2000). Additionally, Heck et al. (2011) identify access to fishing grounds as an indicator of MPA performance; while a wind farm is very different than an MPA, this provides an example of using this metric as an indicator.

Findings from this study highlight the importance of monitoring fishing access around the wind farm and subsea cable route. Recreational fishing focus group participants stated that their positive attitude toward the BIWF is contingent on fishing access around the wind farm, suggesting that access limitations would have had a notable impact on anglers and charter captains.

13. FISHING ACTIVITY AND PRACTICES NEAR WIND FARM AND CABLE ROUTE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The wind farm may change fishing activity and practices that can be conducted in the area. Anglers and captains may change gear types or techniques to maneuver around the wind farm.	Presence/absence, and/or type, and/or density of fishing boats, gear and practices.	Longitudinal (before/after)	Quantitative or Qualitative

The wind farm may change fishing activity and practices that can be conducted in the area. Anglers and captains may change gear types or techniques to maneuver around the wind farm. These changes may negatively or positively affect anglers' and captains' fishing experience, or may have no effect. Collecting quantitative data related to the presence or absence of fishing

activities, gear types used, and/or density of fishing boats or gear as well as qualitatively collecting perceptional data related to these measures over time may reveal how offshore wind farms impact recreational and charter boat fishermen. Measurement also includes documenting previous use of wind farm area for fishing as well as type of fishing practices (e.g. drifting) in area. Focus group participants identified this indicator.

The impact of offshore wind turbines on fishing activity is a chief concern of coastal communities near wind farms (Firestone et al. 2008). Alexander et al. (2013) specifically notes that the presence of offshore wind turbines may impact both mobile and fixed-gear fishing practices. Additionally, BOEM assessments of recreational fishing activity in the Gulf of Mexico found that recreational fishing and dive trips often visited multiple offshore energy structures in the region (Hiett and Milon. 2002), suggesting that recreational fishermen in New England may be similarly drawn to offshore energy structures.

This study found evidence highlighting the potential effect of an offshore wind farm on recreational and charter boat fishing activity and practices in the wind farm area. Charter fishing focus group participants stated that some had to change their original drift fishing technique due to wind and sea conditions around the turbines. Other charter fishing focus group participants indicated that there is more spearfishing activity taking place around the turbines.

14. FISHING PRESSURE AROUND WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The wind farm may change recreational fishing effort around the wind farm. More anglers and charter operators may make more trips to fish around the wind farm. This change could negatively affect fish resources in the area or perceptions of the fishing experience.	Changes in fishing effort (to measure actual or perceived impacts on fishery resources at the site).	Longitudinal (before/after)	Quantitative or Qualitative

The wind farm may change recreational fishing effort around the wind farm. More anglers and charter operators may make more trips to fish around the wind farm. This change could negatively affect fish resources in the area or perceptions of the fishing experience, or it could have no effect. Evaluating changes in fishing effort - both actual with quantitative data and perceived impacts with qualitative data on fishery resources at the site over time - may assist in determining changes in fishing pressure in the wind farm area. This indicator was identified by participant observation and by focus group participants.

The attraction of non-resident and tourist recreational anglers to rich fishing grounds and offshore energy facilities can affect where anglers choose to fish and the pressure that they apply when they fish popular grounds (Gordon 1993; Ditton et al. 2002; Hunt 2005). Hiett and Milon (2002)'s economic evaluation of offshore energy facilities concludes that "crowdedness" may be a factor in recreational angler site selection (Hiett and Milon, 2002, p. 95). Ojeda-Martínez et al. (2008) identified several metrics for identifying fishing ground pressures as a means of evaluating changing stakeholder uses of offshore waters.

Findings from this study underscored the importance of considering changes in fishing pressure around a wind farm. Participant observation research revealed reports of an estimated 40-70

boats around the wind farm at one time. By contrast, recreational focus group participants stated "...if there were 25 boats there before, now when I go there, there are like sometimes 80 to 90 boats there...that added pressure is a concern" (Focus Group Report section 3.2.5). While these are estimates, together they suggest the idea that there may be possible increases in fishing pressure.

4.5.5 Boat and Aircraft Charters

Indicator Question: How is the wind farm affecting boat and aircraft charter businesses and the experience of their clients?

Why is this Important? Charter businesses offering sightseeing or pleasure cruises by boat or aircraft are common in many tourism-dependent coastal communities. The construction and operation of an offshore wind farm may affect charter business opportunities and the experiences of charter clients, either enhancing or diminishing business and clients' experiences. Alternatively, it may have no effects. In Rhode Island, stakeholder input and social science research demonstrated that a wind farm may have a range of effects on charter businesses and clients.

*15. BOAT OR AIRCRAFT TOURIST AND RECREATION TRIPS OR BUSINESSES RELATED TO WIND FARM**

**Note that this is very similar to an indicator presented earlier in the fishing section, but is presented separately to emphasize its relevance to non-fishing related charters*

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Existing charter businesses may offer new wind farm-related trips or packages or purchase new vessels or aircraft to accommodate more clients, or new businesses may open.	Number of new businesses, or business investment in new boats/aircraft, or tours/trips/packages offered by existing businesses; number of participants on tours/trips/packages; or percent of business revenue based on wind farm-related business.	Longitudinal (after)	Quantitative

A wind farm may directly affect boat or aircraft charter businesses such as helicopter trips or sightseeing boat trips. Existing charter businesses may offer new wind farm-related trips or packages or purchase new vessels or aircraft to accommodate more clients, or new businesses may open, thus suggesting that the wind farm is providing a market for new tourism activities. There may also be no increase or only a temporary increase in business. Quantitatively evaluating the number of new businesses, existing business investment in new boats or aircraft, wind-farm related tours, trips, and packages offered by existing boat operators, or percent of business revenue based on wind farm-related business over time can provide insight into the effect of a wind farm on charter operators. Measurement should consider scale differences between businesses and should be longitudinal to account for possible short-term effects to these

businesses. This indicator was identified by participant observation and by focus group participants.

Lilley et al. (2010)'s study of wind power installations and coastal tourism found that an offshore wind farm could support new tourist activities and services as a novelty and an attraction. In addition, Albrecht et al. (2013) identifies boat tours and sightseeing flights as some of many tourist experiences associated with existing offshore wind farms.

Research findings from this study illustrate the ways in which an offshore wind farm can affect boat or aircraft based tourist experiences. Several focus group charter boat operators described the wind farm as an enhancement to their business, and a charter operator interviewed through the participant observation phase of research reported receiving requests to be taken out to the BIWF as late in the season as October, and that he was considering buying another boat.

*16. VISITOR INTEREST IN SEEING WIND FARM BY BOAT OR AIRCRAFT**

**Note that this is very similar to an indicator presented earlier in the fishing section, but is presented separately to emphasize its relevance to non-fishing related charters*

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may indirectly affect boat or aircraft charter businesses. Existing and new clients may ask to see the wind farm as part of a trip, or may request a special wind farm trip which could result in more clients or an enhancement of the client experience.	Number of requests to boat or aviation tour operators, charter boat captains, charter businesses; client perception of charter experience or quality of trip	Longitudinal (after)	Quantitative or Qualitative

A wind farm may indirectly affect boat or aircraft charter businesses. Existing and new clients may ask to see the wind farm as part of a trip, or may request a special wind farm trip which could result in more clients or an enhancement of the client experience. Alternatively, there may be no effect. Quantitatively measuring the number of requests to boat or aviation tour operators, charter boat captains, or charter businesses, as well as qualitatively measuring client perceptions of charter experiences and the quality of their trip over time through surveys, may provide insight into visitor demand to view the wind farm up close. This indicator was identified by participant observation and by focus group participants.

Lilley et al. (2010)'s study on wind power installations and coastal tourism found that an offshore wind farm could support new tourist activities and services as a novelty and an attraction. Albrecht et al. (2013) also explored this topic by evaluating other factors influencing wind farm tourism, such as the wind farm's proximity to land and the potential for educational trips.

Findings from this study underscore the importance of tracking visitor interest in seeing an offshore wind farm by boat. Participant observation research revealed that there is interest in seeing the wind farm. Conversations observed between tourists as part of participant observation research revealed tourists' interest in the turbines' appearance, the project's history, and how the installation works. Charter boat focus group participants discussed how the wind farm has

enhanced their business (i.e. charter participants discussed how their clientele want to see the wind farm as part of their trip - it is another destination of interest to clients).

4.5.6 Coastal and Marine Tourism

Indicator Question: How is the wind farm affecting tourism businesses and tourists' experiences in adjacent coastal communities?

Why is this Important? Coastal and marine tourism is a critical component of many coastal economies. An offshore wind farm may affect tourism businesses and tourists' experience in adjacent coastal communities. It may affect tourists' choice of destination, the numbers of tourists visiting destinations, or tourists' choices of things to do, see, or purchase during their visit. Tourism businesses may expand or contract in response to these changes, and tourists' experiences may be enhanced or diminished. In Rhode Island, stakeholder input and social science research revealed that an offshore wind farm may have direct and indirect positive, negative, or neutral effects on tourism businesses and the tourist experience.

Note: Coastal/Marine Tourism indicators are divided into "Direct" and "Indirect" for the purposes of organization. Direct Indicators are those that reflect an observable change in the behavior of tourism and recreationalists or professionals/business. Indirect Indicators are those reflecting landscape or environmental characteristics or other wind farm-related trends which may influence tourism and recreation.

DIRECT INDICATORS

17. TOURIST INTEREST IN WIND FARM EDUCATIONAL, SCIENTIFIC, OR ENVIRONMENTAL INFORMATION

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may affect tourists' experiences and choices at their destination, particularly when the wind farm is visible or accessible from that destination. Tourists' interest in obtaining wind farm information may provide an indication of the extent to which the wind farm is influencing their tourism experiences.	Number of requests for educational, scientific, environmental or technical information about the wind farm in visitors' center or other venues.	Longitudinal (after)	Quantitative

A wind farm may affect tourists' experiences and choices at their destination, particularly when the wind farm is visible or accessible from that destination. Tourists' interest in obtaining wind farm information may provide an indication of the extent to which the wind farm is influencing their tourism experiences. The number or character of requests for wind farm-related educational, scientific or environmental information suggests interest and curiosity and thus may suggest potential tourism benefits, whereas the absence of requests may indicate no effect. Quantifying the number of requests for educational, scientific, environmental, or technical information about the wind farm in visitors' centers or other venues over time may provide insight into how the wind farm affects the tourism experience. Measurement should include consideration of context (i.e. availability of information which may prompt interest). This indicator was identified by participant observation and by focus group participants.

Studies from Brownlee et al. (2012), Albrecht et al. (2013), and Aitchison (2012) establish that visitors to destinations around offshore wind facilities have interest in attending an education center or educational programs related to the wind farm. Frantal and Urbankova (2017) identify this burgeoning public interest in energy infrastructure as "energy tourism" and briefly discuss the role of offshore wind in this context.

Research findings from this study illustrate that tourists are interested in wind farm- related educational, scientific or environmental information the wind farm. Participant observation research found that visitors at sites like Southeast Lighthouse on Block Island were interested in obtaining wind farm-related scientific information. There was also interest from visitors on the mainland, but less so than on Block Island. Individuals sought information on how the wind farm functions, especially when some turbines are not spinning. Block Island tourism focus group participants stated that visitors expressed interest in learning about the science and engineering of the wind farm.

18. TOURIST INTEREST IN VIEWING THE WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may affect tourists' choices of what to see or do at their destination, particularly when the wind farm is visible or accessible from that destination.	Number of requests to visitors' centers, tour operators, taxis, or other land-based tourism businesses.	Longitudinal (after)	Quantitative

A wind farm may affect tourists' choices of what to see or do at their destination, particularly when the wind farm is visible or accessible from that destination. Tourists may ask to see the wind farm as part of a tour, or may seek out sites from which the wind farms can be viewed, suggesting interest or curiosity. Tourists may also ask for locations from which the wind farm cannot be viewed, suggesting a negative effect on their experience. Alternatively, there may be no effect. Quantitatively measuring the number of requests toward visitor centers, tour operators, taxis, and other land-based tourism businesses to see the wind farm over time may provide insight into how the wind farm is affecting the tourism experience. Measurement should include consideration of context (i.e. availability of information which may prompt interest). This indicator was identified by participant observation and by focus group participants.

Aitchison (2012)'s study of wind farm impacts on tourism found that visitors exhibited "genuine enthusiasm" for seeing wind turbines in person (Aitchison, 2012, p.13). Research conducted by Albrecht et al. (2013) and Polecon Research (2013) further illustrate how visitor demand to see wind turbines can exist for both land-based and sea-based tours.

Findings from this study revealed that tourists express interest in seeing the wind farm as part of their visit. Participant observation found that visitors at the Block Island Visitor's Center were interested in seeing the wind farm as part of their visit, and that interest seemed to increase throughout the summer season. Participant observation research also revealed general interest in seeing the wind farm on the Block Island Ferry, charter fishing trips, charter Block Island boat tour, Block Island Ferry wind farm boat tour, and whale watching tours. Block Island recreation and tourism focus group participants also noted positive interest and curiosity at the Block Island

Visitors Center, stating that the wind farm has become a tourist destination within itself. Additionally, charter excursion focus group participants stated that the wind farm had enhanced many charter businesses (suggesting visitor interest in seeing the wind farm). Finally, focus group research revealed that the wind farm was an attractant for all sectors.

19. TOURISTS AT SITES IN VIEWSHED OF OR IN PROXIMITY TO THE WIND FARM, CABLE, AND RELATED INFRASTRUCTURE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may affect tourists' choices of what sites to visit at their destination, particularly when the wind farm is visible or accessible from that destination.	Number of visitors or perceptions of the tourist experience or quality of the trip.	Longitudinal (before/after)	Quantitative or Qualitative

A wind farm may affect tourists' choices of what sites to visit at their destination, particularly when the wind farm is visible or accessible from that destination. Tourist visitation may increase at sites within view of the wind farm, or perceptions of the tourist experience/quality of the visit may be enhanced, suggesting a potential tourism benefit, or alternatively visits may decrease or perceptions of the experience may be diminished at those sites, suggesting a potential tourism impact. Alternatively, the wind farm may have no effect on site visits. Quantitatively evaluating changes in the number of visitors to such sites before, during, and after turbine installation, or qualitatively measuring perceptions of the tourist experience or quality of the trip, may provide insight into how the wind farm affects the tourism experience. Focus group participants identified this indicator.

Teisl et al. (2015)'s study of Maine residents' perceived benefits and costs of offshore wind energy identifies the degradation of scenic views as a concern of communities near potential offshore wind sites. Additionally, Rand and Hoen (2017)'s synthesis of North American wind energy research identifies visual and landscape aspects as key explanatory variables used in a range of studies.

Findings from this study illustrate the importance of considering visitation at tourist sites in view of or near the wind farm and related infrastructure. Participant observation research revealed that visitors discussed and took pictures of the wind farm at iconic locations such as Southeast Lighthouse, Mohegan Bluffs, and Second Bluffs on Block Island. The Block Island tourism focus groups also reported interest from visitors at Southeast Lighthouse in the form of questions to lighthouse staff and docents.

20. TOURISTS AND RECREATIONALISTS AT BEACHES IN VIEWSHED OF OR IN PROXIMITY TO THE WIND FARM, CABLE, AND RELATED INFRASTRUCTURE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may affect tourists' choices of what beaches to visit at their destination, particularly when the wind farm and infrastructure is visible from or affects that destination.	Number of visitors.	Longitudinal (before/after)	Quantitative

A wind farm may affect tourists' choices of what beaches to visit at their destination, particularly when the wind farm and infrastructure is visible from or affects that destination. Visitors to beaches within view of or near the wind farm and its infrastructure may increase, suggesting a potential tourism benefit, or alternatively may decrease at those sites, suggesting a potential tourism impact. Alternatively, the wind farm may have no effect on beach visits. Quantitatively measuring changes in the number of visitors at project-facing beaches, or those near the wind farm over time can provide insight into the effects of offshore wind farms on visitor preferences. This indicator was identified by content analysis and by focus group participants.

The impact of offshore wind turbines on beach tourism and recreation has been the subject of several studies. Lilley et al. (2010), Landry et al. (2012) and Westerberg et al. (2013) conducted on-site surveys of beach-going stakeholders and assessed their response to hypothetical turbine installations. Similarly, Ladenburg (2010)'s evaluation of a coastal community's attitude toward existing turbines considered beach visitation and beach walking as important variables for analysis. The findings of these studies appropriately integrate into UK Marine Management Organization (2013)'s identification of tourists' opinion on water/beach quality as an indicator for evaluating tourism-related marine plan policies.

Research findings from this study illustrate the importance of considering the numbers of tourists and recreationalists on beaches facing or near the wind farm and related infrastructure. Results from the content analysis revealed that Narragansett residents voiced concerns about the turbines and cable disrupting beachgoers' routines. Others countered this argument, saying that the wind farm could be a draw to RI tourism and recreation destinations. Participant observation research revealed that visitors on East Matunuck, Salty Brine, and Roy Carpenter's Beach along the South Coast of Rhode Island noticed the wind farms, but were mostly indifferent. Mainland tourism and recreational fishing focus groups each reported only one complaint of the turbine lights at night, though this was based on a limited sample of participants.

21. WIND FARM-RELATED LAND-BASED TOURIST PROGRAMS AND TOURS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Businesses may offer new wind farm-related programs and tours, or may incorporate the wind farm into existing programs and tours. Alternatively, businesses may see no such expansion opportunities, or such opportunities may be temporary.	Number of new tours, trips, programs, or packages, and/or inclusion of wind farm on existing tours and packages, and/or number of participants in those experiences, or percent of business revenue based on wind farm-related business.	Longitudinal (after)	Quantitative

A wind farm may affect tourism businesses offering land-based programs, packages, and tours. Businesses may offer new wind farm-related programs and tours, or may incorporate the wind farm into existing programs and tours. Alternatively, businesses may see no such expansion opportunities, or such opportunities may be temporary. Quantifying the number of new tours, trips, programs, or packages and/or the inclusion of the wind farm on existing tours and packages over time may provide insight into this. Additionally, the number of participants on

tours/trips/packages or the percent of business revenue based on wind farm-related business over time may also reveal these effects quantitatively. Measurement should consider scale differences between businesses and should be longitudinal to account for possible short-term effects to these businesses. This indicator was identified by participant observation and by focus group participants.

Survey results reported by Atichison (2012) and Westerberg et al. (2013) indicate that there is sizable public interest in attending tours or programs related to offshore wind farms. Albrecht et al. (2013) reaffirms these survey results with several case studies of existing offshore wind farms and their application as tourist attractions. Additionally, Polecon Research (2013)'s analysis of wind farm impacts to tourism in New Hampshire provides anecdotal evidence that tours and programs already exist for several terrestrial wind farms.

Findings from this study revealed the potential effect of a wind farm on tourist programs or tours. Participant observation research found that Block Island taxi drivers discuss the wind farm on their island tours. Block Island recreation and tourism focus group participants also mentioned how taxi tours provide an opportunity for visitors to see and learn about the wind farm.

22. WIND FARM RELATED RETAIL PRODUCTS AND RETAIL SALES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Retailers may design and sell wind farm-related products as part of that tourism destination, suggesting a tourism benefit. Alternatively, retailers may make and/or sell no related products, indicating no benefit.	Number and/or variety of new products and/or sales of products or percent of business revenue based on wind farm-related business	Longitudinal (after)	Quantitative

A wind farm may affect the market for retail products developed and sold at tourism destinations. Retailers may design and sell wind farm-related products as part of that tourism destination, suggesting a tourism benefit. Alternatively, retailers may make and/or sell no related products, indicating no benefit. Quantitatively measuring the number or variety of wind farm-related products and their retail sales or percent of business revenue based on wind farm-related business over time can provide insight into the effect of the wind farm on tourism-dependent retail. This indicator was identified by participant observation.

Albrecht et al. (2013) suggests that restaurants and merchandising products related to offshore wind farms can supplement offshore wind farm attractions. In this way, wind turbine projects that are branded as "green tourism" may establish a place branding attached to communities in proximity to wind farm areas (Frantal and Kunc 2011). Prior BOEM research on offshore energy development identifies the retail sector as a particularly tourist-dependent economic sector (Eastern Research Group 2014). Retail products purchased by visitors often embody the experiences the visitor had while engaged in recreational or tourist activities (Gordon 1986). In this same context, retail products may also reflect the opinion of residents that are a part of this same recreation and tourism community (Williams and Lawson 2001).

Findings from this study underscores the importance of considering wind farm related retail products and sales. Participant observation research found that Block Island Water Street businesses have postcards, stickers, photographs, T-shirts, and sweatshirts that depict the BIWF in some way, some using the slogan "The Year of the Wind Farm" (Participant Observation report section 3.1.1). A Block Island gift shop owner stated that he sells wind farm T-shirts that he designed.

23. TOURIST DEMOGRAPHICS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may affect the demographics or tourism markets attracted to a tourism destination, especially if the wind farm is visible or accessible from that destination.	Changes in point of origin, reason for visit or activity, tourism/recreation interests, tourism markets, or other demographic attributes.	Longitudinal (before/after)	Quantitative

A wind farm may affect the demographics or tourism markets attracted to a tourism destination, especially if the wind farm is visible or accessible from that destination. Visitors from different points of origin, or with specific interest in science, engineering or the environment may increase, suggesting a potential tourism benefit. Alternatively, visitors seeking a remote or natural area may decrease, suggesting a potential tourism impact. Alternatively, there may be no effect. Quantitatively monitoring changes in visitor point of origin, reason for visit or activity, tourism and recreation interests, or other demographic attributes over time may provide insight into whether or how tourism demographics may be affected by the wind farm. This indicator was identified by participant observation and by focus group participants.

Westerberg et al. (2013)'s choice experiment measured tourist point of origin, repeat visitors ("loyal" tourists), and reason for visit to find that demographics influence attitudes toward compensatory policies (Westerberg et al. 2013, p. 177). In a similar study, Ladenburg (2010) measured time of visit (i.e. number of visits in the summer and winter months) and frequency of recreation activity (beach walking) to find that the frequency usage of beaches influence attitudes toward offshore wind farms. Frantal and Urbank (2017)'s exploration of energy tourism uses a variety of characteristics and travel patterns to examine the demographic makeup of energy tourists. Furthermore, Moscardo and Ormsby (2004) identify patterns of tourist activity and visitor trip data as potential metrics for monitoring areas that support recreation and tourism activities.

Research results support the inclusion of tourism demographics as an indicator. Several Block Island tourism focus group participants relayed that some visitors had traveled to Block Island just to see the wind farm. Participant observation research found that visitors of a wide variety of ages and backgrounds travelled to specific sites on Block Island in order to view the wind farm. Additionally, one charter boat owner interviewed for the participant observation study noticed that his wind farm tours have a more even gender split than some of his other charter trips.

24. SHOULDER SEASON USE FOR WIND FARM TOURISM AND RECREATION ACTIVITIES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Businesses may use the wind farm as an attraction to help market shoulder season (spring and fall) tourism because it does not rely on beach weather. This suggests a potential tourism benefit.	Number of new wind farm-related trips, programs, packages, or discounts pre-June or post-August.	Longitudinal (after)	Quantitative

A wind farm may influence the seasonality of coastal tourism and recreation businesses. Businesses may use the wind farm as an attraction to help market shoulder season (spring and fall) tourism because it does not rely on beach weather. This suggests an expansion of the tourism season and thus a potential benefit. Alternatively, businesses may not use the wind farm this way, suggesting no effect. Quantitatively measuring the number of new wind-farm related trips, programs, packages, or discounts offered in shoulder season months (pre-June and post-August) over time can provide insight into this potential tourism benefit. This indicator was identified by participant observation and by focus group participants.

Frantal and Kunc (2011) state that wind turbine projects that are branded as "green tourism" can contribute to better place branding and tourism development for communities in proximity to wind farm areas. The UK Marine Management Organization (2013)'s compilation of tourism data and indicators identify the creation of tourism activities that extend the tourism season or create full-time jobs as a high-level objective for tourism in a "green economy."

Research findings from this study support the use of considering shoulder season tourism as an indicator for evaluating wind farm effects. One mainland recreation and tourism focus group participant noted that the wind farm's construction provided a substantial number of occupants to hotels during the off-season. Participant observation research also revealed that many members of the recreation and tourism community have an interest in extending the tourist season for social and economic reasons.

INDIRECT INDICATORS

25. WIND FARM CLUSTERING WITH OTHER ATTRACTIONS AND DESTINATIONS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm's clustering with, or proximity to, other attractions or destinations may shape its potential effect on tourism and recreation.	Conducting ongoing assessments of the wind farm's distance from or proximity to new, developing, or existing destinations or scenic areas may provide insight into this potential tourism benefit.	Longitudinal	Quantitative

A wind farm's clustering with, or proximity to, other attractions or destinations may shape its potential effect on tourism and recreation. Tourism/recreation businesses and participants may be

more likely to incorporate the wind farm into their activities if they consider it convenient to other points of interest (e.g. scenic overlooks or fishing grounds), suggesting potential benefits. Conversely, they may not do so if they consider the wind farm too far from other attractions, suggesting no effect. Conducting ongoing quantitative assessments of the wind farm's distance from or proximity to new, developing, or existing destinations or scenic areas may provide insight into this potential tourism benefit. This indicator spans both boat- and land-based attractions, destinations, and tourism experiences. This indicator was identified by participant observation and by focus group participants.

Albrecht et al. (2013) notes the possibility of packaging boat tours to offshore wind farms with other experiences to balance the interests of business and local stakeholders during wind farm development. In addition, the authors explain that the ability to reach offshore sites, "in an acceptable time and with reasonable effort" can influence an offshore wind farm's usability to stakeholders (Albrecht et al. 2013). Furthermore, Gordon (1993)'s study of marine angler preferences recognizes the capacity for offshore structures to provide additional recreational opportunities if they exist as clusters. Hiett and Milon (2002) also suggest that fishing and diving communities prefer multiple offshore structures within close proximity to each other.

Research findings from this study illustrate the importance of considering wind farm clustering with other attractions and destinations. Several focus group participants emphasized that the presence of the wind farm near a tourist destination (Block Island) enhanced their respective recreation and tourism businesses by offering "one more thing" for visitors to experience. Participant observation research revealed that visitors often coupled wind farm viewing with participation in other nearby recreation and tourism activities.

26. EFFECT OF WIND FARM AND CABLE ON MARINE AND AVIAN SPECIES POPULAR WITH WILDLIFE VIEWERS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on wildlife. A wind farm and/or cable may have actual or perceived effects on species with popular wildlife viewers, such as whales and birds.	Presence/absence, and/or change, and/or perceived change in abundance/distribution of or harm to local populations of popular viewing species	Longitudinal (before/after)	Quantitative or Qualitative

Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on wildlife. A wind farm and/or cable may have actual or perceived effects on species with popular wildlife viewers, such as whales and birds. Tourists or participants perceiving positive effects (e.g. wildlife attraction) may increase their tourism and recreation activities in the area, suggesting potential benefits, whereas those perceiving negative effects (e.g. wildlife harm or death) may decrease their activities in the area, suggesting potential impacts. Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data. Quantitatively measuring the presence or absence, harm and/or change in the abundance or distribution of popular wildlife species over time may provide insight into this. Qualitatively measuring the perceived change or perceived harms to local

populations of popular viewing species including birds, whales, dolphins, turtles, and other charismatic species over time should also be considered. This indicator spans both boat- and land-based tourism and recreation experiences. This indicator was identified by participant observation and by focus group participants.

Charismatic wildlife, including whales, are central to the economic sustainability of important marine tourism activities (White et al. 2012). Studies conducted by Thomsen et al. (2006) and Bailey et al. (2014) found that potential impacts to wildlife (including whales and other charismatic species) can occur within wind farm project areas.

Research findings from this study point to the need to consider the potential effect of the wind farm and related infrastructure on wildlife viewing. Block Island tourism focus group participants reported that the coincidental deaths of several whales during the tourist season resulted in numerous questions and comments from visitors about the wind farm's assumed role in these deaths. Likewise, participant observation research found that some people's negative wind farm reactions were linked to concerns about wind farm effects on whale and bird species.

27. EFFECTS OF WIND FARM AND CABLE ON SPECIES CONSIDERED UNDESIRABLE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on species considered undesirable. A wind farm and cable/or cable may have actual or perceived effects on species considered undesirable (e.g. sharks for those swimming, or seals for those fishing).	Presence/absence, and/or change, and/or perceived change in presence or abundance/distribution of species considered to be undesirable.	Longitudinal	Quantitative or Qualitative

Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on species considered undesirable. A wind farm and cable/or cable may have actual or perceived effects on species considered undesirable (e.g. sharks for those swimming, or seals for those fishing). Those perceiving negative effects (e.g. attracting sharks) may decrease their activities in the area, suggesting potential impacts. Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data. Quantitatively monitoring the presence or absence, or change in abundance and distribution, of unwanted or problematic species in proximity to the wind farm, such as sharks, over time provides insight into this potential effect. Additionally, qualitatively monitoring the perceived presence or absence, or change in abundance and distribution, of unwanted or problematic species in proximity to the wind farm, such as sharks, over time may provide insight into this potential effect as well. Importantly, characterization of any species as undesirable is based on tourists and recreationalists' perceptions, not on species' role in the ecosystem. This indicator was identified by participant observation and by focus group participants.

Gill and Kimber (2005) found that offshore renewable energy development may change the behavior of wildlife that respond to magnetic fields such as sharks and rays. Sun et al. (2012)'s

review of offshore wind energy technology also identified sharks as species that may be sensitive to magnetic field changes associated with underwater cables. However, Hutchison et al. (2018) notes that there is a lack of robust evidence to determine how sharks may respond to electromagnetic fields from cables. Despite these findings, there is still little robust evidence to determine how sharks, rays, and other elasmobranchs may respond to the electromagnetic fields emitted from underwater cables (Hutchison et al. 2018). The response of humans to these unwanted species has the potential to impact traditional tourist and recreation activities. Neff (20014) found that common human responses to sharks near swimming beaches are beach clearings (i.e. the evacuation of patches of shore line for short periods of time) or full beach closures.

Research findings from this study supported the identification of this indicator. Focus group research revealed that the rumored attraction of sharks to the wind farm cable was of noted concern to many tourists, and by extension, to tourism professionals. Some focus group participants were particularly concerned that the cables would attract sharks near swimming beaches.

28. NEWS COVERAGE RELATED TO WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Coastal and marine tourism is affected by tourists' choices of where to visit and what to see and do. The amount of wind farm-related coverage in general news or tourism and recreation-specific publications has the potential to shape tourists' knowledge, perceptions, and behavior, including choice of tourist destination. The character of wind farm coverage in general news or tourism and recreation-specific publications could also affect tourism choices.	Number of articles, number of references to environmental or economic risk or benefit, or character of reporting; must exclude any publications/articles paid for by developer or wind energy advocate.	Longitudinal (after)	Quantitative or Qualitative

Coastal and marine tourism is affected by tourists' choices of where to visit and what to see and do. The amount of wind farm-related coverage in general news or tourism and recreation-specific publications has the potential to shape tourists' knowledge, perceptions, and behavior, including choice of tourist destination. The character of wind farm coverage in general news or tourism and recreation-specific publications could also affect tourism choices. Coverage of the wind farm as a positive development - in terms of technology, the environment, and new opportunities for recreation - could indicate potential tourism benefits, whereas coverage of the wind farm as a negative development - in terms of viewshed, the coastal experience or impacts to wildlife and the environment - could indicate potential tourism drawbacks. Alternatively, there could be no effect. Quantitative or qualitative metrics to monitor over time include the number of wind farm news articles, or the number and character of references to associated environmental or economic risks and benefits can provide insight into this metric. Analysis should include pieces written by journalists and published in edited publications and should exclude publications or articles paid for by developers or wind energy advocates. This indicator was identified by content analysis and by focus group participants.

News media is a useful tool for understanding the public discourse and what the public might identify as potential benefits or drawbacks associated with wind energy development (Wilson and Stephens 2009). Furthermore, research by Stephens, Wilson, and Peterson (2008) and Fischlein et al. (2010) suggests that media analysis is a useful approach to exploring the social, political, and cultural factors that may influence that adoption of wind energy in different contexts. Researchers have studied how media coverage of wind energy in several US locations has framed wind energy development and how that coverage might relate to support or opposition for projects sited in those locations (Stephens, Rand, and Melnick 2009; Stephens, Wilson, and Peterson 2008; Feschlein et al. 2010; Smith et al. 2016).

Findings from this study support the use of news coverage for assessing an offshore wind farm's effects on the tourism and recreation. Content analysis research revealed extensive news coverage of the BIWF, much of it framed around environmental and economic risks and benefits. Additionally, Block Island tourism focus group participants noted that "misinformation," - i.e. factually incorrect news reports related to issues like marine mammal strandings were a source of concern both to tourists and tourism professionals. Participant observation research also revealed similar concerns about misinformation.

29. SOCIAL MEDIA TRENDS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Coastal and marine tourism and recreation are affected by tourists' and participants' choices of where to visit and what to see and do. Wind farm-related social media posts provide insight into one form of public discourse that illustrates how people are currently interacting with the wind farm. Images and hashtags shared through social media can shape potential tourists' and participants' knowledge, perceptions, and behavior, including choice of destination and activity..	Number of mentions in individual tourist or recreationalists' posts on social media. Can include text, photos and video. Use hashtags positive, negative, or neutral coding for language. Can include wind farm-specific postings, or general social media postings about BI or RI.	Longitudinal (after)	Quantitative or Qualitative

Coastal and marine tourism and recreation are affected by tourists' and participants' choices of where to visit and what to see and do. Wind farm-related social media posts provide insight into one form of public discourse that illustrates how people are currently interacting with the wind farm. Images and hashtags shared through social media can shape potential tourists' and participants' knowledge, perceptions, and behavior, including choice of destination and activity. Quantitatively or qualitatively evaluating the extent and character of positive wind farm-related social media posts, in terms of technology, the environment, and new opportunities for recreation, could be an indicator of tourism and recreation benefits, while negative posts, focusing on the viewshed, the coastal experience, or impacts to wildlife and the environment, over time could be an indicator of potential tourism and recreation impacts. Alternatively, there could be no effect. This indicator can be measured by tracking the number of individual posts or mentions on social media, using hashtags (e.g. #BlockIsland), text, images, and video, in addition to coding for positive, negative, and neutral language in such posts. This

analysis should exclude comment responses to other media postings (e.g. in response to a newspaper posting a news story). Focus group participants identified this indicator.

Social media platforms are useful for quantifying value and meaning in landscapes providing recreation and leisure activities (van Zanten et al. 2016). Chen et al. (2018)'s examination of landscape values and hydroelectric dam infrastructure used geotagged Instagram posts to quantify visitor responses to existing and proposed energy project sites. Further, studies by Oteros-Rozas et al. (2018) and Richards and Friess (2015) also demonstrate the application of social media analysis for evaluating visitor experiences.

Study results support the use of social media trends as an indicator. Block Island tourism focus group participants reported a great deal of negative and positive wind farm-related posts on social media. Participant observation research revealed that tourists and recreationalists often preferred to photograph themselves with the wind farm prominent in the background, and then post their "selfies" on social media platforms.

30. USE OF THE WIND FARM IN TOURISM AND RECREATION-RELATED ADVERTISING

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Coastal and marine tourism and recreation are affected by tourists' and recreationalists' choices of where to visit and what to see and do. The literal or symbolic positioning of the wind farm in tourism and recreation advertising, marketing, promotional materials, artwork, and real estate listings may provide insight into how businesses feel the wind farm may influence tourist and participant choices.	Assessing the character of use can distinguish between themes such as science/engineering, environmental, or "first in the nation." Measuring the number or character of wind farm uses as a means of representing or symbolizing a place or idea may provide insight into this indicator.	Longitudinal (after)	Quantitative or Qualitative

Coastal and marine tourism and recreation are affected by tourists' and recreationalists' choices of where to visit and what to see and do. The literal or symbolic positioning of the wind farm in tourism and recreation advertising, marketing, promotional materials, artwork, and real estate listings may provide insight into how business owners and managers believe the wind farm may influence tourist and participant choices. Businesses' choices to incorporate the wind farm, by itself or framed around science/engineering, environmental, 'first in the nation,' or other themes, may be an indication of potential wind farm benefits, whereas the absence of the wind farm in advertising and related materials may suggest no effect. Assessing the character of use can distinguish between themes such as science/engineering, environmental, or "first in the nation." Quantitatively or qualitatively measuring the number or character of wind farm uses as a means of representing or symbolizing a place or idea over time may provide insight into this indicator. Additionally, general proximity to or view of the wind farm may be included in property listings, suggesting it is viewed as a selling point and therefore a potential tourism benefit, whereas distance from the wind farm, or a wind farm-free view, may suggest a potential tourism impact.

Alternatively, there could be no effect. Quantitatively or qualitatively measuring the number or character of listings and advertisements explicitly referencing the wind farm and related infrastructure's visibility from the property in these listings over time may provide insight into this potential tourism effect. This analysis should exclude media stories about the wind farm, but can include advertising text, photos and videos. This indicator was identified by participant observation and by focus group participants.

Brownlee et al. (2012) found that some stakeholders near potential wind farm locations believed that an offshore wind farm could give the area a "positive reputation" as a green energy leader (Brownlee et al. 2012, p. 13). Frantal and Kunc (2011) also support the idea that wind farms' status as symbols of "clean, dynamic energy" can transfer to the community that surrounds or is near the wind farm (Frantal and Kunc 2011, p. 501). Furthermore, Albrecht et al. (2013)'s examination of offshore wind farm impacts on tourism suggests that advertisements may be used to emphasize the positive aesthetics of offshore turbines. One study of terrestrial wind turbine impacts on tourism notes that at least one hotel within view of wind turbines prominently advertises the turbine as a demonstration of eco-tourism and sustainability (Polecon Research 2013). This example of wind farm promotion supports White (2010)'s use of "place and promotion" as an indicator of visitor satisfaction to a tourism destination (White 2010, p. 17).

Research findings from this study underscored the importance of considering the wind farm's use in advertising. Some Block Island tourism focus group participants described the wind farm as a symbol of an environmental ethic that was consistent with the values of Block Island's tourists. In addition, participant observation research revealed that some Block Island residents take pride in the wind farm and the progress it represents. Participant observation research also found one case in which there was a flyer advertising a house for sale on Mohegan Trail, overlooking the wind farm: "Own a piece of history with the nation's first offshore wind farm" (Participant Observation report section 3.1.1).

4.5.7 Tourism/Recreation-Dependent Communities

Indicator Question: How is the wind farm affecting tourism-dependent communities and economies?

Why is this Important? For some coastal communities, the tourism and recreation industries are vital to the local economy. A wind farm may affect tourism and recreation-dependent communities beyond the immediate effects to tourism businesses and the tourism experience. Communities may reap benefits, incur costs, or develop views associated with their participation in wind farm development, or they may experience effects to their tourism-related real estate market, which encompasses seasonal residences and rentals. These effects may be positive, negative, or neutral. In Rhode Island, stakeholder input and social science research confirmed that a wind farm can have a range of effects on tourism-dependent communities.

31. SEASONAL RESIDENTIAL PROPERTIES IN VIEWSHED OR IN PROXIMITY TO WIND FARM AND INFRASTRUCTURE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Seasonal residents within view of the wind farm or infrastructure may dislike the view and choose to sell their homes, or sales, property values of such homes may decrease, suggesting a potential tourism impact. Conversely, seasonal residents may like the view, and sales, property values, or the construction/expansion of new seasonal residential properties may increase, suggesting a potential tourism benefit.	Measuring changes in the number of properties over time, their distance from the wind farm and/or related infrastructure, number of days visible in a given season, weather, or time of day	Longitudinal (after)	Quantitative or Qualitative

Seasonal residents, who are part of tourism-dependent communities and economies, may be affected by the view of the wind farm or related infrastructure. Seasonal residents within view of the wind farm or infrastructure may dislike the view and choose to sell their homes, or sales or property values of such homes may decrease, suggesting a potential tourism impact. Conversely, seasonal residents may like the view, and sales, property values, or the construction/expansion of new seasonal residential properties may increase, suggesting a potential tourism benefit. There may also be no impact. Quantitatively or qualitatively measuring changes in the number of properties, their distance from the wind farm and/or related infrastructure, and their number of days visible in a given season, weather, or time of day over time may provide insight into this potential effect. This indicator was identified by participant observation and by focus group participants.

Borger et al. (2015)'s valuation of offshore wind impacts considers turbine height and visibility as primary variables for assessing visual impacts. In addition, multiple survey-based studies acknowledge the seasonal nature of properties in coastal communities in their evaluations of stakeholder perceptions of offshore wind installations (Ladenburg 2010; Lutzeyer et al. 2017; Lilley et al. 2010). Ladenburg and Moller (2011) also identify several studies that account for differences in seasonal residency in their analysis. In addition, Carrera and Mack (2010)'s assessment of energy technologies identified a population's perception of "aesthetic impairment of the landscape" as an important quality of life indicator. Rand and Hoen (2017) found that resident perceptions of property value impacts are important to examine when assessing how offshore turbines affect nearby communities. Survey research conducted by Firestone et al. (2008), Wilson and Dyke (2016), and Teisel et al. (2015) found that residents in proximity to potential terrestrial and offshore wind energy development areas are concerned about the impact that offshore turbine installations may have on their property's value.

Findings from this study pointed to the need to consider an offshore wind farm's effect on seasonal residential properties as a potential tourism impact. Participant observation research revealed that some seasonal residents who live on Mohegan Bluffs and Mohegan Trail on Block Island, directly in view of the wind farm, don't like the wind farm and that one or more residents had put their homes on the market. However, this study also found that some of those who put their homes up for sale later had a "change of heart" and took their homes off the market. Block Island tourism focus group participants identified the negative views of seasonal residents as one of only a few tourism impacts they had observed.

32. SEASONAL RENTALS AND OTHER TOURISM-RELATED PROPERTIES IN VIEWSHED OR IN PROXIMITY TO WIND FARM AND INFRASTRUCTURE

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Seasonal rentals and other properties within view of the wind farm or related infrastructure may experience an increase in business or property values over time, suggesting potential tourism benefits, or may experience a decline in business or property values over time, suggesting potential tourism impacts. There may also be a change in real estate sales of such properties.	Measuring changes over time in the number of tourism-related properties in the viewshed or in proximity to the wind farm and related infrastructure over time, and/or the days that these properties remain on the market may provide insight into this potential effect.	Longitudinal (after)	Quantitative

Seasonal rentals and other tourism-related real estate (e.g. commercial properties) is critical to tourism-dependent communities and economies and may be affected by the view of the wind farm and related infrastructure. Seasonal rentals and other properties within view of the wind farm or related infrastructure may experience an increase in business or property values over time, suggesting potential tourism benefits, or may experience a decline in business or property values over time, suggesting potential tourism impacts. There may also be a change in real estate sales of such properties. As benefits and impacts experienced by tourism-related properties may occur intermittently over time (i.e. benefits and impacts related to the 'novelty' of being America's first and only offshore wind farm), there is a need to monitor for this effect. Quantitatively measuring changes over time in the number of tourism-related properties in the viewshed or in proximity to the wind farm and related infrastructure, and/or the days that these properties remain on the market over time may provide insight into this potential effect. Property values and/or the real estate sales of such properties, rental prices, occupancy rates, or change in the number of seasonal rentals may also capture potential effects. This indicator was identified by participant observation and by focus group participants.

Borger et al. (2015)'s valuation of offshore wind impacts considers turbine height and visibility as a primary variable for assessing visual impacts. In addition, Carrera and Mack (2010)'s assessment of energy technologies identified a population's perception of "aesthetic impairment of the landscape" as an important quality of life indicator. Rand and Hoen (2017) found that resident perceptions of property value impacts are important to examine when assessing how offshore turbines affect nearby communities. Survey research conducted by Firestone et al. (2008), Wilson and Dyke (2016), and Teisel et al. (2015) found that residents in proximity to potential terrestrial and offshore wind energy development areas are concerned about the impact that offshore turbine installations may have on their property's value.

Findings from this study point to the need to consider an offshore wind farm's effects on seasonal rentals and other tourism-related properties. Participant observation research reported that seasonal rentals and other properties had not been affected by the wind farm, although many had initially anticipated impacts. Block Island tourism focus group participants discussed the potential effects of the wind farm on home sales, rentals, property values, and real estate.

33. TOURISM/RECREATION COMMUNITY BENEFITS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may result in the provision of direct financial benefits to tourism and recreation communities or community organizations. A wind farm developer or government agency may provide incentives, subsidies, or mitigation to a community or community organization where an offshore wind farm is developed, suggesting potential tourism benefits.	Actual benefits (subsidies, incentives; offered by government or developer) or attitudes/perceptions about benefits. Actual benefits measured post-wind farm; attitudes/perceptions measured longitudinally.	Post (one-time measurement) or longitudinal (after)	Quantitative or Qualitative

A wind farm may result in the provision of direct financial benefits to tourism and recreation communities and community organizations. A wind farm developer or government agency may provide incentives, subsidies, or mitigation to a community or a community organization where an offshore wind farm is developed, suggesting potential tourism benefits. Alternatively, no benefits may be provided, or benefits may be viewed negatively, suggesting either no impact or negative tourism impacts. Quantitatively measuring actual benefits (subsidies and/or incentives offered by the government or the developer) over time or qualitatively measuring attitudes/perceptions about benefits over time may provide insight into this indicator. Actual benefits should be measured post-wind farm; attitudes and perceptions should be measured longitudinally. This indicator was identified by content analysis and participant observation.

Haggett (2008) recognized that the differential between community benefits and the profits of offshore wind developers can influence stakeholder perceptions of offshore wind projects. Acheson (2012) found that some stakeholders in potential offshore wind development areas perceived subsidies as a negative impact of wind energy due to its burden on taxpayers. Case studies by Frantal and Kunc (2011), Frantal (2015), Hall et al. (2013), and Greene and Geisken (2013) examined the actual and perceived benefits that wind farm developers may provide to recreation and tourism communities. Green and Geisken (2013) found that developer compensation to communities affected by wind farm projects may substantially benefit communities. Frantal and Kunc (2011) also highlighted the benefits of wind farms which, if placed in suitable locations, may only have minor effects on the tourist experience and may actually have the potential to support the development of a new form of tourism, energy tourism.

Research findings from this study found that community benefits or lack thereof are an important indicator of an offshore wind farm's effects on tourism. Content analysis research revealed that Block Island residents and tourists were framed in the news media as the beneficiaries of the wind farm's underwater cable, as it would provide lower energy prices and provide high speed Internet in the only economically feasible way. Participant observation research found that recreation and tourism providers' perceptions of developer incentives (or the inadequate provision of these incentives) influenced their current attitudes about the project.

34. COSTS TO TOURISM/RECREATION COMMUNITY OF ENGAGEMENT IN THE WIND FARM PROCESS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
A wind farm may result in direct financial costs to tourism and recreation communities related to their participation in the wind farm planning, siting, permitting, construction, and monitoring process.	Financial costs of hiring outside consulting firms or experts, building capacity through training and education, producing materials to support community concerns, traveling to meetings, adapting local infrastructure to new infrastructure, or other costs; or attitudes toward these issues.	Post (one-time measurement) or longitudinal (after)	Quantitative or Qualitative

A wind farm may result in direct financial costs to tourism and recreation communities related to their participation in the wind farm planning, siting, permitting, construction, and monitoring process. Such costs could include hiring outside consulting firms or experts, building capacity through training and education, producing materials to support community participation, traveling to meetings, adapting local infrastructure to new infrastructure, or other costs, suggesting potential tourism impacts. Tourism communities may also perceive costs to be too high. Alternatively, there may be no costs, suggesting no impact. This indicator may be measured over time by quantitatively tracking costs related to travel, hiring outside consultants, building capacity through training and education, producing materials to support community concerns, adapting local infrastructure; or qualitatively tracking attitudes toward these issues. This indicator should consider non-reimbursed costs only. This indicator was identified by participant observation and by focus group participants.

Several offshore and onshore wind studies emphasize the importance of public engagement in the development process (Haggett 2008; Haggett 2011; Wilson and Dyke 2016). Eltham et al. (2008) also suggests that the expansion of stakeholder dialogue to a wider spectrum of communities may result from efforts to improve transparency and participation. Although the importance of citizen engagement to offshore wind projects cannot be understated, there are often context-dependent costs to participation that should be considered (Irvin et al. 2004).

Findings from this study support the inclusion of the costs of engagement as an indicator. Focus group and participant observation research both revealed that stakeholder perceptions of the wind farm were shaped by their experience with the public process through which the wind farm was planned, sited, permitted, and constructed. For example, some participants reported that they believed this process was a "done deal" that would have occurred with or without public input (Focus Group report, Section 3.3.4; Participant Observation report Year 1 Section 3.2.4). The perceived value (or lack thereof) of the public's input may in turn have reduced stakeholder willingness to participate. Content analysis research generally revealed that the wind farm development process was most prevalent in related news coverage.

35. ENGAGEMENT OF TOURISM AND RECREATION SECTORS IN THE WIND FARM PROCESS

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The quantity and character of community members' engagement in the wind farm process may influence how they view the effects of the wind farm on tourism and recreation. This includes the engagement of tourism and recreation professionals as well as participants in these activities, and includes engagement in any part of the planning, siting, permitting, construction, and monitoring process.	Includes planning, site selection, permitting, construction, and operation/monitoring. Both professionals and stakeholders. Number of meetings, format of meetings/engagement, or other metric. Can include actual engagement and/or perception of.	Longitudinal (before/after)	Quantitative or Qualitative

The quantity and character of community members' engagement in the wind farm process may influence how they view the effects of the wind farm on tourism and recreation. This includes the engagement of tourism and recreation professionals as well as participants in these activities, and includes engagement in any part of the planning, siting, permitting, construction, and monitoring process. Engagement in site selection can include moving the wind farm further inshore, further offshore, or micrositing. Community members who were actively engaged, and who found that engagement meaningful, may be more inclined to view the wind farm as having a neutral or a positive effect on tourism and recreation, whereas those who feel they were not engaged, or dissatisfied with their engagement, may view the wind farm as having a negative effect. Alternatively, there may be no effect. This indicator includes the planning, site selection, permitting, construction, operation, and monitoring of the wind farm. Quantitatively measuring the number of meetings, the format of meetings/engagement, or other related metrics over time may determine these effects. Qualitatively measuring perception of engagement over time may also determine these effects. This indicator was identified by content analysis, participant observation and by focus group participants.

Several offshore and terrestrial wind studies emphasize the importance of public engagement in the development process (Haggett 2008; Haggett 2011; Wilson and Dyke 2016). Eltham et al. (2008) also suggests that the expansion of stakeholder dialogue to a wider spectrum of communities may result from efforts to improve transparency and participation. Similar investigations of public perceptions and terrestrial wind farms also identified public interest and engagement as a key to the overall success of wind energy projects (Jone and Eiser 2009; Hall et al. 2013; Richard et al. 2012). Furthermore, both Himes (2008) and Heck et al. (2011) identified community involvement and stakeholder consultation as performance indicators for MPAs. While an offshore wind farm is very different than an MPA, this provides an example of using this metric as an indicator.

One of the more prominent themes that manifested in all three aspects of this study was the engagement of the recreation and tourism community in the planning and development process. In this study, many tourism/recreation professionals and stakeholders referenced the BIWF public process and their participation (or lack thereof) in it. Content analysis found that the wind farm development process (both in local media and public meetings) was the most prevalent content theme. Additionally, several focus group participants emphasized that their experiences

with the process of siting and developing the wind farm influenced their perceptions of the project's impact. In a similar context, participant observation research found that a vocal minority of the recreation and tourism community opposed the wind farm because of their lack of participation in the public process.

36. COSTS OF ELECTRICITY TO TOURISM BUSINESSES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Tourism professionals and other coastal residents and business owners may anticipate reductions in electricity costs as a result of a new offshore wind farm. Actual reductions in these costs, or perception of reductions, may suggest a positive effect of the wind farm on the local tourism industry.	Actual changes in rate per kwh, and/or attitudes about rate changes	Longitudinal (after or before/after)	Quantitative or Qualitative

Tourism professionals and other coastal residents and business owners may anticipate reductions in electricity costs as a result of a new offshore wind farm. The need to support recreation and tourism-related buildings in the summer (i.e. hotels and air conditioning) affects this demand for electricity. Actual reductions in these costs, or perception of reductions, may suggest a positive effect of the wind farm on the local tourism industry. No change, or a perception of no change, may suggest no effect on tourism. Quantitatively evaluating the changes in rate per kwh over time and qualitatively evaluating attitudes about rate changes over time may provide insight into this indicator. This indicator may only apply to geographically isolated communities in which the wind farm is expected to have a clear local impact on utilities. Measuring actual changes in electricity rates (per kWh) and/or attitudes about electricity rate changes can reflect potential costs and benefits that recreationalists and tourists experience due to wind farm-induced rate changes. This indicator was identified by content analysis, participant observation and by focus group participants.

Westerberg et al. (2015) found that electricity prices and other factors influence tourist perceptions of wind power facilities. Additionally, Firestone et al. (2008), Teisl et al. (2015) and NFO World Group (2003) found that the public may perceive wind farm-related changes in electricity rates as a positive or negative effect.

Research findings from this study identified the need to consider actual or perceived impacts on tourism businesses' electricity costs. Results from the content analysis revealed that supporters of the BIWF stated that it could lower electricity costs, whereas opponents stated it could raise electricity costs. Participant observation research participants indicated that the wind farm would need to lead to reduced energy costs to be broadly accepted. However, in early 2017 when research was first conducted, some participants reported that rates had gone up from 40 to 42 cents per kilowatt hour due to unanticipated on land transmission upgrades. Finally, electricity costs on Block Island was a dominant topic of discussion in the Block Island tourism focus groups.

37. STABILITY/RELIABILITY OF NEW ELECTRICITY SOURCES FOR TOURISM BUSINESSES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Tourism professionals and other coastal residents and business owners may anticipate increased stability and reliability of electricity provided by a new offshore wind farm. Actual improved reliability, or perception of improved reliability, may suggest a positive effect of the wind farm on the tourism industry.	Number of black- or brown-outs, and/or attitudes about stability of new source	Longitudinal (after or before/after)	Quantitative or Qualitative

Tourism professionals and other coastal residents and business owners may anticipate increased stability and reliability of electricity provided by a new offshore wind farm. The need to support recreation and tourism-related buildings in the summer (i.e. hotels and air conditioning) affects this demand for electricity. Actual improved reliability, or perception of improved reliability, may suggest a positive effect of the wind farm on the tourism industry. No change, or a perception of no change, may suggest no effect on tourism. This indicator may only apply to geographically isolated communities in which the wind farm is expected to have a clear local impact on utilities. Quantitatively measuring black- or brown-outs and qualitatively measuring attitudes about stability of the new source over time may provide insight into this indicator. Measuring the number of blackouts or brownouts and/or attitudes about the stability of electrical power can reveal a wind farm's ability to provide a stable source of electricity to the tourism community. This indicator was identified by content analysis and participant observation.

Findings from this study pointed to the need to consider electricity stability and reliability as an indicator of the effect of the wind farm on tourism. Content analysis research revealed that Block Island had rolling summer blackouts prior to wind farm construction and an Advisory Group member mentioned that replacement of electrical equipment was frequent prior to BIWF.

38. INTERNET ACCESS AND SPEED FOR TOURISM BUSINESSES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
Tourism professionals and other coastal residents and business owners may anticipate increased reliability and speed of new Internet service to which they would have access in connection with a new offshore wind farm. Actual improved reliability and speed, or perceptions of this, may suggest a positive effect of the wind farm on the tourism industry.	Actual Internet speed, reports of outages, and/or attitudes toward this issue	Longitudinal (after or before/after)	Quantitative or Qualitative

Tourism professionals and other coastal residents and business owners may anticipate increased reliability and speed of new Internet service to which they would have access in connection with a new offshore wind farm. Stable, high-speed Internet access is required for professionals to vacation for multiple weeks at a destination while working remotely. Actual improved reliability and speed, or perceptions of this, may suggest a positive effect of the wind farm on the tourism industry. No change, or a perception of no change, may suggest no effect on tourism. Quantitatively monitoring actual Internet speeds, reports of outages, and/or qualitatively monitoring attitudes toward this issue before and after wind farm installation over time can

provide insight into this potential tourism effect. This indicator may only apply to geographically isolated communities in which the wind farm is expected to have a clear local impact on utilities. This indicator was identified by content analysis.

The impact that the wind farm has on surrounding community infrastructure (such as Internet service) can impact tourism. Frantal and Kunc (2011)'s examination of wind turbines and tourism discussed the parallel development of local infrastructure as one benefit that can potentially enhance tourism development.

This study pointed to the need to consider Internet access and speed as an indicator. Participant observation research found that many businesses in the tourism community (such as stores and hotels) had difficulty running credit card machines and other Internet-dependent systems. Similarly, content analysis research revealed that Block Island residents were interested in the acquisition of quick and stable Internet service from a perspective of economic feasibility. This may be a unique benefit to BIWF as inclusion of high speed cable was installed with the transmission cable, which had been prohibitively expensive.

4.5.8 Visual Effects

Indicator Question: How is the wind farm affecting the tourism and recreation experience through its visual effects and perceived fit in the landscape?

Why is this Important? A wind farm can affect tourists' and recreationalists' experiences through its visual impacts and perceived fit in the landscape. Tourists and recreationalists visually interact with the wind farm and its surroundings by land and by sea, from different sites surrounding the wind farm, from tourist sites and residential properties, during the day and at night, and on a one-time or regular basis. Individuals view the sight of the wind farm positively, negatively, or in neutral terms (i.e. neither positive nor negative). In Rhode Island, stakeholder input and social science research confirmed that the wind farm's visual effects were very important across the full range of tourism and recreation businesses and experiences.

39. TOURISTS AND RECREATIONALISTS' RESPONSES TO VIEWING THE WIND FARM

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The words individuals use to describe the sight of the wind farm may provide an indication of its effect on their experience.	Number or character of positive, negative or neutral words used to describe or characterize wind farm, as measured through surveys, interviews, social media.	Longitudinal (after)	Quantitative or Qualitative

Tourists and recreationalists' experiences may be affected by the sight of the wind farm. The words individuals use to describe the sight of the wind farm may provide an indication of its effect on their experience. Individuals may use positive descriptions (e.g. "astounding") or descriptions suggesting interest and curiosity (e.g. "feat of engineering"), which may suggest potential tourism benefits. Individuals may also use negative descriptions (e.g. "eyesore"), which

may suggest potential tourism impacts. Alternatively, there may be no effect. Quantitative or qualitative measurements through surveys, interviews, or social media posts may be used to identify and code individuals' use of positive, negative, and neutral words to describe or characterize the wind farm over time to monitor this indicator. Measurement should distinguish between first time visitors and regular visitors. This indicator was identified by content analysis, participant observation and by focus group participants.

Tourist and recreationist responses to seeing the wind turbines can vary. Pasqualetti (2011)'s examination of public resistance to wind power development examines common public responses to wind turbines in a series of case studies. Similarly, NFO World Group (2003) assessed general reactions to wind farm development by quantifying positive, negative, and neutral comments for analysis.

Evidence from this study illustrates the potential utility of assessing tourist and recreationalists' responses to the wind farm. Focus group research reported that individuals' responses to viewing the wind farm ranged from describing them as "elegant" to "eyesore." Participant observation research also found that tourists and recreationalists used a broad range of descriptors to describe the wind farm while viewing it. This research found that, in general, individuals seeing the wind farm from land and sea responded with indifferent recognition and the occasional demonstration of interest or excitement. Content analysis research generally identified turbine visibility and visual impacts as concerns about the wind farm.

40. VISIBILITY OF WIND FARM RELATIVE TO OTHER DEVELOPED OR INDUSTRIAL AREAS OR ACTIVITIES

What is it?	Examples of how to measure	Longitudinal or one time	Quantitative or Qualitative
The wind farm's effect on tourism and recreationalists' experiences or choices of where to go and what to see may be influenced by its proximity to other developed or industrial areas or activities. A wind farm located near other developed or industrial areas, such as an airport or bridge, may be perceived to have less of a visual impact and fit with the landscape better than one located in an undeveloped area.	Addresses perceived fit in landscape. Visibility of wind farm from different angles in relation to other developed land areas or industrial/commercial ocean uses.	Post (one-time measurement)	Quantitative or Qualitative

The wind farm's effect on tourism and recreationalists' experiences or choices of where to go and what to see may be influenced by its proximity to other developed or industrial areas or activities. A wind farm located near other developed or industrial areas, such as an airport or bridge, may be perceived to have less of a visual impact and fit with the landscape better than one located in an undeveloped area. Importantly, a wind farm's proximity to other development is not a benefit or an impact in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view. This indicator is best used in combination with others that directly measure individuals' reactions to the wind farm and/or tourism and recreation choices. Quantitatively measuring the visibility of the wind farm from different angles in relation to other developed land areas or industrial/commercial ocean uses and qualitatively measuring related perceived visibility from these areas over time may indicate the

wind farm's perceived fit in the surrounding landscape. This indicator was identified by content analysis and by focus group participants.

Waldo (2012) notes that the visual quality of particular sites has an effect on attitudes toward offshore wind farms at those sites; locating wind farms in areas where the turbines fit in visually with the surroundings can counteract local resistance to these projects. Depellegrin (2015) acknowledges that the visibility of many visual stressors (both positive and negative) in ocean viewsheds do not always equal the sum of individual visual impacts. This suggests that a combination of visual impacts (including offshore wind farms, ocean shipping, and other marine activities) may have greater or lesser visual effect on the surrounding landscape.

Findings from this study pointed to the importance of considering a wind farm's visibility relative to other developed or industrial areas. One participant observation research interviewee suggested that offshore turbines should have been placed in industrial areas instead of the scenic viewshed of Block Island. However, participant observation research also found that some tourists and recreationalists thought the existing wind farm location represented a sufficient effort to minimize the structure's visual impacts. Focus group research revealed that many participants compare the view of the wind farm to other industrial infrastructure, such as the Block Island airport or the Newport Bridge. Focus group participants also made general comments about how the wind farm fit with the visual character of Block Island and the surrounding seascape. Content analysis research also identified turbine visibility and visual impacts as concerns about the wind farm.

4.5.9 Subset Indicators for Block Island and Southern Rhode Island

This section presents a subset from the suite of indicators for use at the BIWF that URI's research team identified as highest priority to Block Island and the surrounding communities. Again, *all* indicators presented in section 4.5 are potentially applicable to southern Rhode Island as well as to other potential future offshore wind farms.

Criteria for Selection

The purpose of prioritization is to select a group of indicators that can best measure the effect of a wind farm on the recreation and tourism community in its representative context (i.e. the southern Rhode Island context). URI's research team identified scale of the wind farm (i.e. the number of turbines), the prominence of certain social and economic issues in the area, and convenience (with regards to financial/time commitments of data collection) as useful criteria for prioritization. In addition, the team determined that the data needs of developers, government agencies, recreation and tourism associations, and other stakeholder organizations should also be considered for monitoring purposes. URI's research team used all of the above-mentioned criteria to select the following priority indicators. **In developing this subset, some indicators were combined to respond to the needs of the community and the issues that surround the wind farm.** URI's research team suggest that this technique may be useful for their selection processes.

NAVIGATIONAL ACCESS (Indicator 5)

Recreational boaters and sailors rely on navigational access around an offshore wind farm and cable route. Open access and wind farm placement could enhance boating and sailing, while area closures or navigation limitations could negatively affect these activities. Alternatively, it may have no effect. Evaluating navigational access over time by considering the presence or absence of boats in the area, the acreage or length of a closure, height limitations (clearance under blade tip), or anchoring limitations (around the turbine base or along the cable route) provide insight into the wind farm's impact on boat-based recreation and tourism. This indicator is related to, but distinguished from, fishing access because fishing access relies on access to the benthos and the entire water column.

Concerns about access, especially navigational access, were heavily emphasized by research participants in this study. Any potential closure of previously open waters around the wind farm would adversely affect the existing recreational, charter, and fishing activity near the wind farm. Additionally, the loss of navigational access might limit recreation and tourism experiences that are, in some cases, enhanced by the wind farm's presence.

FISHING ACCESS AND PRACTICES (Indicator 12, Indicator 13)

Recreational anglers and charter captains rely on access to prime fishing areas. Official or *de facto* short- or long-term access limitations would limit anglers' ability to experience the potential benefits of fishing the wind farm. Monitoring the presence/absence of access, the acreage or length of closure, and anchoring limitations could provide insight into this. This is related to, but distinguished from, navigational access because fishing access relies on access to the benthos and the entire water column.

Additionally, the wind farm may change fishing activity and practices that can be conducted in the area. Anglers and captains may change gear types or techniques to maneuver around the wind farm. These changes may negatively or positively affect anglers' and captains' fishing experience, or may have no effect. This indicator considers previous use of wind farm area for fishing as well as the type of fishing practices in the area. Collecting data related to the presence or absence of fishing activities, gear types used, and/or density of fishing boats or gear over time may reveal how offshore wind farms impact recreational and charter boat fishermen.

Concerns about fishing near the wind farm were heavily emphasized by research participants. Many stakeholders are particularly concerned about impact the wind farm may have on fishing access and fishing practices in the area. Recreational anglers and charter captains rely on access to prime fishing areas; any potential closure of previously open fishing around the wind farm, from the benthos through the entire water column, would impact the existing activities of recreational, charter, and fishing vessels near the wind farm.

Recreation and charter boat fishermen that fish near the BIWF also expressed particular concern about their ability to fish the wind farm area without altering the gear type or fishing techniques they used pre-installation. Research participants stated that some fishermen had already changed their original drift fishing technique due to wind and sea conditions around the turbines. Other

research participants indicated that there is more spearfishing activity taking place around the turbines. Future wind farm-related limits to gear or fishing techniques might impact recreational, charter, and fishing vessels near the wind farm.

TOURIST AND RECREATION TRIPS, TOURS, PROGRAMS, AND BUSINESSES (Indicator 8, Indicator 15, Indicator 21)

A wind farm may directly affect fishing, boat, and aircraft charter businesses. Existing charter businesses may offer new wind farm-related trips or packages or purchase new vessels to accommodate more clients, or new businesses may open, suggesting a new market for tourism activities. There may also be no increase or only a temporary increase in business. Evaluating the number of new businesses, business investment in new boats, or tours/trips/packages offered by existing businesses can provide insight into this. Additionally, the number of participants on tours/trips/packages or the percent of business revenue based on wind farm- related business may also reveal these effects. Measurement should consider scale differences between businesses and should be longitudinal to account for possible short-term effects to these businesses.

URI's research team found that the BIWF already affects fishing, boat, and aircraft charter businesses, in addition to land-based tourist programs and tours. Research participants revealed that existing recreation and tourism businesses near the wind farm have already incorporated the wind farm into existing programs and tours on land, sea, and air. Several charter operators already provide trips to the wind farm- many research participants noted that these charters and related entrepreneurial endeavors seemed to find success in their first summer of wind farm business (Summer 2017). There is also evidence that a few mainland tour or program leaders have integrated the wind farm into their programming, when the wind farm is visible. These indicators are especially important to monitor in the Block Island context because of the novelty that surrounds the wind farm as the first offshore wind farm in the United States. It is unknown if reported benefits to tourism businesses will be short-term and temporary or long-lasting and consistent over time.

TOURISM/RECREATION COMMUNITY BENEFITS (Indicator 33)

A wind farm may result in the provision of direct financial benefits to tourism and recreation communities and community organizations. A wind farm developer or government agency may provide incentives, subsidies, or mitigation to a community or a community organization where an offshore wind farm is developed, suggesting potential tourism benefits. Alternatively, no benefits may be provided, or benefits may be viewed negatively, suggesting either no impact or negative tourism impacts. Measuring actual benefits (subsidies and/or incentives offered by the government or the developer) or attitudes/perceptions about benefits. Actual benefits should be measured post-wind farm; attitudes and perceptions should be measured longitudinally.

Block Island is considered a small isolated island community. Historically, Block Island has had some of the highest electricity costs in the nation as a result of having to generate power through diesel generators. In addition, rolling summer brown-outs are frequent. Finally, the lack of fiber optic cables to the mainland makes internet access difficult and slow, inhibiting the use of credit card machines. With the implementation of BIWF the cost of electricity to tourism businesses,

the stability/ reliability of new electricity sources to for tourism businesses, and internet access and speed for tourism businesses and seasonal residents are expected to improve and therefore should be monitored.

ENGAGEMENT OF TOURISM AND RECREATION SECTORS IN THE WIND FARM PROCESS (Indicator 35)

The quantity and character of community members' engagement in the wind farm process may influence how they view the effects of the wind farm on tourism and recreation. This includes the engagement of tourism and recreation professionals as well as participants in these activities, and includes engagement in any part of the planning, siting, permitting, construction, and monitoring process. Engagement in site selection can include moving the wind farm further inshore, further offshore, or micrositing. Community members who were actively engaged, and who found that engagement meaningful, may be more inclined to view the wind farm as having a neutral or a positive effect on tourism and recreation, whereas those who feel they were not engaged, or dissatisfied with their engagement, may view the wind farm as having a negative effect. Alternatively, there may be no effect. This indicator includes the planning, site selection, permitting, construction, operation, and monitoring of the wind farm. Measuring the number of meetings, the format of meetings/engagement, or other related metrics may determine these effects. This can include actual engagement and/or the perception of engagement.

Research participants in the BIWF context expressed a desire for the recreation and tourism community to be engaged in the planning, development, and ongoing operation decisions for the wind farm. In this study, many tourism/recreation professionals and stakeholders referenced the BIWF public process and their participation (or lack thereof) in it. Because of the attention the recreation and tourism community placed on this aspect of the wind farm, URI's research team recommend that it be monitored for the BIWF- especially with regards to the wind farm's ongoing maintenance and future decommissioning. Findings from URI's research team suggest that the engagement (or lack thereof) of the public in the future operations of the wind farm will continue color perceptions of the wind farm going forward.

Tourists' and recreationalists' responses to viewing the wind farm (Indicator 39)

Tourists and recreationalists' experiences may be affected by the sight of the wind farm. The words individuals use to describe the sight of the wind farm may provide an indication of its effect on their experience. Individuals may use positive descriptions (e.g. "astounding") or descriptions suggesting interest and curiosity (e.g. "feat of engineering"), which may suggest potential tourism benefits. Individuals may also use negative descriptions (e.g. "eyesore"), which may suggest potential tourism impacts. Alternatively, there may be no effect.

Measuring how participants change their behavior in the presence of the wind farm provides insight into the experience of the wind farm. It is unclear whether reactions to the wind farm will change overtime, therefore making this an important indicator to monitor.

News coverage related to the wind farm/ social media trends (Indicator 28, Indicator 29)

Coastal and marine tourism and recreation are affected by tourists' and participants' choices of where to visit and what to see and do. Wind farm-related social media posts provide insight into one form of public discourse that illustrates how people are currently interacting with the wind farm. Images and hashtags shared through social media can shape potential tourists' and participants' knowledge, perceptions, and behavior, including choice of destination and activity. The extent and character of positive wind farm-related social media posts, in terms of technology, the environment, and new opportunities for recreation, could be an indicator of potential tourism and recreation benefits, while negative posts, focusing on the viewshed, the coastal experience, or impacts to wildlife and the environment, could be an indicator of potential tourism and recreation impacts. Alternatively, there could be no effect.

Additionally, coastal and marine tourism is affected by tourists' choices of where to visit and what to see and do. The amount of wind farm-related coverage in general news or tourism and recreation-specific publications has the potential to shape tourists' knowledge, perceptions, and behavior, including choice of tourist destination. The character of wind farm coverage in general news or tourism and recreation-specific publications could also affect tourism choices. Coverage of the wind farm as a positive development, in terms of technology, the environment, and new opportunities for recreation, could indicate potential tourism benefits, whereas coverage of the wind farm as a negative development, in terms of viewshed, the coastal experience or impacts to wildlife and the environment, could indicate potential tourism drawbacks. Alternatively, there could be no effect.

These two indicators were chosen to be part of the subset indicators for two reasons: their ability capture a variety of trends related the wind farm that other subset indicators may not capture and their convenience in monitoring. The monitoring of these two indicators will assist in capturing recreationalists' and tourists' general perceptions of and interest in the wind farm over time.

Effect of wind farm and cable on marine and avian species popular with wildlife viewers and effect of wind farm and cable on species considered undesirable (Indicator 26, Indicator 27)

Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on wildlife. A wind farm and/or cable may have actual or perceived effects on species with popular wildlife viewers, such as whales and birds. Tourists or participants perceiving positive effects (e.g. wildlife attraction) may increase their tourism and recreation activities in the area, suggesting potential benefits, whereas those perceiving negative effects (e.g. wildlife harm or death) may decrease their activities in the area, suggesting potential impacts. Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data.

Tourists' and recreationalists' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on species considered undesirable. A wind farm and cable/or cable may have actual or perceived effects on species considered undesirable (e.g. sharks for those swimming, or seals for those fishing). Those perceiving negative effects (e.g. attracting sharks) may decrease their activities in the area, suggesting potential impacts.
Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data.

URI's research team notes that these two indicators are important to monitor because southern New England has both desirable and undesirable species that are unique to the area. Any change in the number of desirable or undesirable species could be significant to tourism and recreation activities.

4.6 Guidance: How to Select and Apply Indicators in Other Settings

The 40 indicators included herein are a range of options - not all are recommended nor appropriate for all settings. Researchers should choose from among this range of options a set of indicators to monitor at a particular location. Indicators can be combined to respond to the needs of the community and the issues that surround the wind farm. Appendix VI: Social Indicator Sets is intended to help facilitate this decision-making process.

First, it is recommended that those leading the indicator selection process assess the local context. This includes consideration of the offshore wind farm itself (e.g. size, location, and distance from shore) as well as the surrounding context. Consideration of surrounding context should consider nearby tourism and recreation-dependent communities and economies, including what kinds of tourism and recreational activities and experiences are most common in these places and what kinds of participants and professionals most commonly participate in or support these activities. This should include both land- and boat-based activities. Second, it is recommended that those leading the indicator selection process consider available resources, including available data, funds, and personnel to support implementation. See below for further discussion of available data. Third, it is recommended that at least one indicator is selected from each of the "Indicator Sets" categories. Fourth, it is recommended that those leading the indicator selection process consider how these finding will be used and by whom. These individuals should be included in selecting indicators and may serve as excellent sources for collecting data.

4.7 Guidance: How to Measure

Researchers using these indicators may choose from among this range of indicator options a list of priority indicators to monitor at a particular location. Indicators can be combined to respond to the needs of the community and the issues that surround the wind farm. The scale of the wind farm (i.e. the number of turbines), the prominence of certain social and economic issues in the area, and convenience (with regards to financial/time commitments) are useful criteria for prioritization. The data needs of developers, government agencies, recreation and tourism associations, and other stakeholder organizations should also be considered for monitoring purposes.

Upon selecting priority indicators, evaluators intending to use the indicators must provide a plan for measuring those indicators given the local context and availability of local data. This section provides general guidance on how to collect data.

Each of the indicators presented herein may be measured many different ways - including both quantitatively and qualitatively - depending on available resources, including data. For the

indicators presented here, **data collection** can range from a relatively streamlined approach (i.e. using existing data or having volunteers administer a simple paper or online survey) to a rigorous social science research approach (i.e. hiring researchers at a nearby university to develop and administer a large-scale, multi-year survey). Given that many localities may not have the resources to develop a large-scale survey research study, it is important to remember that there are simple versions of data collection that can be led by local tourism councils, chambers of commerce, and associations that could still be useful and meaningful. Further, small local organizations may benefit from graduate students and volunteers who either have expertise or are seeking experience with offshore wind farms or social research.

Some of the indicators outlined herein might be measured using **existing data**. As discussed above, availability of data that are appropriate for this purpose varies notably by location and may be collected at the state or local level, by universities, or by private businesses or associations (e.g. chambers of commerce). Examples relevant for these indicators include the number of visitors visiting sites or beaches near or in view of the wind farm. Visitation numbers may be tracked by management agencies, tourism councils, or private organizations managing such sites. Not all existing data may be publicly available. For example, charter operators keep track of the number of trips and passengers, but may consider this information proprietary. In this case, evaluators may wish to explore developing confidentiality and/or non-disclosure agreements, or a collaborative arrangement with businesses that would provide them control over their data as well as direct benefits from use of the data.

As explained in the Section 4.5 of this report, **longitudinal** data collection is recommended for most indicators. In other words, it is recommended that data are collected over time at regular intervals, i.e. 1x/year for 5 years. The precise number of times or length of time a data point should be measured depends on the specific indicator and available resources. Some indicators are described as longitudinal (before/after), meaning it is best to measure this indicator before wind farm construction begins, and continue it through construction into operation. Examples of this include monitoring changes in fish abundance, distribution, and diversity. Others are described as longitudinal (after), meaning that this indicator can only be measured once the wind farm has been constructed, but that it is best to measure this indicator over a period of time following construction to determine whether the wind farm has just a temporary or a longer-term effect on tourism and recreation. Examples of this include monitoring effects on charter businesses.

The indicators presented herein include both **quantitative and qualitative** measures. More, many of the indicators could be measured *both* quantitatively and qualitatively depending on evaluators' goals and resources. Both types of data may be collected through surveys, though qualitative measures may require more complex survey instruments. For survey results to be statistically meaningful, surveys should be administered to a representative sample of individuals. Qualitative data can also be collected through interviews, focus groups, participant observation, or other forms of social research. Quantitative or qualitative data can also be collected through a variety of secondary sources, including news and social media.

Finally, when collecting indicator data and interpreting findings, it is critical to consider findings within the **broader context of factors that could explain the change** revealed by the indicator. For example, a decline in fish abundance around a wind farm could be explained by other

ecological factors such as climate change or fishing pressure. Additionally, a decline in tourist visitation to key sites around a wind farm could be explained by a decline in the economy or an unusually cold and rainy summer.

4.8 The Need for Baseline Data Collection

This section discusses the need for baseline data collection which could support potential future implementation of the indicators presented herein. This need is highlighted because the research team found a lack of tourism and recreation data in Rhode Island that could support monitoring the effects of the BIWF on recreation and tourism, and because of the high variability of tourism and recreation data which may be available in other locations.

For tourism and recreation data to be of use in monitoring the effects of an offshore wind farm on recreation and tourism, it must be collected at a scale and over a timeframe appropriate for this particular use. First, data must be collected at a relatively local scale (e.g. number of visits to individual beaches or to individual tourist towns in view of the wind farm), whereas many such datasets are collected or estimated at the county or state-wide level.

Second, data must be geospatially referenced where possible - in other words, specifying the precise location where an activity takes place (e.g. precise location of boating activity), whereas geospatial assessments of tourism and recreation activities are not regularly conducted.

Third, data must be collected over a sufficient length of time to provide a baseline - not just once. For example, many natural science assessments conducted prior to offshore wind farm construction include a minimum of three years of data.

Please see The Suite of Indicators (Section 4.5) to view examples of the types of data that may be considered. Additionally, please see Guidance: How to Measure (Section 4.7) for information on using these to measure baseline data.

5. References

Acheson, J. (2012). Attitudes toward offshore wind power in the Midcoast Region of Maine. *Maine Policy Review*, *21*(2), 42-55.

Albrecht, C., Wagner, A., Wesselmann, K., & Korb, M. (2013). The Impact of Offshore Wind Energy on Tourism.

Alexander, K. A., Wilding, T. A., & Heymans, J. J. (2013). Attitudes of Scottish fishers towards marine renewable energy. *Marine Policy*, *37*, 239-244.

Arlinghaus, R. (2006). On the apparently striking disconnect between motivation and satisfaction in recreational fishing: the case of catch orientation of German anglers. *North American Journal of Fisheries Management*, *26*(3), 592-605.

Aitchison, C. (2012). Tourism impact of wind farms. *Edinburgh, University of Edinburgh*.

Bailey, H., Brookes, K. L., & Thompson, P. M. (2014). Assessing environmental impacts of offshore wind farms: lessons learned and recommendations for the future. *Aquatic Biosystems*, *10*(1), 8.

Belfiore, S., Balgos, M., McLean, B., Galofre, J., Blaydes, M., & Tesch, D. (2003). A reference guide on the use of indicators for integrated coastal management – ICAM Dossier 1 IOC Manuals and Guides No. 45. UNESCO (English). *France, Intergovernmental Oceanographic Commission (IOC) of United Nations Educational, Scientific and Cultural Organization (UNESCO).*

Bergström, L., Sundqvist, F., & Bergström, U. (2013). Effects of an offshore wind farm on temporal and spatial patterns in the demersal fish community. *Marine Ecology Progress Series*, *485*, 199-210.

Bidwell, D. (2017). Ocean beliefs and support for an offshore wind energy project. *Ocean & Coastal Management*, *146*, 99-108.

Block Island Power Company (2017, May 1). Block Island Power Company Connected- Shuts Down Generators [Press release]. *Block Island Times.* Retrieved from https://www.blockislandtimes.com/article/island-operating-wind-farm-power/49352

Boissevain, J., & Selwyn, T. (2004). *Contesting the foreshore: Tourism, society, and politics on the coast*. Amsterdam, Amsterdam University Press.

Börger, T., Hooper, T. L., & Austen, M. C. (2015). Valuation of ecological and amenity impacts of an offshore windfarm as a factor in marine planning. *Environmental Science & Policy*, *54*, 126-133.

Brody, S. D., Grover, H., Bernhardt, S., Tang, Z., Whitaker, B., & Spence, C. (2006). Identifying potential conflict associated with oil and gas exploration in Texas state coastal waters: a multicriteria spatial analysis. *Environmental Management*, *38*(4), 597-617.

Broekel, T., & Alfken, C. (2015). Gone with the wind? The impact of wind turbines on tourism demand. *Energy Policy*, *86*, 506-519.

Brownlee, Matthew & C. Hallo, Jeffrey & Jodice, Laura. (2012). *2011 Survey of marine recreationists' attitudes towards potential offshore wind energy in South Carolina.* Clemson, SC, Clemson University.

Byrnes, L., Brown, C., Foster, J., & Wagner, L. D. (2013). Australian renewable energy policy: Barriers and challenges. *Renewable Energy*, *60*, 711-721.

Cantrill, J. G. (2012). Amplifiers on the commons: Using indicators to foster place-based sustainability initiatives. *Environmental Communication: A Journal of Nature and Culture*, *6*(1), 5-22.

Carrera, D. G., & Mack, A. (2010). Sustainability assessment of energy technologies via social indicators: Results of a survey among European energy experts. *Energy Policy*, *38*(2), 1030-1039.

CEQ Regulations for Implementing the Procedural Provisions of the NEPA, 40 CFR § 1500-1508 (2005).

Chen, Y., Parkins, J. R., & Sherren, K. (2018). Using geo-tagged Instagram posts to reveal landscape values around current and proposed hydroelectric dams and their reservoirs. *Landscape and Urban Planning*, *170*, 283-292.

Chen, Z., Guerrero, J. M., & Blaabjerg, F. (2009). A review of the state of the art of power electronics for wind turbines. *IEEE Transactions on power electronics*, *24*(8), 1859-1875.

Choi, H.C. and Sirakaya, E. (2006). Sustainability indicators for managing community tourism. *Tourism Management*, 27(6), 1274-1289.

Colburn, L.L., & Jepson, M. (2012). Social indicators of gentrification pressure in fishing communities: A context for social impact assessment. *Coastal Management*, *40*(3), 289-300.

Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social Vulnerability to Environmental Hazards. *Social Sciences Quarterly 84* (2): 242-261.

Collins, D. (2017, July 13). Ocean City officials say wind turbines too close to coast an eyesore. *WBAL-11 TV Baltimore.* Retrieved from http://www.wbaltv.com/article/ocean-city-officials-say-wind-turbines-too-close-to-coast-an-eyesore/10302856

Dalton, T., & Thompson, R. (2013). Recreational boaters' perceptions of scenic value in Rhode Island coastal waters. *Ocean & Coastal Management, 71*, 99-107.

Depellegrin, D. (2016). Assessing cumulative visual impacts in coastal areas of the Baltic Sea. *Ocean & Coastal Management, 119*, 184-198.

Ditton, R. B., Osburn, H. R., Baker, T. L., & Thailing, C. E. (2002). Demographics, attitudes, and reef management preferences of sport divers in offshore Texas waters. *ICES Journal of Marine Science, 59*(suppl), S186-S191.

Dwyer, J. & Bidwell, D. (2019). Chains of trust Energy justice, public engagement, and the first offshore wind farm in the United States. *Energy Research & Social Science, 47*, 166-176.

Eastern Research Group, Inc. (2014). *Measuring county-level tourism and recreation in the Gulf of Mexico region: Data, methods, and estimates.* (OCS Study BOEM 2014-660). New Orleans, LA.: U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Gulf of Mexico OCS Region.

Environmental Services, LLC. (2012). *Visual Impact Assessment.* Syracuse, NY: Deepwater Wind Block Island, LLC.

Eltham, D. C., Harrison, G. P., & Allen, S. J. (2008). Change in public attitudes towards a Cornish wind farm: Implications for planning. *Energy Policy, 36*(1), 23-33.

Fayram, A. H., & de Risi, A. (2007). The potential compatibility of offshore wind power and fisheries: an example using bluefin tuna in the Adriatic Sea. *Ocean & Coastal Management, 50*(8), 597-605.

Fikes, R. (2013). Artificial reefs of the Gulf of Mexico: A review of Gulf State programs & key considerations. *National Wildlife Federation.* Retrieved from: http://www.nwf.org/News-and-Magazines/Media-Center/Reports/Archive/2013/11-08-13-Review-of-Gulf-of-Mexico-Artificial-Reefs.aspx

Firestone, J., & Kempton, W. (2007). Public opinion about large offshore wind power: underlying factors. *Energy Policy, 35*(3), 1584-1598.

Firestone, J., Kempton, W., & Krueger, A. (2008). *Delaware opinion on offshore wind power. Final Report (January 2008)*. Delaware, University of Delaware College of Marine and Earth Studies.

Firestone, J., Kempton, W., & Krueger, A. (2009). Public acceptance of offshore wind power projects in the USA. *Wind Energy, 12*(2), 183-202.

Fischlein, M., Larson, J., Hall, D. M., Chaudhry, R., Peterson, T. R., Stephens, J. C., & Wilson, E. J. (2010). Policy stakeholders and deployment of wind power in the sub-national context: A comparison of four US states. *Energy Policy*, *38*(8), 4429-4439.

Frantál, B. (2015). Have local government and public expectations of wind energy project benefits been met? Implications for repowering schemes. *Journal of Environmental Policy & Planning*, *17*(2), 217-236.

Frantál, B., & Kunc, J. (2011). Wind turbines in tourism landscapes: Czech experience. *Annals of Tourism Research*, *38*(2), 499-519.

Frantál, B., & Urbánková, R. (2017). Energy tourism: An emerging field of study. *Current Issues in Tourism*, *20*(13), 1395-1412.

Fraser, E.D.G., Dougill, A.J., Mabee, W., Reed, M., & McAlpine, P. (2006). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of Environmental Management 78*, 114-127.

Fritz, J. (2017, July 21). Proposed wind farm runs into opposition in Ocean City, Congress. *The Baltimore Sun*. Retrieved from http://www.baltimoresun.com/news/maryland/politics/blog/bs-md-wind-farm-fight-20170721-story.html

Gee, K. (2010). Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy*, *27*(2), 185-194.

Genskow, K. & Prokopy, L.S. (2009). Lessons Learned in Developing Social Indicators for Regional Water Quality Management. *Society and Natural Resources 23*(1), 83-91.

Gill, A. B., Bartlett, M., & Thomsen, F. (2012). Potential interactions between diadromous fishes of UK conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments. *Journal of Fish Biology*, *81*(2), 664-695.

Goossen, M., & Langers, F. (2000). Assessing quality of rural areas in the Netherlands: finding the most important indicators for recreation. *Landscape and Urban Planning*, *46*(4), 241- 251.

Gordon, B. (1986). The souvenir: Messenger of the extraordinary. *The Journal of Popular Culture*, *20*(3), 135-146.

Gordon Jr, W. R. (1993). Travel characteristics of marine anglers using oil and gas platforms in the central Gulf of Mexico. *Marine Fisheries Review*, *55*(1), 25-31.

Greene, J. S., & Geisken, M. (2013). Socioeconomic impacts of wind farm development: a case study of Weatherford, Oklahoma. *Energy, Sustainability and Society*, *3*(1), 2.

Haggett, C. (2008). Over the sea and far away? A consideration of the planning, politics and public perception of offshore wind farms. *Journal of Environmental Policy & Planning*, *10*(3), 289-306.

Haggett, C. (2011). Understanding public responses to offshore wind power. *Energy Policy*, *39*(2), 503-510.

Hall, N., Ashworth, P., & Devine-Wright, P. (2013). Societal acceptance of wind farms: Analysis of four common themes across Australian case studies. *Energy Policy, 58*, 200-208.

Hall, M.C., & Page, S.J. (2014). Introduction: Tourism Matters. In *The Geography of Tourism and Recreation: Environment, Place, and Space* (4th Edition). Abingdon, Oxon; New York, NY, Routledge.

Heck, N., Dearden, P., McDonald, A., & Carver, S. (2011). Developing MPA performance indicators with local stakeholders' input in the Pacific Rim National Park Reserve, Canada. *Biodiversity and Conservation*, *20*(4), 895-911.

Hiett, R.L., & Milon, J.W. (2002). *Economic impact of recreational fishing and diving associated with offshore oil and gas structures in the Gulf of Mexico*. (OCS Study MMS 2002-010). New Orleans, LA.: US Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region.

Himes, A. H. (2007). Performance indicators in MPA management: using questionnaires to analyze stakeholder preferences. *Ocean & Coastal Management*, *50*(5-6), 329-351.

Hunt, L. M. (2005). Recreational fishing site choice models: insights and future opportunities. *Human Dimensions of Wildlife*, *10*(3), 153-172.

ICF Incorporated, L.L.C. (2012). *Atlantic Region Wind Energy Development: Recreation and Tourism Economic Baseline Development.* (OCS Study BOEM 2012-085). Herndon, VA.: U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs.

Industrial Economics, Inc. and SC&A, Inc. (2015a). *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development - Volume 1: The 2015 Revised Offshore Environmental Cost Model (OECM).* (OCS Study BOEM 2015-052). Washington, D.C., U.S. Department of the Interior, Bureau of Ocean Energy Management.

Industrial Economics, Inc. and SC&A, Inc. (Industrial Economics) (2015b). *Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development - Volume 2: Supplemental Information to the 2015 Revised OECM.* (OCS Study BOEM 2015-053). Washington, D.C., U.S. Department of the Interior, Bureau of Ocean Energy Management.

Irvin, R. A., & Stansbury, J. (2004). Citizen participation in decision making: is it worth the effort? *Public Administration Review*, *64*(1), 55-65.

Jones, C. R., & Eiser, J. R. (2010). Understanding 'local' opposition to wind development in the UK: How big is a backyard? *Energy Policy*, *38*(6), 3106-3117.

Jordan, E., & Javernick-Will, A. (2013). Indicators of Community Recovery: Content Analysis and Delphi Approach. *Natural Hazards Review* 14: 21-28.

Koundouri, P., Kountouris, Y., & Remoundou, K. (2009). Valuing a wind farm construction: a contingent valuation study in Greece. *Energy Policy*, *37*(5), 1939-1944.

Kenney, M. A., Janetos, A. C., & Lough, G. C. (2016). Building an integrated US national climate indicators system. *Climatic Change*, 135(1), 85-96.

Krohn, S., & Damborg, S. (1999). On public attitudes towards wind power. *Renewable Energy*, *16*(1-4), 954-960.

Ladenburg, J. (2010). Attitudes towards offshore wind farms—The role of beach visits on attitude and demographic and attitude relations. *Energy Policy*, *38*(3), 1297-1304.

Ladenburg, J., & Dubgaard, A. (2009). Preferences of coastal zone user groups regarding the siting of offshore wind farms. *Ocean & Coastal Management*, *52*(5), 233-242.

Ladenburg, J., & Möller, B. (2011). Attitude and acceptance of offshore wind farms—The influence of travel time and wind farm attributes. *Renewable and Sustainable Energy Reviews*, *15*(9), 4223-4235.

Landry, C. E., Allen, T., Cherry, T., & Whitehead, J. C. (2012). Wind turbines and coastal recreation demand. *Resource and Energy Economics*, *34*(1), 93-111.

Leonhard, S. B., Stenberg, C., & Støttrup, J. G. (Eds.). (2011). *Effect of the Horns Rev 1 offshore wind farm on fish communities: follow-up seven years after construction*. Denmark, Danish Energy Authority.

Lilley, M. B., Firestone, J., & Kempton, W. (2010). The effect of wind power installations on coastal tourism. *Energies*, *3*(1), 1-22.

Lutzeyer, S., Phaneuf, D. J., & Taylor, L. O. (2017). *The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment.* (CEnREP Working Paper no. 17-017). Raleigh, NC. North Carolina State University Center for Environmental and Resource Economic Policy.

Mackinson, S., Curtis, H., Brown, R., McTaggart, K., Taylor, N., Neville, S. and Rogers, S. (2006). *A report on the perceptions of the fishing industry into the potential*

socioeconomic impacts of offshore wind energy developments on their work patterns and income. Science Series Technical Report no. 133, Cefas Lowestoft.

MacCloud, D. V. L., & Carrier, J. G. (2010). Tourism, power and culture: insights from anthropology. In D.V.L. MacCloud & J.G. Carrier (Eds.), *Tourism, power and culture: Insights from anthropology* (3-20). Channel View Publications: Bristol, UK.

Moscardo, G. and Ormsby, J., (2004). *A social indicators monitoring system for tourist and recreational use of the Great Barrier Reef.* (Research publication No. 80). Queensland, Australia: Great Barrier Reef Marine Park Authority (GBRMPA).

Marine Management Organization (2013). Compilation of information on tourism relevant to marine planning in the South Inshore and Offshore marine plan areas. A report produced for the Marine Management Organization. (MMO Project No:1038). Newcastle, UK: Marine Management Organization.

Nassauer, J. I., & Benner, M. K. (1984). Visual preferences for a coastal landscape including oil and gas development. *Journal of Environmental Management*, *18*(4), 323-338.

Neff, C. (2014). Human perceptions and attitudes towards sharks. E.J. Techera & J.G. Carrier (Eds.) In *Sharks: Conservation, governance and management* (107-131). New York: Routledge.

NFO World Group. (2003). Investigation into the Potential Impact of Wind Farms on Tourism in Wales. *Nature*, (October 2003), 1–22.

NOAA National Marine Fisheries Service. (2013). *Fisheries Economics of the United States*. Retrieved from: http://www.st.nmfs.noaa.gov/economics/publications/feus/FEUS-2013/fisheries_economics_2013

Obaid, R. R. (2011). Reducing peak electricity demand through 300MW wind farm north of Jeddah, Saudi Arabia. *International Journal of Engineering and Technology*, *11*(2), 134-140.

Ojeda-Martínez, C., Casalduero, F. G., Bayle-Sempere, J. T., Cebrian, C. B., Valle, C., Sanchez-Lizaso, J. L., ... & Salas, F. (2009). A conceptual framework for the integral management of marine protected areas. *Ocean & Coastal Management*, *52*(2), 89-101.

Oteros-Rozas, E., Martín-López, B., Fagerholm, N., Bieling, C., & Plieninger, T. (2018). Using social media photos to explore the relation between cultural ecosystem services and landscape features across five European sites. *Ecological Indicators 94*(2), 74-86.

Pasqualetti, M. J. (2011). Opposing wind energy landscapes: a search for common cause. *Annals of the Association of American Geographers*, *101*(4), 907-917.

Parsons, G. & Firestone, J. (2018). *Atlantic Offshore Wind Energy Development: Values and Implications for Recreation and Tourism*. (OCS Study BOEM 2018-013). Sterling, VA.: US Department of the Interior, Bureau of Ocean Energy Management.

Pascual, J.J. (2004). Littoral Fishermen, Aquaculture, and Tourism in the Canary Islands: Attitudes and Economic Strategies. 61-82, In *Contesting the Foreshore – Tourism, Society, and Politics on the Coast - MARE Publication Series No. 2* (61-82). Boissevain, J. & Selwyn, T. (eds.). Amsterdam, Netherlands: Amsterdam University Press.

Planning Decisions, Inc. (2014). *Economic Impact & Skills Gap Analysis*. Prepared for the Rhode Island Marine Trades Association. Retrieved from: http://www.gwb.ri.gov/pdfs/RIMTAImpactRpt0914.pdf.

Polecon Research. (2013). *The impact of wind farms on tourism in New Hampshire*. Retrieved from: http://www.nhsec.nh.gov/projects/2013-02/documents/131212appendix_31.pdf.

Rand, J., & Hoen, B. (2017). Thirty years of North American wind energy acceptance research: What have we learned? *Energy Research & Social Science, 29*, 135-148.

Reed, M.S., Fraser, E.D., & Dougill, A.J. (2006). An adaptive learning process for developing and applying sustainability indicators with local communities. *Ecological Economics, 59*(4), 406-418.

Reed, M.S., Dougill, A.J., & Baker, T.R. (2008). Participatory indicator development: What can ecologists and local communities learn from each other? *Ecological Applications* 18(5): 1253-1269.

Richards, D.R., & Friess, D. A. (2015). A rapid indicator of cultural ecosystem service usage at a fine spatial scale: content analysis of social media photographs. *Ecological Indicators, 53*, 187-195.

Richards, G., Noble, B., & Belcher, K. (2012). Barriers to renewable energy development: A case study of large-scale wind energy in Saskatchewan, Canada. *Energy Policy*, *42*, 691-698.

Rudolph, D. (2014). The resurgent conflict between offshore wind farms and tourism: Underlying storylines. *Scottish Geographical Journal*, *130*(3), 168-187.

Schulman, S., & Rivera, J. (2009). Survey of Residents & Visitors in the Four Communities along the Southern New Jersey Shore. *William J. Hughs Center for Public Policy and Richard Stockton College of New Jersey. Submitted to Fishermen's Energy LLC.* Retrieved from: http://www.fishermensenergy. com/public-opinionstudy/20090810_Hughes_Center_Stockton_College_Opinion_Poll_Report_for_Fisherme ns_Energy. pdf.

Shiau, T. & Chuen-Yu, J. (2016). Developing an indicator system for measuring the social sustainability of offshore wind power farms. *Sustainability, 8*(470), 1-14.

Smith, H., Smith, J., Lindenfeld, L., Silka, L., & Gilbert, C. (2016). Media and policy in a complex adaptive system: An analysis of wind energy legislation. *Energy Research & Social Science, 19,* 53-60.

Smith, H., Smythe, T., Moore, A., Bidwell, D. & McCann, J. (2018). The social dynamics of turbine tourism and recreation: Introducing a mixed-method approach to the study of the first U.S. offshore wind farm. *Energy Research & Social Science* (prepublication).

Smith, V.L. (1989). Introduction. *Hosts and Guests: The Anthropology of Tourism*. Philadelphia, Pennsylvania: University of Pennsylvania Press.

Snyder, B., & Kaiser, M.J. (2009). Ecological and economic cost-benefit analysis of offshore wind energy. *Renewable Energy, 34*(6), 1567-1578.

Stephens, J. C., Rand, G. M., & Melnick, L. L. (2009). Wind energy in US media: a comparative state-level analysis of a critical climate change mitigation technology. *Environmental Communication, 3*(2), 168-190.

Stephens, J. C., Wilson, E. J., & Peterson, T. R. (2008). Socio-Political Evaluation of Energy Deployment (SPEED): An integrated research framework analyzing energy technology deployment. *Technological Forecasting and Social Change, 75*(8), 1224-1246.

Stronza, A. (2001). Anthropology of tourism: Forging new ground for ecotourism and other alternatives. *Annual Review of Anthropology, 30*(1), 261-283.

Teisl, M. F., McCoy, S., Marrinan, S., Noblet, C. L., Johnson, T., Wibberly, M., ... & Klein, S. (2015). Will offshore energy face "fair winds and following seas"?: Understanding the factors influencing offshore wind acceptance. *Estuaries and Coasts, 38*(1), 279-286.

Thomsen, F., Lüdemann, K., Kafemann, R., & Piper, W. (2006). *Effects of offshore wind farm noise on marine mammals and fish*. Biola, Hamburg, Germany: COWRIE Ltd.

Train, K. E. (1998). Recreation demand models with taste differences over people. *Land Economics, 74*(2), 230-239.

Uhlmann, V., Rifkin, J. B., Everingham, J. Head, B. & May, K. (2014). Prioritising indicators of cumulative socio-economic impacts to characterise rapid development of onshore gas resources. *The Extractive Industries and Society, 1*, 189–199.

van Zanten, B.T., Van Berkel, D.B., Meentemeyer, R.K., Smith, J.W., Tieskens, K.F., & Verburg, P.H. (2016). Continental-scale quantification of landscape values using social media data. *Proceedings of the National Academy of Sciences, 113*(46), 12974-12979.

Vera, I.A., Langlois, L.M., Rogner, H.H., Jalal, A.I., & Toth, F.L. (2005). Indicators for sustainable energy development: An initiative by the International Atomic Energy Agency. In *Natural Resources Forum* 29(4), 274-283.

Vilar, C., Amarís, H., & Usaola, J. (2006). Assessment of flicker limits compliance for wind energy conversion system in the frequency domain. *Renewable Energy*, *31*(8), 1089-1106.

Voltaire, L., Loureiro, M.L., Knudsen, C., & Nunes, P.A.L.D. (2017). The impact of offshore wind farms on beach recreation demand: Policy intake from an economic study on the Catalan coast. *Marine Policy*, *81*, 116-123.

Voss, C.M., Peterson, C.H., & Fegley, S.R. (2013). *Fishing, Diving, and Ecotourism: Stakeholder Uses and Habitat Information for North Carolina Wind Energy Call Areas*. (OCS Study BOEM 2013-210). Herndon, VA.: U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs.

Waldo, Å. (2012). Offshore wind power in Sweden—A qualitative analysis of attitudes with particular focus on opponents. *Energy Policy*, *41*, 692-702.

Westerberg, V., Jacobsen, J. B., & Lifran, R. (2013). The case for offshore wind farms, artificial reefs and sustainable tourism in the French Mediterranean. *Tourism Management*, *34*, 172-183.

Westerberg, V., Jacobsen, J. B., & Lifran, R. (2015). Offshore wind farms in Southern Europe–Determining tourist preference and social acceptance. *Energy Research & Social Science*, *10*, 165-179.

White, S. (2010). *Measuring Tourism Locally: Guidance Note Four: Tourism Benchmarking and Performance Indicators.* Newport, UK.: Office for National Statistics.

White, C., Halpern, B.S., & Kappel, C.V. (2012). Ecosystem service tradeoff analysis reveals the value of marine spatial planning for multiple ocean uses. *Proceedings of the National Academy of Sciences*, *109*(12), 4696-4701.

Wilhelmsson, D., Malm, T., & Öhman, M.C. (2006). The influence of offshore windpower on demersal fish. *ICES Journal of Marine Science*, *63*(5), 775-784.

Wilhelmsson, D., & Malm, T. (2008). Fouling assemblages on offshore wind power plants and adjacent substrata. *Estuarine, Coastal and Shelf Science*, *79*(3), 459-466.

Williams, J., & Lawson, R. (2001). Community issues and resident opinions of tourism. *Annals of Tourism Research*, *28*(2), 269-290.

Wilson, E.J., & Stephens, J.C. (2009). Wind deployment in the United States: States, Resources, Policy, and Discourse. *Environmental Science and Technology 43*, 9063-9070.

Wilson, G.A., & Dyke, S.L. (2016). Pre-and post-installation community perceptions of wind farm projects: the case of Roskrow Barton (Cornwall, UK). *Land Use Policy*, *52*, 287-296.

Wilson, J. C., & Elliott, M. (2009). The habitat-creation potential of offshore wind farms. *Wind Energy*, *12*(2), 203-212.

6. Appendices

Appendix I. **Literature Review**

Appendix II. **Content Analysis Report**

Appendix III. **Participant Observation Year One Report**

Appendix IV. **Participant Observation Year Two Report**

Appendix V. **Focus Group Report**

Appendix VI. **Social Indicator Sets**

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM's Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix I: Literature Review for Identifying Indicators of Offshore Wind Benefits (2018)

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix I: Literature Review for Identifying Indicators of Offshore Wind Benefits (2018)

August / 2018

Prepared under Agreement Number MP16PC00016
By
University of Rhode Island
45 Upper College Rd.
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study collaboration and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Agreement Number MP16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management website at www.boem.gov/Environmental-Studies-EnvData/, click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068.

CITATION

Appendix I: Literature Review for Identifying Indicators of Offshore Wind Benefits. 2018. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 39 pp.

Contents

List of Abbreviations and Acronyms

BOEM	Bureau of Ocean Energy Management

1 Introduction

The University of Rhode Island has assembled the following literature review. Three major topics have been reviewed: 1) potential effects of offshore wind farms on tourism and recreation, 2) the application of social indicators, and 3) baseline information relevant to tourism and recreation in the project area of Block Island and coastal areas of southern Rhode Island.

2 Potential Effects of Offshore Wind Farms on Tourism and Recreation

When an offshore wind energy project is proposed, people in communities near the proposed site and other interest groups frequently raise concerns that the project will affect tourism and recreation (Gee 2010; Rudolf 2014). Although there is often a presumption that wind energy projects threaten tourism (via visual impacts and resource-use conflicts), people also raise the potential of offshore wind farms acting as an asset to the tourism industry. This review of the literature seeks to inform several questions:

1. What evidence exists regarding the real or potential impacts of offshore wind farms on tourism and recreation?
2. What aspects of offshore wind farms could impact tourism and recreation?
3. What factors typically influence coastal tourism rates and/or affect tourism and recreation experiences?
4. Are there lessons from the offshore oil and gas industry that can be applied to the issue of offshore wind farms and tourism and recreation?

There is little empirical evidence for how wind energy projects have affected tourism and recreation; however, the literature suggests that wind farms do not negatively influence tourism to a substantial degree, and in fact, they may act as a minor attraction (Westerberg et al. 2013). Most work on wind farm tourism impacts examine the potential impacts of a proposed wind farm, based mostly on the responses of tourists or residents to simulations. These studies provided mixed results for whether a wind farm would dissuade or attract visitors to an area. With relative consistency, researchers find concerns about visual impacts of offshore wind farms, which decrease as distances of the wind farm from shore are increased (Ladenburg, 2009; Landry et al. 2012; Lilley et al. 2010; Westerberg et al. 2013; Westerberg et al. 2015, Parsons et al. 2018). There is some evidence that more frequent visitors to an area may be most concerned about potential wind farms, based on their desire to preserve natural or pristine settings (Ladenburg 2009; Landry et al. 2012, Voltaire et al., 2017). Researchers stress that tourists are not a singular group, and that their attitudes towards wind farms are influenced by personal factors, beliefs about renewable energy and the environment, and motivations for tourism and feelings about the landscape (Broekel and Alfken 2015; Ladenburg 2009; Westerberg et al. 2015, Smith et al., 2018). There is also evidence that wind farms can attract tourists or revitalize tourism sectors (Albrecht et al. 2013; Firestone et al. 2008; Frantál & Kunc, 2011; Frantál & Urbánková, 2014).

There is substantial literature about general public attitudes towards wind energy (on- and offshore), which provides further insights into how offshore wind farms could affect tourism. While the public routinely expresses concerns that offshore wind farms will negatively influence tourism (Gee 2010), the literature also highlights potential impacts that may have indirect effects on tourism. Again, public

attitudes are related to personal characteristics and general beliefs about renewable energy (Krohn and Damborg 1999; Ladenburg 2009). Evidence suggests that people who live further away from wind farms may be less supportive than those who have become more accustomed to them (Ladenburg and Moller 2011, Firestone et al., 2018); however, most of the research is based on expectations of potential developments. While the public frequently expresses concerns about the visual impacts (Haggett 2008), there is evidence that individuals are most concerned about impacts on marine life (Firestone et al. 2009; Firestone and Kempton 2007; Koundouri et al. 2009). These concerns may be based on attitudes towards the sea as a natural space (Bidwell 2017; Gee 2010; Haggett 2008) and attachment to sites (Pasqualetti 2011). The public does express some concern about potential negative impacts towards recreational activities, particularly fishing and boating (Firestone et al. 2009).

We have also reviewed literature focused on the oil and gas industry (as well as other energy sources), which have longstanding experiences with offshore structures. While much of this literature concerns the risks of petroleum spills to tourism and recreation, there are some lessons applicable to offshore wind energy. Depending on their distance from shore, oil and gas structures can negatively affect property values (BOEM 2015). However, there is also evidence that for some members of the public, oil and gas developments meeting particular criteria are perceived as visually attractive (Nassauer and Benner 1984). The public expresses some concerns about maintaining access to recreational fishing areas and potential biological impacts (BOEM 2013), but there is strong evidence that offshore structures are perceived as beneficial to fishing (by providing habitat that increases fish abundance) and recreational diving (BOEM 2002; Fikes 2013). An older study of public attitudes towards potential offshore nuclear facilities revealed a small possible decrease in beachgoers, but evidence from actual facilities did not reveal any adverse impacts (Baker et al. 1980).

The anthropological literature on tourism reviewed to date offers broad tourism considerations that may provide useful context for this study. However, this literature has provided limited insight into specific questions such as factors influencing tourist choice of destination or indicators that can be used to monitor tourism. The tourist's choice of destination and enjoyment of that location is shaped by both place and space - both the physical aspects of a space and intangible aspects informed by history, culture and other factors (Selwyn and Boissevain 2004; Hall and Page 2014). The distinction between tourism and recreation was once shaped by the focus of recreation on local, outdoor, non-commercial activities, but Hall and Page (2014) note that integrated research is now needed in part because new forms of tourism, such as nature-based and ecotourism, blur this distinction. Other types of tourism may include ethical, cultural, historical, environmental, and recreational (Smith 1989) and draw attention to the diversity of factors shaping tourism. Stronza (2001) and Macleod and Carrier (2010) note that tourism is shaped by linkages and interactions between tourists, guests, and local residents, and Stronza (2001) calls attention to the need for a holistic approach to consider both locals and tourists as well as both incentives and impacts of tourism participation. Two of these tourism papers provide relevant information for this project based on empirical data analysis. Deidrich and Garcia-Buades (2009) tested a theory related to tourism destination decline in a Belizean community and noted how local perceptions and reactions to tourism are important in devising indicators of tourism sustainability. Ditton et al. (2002) examined recreational fishing as a form of tourism when anglers crossed state lines and evaluated survey data to understand the extent to which anglers travel to other states to fish. They noted that little is understood about how and why states gain and lose angler tourists and pointed out that fishing tourism and fisheries management should be better linked to better manage and promote fisheries tourism.

2.1 Impacts of offshore and onshore wind energy on tourism and recreation

2.1.1 Albrecht, C., Wagner, A., & Wesselmann, K. (2013). Stiftung Offshore-Windenergie (German Offshore Wind Energy Foundation): Good Practices and Perspectives for the South Baltic Region the Impact of Offshore Wind Energy on Tourism.

The Stiftung Report focuses on how offshore wind energy can be harnessed to attract new and greater numbers of tourists to the South Baltic Region. The article, similar to previous articles, points out the fears related to offshore wind and its impact on tourism; impacts include: 1) change in landscape, 2) the conflicting use of sea space, 3) noise and shadow flickering, and 4) potential collisions between the turbines and large vessels. While there are conflicting results on offshore wind support, the report provides best practices to increase support. According to the article, good practices to increase support include: designing the turbines in a way that makes them fit better into the landscape, advertising the project, creating good communications strategies to elicit positive associations for viewers, addressing tourism impact fears early on in the process, and trying to incorporate the project into the local tourism concept. By addressing fears early on and designing the project accordingly, the article claims that offshore wind can provide new job opportunities, can create added value for a region by providing another tourist activity, and may attract a new clientele of tourists.

2.1.2 Aitchison, C. (2012). Tourism Impact of Wind Farms: Submitted to Renewables Inquiry Scottish Government. vol. NA, NA edn, University of Edinburgh, Edinburgh.

The author of this article seeks to clarify how onshore wind farms may impact tourism; primary and secondary evidence was used to analyze both potential and actual impact. According to Aitchison, the two largest and most rigorous studies to date include: Aitchison's (2004) University of the West of England's report titled "The Potential Impact of Fullabrook Wind Farm Proposal, North Devon: Evidence Gathering of the Impact of Wind Farms on Visitor Numbers and Tourist Experience," and Glasgow Caledonian University's (GCU) (2008) report titled "The Economic Impact of Wind Farms on Scottish Tourism." Through her analysis of these studies and other previous studies, Aitchison finds that there has been no measurable economic impact of wind farms on tourism. The UWE and GCU studies concluded that the development of wind farms does not result in decreased tourist numbers, tourist experience, or tourism revenue. Evidence actually suggests that areas with wind farms could see a boost in visitor numbers and tourist related expenditures. Aitchison also found that while there may be opposition during the beginning stages of wind farm siting, opposition tends to decrease after construction.

2.1.3 Broekel, T., & Alfken, C. (2015). Gone with the Wind? The Impact of Wind Turbines on Tourism Demand. *Energy Policy*, *86*, 506–519.

Unlike the previous studies, this paper analyzes the impact of onshore wind on tourism by using spatial panel regression techniques and secondary data reflecting tourist activities and turbine locations to show variance in tourism demand. This study showed an overall negative effect of onshore turbines (comprising both inland and coastal) on tourist demand in German municipalities. However, in coastal regions there was an opposite effect; there was a positive relationship between the number of installed wind turbines in the municipalities and tourist demand. To explain this relationship, the authors put forward the idea of place displacement; this concept suggests that tourists avoid their preferred destinations when they are located close to highly dense areas of wind turbines and instead move to areas with less exposure to the turbines. An interesting point raised in this article is the idea that turbines may be historically unacceptable in certain landscapes; according to the authors tourists may associate rural

landscapes with historical periods and the introduction of turbines into that historical landscape may conflict with tourist expectations. Another interesting observation made in this article is that annoyance with onshore wind farms increases as the number of turbines increase. Similar to previous articles, this article also cites the importance of place attachment and user frequency.

2.1.4 Brownlee, M., Hallo, J., Jodice, L. (2012). Final Report 2011 Survey of Marine Recreationists' Attitudes Towards Potential Offshore Wind Energy in South Carolina.

The main objective of this report was to evaluate stakeholder attitudes and potential behavioral responses to offshore wind along the coast of South Carolina. Results from semi-structured interviews and questionnaires indicate high levels of support for offshore wind energy along the coast of North Myrtle Beach and Georgetown in South Carolina. Approximately 73% of coastal recreationists reported some level of support for offshore wind energy in the study areas. Among the 25% of respondents that reported some level of opposition, the belief that the scenic or natural beauty of the area would be decreased was the number one reason for opposition. The results also indicate that there would be a limited change in site visit and frequency by users due to the presence of wind energy.

2.1.5 Damsbo-andersen, L. (2013). Offshore Wind Farms and Tourism Potentials in Guldborgsund Municipality.

While not the main focus of this report, the effect of offshore wind farms on tourism around the world is investigated. Similar to previous studies, this report highlights the potential of offshore wind as a new sector of tourism, and more so, how empirical evidence suggests that offshore wind farms have had no negative impact on tourism. To highlight the tourism impact, or lack of, the report focuses on four studies: 1) "The Effect of Wind Power Installations on Coastal Tourism," 2) "Sociological Investigation of the Reception of the Horns Rev and Nysted Offshore Wind Farms in Local Communities," 3) "The Impact of Wind Farms on the Tourist Industry in the UK," and 4) "The Economic Impact of Wind Farms on Scottish Tourism." Study results from each of these studies show a generally positive attitude to offshore wind farms. More importantly, all of the studies reveal that tourism has not been negatively impacted by the offshore wind farms. Instead, survey results suggest that tourists are interested in learning more about the wind turbines during their visit, thus revealing an opportunity for tourism project development.

2.1.6 Fooks, J., Messer, K., Duke, J., Johnson, J., Li, T., & Parsons, G. (2017). Tourist Viewshed Externalities and Wind Energy Production. *Agricultural and Resource Economics Review, 46*(2), 224-241.

This article details the findings from an economic study concerning tourists' willingness to pay for hotel rooms based on proximity to turbines. Passengers on the Lewes-Cape May Ferry participated in a 60-minute choice-experiment, which produced a very small sample size of only 65 surveys. Overall, being able to see turbines reduced willingness to pay, however there was a small group of tourists (12.3%) who indicated that they would be willing to pay more for a view of the structures.

2.1.7 Foster, J. M. (2013). "Meet Michigan's Thriving Wind Turbine Tourism Industry." *Climate Progress.*

This article highlights how various wind farms across the country have led to the development of a new type of tourism. The Lake Winds Energy Park, a site with 900 turbines in Michigan, developed tours as a result of public interest; interest in the site has grown to the point that during the summers there are continual waiting lists for the tours. In California, tourists pay up to $35 to see one of the country's oldest

wind farms in North Palm Springs. In Atlantic City, New Jersey wind turbines attract about 15,000 visitors each year. While highlighting how wind development has become a new type of tourism, the article also reflects on the lack of consistent data regarding the impacts of wind farms on the tourism industry as a whole.

2.1.8 Eltham, D. C., Harrison, G. P., & Allen, S. J. (2008). Change in public attitudes towards a Cornish wind farm: Implications for planning. *Energy Policy*, *36*(1), 23–33.

The authors of this article seek to discover if there is a change in public support for wind farms from pre to post construction. The article focuses on a wind farm located in St. Newlyn East in Cornwall, England; residents were asked to recall their opinions of the Carland Cross Wind Farm in 1991 and then in 2006. Results from the study suggest that significant changes in resident attitudes regarding the wind farms' attractiveness and energy security importance occurred. While the perceived attractiveness and energy security importance was significantly different from pre to post construction, there was no reliable change in residents' general acceptance of the windfarm between 1991 and 2006. In an effort to better capture public perceptions and prevent further wind farm opposition, the authors suggest that developers and planning authorities need to engage local stakeholders early and ensure transparency and participatory engagement. In the end, the findings from this study support the literature on public perceptions to wind farms, and have the potential to help mitigate future opposition to wind farm projects.

2.1.9 Frantál, B., & Kunc, J. (2011). Wind turbines in tourism landscapes: Czech Experience. *Annals of Tourism Research*, *38*(2), 499–519.

This article seeks to explore possible impacts onshore wind farms may have on landscape imagery and potential tourism. While this article focuses on onshore wind farms the impacts to tourism can be extrapolated to offshore placement as well. Surveys and interviews were used to identify potential impacts on tourist perceptions and experience, preferences for wind farm siting locations, and the tourism potential for these sites. The results indicate that if placed in suitable locations, wind farms may only have minor impacts on the tourist experience and may actually have the potential to support development of a new form of tourism, energy tourism. Similar to the previous article, tourist preferences regarding site selection and motivation affects tourist support for wind farms; respondents that find the attractiveness of local nature and scenery to be the most important aspect in their destination choice were sensitive to unfavorable landscape interferences. However, 90% of tourists stated that wind turbines in an area do not influence their destination choice.

2.1.10 Frantál, B., & Urbánková, R. (2014). Energy tourism: An emerging field of study. *Current Issues in Tourism*, *0*(0), 1–18.

This article seeks to provide a new perspective on the energy and tourism relationship; energy was conceptualized and investigated as a driver and/or constraint of tourism and as a tourist attraction itself at three energy tourist attractions: 1) a Coal Safaris, 2) a nuclear power plant information center, and 3) Dragon Kite Festivals under wind turbines. The authors explore the motivations and perceived benefits of energy tourism for organizations, tourist experience and motivation, and changes in attitude toward energy development before and after the site visits. Survey results suggest that the main motivating factor behind visits to energy attractions is an interest in a specific technology of energy production or just energy in general; those that visited the wind farm were mostly interested in the specific aspects of wind turbine operation. Of those that visited the wind farm, survey results show that about one quarter of respondents reported a positive change in attitude towards wind energy after their visit. On top of improving people's energy literacy and impacting the way they consume energy, the authors suggest that

energy tourism can increase social acceptance of various energy sources. Unlike any of the previous articles discussed, this article provides a unique perspective on the energy-tourism nexus. Overall, the authors suggest that energy facilities and energy landscapes may represent a new type of attraction for tourists.

2.1.11 Ladenburg, J., & Dubgaard, A. (2009). Preferences of coastal zone user groups regarding the siting of offshore wind farms. *Ocean and Coastal Management*, *52*(5), 233–242.

In this article, the authors examine how coastal zone use and frequency affect perceptions of visual impact; value was attached to the visual disamenities through the use of a choice experiment and a contingent valuation model. The results suggest that those that frequently use the coastal zone perceive the visual impacts from a wind farm to be more severe than those with less strong connections or infrequent use. An interesting observation made in this article was the role of landscape perceptions on perceived impact; less frequent users may view the coastal landscape as a resource with various available goods whereas frequent users may view the coastal landscape as a more pristine resource where industrial usage doesn't fit. While wind farm construction may negatively impact existing users of the coast, Firestone et al. 2008 found that they may have a positive impact on future users. Similar to the previous articles, the authors note that the significance of disamenities is also dependent upon the distance that the offshore wind farms are from shore; the further a wind farm is from shore, the less the visual impact. These results lead the authors to suggest that the visual disamenity costs in coastal areas with high recreation activity outweigh building wind farms closer to shore due to decreased cost.

2.1.12 Landry, C. E., Allen, T., Cherry, T., & Whitehead, J. C. (2012). Wind turbines and coastal recreation demand. *Resource and Energy Economics*, *34*(1), 93–111.

This article examines the impact of offshore wind on coastal tourism and recreation in North Carolina; a stated preference non-market evaluation method was employed to determine how trip behavior and site choice selection would be impacted. Results from phone surveys indicate that offshore wind has minor impacts on the aggregate recreational visitation of local coastal residents and shows no significant influence on average visitation intensity; half of respondents expressed that wind farms would actually enhance the coastal view. The results of web surveys indicate that coastal residents opposed wind farms that were located close to shore, however this was not statistically significant. However, overall, the results indicate that the installation of offshore wind farms would not significantly impact coastal recreation and tourism in the coastal regions of North Carolina.

2.1.13 Lilley, M. B., Firestone, J., & Kempton, W. (2010). The effect of wind power installations on coastal tourism. *Energies*, *3*(1), 1–22.

The authors in this article seek to improve estimates of the likely effects of wind development on local tourism in Delaware; while specific to Delaware this study may shed light on the possible economic effects in other areas dependent upon tourism. Through the use of photo simulations and surveys, results indicate that a majority of out-of-state tourists would likely visit a beach, at least once, if a wind farm was built 10 km offshore. Results also indicate that wind development 10 km offshore would increase tourism rather than reduce it; 44% of out-of-state beachgoers stated that they would pay for a boat tour of an offshore wind farm. Respondent's attraction to offshore wind related tourist activities such as boat tours and beaches with views of wind turbines is greater than the reported avoidance. Like the previous two articles, survey results reveal that avoidance of beaches with offshore wind turbines decreases as the distance from shore increases. An interesting observation made in both this article and previous articles is the important role of tourist preferences on tourist behavior and support; it is important to understand

what visitors are seeking from particular locations especially when deciding where to locate the wind turbines.

2.1.14 Lutzeyer, S., Phaneuf, D. J., & Taylor, L.O. (2016). The Amenity Costs of Offshore Wind Farms: Evidence from a Choice Experiment. *Working Paper*, 1–56.

This article seeks to show the impacts of a utility scale wind farm on tourist rental decisions. To assess impacts, the study conducted a choice experiment with individuals that recently rented a vacation property along the coast of North Carolina. Survey results indicate that not one respondent was willing to pay more to rent a home with a view of wind turbines. In fact, the survey presented suggests that a majority of the respondents would change their vacation destination if turbines were visible from their selected beach. Ultimately, the survey found that a rental value loss of at least five percent was possible if a utility scale wind farm was placed within 8 miles of the shore.

2.1.15 Mills, D., & Rosen, H. (2006). New Jersey Shore Opinions About Off-Shore Wind Turbines, 1-36.

In an effort to understand how residents and visitors feel about the placement of wind turbines on the New Jersey coastline, a total of 4,026 interviews were conducted in four counties of New Jersey. During the interviews, respondents were shown hypothetical visual representations of the wind farms at four different distances from the shore. Study results show that 47% of residents and visitors supported the wind farm; support increased as the distance from shore increased. Similar to other studies, results indicated that the more familiar people are with wind turbines, the more likely they are to support the project. Associated benefits cited in the study included cheaper electricity, a cleaner source of energy, and less pollution resulting in cleaner air; the most common disadvantage cited was the visual impact. Overall, over 70% of respondents stated that they were neither more or less likely to visit the shore for vacations or day trips if wind turbines were located off the New Jersey Shore.

2.1.16 NFO World Group. (2003). Investigation into the Potential Impact of Wind Farms on Tourism in Wales. *Nature*, (October 2003), 1–22.

This summary report was commissioned by the Wales Tourist Board to understand the possible impacts of wind farms on tourism in Wales. Results from semi-structured consultations with key organizations and personnel involved in the development of wind farms in Wales suggest that wind farms should be placed outside of National Parks and Areas of Outstanding Natural Beauty and Sites of Specific Scientific Interest and in those areas that would minimize environmental and visual impacts. Similar to previous studies, offshore wind farms were preferable to on-shore wind farms due to the perception that visual and environmental impacts are reduced offshore. In addition to the consultations conducted, this report also conducted case studies in the Mid Wales region. The case studies involved semi-structured telephone consultations with 19 tourism businesses. From the consultations, the positive impacts mentioned include: 1) cheaper electricity, 2) new potential form of tourist attraction, and 3) increase in business due to construction efforts. The negative impacts mentioned include: 1) fear that wind farm development would negatively impact return visits to the area, 2) visual impact on the landscape, 3) environmental impacts, and 4) the potential disputes that could arise in communities over the distribution of monetary benefits. In a survey conducted with visitors to Wales, respondents were asked to identify which facility/development detracted from their overall experience; only 23% of survey respondents said that wind farms and turbines detracted from their experience while almost half of visitors claimed that electricity pylons and wires were the most negative type of facility/development.

2.1.17 Noblet, C., Teisl, M. F., Kashkooli, M., & Teisl, B. (2016). Potential Tourism Impacts of an Offshore Wind Farm Near Monhegan Island Technical Report.

This report reflects the results from a survey given to Monhegan Island, Maine visitors to determine reactions to a proposed wind farm. Intercept surveys using two-dimensional and 3-dimensional imagery of wind farms via iPads were conducted on Monhegan Island from May 29 to August 24, 2014; the timing of the survey allowed the researchers to sample over 180 summer tourists and visitors. Survey results indicate that the proposed wind farm would have a limited negative impact on visitation to Monhegan Island. 90% of those surveyed stated that they would continue visiting the island if an offshore wind farm was established. In general, the study suggests that tourist behavior to the Island would not be affected; almost 75% of those surveyed said they would not change the locations of the island they visited if a wind farm was established.

2.1.18 Parsons, G. Firestone, J. (2018). Atlantic Offshore Wind Energy Development: Values and Implications for Recreation and Tourism. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-013. 52 p.

This report details how the experiences of recreational beachgoers up and down the East Coast of the U.S. would be impacted by offshore wind energy developments. The study was a stated preference survey which produced 1,725 viable surveys. Background data such as demographics, frequency/location/length of visits, and type of activities were collected first, however the main part of the survey was based off of a series of computer generated photomontages. These depicted offshore wind farms consisting of 100 turbines in a variety of conditions (clear day, foggy, nighttime, etc) at distances between 2.5 to 20 miles from shore. Participants were shown specific renderings from one of several beaches, and then asked a series of questions on if/how their beach experience would be impacted as a result of the presence of the wind farms. The study finds that impacts will vary between positive and negative depending on location, distance of development from shore, and other related factors. One consistent finding however was that at 12.5 - 20 miles offshore, impacts would be largely neutral, with multiple instances of net economic gain due to curiosity over the wind farms.

2.1.19 Rudolph, D. (2014). The Resurgent Conflict Between Offshore Wind Farms and Tourism: Underlying Storylines. *Scottish Geographical Journal*, *130*(3), 168–187.

In this article, the authors seek to address the gap in the negative perceptions of the impacts resulting from offshore wind farms; while there is limited empirical evidence to support the argument that offshore wind farms negatively impact coastal tourism, coastal communities are still concerned about the unknown risks. The authors note that feelings of fear and opposition towards wind turbine construction are driven by the unknown economic impacts that may ensue from offshore wind installation. Thus, it is important to explore how and why various stakeholders rationalize the potential impacts on the coastal tourism economy in order to understand the underlying conflict between tourism and offshore wind. According to this article, there are five main ways that wind farms may conflict with coastal tourism: visual disruptions, disruptions to local character and identities, the "construction of tourists and visitors," disturbance of recreational activities, and environmental impacts. An interesting observation, not mentioned in previous articles, is the potential disruption wind farms may have on the local character and identities of the coastal area. It is possible that in future areas of offshore wind projects that a lack of infrastructure and public services capable of dealing with a local wind industry boom may exist; those areas sensitive to place identity and culture may see no incentive to increase capacity for fear of altering the image and character of the area. Common themes presented in this article found in previous articles include: the significance

of visual impacts on tourism, the lack of empirical evidence reflecting negative impacts on tourism economies, and the knowledge gaps that exist between survey results and expert knowledge.

2.1.20 Schulman, S. and Rivera, J. (2009). *Survey of Resident & Visitors in Four Communities Along the Southern New Jersey Shore*.

In preparation for a proposed wind project approximately three miles off the Atlantic City, New Jersey shoreline, surveys were conducted to measure the attitudes and perceptions of residents and visitors in three nearby communities. Survey results from the 2009 study were compared with a similar survey conducted in 2006 to observe the change in support and public opinion over time. Survey results indicate that support for a wind turbine project three miles off the Atlantic City shore is strong and was actually 30 percent higher than a similar question asked in 2006. 66% of those surveyed felt that the proposed wind project would positively impact Atlantic City and the local environment. To gauge how beach visitation and frequency would be affected, respondents were asked whether the wind farm would affect their visit to Atlantic City in the future; over 75% respondents said it would have no impact on their visit and almost 20% said they would be a little or a lot more likely to visit the area due to the wind farm.

2.1.21 Smith, H., Smythe, T., Moore, A., Bidwell, D., and McCann, J. (2018). The social dynamics of turbine tourism and recreation: Introducing a mixed-method approach to the study of the first U.S. offshore wind farm. *Energy Research & Social Science* (prepublication).

This paper describes how a mixed method interdisciplinary approach proved useful when studying the impacts of the Block Island Wind Farm on tourism and recreation. This study was funded by BOEM, and the goal was to create social indicators that could help accurately assess effects that wind farms have on tourism and recreation. This study brought together a team of researchers from different academic backgrounds. The research was conducted using an iterative approach. First using content analysis, then a combination of focus groups and participant observation, the researchers found that the team's diversity helped them to holistically understand how the community and visitors experienced the Block Island Wind Farm. Having these different perspectives helped the researchers create indicators which could capture certain intangible aspects of tourism, such as feel and experience. The author concludes the paper by encouraging future researchers of energy transitions to utilize a similar iterative approach.

2.1.22 Westerberg, V., Jacobsen, J. B., & Lifran, R. (2015). Offshore wind farms in Southern Europe – Determining tourist preference and social acceptance. *Energy Research & Social Science*, *10*, 165–179.

The authors of this article state that NIMBY is no longer a valid explanation for offshore wind resistance; beyond just the visibility effects of wind turbines, the authors seek to explain how attitudes shape preferences. To do this, the authors developed a conceptual framework and applied it to a stated valuation study in the Languedoc Roussillon region of the Mediterranean. The authors confirm that attitudes toward offshore wind development are influenced by site-specific issues related to development, the context in which they are installed, personal experience with turbines, and sociodemographic characteristics such as nationality and education. The study also indicates that the welfare economic impacts from recreating in areas close to wind turbines not only depends on the perceived visibility impacts but also on one's opinion of climate change, efficiency of wind energy, and suitability of sustainable energy sources; this reveals that tourist preferences are shaped by political, technical, economic or ecological implications of the landscape under consideration. The authors note that respondents that were concerned about visual landscape impacts, noise pollution, or damage to wildlife were not easily compensated by locating wind farms further offshore; thus, locating wind farms further offshore may still have negative impacts.

However, the results from this study strongly indicate that locating wind turbines further offshore minimizes opposition.

2.1.23 Westerberg, V., Jacobsen, J. B., & Lifran, R. (2013). The case for offshore wind farms, artificial reefs and sustainable tourism in the French Mediterranean. *Tourism Management, 34*, 172–183.

This article highlights the lack of empirical evidence supporting the argument that offshore wind installations negatively impact tourism; In Denmark, at Horns Rev there has been no decrease in tourism levels nor in rent prices for summer rentals. Similarly, in the Czech Republic, the majority of tourists surveyed at a popular tourist site stated that the construction of turbines would not impact their destination choice. In Southeast Asia, a wind farm located in Bangui Bay in the Philippines, has actually revitalized the local tourism industry by luring curious visitors. However, it does seem that tourists that visit specific sites repeatedly are more likely to oppose a wind farm.

To determine the potential impact that offshore wind farms may have on tourism in the French Mediterranean, the authors performed a choice experiment to elicit tourist preferences for wind turbines at different distances from the shore. Results from the choice experiment indicate that disamenity costs associated with the wind farm decrease with increasing distance from shore; disamenity costs zero out between 8 and 12 kilometers. Research indicates that tourist preferences are impacted by sociodemographic characteristics such as age, nationality, loyalty to destination site, and motivations for visiting the particular site. To determine whether the visual impacts associated with the wind farms could be offset by reef-recreation or the adoption of a coherent environmental policy, the authors employed a choice experiment. Results from this experiment imply that the impacts of wind farms located close to shore could be mitigated by a greening of the destination (i.e. resort); tourist revenues could increase if the wind farm was associated with artificial reefs and recreational user access.

2.1.24 Voltaire, Loureiro, Knudsen, & Nunes. (2017). The impact of offshore wind farms on beach recreation demand: Policy intake from an economic study on the Catalan coast. *Marine Policy, 81*, 116-123.

This paper researches how the recreational beaches of the Catalonia region of Spain would be impacted if offshore wind farms were developed off the coast. Using a combined revealed and stated preference approach, surveys were administered to a sample of 641 people. The survey was based off of a series of computer generated images which depicted offshore wind farms of different densities located at different distances. Participants were shown the images, and then asked a series of questions on if/how often they would return to the beach as a result of the presence of the wind farms. The study finds that overall the presence of wind farms would result in a drop in recreational beach use, and most people surveyed stated they would go to a different beach in the Catalan region instead. Thus, economic loss would be geographically specific and therefore unevenly distributed.

2.2 General offshore and onshore wind energy impacts

2.2.1 Alverez-Farizo, B., & Hanley, N. (2002). Using conjoint analysis to quantify public preferences over the environmental impacts of wind farms: An example from Spain. *Energy Policy 30*:107-116.

This article measures how much value individuals place on certain aspects of wind power development by using two conjoint analysis techniques: contingent rating and choice experiments. The article focuses on La Plana of Zaragoza region in the North of Spain which is a unique and undeveloped ecological area of

natural significance. The researchers conducted hundreds of interviews throughout December 1998, during which participants filled out surveys concerning their attitudes on the environment and renewable energy production. The results showed that both analytic approaches indicated that the development of wind farms resulted in significant social costs (despite a lack of pollution), the most important of which were the impacts on flora and fauna, followed by landscape and by geologically-rare cliffs. The authors felt that their findings would hold true in different locations, while accounting for geographically dependent differences in priority of impacts. They further stated that they believed that wind farms could be developed in a less socially impactful manner and encouraged further research on the subject.

2.2.2 Bidwell, D. (2017). Ocean beliefs and support for an offshore wind energy project. *Ocean & Coastal Management*, 146:99-108.

This article reports findings from an intercept surveys of residents, seasonal residents, and visitors to Block Island, during the initial construction phase of the first commercial offshore wind farm in the U.S. The author finds a moderately high level of support for the project and examines several predictors of that support, including beliefs about the ocean. Overall, beliefs that the ocean is a source of consumptive uses increases support for the project, while ecological-cultural beliefs decrease support. The author also found that underlying values of altruism predict greater support, but traditional values were associated with lower support. The greatest predictors of support were beliefs that the project would have positive impacts on socio-economic conditions and natural resources. Path analysis revealed that beliefs about potential impacts are also affected by underlying values and beliefs about the ocean.

2.2.3 Dimitropoulos, A., & Kontoleon, A. (2009). Assessing the determinants of local acceptability of wind-farm investment: A choice experiment in the Greek Aegean Islands. *Energy Policy*, *37*(5), 1842–1854.

This paper seeks to identify, analyze, and evaluate the factors influencing the local acceptance of wind-farm investments in the small Greek Aegean islands. To understand the determinants of local acceptance and preferences, a choice experiment survey was used. Survey results indicated that the turbine height, abundance, conservation status of the wind farm siting area, the institutional structure of the planning process, and the local community compensation received per household were attributes that affected the willingness of the locals to accept new wind power projects. The most important determinants of the local acceptance of wind power installations, among the ones examined, were the conservation status of the area where the wind farms were to be installed and the governance characteristics of the planning process. Interestingly, findings from this article suggest that the physical attributes of wind farms are of less importance than siting and institutional factors.

2.2.4 Firestone, J., Bidwell, D., Gardner, M., and Knapp, L. (2018). Wind in the sails or choppy seas?: People-place relations, aesthetics and public support for the Unites States' first offshore wind project. *Energy Research & Social Science, 40*, 232-243.

This article investigates how Southern Rhode Island (RI) residents, both permanent and seasonal, feel about the Block Island Offshore Wind Project (BIOWP). The purpose of this study was to examine how much support or opposition there was among residents, how influential the idea of place attachment was, and which factors contributed the most to public opinion. Researchers surveyed three strata of residents (those who lived on Block Island, south coast RI, and near-coastal RI) once before and once after the construction of the wind farm, in an effort to observe how public opinion evolved once the structures had been installed. This article showed that there was a high level of support in each stratum pre-construction which increased post-construction. The authors felt that the findings supported Wolsink's claim that

visibility does not necessarily lead to negative perception. Furthermore, the study found that coastal and island residents have very strong place attachment to the coast/ocean, however this does not appear to dampen their support for the BIOWP. In fact, island residents (who are substantially closer to the turbines) were more supportive than coastal or inland residents. Finally, the authors urge that community engagement should be a key part of siting future projects, and that sources of and reasons for opposition be holistically considered.

2.2.5 Firestone, J., Kempton, W., & Krueger, A. (2009). Public acceptance of offshore wind power projects in the USA. *Wind Energy*, *12*(2), 183–202.

The authors of this article seek to examine public opinion surrounding offshore wind. To try and understand why people support or oppose offshore wind projects, this paper uses two cases studies, one in Delaware and the other in Cape Cod, Massachusetts, in combination with findings from previous studies. In general, both studies show that a majority of respondents believe that electricity rates, job creation, and air quality are positive impacts associated with offshore wind, while others believe offshore wind will negatively impact local fishing industries and recreational boating. According to respondents from Cape Cod, residents believe that the perceived negative impact on marine life, aesthetics, recreational fishing and boating would not be offset by an improvement in electricity rates and less reliance on foreign energy sources. On the other hand, residents in Delaware expect that offshore wind power's perceived positive impacts on electricity rates, climate change, and air quality outweigh its negative impacts on aesthetics. Regarding the impact on recreation and tourism, 42% of respondents in Cape Cod think that offshore wind will negatively impact tourism, while only 27% of respondents in the ocean area of Delaware think tourism will be negatively impacted. As part of the case study in Delaware, the researchers wanted to determine the potential effect on beach visitation by Delaware residents if there was a very large 500 turbine wind farm located six miles off the coast. 89% of respondents stated that they would go to the same beach even if a large wind farm was constructed six miles off the coast of the beach that they last visited. Respondents were also asked whether the presence of a large wind farm on a beach that they did not usually visit or have never visited would stimulate a visit at least once to see the wind farm at that unfamiliar beach; 84% of respondents stated it was likely that they would visit an unfamiliar beach to view an offshore wind farm. The results from the study in Delaware find little concern over the effect of offshore wind power on tourism.

2.2.6 Firestone, J., Kempton, W., & Krueger, A. (2008). Delaware Opinion on Offshore Wind Power.

This report seeks to understand how Delaware residents feel about offshore wind development and to provide an analysis on Delaware's present regulatory regime for offshore wind power. Through the use of mail surveys, results indicate high support for offshore wind power development among Delaware residents. According to the report, approximately 50% of survey respondents believe that offshore wind power should be encouraged and promoted. Results from a photo simulation showing a 130 turbine wind farm located 6 miles off the Delaware coast showed that 77.8% of residents supported the project while only 4.2% opposed it. Interestingly, of those that live near the ocean, 65% of people supported the project while only 19.5% opposed it. In an effort to understand how beach-goer behavior would change after the installation of a wind farm, the researchers asked respondents how offshore turbines at their regular beach would affect beach visits. 83.8% of survey respondents said that they were likely to visit another beach, not previously visited, in order to see wind turbines. While turbines seem to be a visual disamenity for ocean area residents of Delaware, there is a preference for offshore wind power over coal or natural gas as long as the turbines are located more than one mile from shore.

2.2.7 Firestone, J., & Kempton, W. (2007). Public opinion about large offshore wind power: Underlying factors. *Energy Policy*, *35*, 1584–1598.

The authors of this article seek to address the factors that affect public opinion regarding offshore wind. The public perceptions of residents near a proposed development off Cape Cod, MA, USA were elicited through a survey and serve as the basis for which conclusions are drawn upon in this paper. Survey results indicate that a majority of the population expected negative impacts from the large offshore wind project. When asked what factors most affected their decision, the most frequently mentioned topic was damage to marine life and the possible environmental impacts. Other areas of concern included aesthetics, impacts on fishing or boating, and electricity rates. The authors highlight that public opinion was inconsistent with scientific studies and the environmental impact statement associated with the project; it is for this reason that the authors attempted to find out whether new information regarding topics they were concerned about could change their opinion. When asked if a change in the design or type of project would affect support, the authors found that 36% of people would support the project, if the project was the first of 300 such projects. The authors suggest that a large part of opposition to offshore wind projects is that project proponents have not articulated a larger vision that offshore wind is abundant in other areas and that large-scale development is a reasonable outcome of individual successful projects. Thus, results suggest that it is possible for wide scale implementation of offshore wind projects to receive public support in the U.S. The authors suggest that support could be enhanced by a more complete understanding of both the negative and positive environmental impacts, by increased public control over wind power development in terms of municipal development and federal oversight.

2.2.8 Fooks, Messer, Duke, Johnson, & Parsons. (2017). Continuous attribute values in a simulation environment: Offshore energy production and Mid-Atlantic beach visitation. *Energy Policy, 110*(C), 288-302.

This article studies public preferences for offshore energy siting, both in the form of oil rigs and wind turbines. Using a digital simulation, participants were able to place the structures at their ideal viewing distance between structure and shore. The study focuses on the Mid-Atlantic region, with a special focus on Delaware beaches. The researchers created a continuous variation model which allowed for a higher level of precision, which allowed for the results to be translated into willingness to pay in terms of distance with high levels of accuracy. The majority of participants did not feel that the turbines were a disamenity once they were approximately 2 miles offshore, however they were more averse to oil rigs. The researchers concluded with the suggestion that this approach could be applied in further research involving proximity issues in a variety of environmental settings.

2.2.9 Gee, K. (2010). Offshore wind power development as affected by seascape values on the German North Sea coast. *Land Use Policy*, *27*, 185–194.

In an effort to understand how attitudes towards offshore wind farms are shaped, this article focuses on perceptions of the local seascape and the role of aesthetic seascape qualities on offshore wind acceptance. According to this article, the most vocal critics of offshore wind farm proposals in Germany include tourism operators, visitors to coastal holiday areas, and residents of coastal communities. This opposition is based on the belief that offshore wind farms would disrupt the horizon and negatively impact tourism by removing the essential landscape qualities tourists come to enjoy. More specifically, the main driver of opposition towards offshore wind is the visual impact that can result from altering the seascape with wind turbines. However, this article clearly states that the tourism argument is not borne out by research. In an effort to better understand how acceptance of offshore wind farms is shaped, this study used a mail questionnaire survey of local residents in the districts of Dithmarschen and North Frisia, Germany. Survey results indicate that attitudes toward offshore wind are shaped by deeply held convictions of the

sea as a natural space, deeply held views of the landscape and its link to local identity, and the perceptions of renewable energy combined with attitudes towards environmental issues.

2.2.10 Haggett, C. (2011). Understanding public responses to offshore wind power. *Energy Policy*, *39*(2), 503–510.

The authors of this paper seek to understand the role and importance of public responses to offshore wind power. According to the article, factors that influence support or opposition include 1) visual impacts, 2) the social, political, and historical context of the location combined with the role of one's particular attachment to that place, 3) perceived differences between global benefits and local effects, 4) trust and relationships with developers and outsiders, and 5) the role of the public in planning and decision making processes. The authors argue that the public needs to be included in the decision making processes regarding offshore wind farms. Thus, if offshore wind projects are to be successful, development needs to take the above factors into consideration in a meaningful way.

2.2.11 Haggett, C. (2008). Over the Sea and Far Away? A Consideration of the Planning, Politics and Public Perception of Offshore Wind Farms. *Journal of Environmental Policy & Planning*, *10*(3), 289–306.

The objective of this paper is to provide a critical review of research on the issues associated with siting wind turbines onshore and offshore. To address the idea that siting wind farms offshore will resolve the problems encountered onshore, this article highlights the difficulties apparent with both. According to the author, less than half of onshore wind applications in England and Wales are successful through the normal planning process because of the visual impact of turbines in the landscape, a lack of suitable sites for them, their environmental impact, and public opposition. The author points out that one of the most common complaints about onshore wind turbines is their visual impact; research suggests that simply moving the turbines offshore will not eliminate this. Important factors that need to be considered when assessing the visual impact of an offshore wind farm include: 1) wind farm and turbine design, 2) the importance or significance of the seascape and the landscape from which it will be viewed, 3) public access to the seashore, and 4) the effects on tourism and recreation. Thus, impacts associated with onshore and offshore wind farms include visual, environmental, spatial demands, user conflicts, and public opposition.

2.2.12 Hall, N., Ashworth, P., & Devine-Wright, P. (2013). Societal acceptance of wind farms: Analysis of four common themes across Australian case studies. *Energy Policy*, *58*, 200–208.

The objective of this research study is to explore the social gap between publicly stated support and individual local acceptance of wind farms. The researchers applied a qualitative approach to seven onshore wind farms in rural Australia to help determine if the country is capable of meeting its renewable energy target. Qualitative interviews with key stakeholders reveal that there are four themes that affect onshore wind farm acceptance: 1) trust, 2) distributional justice, 3) procedural justice, and 4) place attachment. The authors state that wind energy is unlikely to provide the early and majority of new renewable energy in Australia, helping the country meet its renewable energy target, if the above themes are not integrated into policy development and engagement approaches.

2.2.13 Jones, C. R., & Richard Eiser, J. (2010). Understanding "local" opposition to wind development in the UK: How big is a backyard? *Energy Policy*, *38*(6), 3106–3117.

The objective of this article is to address the discrepancy between the public's desire for renewable energy technology and the slow rate at which new generating capacity is being commissioned in the UK. More

specifically, the research sought to investigate how the distance from potential sites affected attitudes towards wind development. Questionnaire results reveal that opposition is not determined by the spatial proximity to a proposed development but rather is determined by the anticipated visibility impacts. Thus, results suggest that as wind farm development is anticipated to be out of sight, acceptance increases.

2.2.14 Koundouri, P., Kountouris, Y., & Remoundou, K. (2009). Valuing a wind farm construction: A contingent valuation study in Greece. *Energy Policy*, *37*(5), 1939–1944.

In an effort to elicit public attitudes towards the construction of a wind farm in the area of Messanagros in southern Rhodes, Greece, the authors employed a double dichotomous choice contingent valuation study. Only 15% of respondents expected adverse effects from wind farm construction while 94% of respondents reported that positive impacts were expected. The most common negative impact was perceived to be damage to flora and fauna. The most common positive impact was the reduction of greenhouse gas emissions. Results from the econometric estimation for willingness to pay for wind farm construction shows that those who believe they are more informed about the potential of Rhodes to adopt renewable energy are willing to pay more than those that believe they are less informed. Specifically, 70% of respondents stated that they would be willing to pay some amount for wind farm construction.

2.2.15 Krohn, S., & Damborg, S. (1999). On Public Attitudes Towards Wind Power. *Renewable Energy*, *16*, 954–960.

The authors of this paper seek to summarize findings from public attitude surveys on wind power. In general, this study finds that there is public support for renewable energy and an even higher amount of support for wind power specifically in Britain, the U.S., Canada, Sweden, Germany, the Netherlands, and Denmark. From the surveys investigated in this paper, about 80% of the population in the surveys addressed in this paper support wind power. Survey results suggest that attitudes toward wind energy impact the way respondents feel about things like noise and aesthetics. For example, a Danish survey revealed that those in favor of renewables and wind power in general were more positive about local turbines and find them less noisy and less intrusive to the landscape. The article asserts that one's personal values and beliefs shape their attitudes toward offshore wind.

2.2.16 Ladenburg, J. & Dubgaard, A. (2007). Willingness to pay for reduced visual disamenities from offshore wind farms in Denmark. *Energy Policy 35*:4059-4071.

This article investigates how much more the Danish population is willing to pay to have wind farms sited further offshore, using a stated preference survey which produced 362 viable results. Findings showed that in general, Danish citizens were willing to pay more to have the farms located further out to sea and out of their viewshed, although the exact number of Euros varied from group to group. However, past a distance of 18km the marginal benefits of distancing the wind farms began to shrink. This led the researchers to suggest that the socially optimal location for future wind farms in Denmark was unlikely to be further than 18km. Another notable finding was that participants below the age of 30 appeared to care very little about preserving their viewshed and had a willingness-to-pay of nearly zero. These findings are useful in that they frame the difficult idea of theoretical visual impacts in tangible economic terms which help to create policy.

2.2.17 Ladenburg, J., & Möller, B. (2011). Attitude and acceptance of offshore wind farms - The influence of travel time and wind farm attributes. *Renewable and Sustainable Energy Reviews*, *15*(9), 4223–4235.

This paper seeks to explore the relationship between attitudes and prior experience with wind turbines; travel distance to the nearest offshore wind farm and wind farm attributes were analyzed to show impact on attitudes. Results indicate that those living farther away from an existing offshore wind farm are less supportive than those living close. An explanation for these findings is that those respondents living further away from the wind farm have not had experience with the structures; the authors suggest that you should expect attitude to improve as more people have the opportunity to see and visit the wind farm. Conversely, those living close to a wind farm might experience an attitudinal shift from support to opposition with time. Relating to wind farm characteristics, this study found that acceptability increases with increasing numbers of wind turbines.

2.2.18 Ladenburg, J. (2009). Attitudes towards offshore wind farms-The role of beach visits on attitude and demographic and attitude relations. *Energy Policy*, *38*(3), 1297–1304.

According to the author, there is a gap in current research regarding the role of experience and demographics on forming attitudes toward offshore wind farms. In order to fill this gap, the author analyzed the attitudes of more than 1000 respondents using an Ordered Probit Model. Results from this study suggest that attitude formation toward offshore wind farms is a function of gender, income, education, visit frequency, type of visit to the beach, and the view to on-land turbines from the residence. An interesting observation made in this article was the discovery that the relationship between demographics and attitude is dependent upon the type and frequency of beach usage. The research findings suggest that there are significant differences in attitudes towards offshore wind farms between permanent visitors and high season visitors of a particular beach. The author suggests that visitor frequency may impact user perceptions of the coastal landscape and acceptable uses.

2.2.19 Leung, D. Y. C., & Yang, Y. (2012). Wind energy development and its environmental impact: A review. Renewable and Sustainable Energy Reviews, 16(1), 1031–1039.

Through a broad literature review of studies of the environmental impact of offshore wind energy developments, this article discusses the environmental and climatic impact of wind farms. The major environmental impacts caused by offshore wind discussed in this article include: 1) noise impacts, 2) visual, 3) effect on animals and birds, and 4) climate change. The authors conclude by stating that while wind power is believed to be environmentally benign compared to conventional fossil fuels, it still has effects on animals and human life that need to be considered.

2.2.20 Lombard, A., & Ferreira, S. (2014). Residents' attitudes to proposed wind farms in the West Coast region of South Africa: A social perspective from the South. *Energy Policy*, *66*, 390–399.

The authors of this article seek to understand people's reaction to proposed wind farm projects in the Western Cape Province of South Africa. Through this research, the authors wanted to compare reasons for opposition with those wind farm projects in developed countries. Semi-structured interviews and a questionnaire survey were used to gauge Western Cape Province resident's attitudes. Results suggest that Western Cape Province residents generally feel positive about the wind farm projects. Study findings also show that adverse effects on the natural landscape do not lead to opposition, but rather it appears that

residents feel that the adverse effects on the landscape and place attachment are acceptable sacrifices in order to protect the landscape from climate change for future generations.

2.2.21 Pasqualetti, M. J. (2011). Opposing Wind Energy Landscapes: A Search for Common Cause. Annals of the Association of American Geographers, 101(4), 907–917.

The author of this article seeks to identify reasons for public resistance to wind power development through a literature review of four case studies based around the world: Palm Springs, California; Cape Cod, Massachusetts; the Isle of Lewis, Scotland; and Oaxaca State, Mexico. While the case studies reflect very diverse locations and cultures, the author suggests that there are five points of opposition that are consistent throughout. The first major issue is immobility, or the fact that wind energy is site specific. The second major issue is immutability, or the change in landscape that results from the introduction of wind turbines to a landscape or seascape. The third major issue is solidarity, or the important ties between people and the land and how a disruption in that connection may influence project support. The fourth major issue is imposition, or the unequal distribution of costs and benefits as a result of a wind farm project. The fifth and final issue is place, or the attachment people have with place and the threat wind farms may have on place identity.

2.2.22 Richards, G., Noble, B., & Belcher, K. (2012). Barriers to renewable energy development: A case study of large-scale wind energy in Saskatchewan, Canada. *Energy Policy*, *42*, 691–698.

The authors of this paper apply a theoretical framework to examine stakeholder perceptions and understandings of the barriers to wind energy development in Saskatchewan, Canada. Through interviews with wind energy experts and stakeholders, results show that the most common barriers were technological and political. Due to the intermittent nature of wind, respondents felt that there needed to be efficient storage technology to improve wind power efficiency. However, the researchers suggest that the perception that technology is a barrier may be more of an underlying knowledge barrier. According to the authors, the political barriers mentioned are inherently complex and may relate to not only knowledge and agreement barriers but also to values concerning what is an acceptable level of investment in renewable energy.

2.2.23 Snyder, B., & Kaiser, M. J. (2009). Ecological and economic cost-benefit analysis of offshore wind energy. *Renewable Energy*, *34*(6), 1567–1578.

This paper seeks to address whether investment in offshore wind power is preferred over investments in fossil-fueled or onshore wind power. According to the article, criticisms of offshore wind power include: 1) navigational safety, 2) economic dependence on federal subsidies, 3) aesthetics, 4) increased cost and risk, 5) unpredictable power supply, 6) environmental impacts, and 7) the possible negative impact on tourism. Arguments in favor of offshore wind power include: 1) mitigates climate change, 2) decreases water use, 3) improves air quality, 4) reduces foreign fuel dependence, 5) creates jobs, 6) creates electrical price stability, and 7) reduces user conflict. The authors conclude that in some cases offshore wind power may be able to cheaply produce electricity with negligible environmental impacts, but, in many more cases, offshore wind power will typically be more expensive than onshore or fossil fuel energy sources. However, the ecological and economic costs of offshore wind power are site specific and need to be taken in a case by case manner.

2.2.24 Teisl, M. F., McCoy, S., Marrinan, S., Noblet, C. L., Johnson, T., Wibberly, M., … Klein, S. (2014). Will Offshore Energy Face “Fair Winds and Following Seas?”:

Understanding the Factors Influencing Offshore Wind Acceptance. *Estuaries and Coasts*, *38*, 1–8.

The main objective of this paper is to use regression approaches to better understand how people's evaluations of the costs and benefits of offshore wind affect their level of general acceptance for offshore wind. This study used a mail survey to measure people's acceptance of offshore wind and the factors that affect their acceptance in Maine. Study results indicate that the potential benefits of offshore wind were more important to respondents that the potential costs. The type of benefits that earned the highest importance were economic, environmental, and fuel security. The concerns that earned the highest importance mainly focused on the economic impact (increases in electricity prices, decreases in coastal property values, visual impacts, and degraded working waterfronts). An interesting finding highlighted in this study was that the level of acceptance for offshore wind was not necessarily related to the importance ratings of the benefits and concerns. The study results reveal that offshore wind acceptance may increase if it can be shown that offshore wind will provide clear fuel security and environmental benefits. On the other hand, this study shows that acceptance will decrease if wind power resulted in economic, commercial, or aesthetic losses.

2.2.25 Waldo, Å. (2012). Offshore wind power in Sweden-A qualitative analysis of attitudes with particular focus on opponents. *Energy Policy*, *41*, 692–702.

The objective of this paper is to better understand the attitudes of opponents to wind power by using a qualitative methodology to study the views expressed by locals towards two large offshore wind power projects in Sweden. Interview results from the two case studies reveal that the visual impact of wind power is the main cause of negative attitudes. The author states that wind power is perceived as a threat to the quality of the local landscape and to the emotional experience associated with the site. Results from this study also suggest that one's belief about wind power in general can directly impact their attitude toward a project; a negative feeling about the landscape impact is generally accompanied by a belief that wind power is inefficient and unprofitable.

2.3 Factors that affect tourism

2.3.1 Deidrich, A. and Garcia-Buades, E. (2009). Local perceptions of tourism as indicators of destination decline. *Tourism Management 30*: 512- 521.

Once a location becomes dependent on tourism, a decline in the tourism market to that destination can be economically and socially devastating. This article presents a case study from Belize looking at coastal resident perceptions of tourism impacts across a gradient of tourism development from tourist exploration to late stages of development in order to test the Tourism Area Lifecycle Theory (TALC). TALC assumes that as tourism increases, the impacts from tourism increase to the point where they become unsustainable and the destination begins to decline. In order to understand how decline happens, critical thresholds must be identified in order to predict and prevent decline in tourism dependent locales. Local reactions to tourism are an important element in the process of devising indicators beyond number of tourists and carrying capacity of destinations. Local perceptions shape how local people behave in a tourism market, affecting the tourist experience. Local perceptions also reflect some aspects of reality in terms of the health, success, and viability of a tourist market for a community. Positive perceptions of tourism from local people are more closely correlated to less developed locations in the literature. Perceptions in this case were collected through interviews, participant observation, and surveys in five coastal communities in Belize. The study assessed factors including: perceived level of tourism (low, just right, high), changes

resulting from tourism (ranked from very bad to very good), the identification of the impacts of tourism on the community (listed), and the perceptions of specific impacts (ranked). The study found that local perceptions mirrored the TALC assumption that as tourist development increases, positive perceptions increase to a point and then tend to become negative or coexist with negative views as development continues to increase and social and environmental costs outstrip or match the other benefits of participating in tourism. However, at no study site in Belize has the threshold been crossed such that the perceptions are so negative as to indicate real decline yet. The study did note that the perceived pace of change was experienced as negative in some sites, and therefore communities need time to adapt to changes in the scale of tourism development. The conclusion is that tourism must be managed as much as it is promoted, and it cannot be allowed to grow uncontrollably. Every destination has a threshold.

2.3.2 Ditton, Robert B., Holland, S.M., and Anderson, K. (2002). Recreational fishing as tourism. *Fisheries 27*(3): 17-24.

Fishing, one of the most popular forms of outdoor recreation in America, is a form of tourism when anglers cross state lines to fish. States promote fishing to attract tourists as a form of important economic development, and some states lose anglers to other states as those anglers travel to more attractive or more specialized fishing grounds. The authors devote much of the paper to calculating which states gain anglers and which states lose anglers using travel data based on licenses, but without explanation as to why that might be the case, so they cannot offer recommendations to states to improve fishing attractiveness. However, fishing as tourism and fisheries management are not often linked. There is a diversity of thought on fishing as tourism issue. If angling conditions are perceived as good in one state, then residents won't resent out-of-state anglers coming in to fish, but if conditions are bad, then conflict can occur. Fishery managers need to incorporate tourism and partner with tourism organizations in order to manage the effects of fishing tourism. They need to know factors like: what makes some states more attractive than others?, what can managers do to retain anglers in their own states?, will population growth affect fishing tourism?, can fishing tourists be regulated if they become problematic, and if so, how?, do resident and non-resident anglers have conflicting values?, could increasing the cost of nonresident fishing licenses hurt fishing tourism?, how can tourism organizations make sure the benefits of fishing tourism outweigh the costs? If fishing can be viewed as ecotourism, especially catch and release, then state fishing should be marketed as ecotourism and licenses to out of state fishers can be sold at a premium to attract more money to the state and provide alternatives to more consumptive forms of fishing.

2.3.3 Hall, M. C. and Page, S. J. (2014). Introduction: Tourism matters. *The Geography of Tourism and Recreation: Environment, Place, and Space*. 4th edition. Routledge.

As one of the most significant and rapidly growing form of global economic activity, tourism is greatly affected by geographical opportunities and constraints and is highly differentiated across scale. The majority of all tourism is domestic (4.7 billion domestic arrivals in 2010), even though international tourism gets a lot of attention. Tourism depends heavily on transport, trading, and service networks and on social, political, and environmental relationships between producers and consumers. Within the field of geography, the authors define recreation research as more focused on local, outdoor, noncommercial behavior and tourism research as more focused on commercial international leisure mobility. However, they advocate for the integration of these research areas under the concept of leisure as the practices are converging and becoming increasingly indistinguishable. Leisure is an uneven attribute and is highly affected by social sanctions (i.e. recreation as a public good) and social class, especially in postindustrial societies. The distinction between the public or private nature of leisure activities is also becoming less and less relevant. As nature-based tourism and ecotourism have become more popular, the outdoor

aspects of recreation have become more and more central. Mobility, immobility, and the unevenness of space-time mobility for different traveling groups (hyper-mobile elite vs. immobilized or forced-mobile poor), has also become a central concern. Space matters for tourism, but in an expanded sense including both the material and the metaphorical factors that affect tourist enjoyment, identity, and meaning beyond a narrow focus on location. Culture is a now a factor in the sense that there are uses of culture itself as an economic development strategy for tourism (i.e. heritage tourism, museums). Globalization and commodification are key factors affecting the shape of tourism and recreation, influencing processes of homogenization and product differentiation.

2.3.4 Larkin, B. (2013). The politics and poetics of infrastructure. *Annual Review of Anthropology 42*: 327-343.

Infrastructures are material and "physical networks through which goods, ideas, waste, power, people, and finance are trafficked." Drawing on theories of biopolitics, science and technology studies, technopolitics, and aesthetics, this author summarizes the anthropological importance of infrastructure. The point for tourism (which is not mentioned explicitly in the article and so must be inferred) is that the physical forms of the built environment (infrastructure) generate the background conditions for everyday life and are thus vitally important and woefully taken for granted. Beyond being a mere metaphor, infrastructure actually does (unevenly) structure possibilities for action and thought, materializing politics and governance. Infrastructure is designed to organize both the market and society and store or perform fantasy and desire. Machines are amalgamations of technologies, many of which are not physical but are organizational (the companies that design and coordinate the inputs and outputs of physical machines are thus integral parts of the machine itself). Societies are shaped by the behavior of infrastructures (both functional and performative ("metapragmatic")) and their networks as much as society shapes infrastructure. For example, more and more people in the world are becoming "hydraulic citizens" shaped by the unequal infrastructures and differential access to fresh water. Similarly, many people are engaged (often times without being aware of it) in struggles over energy infrastructure and the source of energy that animates the energy systems that they usually ignore but that determine the basic rhythms of their lives and their everyday capacities. Specific energy technologies, when they become visible or are intentionally made visible (like accessible meters), can shape citizens and subjects to self-monitor and change their behavior, mode of moral responsibility, and even sense of enjoyment, desire, and pleasure. Therefore, not only the effects of infrastructure matter, but the concepts and designs that result in given infrastructure must be recognized as critical to the understanding of infrastructure itself. Tourist infrastructures are especially designed to address specific audiences, regulate attention, move capital, and perform fantasy. Tourist infrastructures are vital for the distribution of tourism benefits and costs, hierarchies of control and subjectivity, and sovereignty over the conditions of possibility. Yet tourist infrastructures rely on a myriad of other infrastructures, such as energy infrastructure, transportation infrastructure, waste management infrastructure, labor infrastructure, financial infrastructure, etc. and therefore the key systems pertaining to a given question have to be identified in order to ignore what is not pertinent for analysis (the act of defining and categorizing, along with the method of analyzing what is important about infrastructure, is itself a cultural and political act).

2.3.5 Macleod, D. V. L. and Carrier, J. G. (2010). Tourism, power and culture: Insights from Anthropology." *Tourism, Power and Culture: Anthropological Insights.* Channel View Publications.

Tourism is inextricably linked with power and culture. These linkages include "host" country/community vs. "guest" visitor relations, the interactions between tourists and local residents, the economic structures of the tourism industry, and the influence of political and economic interests at every level. Culture is the framework within which all tourism takes place. Power is a slippery concept, but it is understood here as

a concrete component of all social relationships and especially relevant to tourism in terms of competition and struggle to promote and stabilize tourist destinations to the advantage of various groups. Power is also at play in tourism around dynamic issues of race, gender, multiculturalism, development, and state control. "Sustainable tourism" is recognized as being as fraught with asymmetrical power relations as any other form of tourism. Culture matters for tourism, but not only as an aspect of difference between hosts and guests or as an aspect of the motivation for travel for the tourist. Culture is also a performance put on to attract tourists when residents of a destination "learn to be local" in order to fulfill the desire for recognizable difference perpetuated by the tourism industry. Culture is a source of conflict but also a source of wealth, and thus caught up in the play of power relations in any given destination.

2.3.6 Selwyn, T. and Boissevain, J. (2004). Introduction. *Contesting the Foreshore: Tourism, Society, and Politics on the Coast.* Amsterdam University Press.

Coasts are ambivalent landscapes associated with trade, invasion, and defense. Coastal settlements evolve in complex conditions, and an important factor is the conflict between interest groups concerning control of coastal space and resources. Tourism is embedded in these dynamic coastal conflicts and relations. Major factors that affect coastal tourism are based on place and space: the physical and imaginary aspects of a location and their dialectic relationship that shapes that location. The key factors can be summarized as: 1) Economy: local and global modes of coastal production and consumption, sectoral relationships, the role of kinship in economic relations, and the degree of uneven capitalist penetration and expansion of market forces and their resistance. 2) Environment: control, management, and regulation of maritime resources, coastal development of the built environment and infrastructure, public and private coastal property, the ways socioecological relations affect quality of life, and the social and political way specific groups are associated with specific resources. 3) Politics: conflicts over land or marine use, the regulation of private and public property, the power of public and private institutions to influence coastal dynamics and processes, the role of domestic and international agencies and non-governmental organizations, and the structure of governance systems (i.e. democratic vs. authoritarian). 4) Society: the shape and structure of coastal society, the role of kinship, gender, class, status, and ethnicity in social organization, and the relationship between the spatial and the social. 5) Symbolic: tourist related imagery, fantasy, perceptions, and myth and the way these relate to environmental and economic realities, the global cultural landscape (i.e the growth of leisure tourism for health, relaxation, and authenticity as a global phenomenon), the intentional local creation of coastal imagery and myth to attract or repel tourists.

2.3.7 Smith, Valene L. (1989). Introduction. *Hosts and Guests: The Anthropology of Tourism*. University of Pennsylvania Press.

This classic chapter introduces the famous definition, "a tourist is a temporarily leisured person who voluntarily visits a place away from home for the purpose of experiencing a change." Factors that affect tourism and recreation the most are therefore the post WWII advent of leisure time in post-industrial EuroAmerican society, the positive social sanctions that allow for the acceptance and privileging of leisure and certain forms of travel, the patterns of work and labor that allow for weekends and vacation to be a standardized social practice, the economic conditions and shifting ethics that produce discretionary income, shifting gender relations to move women's lives outside the home, and increased longevity in populations and structures that allow for retirement. The type of tourism is also a key factor affecting how tourism functions in the world. Ethnic, cultural, historical, environmental, recreational, and others were are all different types of tourism in the 1980's with different impacts and responses to conditions and events. The type of tourist is also key. Explorer, Elite, Off-beat, Unusual, Incipient Mass, Mass, and Charter were all types of 1980's tourists; each have different numbers of tourists involved and different relationships with local norms. The local norms in which tourism takes place (the host conditions) affect

and are affected by tourism to a great extent. Therefore, planning and adapting tourist products and styles to local norms before tourism develops beyond low numbers is essential to maintaining successful host/guest relationships.

2.3.8 Stronza, A. (2001). Anthropology of tourism: Forging new ground for ecotourism and other alternatives. *Annual Review of Anthropology 30*: 261-283.

Tourism in the 20th Century did not turn out to be the economic panacea it was touted to be by many economists and planners and therefore requires further study. While most anthropology of tourism in the 20th Century was concerned with studying either the impacts of tourism on local people in a given locale or the origins of tourism and travel desires for tourists, this article argues for a more holistic viewpoint. Incentives for and impacts from participation in tourism should be analyzed for both tourists and locals at all stages of tourist development. Therefore, the factors that affect tourism and recreation cannot be relegated to one half of the tourism picture, but must likewise be assessed holistically, or else explanations are going to be partial. A suite of factors to study should look something like this: what are the motives, social profiles, and activities of leisured travelers in a given locale? How have these changed over time? How do these origins and motives relate to what matters in the wider society? What are the social and material factors that allow for travel and for becoming a tourist? What prevailing conditions compel local groups to become involved in tourism or to resist it? How are local people enrolled in tourism unequally in terms of labor, time, and benefits/costs? Who gets involved and why? Does gender matter? Occupation? What is the role of wealth stratification in both shaping and stemming from tourism in a given locale? What are the processes of commodification at work? What is being commodified as a tourist product? By whom? Who is consuming the product? What do host populations stand to gain and lose (economically, socially, environmentally) by participating in tourism? Who has the power in a tourist situation (hosts or guests) and how are host and guest populations differentiated in that relationship? What are the impacts of travel on tourists after the fact? Do they in fact experience the change (of feeling, learning, and/or values) they were looking for and how long does it last?

2.4 Impacts of other offshore energy structures on tourism and recreation

2.4.1 Baker, E. J., West, S. G., Moss, D. J., & Weyant, J. M. (1980). Impact of Offshore Nuclear Power Plants: Forecasting Visits to Nearby Beaches. *Environment and Behavior*, *12*(3), 367–407.

The focus of this study was to determine the potential impact of offshore nuclear generating facilities on beach-going behavior. To forecast the potential impact, multiple methods including the following were employed: 1) a series of studies were conducted on coastal locations with land-based nuclear generating facilities, 2) beach-goers were surveyed regarding their intentions to avoid beaches with hypothetical offshore floating nuclear plants, 3) respondents were asked to judge hypothetical beaches that varied in a number of attributes including the proximity of an offshore plant, and 4) data were collected on respondents' attributes to determine their effects on attitudes toward nuclear power. Results from previous studies focusing on the impact of land based nuclear facilities reveal no significant impact on attendance at nearby beach state parks. The author concludes that at its closest point to shore, an offshore nuclear power plant would probably deter no more than 5 to 10 percent of routine beach visitors.

1. **Brody, S. D., Grover, Æ. H., Whitaker, B., & Spence, Æ. C. (2006). Identifying Potential Conflict Associated with Oil and Gas Exploration in Texas State Coastal Waters: A Multi-Criteria Spatial Analysis, 597–617.**

The main objective of this paper is to identify and map areas of potential stakeholder conflict associated with offshore oil and gas production. To identify the potential degree of conflict in offshore oil and gas lease areas along the Texas coast, a multiple-criteria spatial decision support tool was created. The tool created was based on data collected from geographic information systems (GIS); through the use of GIS, coastal features, including recreation and tourism sites, were mapped and analyzed as stakeholder values. Study results indicate that coastal development and aesthetic opportunities are the most prevalent stakeholder values that should be considered when constructing offshore energy facilities. While recreation and tourism were not cited among the most important user values, aesthetic opportunities and tourism share five out of six spatial data layers (City and County Parks, Beach Access Points, Audubon Sanctuaries, Boat Ramps, and State Parks/Wildlife Management Areas). While this study provides some unique insights into potential user conflicts, the limitations of the study are worthy of mention. First, the study only used used eight spatially representative values for an initial analysis to test the efficacy of the mapping technique. Second, stakeholder values were not based on stakeholder input but from publicly available spatial data for the Texas coast. Third, impacts on tourism and recreation were only based on the location of city and county parks, beach access points, Audubon sanctuaries, Texas artificial reefs, boat ramps, and state parks/wildlife management areas. Thus, the data used to assert stakeholder values and potential user conflicts from the introduction of offshore oil and gas structures is severely limited and should be remembered when extrapolating results.

2. **Bureau of Ocean Energy Management. (2015). Forecasting Environmental and Social Externalities Associated with Outer Continental Shelf (OCS) Oil and Gas Development- Volume 1: The 2015 Revised Offshore Environmental Cost Model, OCS Study BOEM 2015-052, 1-333.**

To estimate the anticipated environmental and social costs attributed to oil and gas exploration, development, production, and transport, BOEM completed this report. To determine possible impacts, an Offshore Environmental Cost Model was employed. The six categories addressed by the model include: 1) Recreation: The loss of consumer surplus that results when oil spills interfere with recreational offshore fishing and beach visitation; 2) Air quality: Emissions-by pollutant, year, and planning area- and the monetary value of the human health and environmental damage caused by these emissions; 3) Property values: Impacts of the visual disamenity caused by offshore oil and gas platforms and losses in the economic rent of residential properties caused by oil spill; 4) Subsistence harvest: The estimated replacement cost for marine subsistence organisms killed by oil spills; 5) Commercial fishing: The costs of fishing area pre-emption caused by the placement of oil and natural gas infrastructure (platforms and pipelines); and 6) Ecological: Restoration costs for habitats and biota injured by oil spills. While the majority of these categories address the potential impacts from oil spills, the impact on property values due to visual disamenities is of special interest. According to the report, property values decrease when a platform is visible from a home, property value impacts decline with the distance from a visual disamenity, and no impacts occur beyond a fixed distance from shore but varies regionally based on visibility information.

3. **Bureau of Ocean Energy Management. (2013). Fishing, Diving, and Ecotourism Stakeholder Uses and Habitat Information for North Carolina Wind Energy Call Areas, OCS Study 2013-210.**

The main objective of this study is to obtain and convey spatially explicit information indicating where wind energy development can avoid or minimize conflicts with fish, fish habitat, fishing, diving, and ecotourism in three areas on the OCS offshore of North Carolina. To identify areas of least conflict, stakeholder meetings were conducted with commercial fishermen, recreational fishermen, diving industry representatives, and ecotourism practitioners. The most important concern of all stakeholder groups was the potential loss of access to areas of traditional use within the coastal ocean. Stakeholders were also

concerned about the broader ecosystem impacts that were associated with wind farm construction, this included: 1) increased ship traffic, 2) turbidity, and 3) noise. Fishermen felt particularly positive and optimistic about the possible increase in fish biomass as a result of adding new hard-substrate and emergent habitats.

4. **Bureau of Ocean Energy Management. (2002). Economic Impact of Recreational Fishing and Diving Associated with Offshore Oil and Gas Structures in the Gulf of Mexico, OCS Study MMS 2002-010.**

This report seeks to estimate the demand, expenditures, and economic impact associated with recreational fishing and diving near offshore Gulf of Mexico-based oil and gas structures and artificial reefs created from the structures. Data for this study was collected through in-person interviews, follow-up interviews, and telephone interviews. Those interviewed included fishermen, divers, charter boat operators, party boat operators, and dive shops. Results from this study suggest that there is significant recreational activity associated with the presence of oil and gas structures in the Gulf of Mexico. According to the report, it is estimated that a total of 980,264 fishing trips were taken within 300 feet of an oil or gas structure or an artificial reef created from such structures during 1999 out of a total of 4,484,080 marine recreational fishing trips in the Gulf from Alabama through Texas. In addition, there were 83,780 dive trips near oil and gas structures out of a total of 89,464 dive trips taken from Alabama through Texas. Overall, this study also found that recreational fishing and diving have a considerable economic impact and should be considered when deciding about the introduction or removal of such structures.

5. **Ditton, R. B., Osburn, H. R., Baker, T. L., & Thailing, C. E. (2002). Demographics, attitudes, and reef management preferences of sport divers in offshore Texas waters, 186–191.**

The authors of this study seek to understand the size and distribution of the statewide sport-diving population and the extent to which divers utilize marine waters in an effort to improve artificial reef siting. Artificial reefs may include large naval vessels, rig jackets, and other oil production structures. While artificial reefs are not deployed with the sole purpose of recreation, they are used to increase fish biomass. According to a mail questionnaire survey sent to Texan sport divers, scuba diving is their most important recreation activity and they prefer to dive near large naval vessels. Recreation activities on the artificial reefs include night diving, underwater photography, wreck diving, marine identification, and spear fishing. The survey results of this article reveal that offshore artificial reefs increase fish biomass, and thus have a positive impact on recreational fishing and sport diving activities.

6. **Fikes, R. (2013). Artificial Reefs of the Gulf of Mexico: A Review of Gulf State Programs and Key Considerations, National Wildlife Federation.**

This paper reviews existing artificial reef programs found in the Gulf states and provides insights on the economic and environmental considerations that need to be addressed when developing new artificial reefs. Of the five Gulf states, three states are currently using oil and gas rigs and/or platforms as artificial reefs. Louisiana, Mississippi, and Texas have found that oil and gas platforms provide important habitat to coastal fishes and have thus been active in programs like "Rigs to Reefs" where decommissioned oilrigs are turned into artificial reefs. According to the paper, recreational fisheries are enhanced with the establishment and management of robust artificial reef programs; fish landings have been shown to increase on and around oil and gas platforms. Thus, this paper reveals that offshore oil and gas structures may have a positive impact on recreational fishing in the Gulf of Mexico.

7. **Nadeau, L. (2014). Measuring County-level Tourism and Recreation in the Gulf of Mexico Region: Data, Methods, and Estimates. BOEM OCS Study 2014-660, 1-59.**

The purpose of this report is to assess the impacts of leasing offshore areas for oil and gas exploration on the travel, tourism, and recreation industries in the Gulf of Mexico. Through this study, measures of the economic scales of tourism and recreation in the Gulf region were developed for Gulf states and their respective coastal counties. Through the development of economic scales for tourism and recreation, the report identified those regions along the coast that were most sensitive to outer continental shelf development. The methods and data used for this study could be applied to other coastal regions to determine the potential impact on recreation and tourism.

8. **Nassauer, J.I., Benner, M.K. (1984). Visual Preferences for a Coastal Landscape Including Oil and Gas Development. *Journal of Environmental Management 18:*323-338.**

The objective of this study is to explore viewer perceptions of and preferences for coastal oil and gas development. The researchers conducted face-to-face, open-ended interviews with people in Grand Isle, Louisiana, a small Louisiana Gulf Coast island where offshore oil and gas development had existed for more than forty years. Respondents were asked to recall and describe various views of the area; their verbal descriptions and ratings of attractiveness of the views were recorded. More specifically, the data collected included: 1) view ratings, 2) feature attractiveness classifications, and 3) feature presence classifications for each view. Study results indicate that some views of coastal oil and gas development were considered to be attractive by residents and visitors of the Grand Isle. The views of oil and gas development that were favored and seen as most attractive included development that was tidy, created a night-time light display, blended into the larger landscape, or that generated interesting activity.

3 Tourism, recreation and related socioeconomic indicators

Our review of the indicator literature helped broaden our view of the types of indicators that might be developed, and methods used to identify and select them. As described in our proposal, stakeholder-driven approaches are commonly used to develop indicators (e.g. Cantrill 2012, Heck et al. 2011), and stakeholders can actively use indicators to help their communities achieve desired goals (e.g. Cantrill 2012). Some studies provided insight into criteria that can be used to select indicators; for example, Uhlmann et al. (2014) outlined a set of criteria in order of frequency of usage which addresses data characteristics (e.g. practicality); selection processes (e.g. engagement, expert input); and output characteristics (e.g. credibility).

Indicators can vary widely in specificity and can be as broad as employment growth in general (Choi and Sirakaya 2006), or as narrowly focused as number of "blue flag beaches" (a water quality classification) (Marine Management Organisation 2013). This review has also revealed that indicators can be expressed directionally, i.e. measuring a one-directional change (e.g. "increase in economic development" or "increase in tourism" in Himes 2007) or non-directionally (e.g. patterns of commercial visitor use in Moscardo and Ormsby 2004). Indicators reviewed in these studies also include those that appear to have been measured qualitatively, such as "promotion of resource conservation programs," and those based on quantitative data, such as "depletion rates for wildlife and fisheries" and "cost of living" (Catrill 2012).

Some studies outlined categories of indicators which could ultimately be used in this study. These include those identified by Heck et al. (2011), who classified indicators as biophysical, social, economic, and governance and those developed by Himes (2007), who classified indicators as biological, economic, and socio-cultural. Specific indicators from these studies may also prove useful for this study; examples include measurements of specific types of recreation and tourism activities (Polecon Research 2013); visitor metrics (Marine Management Organisation 2013); economic metrics (e.g. Choi and Sirakaya 2006); and indicators which measure intangible or aesthetic considerations (e.g. "tranquility" and "accessibility" in Goossen and Langers 2000). Other papers reviewed did not necessarily involve indicator development but sought to characterize impacts of activities such as wind farm development (e.g. Greene and Geisken 2012); variables considered in these studies (e.g. number of jobs or economic impact to the adjacent community from wind farm construction in Greene and Geisken 2013) may be considered as possible indicators for use in this study.

Our review of the existing literature on potential indicators has been of limited applicability to this project. The literature reviewed did not provided a set of clear and specific potential social indicators relevant to this project. Much of the literature discussed the need to have social indicators and the process of identifying social indicators but there was little evidence to support the selection of any specific indicators. In particular, information on indicators for monitoring impacts of wind energy on recreation and tourism was very limited. A number of potential indicators were identified but there was very little evidence to support their relative importance or usefulness. Below are examples of articles that were read, but not used for the literature review. These articles discussed the process of developing social indicators, but did not list specific indicators used. If indicators were listed, they did not relate specifically to this proposal, and would not be useful for measuring impacts of offshore wind energy.

- Afgan, N.H. and da Graça Carvalho, M., 2000. Energy system assessment with sustainability indicators. In *Sustainable Assessment Method for Energy Systems* (pp. 83-125). Springer US.
- Doody, D.G., Kearney, P., Barry, J., Moles, R. and O'Regan, B., 2009. Evaluation of the Q-method as a method of public participation in the selection of sustainable development indicators. *Ecological indicators*, *9*(6), pp.1129-1137.
- Fay, G. and Karlsdóttir, A., 2011. Social indicators for Arctic tourism: observing trends and assessing data. *Polar Geography*, *34*(1-2), pp.63-86.
- Hirschberg, S., Bauer, C., Burgherr, P., Dones, R., Schenler, W., Bachmann, T. and Gallego Carrera, D., 2007. Environmental, economic and social criteria and indicators for sustainability assessment of energy technologies. *New energy externalities developments for sustainability consortium*, pp.1-29.
- Vella, P., Bowen, R.E. and Frankic, A., 2009. An evolving protocol to identify key stakeholder-influenced indicators of coastal change: the case of Marine Protected Areas. *ICES Journal of Marine Science: Journal du Conseil*, *66*(1), pp.203-213.

3.1 General Indicators

3.1.1 Cantrill, J. (2012). Amplifiers on the Commons: Using Indicators to Foster Place Based Sustainability Initiatives. *Environmental Communication, 6*:1, 5-22

This study focusing on creating place-based sustainable initiatives. The approach the author uses to develop these initiatives is to use sustainability indicators to promote community dialogue and move towards environmentally benign practices. The paper discusses the development of sustainability indicators incorporated into community-based planning in the Lake Superior Basin. Case studies are

explored which focus on indicator development. The author himself helped facilitate the use of local expertise, citizen input, and a federally funded forum of basin residents to form the development and use of sustainability indicators. Stakeholders were brought together for a two-day workshop during which the participants achieved consensus regarding 21 sustainability indicators that could be used as gauges and levers in the basin and adapted at the community level as well. Several indicators that might offer the best measurements for capturing the status of lifestyles in the region were chosen. Indicators are divided into indicator themes and then specific gauge and lever indicators. Indicator themes included reinvestment in the natural capital of the area, quality of human life, resource consumption patterns, awareness of capacity for sustainability, and economic vitality. Important specific gauge and lever indicators for quality of life include demographics of migration, demands for social services, status of transportation infrastructure, extent of recreational and cultural opportunities, citizen involvement in decision making, and population density. Resource consumption patterns include types and quantities of electric power generation, amount of and stressors related to tourism, depletion rates for wildlife and fisheries, and degree of urban sprawl. Awareness of capacity for sustainability include depth of environmental and sustainability education curricula in schools, promotion of resource conservation programs, extent of zoning regimes, popular support for environmental regulations, community outreach programs by natural resource agencies, and media coverage of sustainability-related issues. Economic vitality includes per capita income, cost of living, local employment trends, diversity of community economies, value-added industry, and regional or local tax bases. Specific recommendations if one wants to develop indicators of sustainability at the local and regional level are mentioned.

3.1.2 Greene, J., & Geisken, M. (2013). Socioeconomic impacts of wind farm development: a case study of Weatherford, Oklahoma. *Energy, Sustainability, and Society, 3*:2

This study used a mixed-method approach to investigate the impact on a small city when a substantial wind farm is built nearby. For their methods, the authors used a survey, in-depth personal interviews, and economic modeling looking at both direct and indirect economic impacts. For this study, the authors used economic modeling (quantitative indicators) using a combination of the impact analysis and planning (IMPLAN) and job economic development index (JEDI) input-output models. IMPLAN is an economic impact assessment modeling system, which can be used at many different geographic levels, from a state to county level. It relies on multipliers to quantify interactions between industries. From this model, JEDI was developed. JEDI has been used in wind energy impact modeling and can be used to show such variables as overall increase in jobs and overall lifetime impacts to an area with wind farms. Qualitative methods were also used through direct interviews and surveys. Results from the economic modeling (IMPLAN and JEDI) are shown, indicating that the county received a substantial economic impact during the construction of the wind farm. This modeling method provides a quantitative description of the socioeconomic impact. The results of the interviews and surveys showed a positive impact on the local community.

3.1.3 Heck, N., Dearden, P. McDonald, A. & Carver, S. (2011). Developing MPA Performance Indicators with Local Stakeholders' input in the Pacific Rim National Park Reserve, Canada. *Biodiversity and Conservation*, 20:895-911

This study worked to assess whether MPA's are achieving their goals and objectives through identifying performance indicators against which to evaluate MPA management. The development of performance indicators, like other studies, includes incorporating diverse stakeholder groups in the process. Stakeholders in the group included marine tourism operators, commercial fishermen and recreational fishing operators, researchers, and also NGO members. Marine values included marine mammals, biodiversity, fish resources, migrating species areas, tourism income, scenic beauty, marine recreation,

food resources, traditional lifestyle, marine flora, ecosystem services, cultural resources, and marine research. Respondents mainly selected marine values as important such as marine mammals, marine biodiversity, important habitats, fish resources and areas for migrating species. Few respondents mentioned social values like opportunities for marine research and protection of cultural resources. Significant impacts on the marine environment in the park reserve were listed as a wide range of marine and terrestrial activities. This includes impacts of illegal fishing, environmental change, commercial fishing, non-commercial harvesting, recreational fishing, camping, boating, marine traffic, seaplanes, kayaking, scuba diving, and wildlife viewing. Working with these stakeholders, 25 MPA indicators were identified which were classified into biophysical, social, economic, and governance. The study found that different groups identified distinct MPA performance indicators, illustrating that desired MPA performance often differs between groups. Local stakeholders can provide valuable input for the development of MPA performance indicators.

3.1.4 Himes, A.H., (2007). Performance indicators in MPA management: using questionnaires to analyze stakeholder preferences. *Ocean & Coastal Management*, *50*(5), pp.329-351.

This study researches a practical set of techniques to measure performance and evaluate trade-offs in relation to the success of a marine protected area (MPA). Using a variety of different stakeholders, qualitative data was collected through interviews with stakeholders for the selection of performance indicators to evaluate the success of an Italian MPA. The indicators preferred depended on the stakeholder's viewpoint. MPA performance was based on biological, economic, and socio-cultural performance indicators. The stakeholders' criteria for a successful MPA were collected through questioners. Responses were categorized into contextual issues, planning activities, inputs (including financial, technical and human resources), management processes and the way in which decisions are made, outputs (including products and services) from management, and outcomes (that is, achievements and changes) derived from those management activities. The category 'outcomes' was further divided into four specific areas that reflect the range of answers provided: increased awareness; economic changes; changes in social behaviors and/or attitudes; and biological and ecological improvements. Secondly, responses in each category were divided into indicators of MPA performance. A description of the management categories and most frequently identified performance indicators for a successful MPA were then listed. For example, for the element of management categorized as "planning," suggested performance indicators included indicators that management is better organized, tourism is better organized, and regulations are changed. Under the element of management categorized as "outcomes," indicators of economic changes included an increase in economic development, evidence that community benefits economically from the MPA, an increase in tourism, and evidence of tourism being maintained or decreasing. The interviews with stakeholders helped to consider stakeholder preferences for performance indicators when evaluating MPA's, helping to work towards a successful MPA in the future.

3.1.5 Ojeda-Martínez, C., Casalduero, F.G., Bayle-Sempere, J.T., Cebrian, C.B., Valle, C., Sanchez-Lizaso, J.L., Forcada, A., Sanchez-Jerez, P., Martín-Sosa, P., Falcón, J.M. and Salas, F., (2009). A conceptual framework for the integral management of marine protected areas. *Ocean & Coastal Management*, *52*(2), pp.89-101.

This study developed a general conceptual framework, known as the driver-pressure-state-impacts response (DPSIR), for the management of MPA's, which helped to select an appropriate suite of indicators to support an ecosystem approach, an assessment of the MPA's functioning and policy decisions. For a general conceptual framework, the key elements chosen were species and habitats protected by European directives, target commercial species, ecological processes developed, and socioeconomic processes. Driving forces were chosen to be fishing and tourism, which are factors that

cause changes in the system. Variables were created for the driving forces, pressures, states, impacts and responses for both fishing and tourism sectors. Variable are presented in a table which could be used and/or adapted as potential indicators. These indicators were split between fishing & tourism combined, tourism independently, and fishing independently. Definitions were provided for each type of indicator chosen. For example, under driving forces the temporal and spatial evolution of the hotel accommodation offers in the area can be measured as an indicator. The DPSIR scheme created can be used in the identification and analysis of indicators, as well as can be an effective tool to organize participation processes to better involve stakeholders, managers, and scientists.

3.1.6 Uhlmann, V., Rifkin, J. B., Everingham, J. Head, B. & May, K. (2014). Prioritising indicators of cumulative socio-economic impacts to characterise rapid development of onshore gas resources. The Extractive Industries and Society, 1: 189–199.

This study examined the socioeconomic impacts from development of coal seam gas in Australia. The goal was to gather an indicator set that will help to identify possible cumulative, long-term impacts on regional socio-economic conditions and assets. The use of indicators was examined to address cumulative socio-economic impacts. It is important to look at cumulative impacts across time and space, and it is important to select indicators that represent overall impacts experienced by the receiving social or environmental system rather than discrete changes. It must be decided whether to focus on indicators of the changes that cause impacts (activity indicators), indicators of the impacts or pressures experienced, indicators of the changing condition of society, or how to combine these elements. The article discusses a frame of reference for impact measurement, discussing examples of models which contain recently developed frameworks combined with conceptualizations of sustainability that encompass multiple dimensions. Criteria for selecting indicators are discussed, listing a set of criteria in order of frequency of usage. The list addresses characteristics of input data (such as practicality), processes for selection (engagement and expert input), and characteristics of outputs (credibility). An analysis of selected indicator sets was conducted containing international projects. They feature different types of indicators, including indicators of pressures, of policy and management responses, of performance and outcomes as well as indicators of overall condition or trends not linked to impacts. Sixteen impact themes derived from the studies are also listed after analysis, many of them found in multiple projects. The projects reviewed provide a number of lessons for establishing a set of sustainability indicators for monitoring and managing cumulative impacts of coal seam gas development.

3.2 Tourism and Recreation Indicators

3.2.1 Choi, H.C. and Sirakaya, E., (2006). Sustainability indicators for managing community tourism. *Tourism Management*, *27*(6), pp.1274-1289.

This study developed indicators to measure community tourism development (CTD) within a sustainable framework. A panel of 38 academic researchers in tourism provided input into the development of indicators. As a result, a set of 125 indicators were chosen under categories including political, social, ecological, economic, technological, and cultural dimensions. A table was included with key themes, indicators/issues, mean, and soundness for each of these dimensions. The mean and soundness represents a rating of each itemized indicator for each category by panel members. For example, a key theme under indicators for economic dimensions includes employment. Indicators/issues under employment include employment growth in tourism, unemployment rate, and employment growth in general. Another theme under this dimension includes nature of demand, and indicators/issues under this dimension includes

percent of repeat visitors and seasonality of tourism/tourist visitation. After collecting the ranking scores, the top three objective indicators for each dimension were then reported. This study took the first steps towards developing a set of sustainable indicators relying on communities' distinctive characteristics and employing indicator experts from the social and physical sciences and from all stakeholder groups.

3.2.2 Goossen, M. and Langers, F., (2000). Assessing quality of rural areas in the Netherlands: finding the most important indicators for recreation. *Landscape and urban planning*, *46*(4), pp.241-251.

This study examines possible ways to measure the quality of rural areas for recreational purposes in the Netherlands. In-home interviews were made with cyclists, walkers, swimmers, sailors, and fishermen, which assessed the relative importance of some quality indicators of rural areas for recreational purposes. Quality level indicators for recreational activities were chosen based upon survey answers. Recreational activities included walking, cycling, swimming, fishing, and boating (sailing or motor vessel). The number of indicators for each activity was split between fitness for use and perception quality. The five most important indicators, and their highest preference value of the levels for each activity, were reported in tables. For example, the relative importance of quality indicators measured for the activity of walking includes accessibility of area of natural beauty, land-use, social aggression, tranquility, and crowding. Smaller categories were measured for mean preference under each of the five most important indicators. For example, under the indicator of crowding, mean preference was measured for not crowded, crowded, and very crowded. This was repeated for each activity, each which contained a unique set of quality indicators. Overall, the most important quality indicators included tranquility, accessibility, water quality, and nuisance values. The results of the analysis were then combined with spatial characteristics, which could serve as an instrument to measure potential and actual values of areas with one or more recreational activities. The study provided insight into what recreationists find as important quality indicators.

3.2.3 Marine Management Organisation (2013). Compilation of information on tourism relevant to marine planning in the South Inshore and Offshore marine plan areas. A report produced for the Marine Management Organisation, pp 71. MMO Project No: 1038. ISBN: 978-1-909452-09-1.

This UK project, supported by the Atkins and Tourism Company, was an assessment of tourism information for the South Marine Plan areas to support marine spatial planning by establishing an understanding of the availability of tourism information to explore its potential use to create tourism related indicators. National datasets provided potential for generating repeatable tourism-related indicators at a south plan level. It is also necessary to design indicators using primary surveys as well. A main goal of this project was to conduct an assessment of what indicators could be used to test the success of marine plan policies for tourism in the future. A section provides a review of existing indicator sets and research with a focus on tourism and/or marine spatial plans. From the review, the studies were found to typically support a small set of core indicators. The common ones include the volume and value of tourism (number of visitors and expenditure by visitors), employment (jobs and wages), water quality (number of blue flag beaches, or other official water quality classifications), and CO2 emissions, energy consumption and waste (by business or by visitor transport). Tables of possible tourism indicators separated by theme are also provided. These themes include visitor volume and value, visitor activity, visitor satisfaction, tourism ship traffic, business performance, job creation, local societal benefits of tourism, and tourism intensity. Indicators are then listed under each theme, with data source, strengths, weaknesses, and frequency provided. An example of indicators listed for visitor activity could include number of visitors undertaking marine and coastal recreation activities, and seasonal distribution of recreation activity. The project serves as an introduction to the potential appropriateness and availability of different indicator options for possible future use.

3.2.4 Moscardo, G. and Ormsby, J., (2004). A social indicators monitoring system for tourist and recreational use of the Great Barrier Reef, Research publication No. 80. *Great Barrier Reef Marine Park Authority (GBRMPA), Queensland, Australia*.

This study worked to identify potential indicators to monitor aspects of tourist and recreational use and impacts on human use of the Great Barrier Marine Park (GBRMP). The study designed a broad monitoring program for these social indicators. The indicators chosen were created to be measured regularly, cost effective and relatively easy to measure, comparable over time, reliable, accurate and sensitive to changes, and easy for managers to understand and use. A number of variables were chosen that can influence visitor satisfaction and behavior. Those include visitor characteristics such as place of residence, age, motivation, and experience; on site experiences such as activity participation and encounters with other users; perceived quality of the natural environment including contact with wildlife, scenic quality and perceived human impacts; and perceived quality of tour operations. The report itself includes a discussion of issues associated with understanding and monitoring tourist and recreational use, as well as a proposed social indicators monitoring system for tourist and recreational use of the GBR. A review of available research used includes patterns of commercial visitor use (i.e. patterns of reef tourist activity participation), patterns of independent visitation, recreational fishing, characteristics of visitors, and factors that influence visitors' GBR experiences and satisfaction (i.e. features that influence a reef experience). The main methodology used to form indicators were structured surveys or interviews which include face to face, telephone, and mail. Information on other major social science data collection techniques is provided.

3.2.5 White, S. 2010. Measuring tourism locally, Guidance note 4: tourism benchmarking and performance indicators. Office for National Statistics.

This guidance note is part of a series by the Tourism Intelligence Unit at Office for National Statistics (ONS) in the UK. The notes were created to provide a framework for those within the tourism sector to measure and collect data on various aspects of tourism. The guidance looked to develop a consistent "bottom up" approach to data collection for performance indicators. The performance monitoring and benchmarking was collected through a Baseline Statement, which was created through an annual questionnaire given to Destination Performance UK, a membership organization for local authority tourism services. The questionnaire captured information on tourism resources, activities and performance of member authorities and reproduces it in table form by category group. The questionnaire includes information on a range of performance indicators based around satisfaction indicators, economic indicators, sustainability indicators, and organizational indicators. An example of satisfaction indicators includes a % of visitors who rate the overall visitor experience as good or excellent. An example of indicators includes number of day visitors [or trips] (+ % increase/decrease) and the number of overnight visitors [or trips] (+ % increase/decrease). The note then provides a table which considers indicators that tourism professionals may find useful when collecting information on the tourism sector to aid in performance monitoring process. Four tables of information are grouped into four themes on which data can be collected. These include economic, satisfaction, environmental, and community/social. The table provides further detail in terms of the indicators that are seen as key performance measures.

3.2.6 Polecon Research. (2013). The impact of wind farms on tourism in New Hampshire. 28 pp.

This study examined the impacts of wind farms on tourism in New Hampshire by exploring the economic trends in the region before and after the introduction of the wind farm. The study used publicly objective data on spending for accommodations, food services, recreational activities, traffic volumes, and changes

in employment to assess the impact on the tourism economy. These categories were used as indicators to measure the impacts of wind farm development. A measurement of the type of activities being undertaken by tourists in the area was also measured. These activities included shopping, sightseeing, scenic drives, camping/hiking, wildlife watching, boating, beaches, among other activities. The results show that the wind project had little or no impact on meals and room sales in the region of the project location. Since operation, growth in tourism-related employment in the project region has been as large as in the majority of the other regions. State park revenues have also increased in those areas closest to the wind project. Weekend traffic volume suggested that the presence of the wind farm had not discouraged visits to the region. In conclusion, using the indicators provided, it was estimated that the wind farm project would have a minimal impact on tourism activity in the larger region.

3.3 Fisheries Indicators

3.3.1 Heather, B. & Charles, A. (2006). Creating community-based indicators to monitor sustainability of local fisheries. Ocean & Coastal Management, 49:237-258

This study looks at a systematic approach to creating frameworks of indicators monitoring sustainable development in fisheries at the local community level. In order to create sustainability indicators, fisheries characteristics influencing sustainability was considered. To begin, a scoping for whom the indicators will be established as well as who will be part of the indicator team should take place. An overall framework within which it is possible to observe/monitor a fishery system is then created. A holistic approach is taken, combining four components of fishery sustainability including community, socio-economic, institutional, and ecological sustainability. This framework is used to identify the characteristics of fishery systems that can be expected to impact sustainability and then to develop indicators to monitor the status of each characteristic. The study then describes sets of relevant characteristics considered as influencing fishery sustainability, used internationally and nationally, under the four components. Given this set of characteristics, multiple indicators can be selected to monitor each of the characteristics of interest. The process involves three sequential categories of indicator evaluation criteria which together provide a filtering process that can be used in evaluating the quality of indicators. The study provides information for communities to use in the process of indicator design, classification and selection as a guide in customizing a set of fishery indicators, particularly at the local level.

3.4 Energy Indicators

3.4.1 Vera, I.A., Langlois, L.M., Rogner, H.H., Jalal, A.I. and Toth, F.L. (2005). November. Indicators for sustainable energy development: An initiative by the International Atomic Energy Agency. In *Natural Resources Forum* (Vol. 29, No. 4, pp. 274-283). Blackwell Publishing Ltd.

This article summarizes the studies conducted by the International Atomic Energy Agency (IAEA) on Indicators for Sustainable Energy Development (ISED). Since 1999, this agency has developed a set of indicators useful for measuring progress on sustainable development at the national level. The project was first conceived in order to address the need for a consistent set of energy indicators, assist countries in the energy and statistical capacity building necessary to promote energy sustainability, and to supplement the work on general indicators being undertaken by the UN Commission on Sustainable Development. After an original set of indicators were developed and tested in 15 countries, in 2002 a three year coordinated research project began to implement this original set of indicators in seven countries (Brazil, Cuba, Lithuania, Mexico, the Russian Federation, the Slovak Republic and Thailand). The original set of ISED is listed. This list was then classified according to indirect and direct driving forces and state. Finally, a

final list of energy indicators for sustainable development (EISD) was created that included theme, subtheme, energy indicator, and components. These indicators were grouped into social, economic, and environmental indicators. Themes under the social category include equity and health. Those subthemes under equity include accessibility, affordability, and disparities. Under health the subtheme is safety. An example of an energy indicator for equity includes affordability, which uses an indicator measuring the share of household income spent on fuel and electricity. The components of this indicator include household income spent on fuel and electricity, and household income (total and poorest 20% of the population). The ISED/EISD was designed for assessing energy systems and for measuring progress towards more sustainable energy futures. These indicators can be used as a starting point that can serve as a reference point for a more refined and complete set of energy indicators.

3.4.2 Carrera, D.G. and Mack, A. (2010). Sustainability assessment of energy technologies via social indicators: Results of a survey among European energy experts. *Energy policy*, *38*(2), pp.1030-1039.

This article discusses the importance of accounting for social repercussions and long –term negative effects and benefits of energy systems. The New Energy Externalities Development for Sustainability (NEEDS) is a project that developed an expert-based set of social indicators to look at the societal effects of energy systems. The indicator set consists of an overarching set of indicators under four different categories. This includes indicators for continuity of energy service over time, political stability and legitimacy, social components of risk, and quality of life. Some examples of indicators under quality of life include perception of fairness of risk distribution and benefits in neighboring communities, percentage of population perceiving aesthetic impairment of the landscape, number of residents feeling highly affected by noise caused by energy production, among others. These indicators are listed in the article, along with mean evaluations of selected indicators. An explanation of the selection of social indicators for the assessment of energy systems is provided, as well as a demonstration of both the qualitative methods (surveys, interviews, etc.) and quantitative methods used. This wide spectrum of methods resulted in an indicator set which provides empirical measures to assess the social dimension of sustainability of energy systems through the collection of a consensus across all indicators amongst the participation specialists.

4 Review of available and existing baseline information

For this component of the literature review, our goal was to begin exploring and documenting existing and readily available data and information, which might ultimately contribute to tourism and recreation indicators. In searching for such data, in some cases we reviewed well-known data sources (e.g. *Fisheries Economics of the United States*, a report published annually by the NOAA National Marine Fisheries Service), and in other cases we sought data to answer questions the team has been considering (e.g. What is the hotel occupancy rate on Block Island?). As such, this section of the literature review is presented differently in that each entry begins with a general description of the type of data, not the source itself. In some cases we present incomplete information because more work will be required to find the data we seek, if it exists at all.

Discussions with state and local experts confirms that there is very little baseline information available that is consistently and reliably collected, or collected at a scale that provides insight into tourism and recreation on and around Block Island. Specifically, data that are collected are generally aggregated statewide, not even disaggregated by county; additionally, data characterizing marine uses such as fishing

and boating are not geo-referenced such that we can select only the data reflecting activity in our study area.

- **General Baseline Information**

1. ***Ocean and coastal economy data:***
   National Ocean Economics Program. N.d. "Coastal Economy Data." Online at http://www.oceaneconomics.org/Market/coastal/coastalEcon.asp. Last accessed January 19, 2017.

The National Ocean Economics Program compiles data on ocean and coastal resources, uses, and values including natural resources, non-market valuation, ports and cargo, population and housing, offshore renewables, and other topics. It can be used to gather state-specific data for Rhode Island on metrics including establishments, jobs, wages, and GDP contributions from businesses comprising the coastal economy. For example NOEP data indicate that in 2014 the Rhode Island coastal economy comprised 7,619 establishments and 78,567 employees and paid $3,212,874,309 in wages. Some of these datasets can be disaggregated by county.

- **Land-based tourism: General**

1. ***Economic impact of statewide tourism:***
   IHS Consulting, 2014. "Rhode Island Tourism 2013." Online at http://www.blackstonevalleytourismcouncil.org/tourism2013.pdf. Last Accessed January 12, 2017.

This sources provides and in depth analysis of the economic impact of tourism on RI for the year 2013. It reports the number of visitors to RI, visitor's expenditures, economic impacts, total jobs, wages and taxes to the state of RI, and breaks expenditures down by regions and by accommodation, entertainments, food, shopping, and transportation. It appears that this is the most recent such study. Previous year studies conducted by IHS Consulting or its subsidiary Global Insight, and providing similar data, have been identified for 2012, 2008, 2007, and 2006. It appears that these studies have all been commissioned by the RI Commerce Corporation, which promotes statewide tourism, but these studies are not posted in one place on the RI Commerce website. Nor is it clear that the state consistently conducts these studies.

2. ***Hotels, motels and rental property listings:***
   Rhode Island Commerce Corporation. 2017. "Visit Rhode Island." Online at https://www.visitrhodeisland.com. Last accessed January 12, 2017.

The Rhode Island Commerce Corporation is a state agency that promotes industry and commerce in RI, including its tourism industry. Visitrhodeisland.com is the official RI tourism website and includes listings of Rhode Island fishing, sailing, or regular motor charter boats; rental properties; and hotels and motels providing insight into the total number of such businesses serving the state. It is not clear whether or to what extent RI Commerce tracks changes in these industry and records changes in the number or size of these businesses from year to year. These data are of limited use to our study as they do not reflect the number of boats that visit Block Island or travel through our study area.

3. Hotel tax (Block Island and other destinations):

Rhode Island has a 5% statewide hotel tax and a 1% local hotel tax collected on all occupied hotel rooms. These data can then be used to extrapolate total hotel spending in each municipality but cannot be used to determine room occupancy because of variation in hotel room rates, both between hotels and for each hotel (throughout the seasons). The statewide source of these data is the RI Department of Revenue (www.dor.ri.gov) who issues monthly summaries of these data. Information on the 1% local hotel tax can also be collected by each individual town. On Block Island the source of these data is the Town of New Shoreham's Finance Department, Amy Land, Director.

4. Meal tax (Block Island and other destinations):

Rhode Island has a 1% local food and beverage ("meal") collected by the state. The statewide source of these data is the RI Department of Revenue (www.dor.ri.gov) who issues monthly summaries of these data.

● Land-based tourism: Block Island

1. Block Island tourism overall:

Block Island Tourism Council Executive Director Jessica Willi has indicated that there is little appropriate data to quantify and track Block Island tourism. As such, she has developed her own "tourism index" for use with her own board. This involves tracking hotel taxes (see below); food and beverage taxes (see below); Block Island housing board payments (a 1% tax levied on whole house rentals on Block Island); and ferry landing fees (see below). For FY 16 she reported $407,818 in hotel taxes (up 45% from the previous year); $36,187 in food and beverage taxes (up 17% from the previous year); $122,970 in housing board payments (up 12% from the previous year), and $183,608 in commercial landing fees (up 18% from the previous year). Ms. Willi also tracks water and sewer use on the island to look at change over time, both by month (May to October) and by year. (Source: J. Willi, Block Island Tourism Council, Jan. 2017)

2. Ferry landing fees:

The Town of New Shoreham charges a $0.50 landing fee for every person that steps foot on the island, whether resident or tourist. This landing fee is collected by Interstate Navigation, the main (but not the only) ferry serving the island. Technically, this fee is also assessed on those who travel to Block Island via private boats, but it is believed that few if any private boaters pay this fee. It is our understanding that Interstate Navigation keeps some portion of this fee to cover their administrative costs and pays the rest to the town of New Shoreham. For this reason these data provide limited insight into how many people step foot on the island. The total revenue received from this can be found through the Town of New Shoreham's Finance Department, Amy Land, Director. To our knowledge to date, landing fees are not collected by any of the other ferries serving Block Island, from private boaters visiting marinas or anchoring in Old or New Harbor, and from cruise ships. (Source: J. Willi, Block Island Tourism Council, Jan. 2017)

3. Hotel occupancy rate:

There are an estimated 500-600 hotel rooms on Block Island (probably closer to 600). We have learned that hotel occupancy rates are not recorded by the Block Island Tourism Council or the Town of New Shoreham. For this to be done, one would need to call each individual hotel to request this information. Further, this information is proprietary, so it cannot be assumed that individual hotels would report exact numbers or accurate numbers. (Source: J. Willi, Block Island Tourism Council, Jan. 2017)

4. Rental properties:

There are an estimated 1,200 rental units (houses or apartments) on Block Island. These rental properties are also subject to the hotel tax (below) though it is not clear to what extent this is enforced. (Source: J. Willi, Block Island Tourism Council, Jan. 2017)

5. Visitors' Center visitors:

The Block Island Visitors' Center is run by the Block Island Chamber of Commerce. Our understanding is that the Center does not systematically count the number of people who come in their building, though they sometimes attempt to estimate this. We also understand that they record the number of phone calls and mailing requests they receive, though it's not clear how systematic these counts are and how relevant they are given the changing ways in which tourists acquire relevant information. (Source: J. Willi, BI Tourism Council, Jan. 2017)

● Land-based recreation: General

7. *Beach visitation:*

Numbers of visitors to Rhode Island state beaches do not appear to be published online or in an annual report by the relevant management agency, the RI Department of Environmental Management Division of State Parks and Recreation. An internet search reveals anecdotal mentions of these numbers, such as in this 2015 state government press release indicating that Rhode Island state beaches attract 6 million visitors a year and contribute $5.8 billion to the state's economy http://www.ri.gov/press/view/25333).

A key next step will be contacting this agency directly to learn whether they maintain annual state beach visitation counts and whether these are disaggregated by beach such that we could examine only the beaches in our study area.

● Water-based recreation: Recreational boating, fishing and sailing

1. Boater registrations:

Rhode Island Department of Environmental Management Office of Boating Registration and Licenses. Online at www.dem.ri.gov/programs/managementservices/. Last accessed January 11, 2017.

This office at the RI Department of Environmental Management administers RI's boater registration and compiles boating data, and as such maintains a record of the total number of recreational boats registered in the state, both by residents and non-residents. Summaries are not published online but can be obtained by contacting the office. A recent call by the URI Coastal Resources Center indicated that as of December

2015, there were 39,090 boats registered in the state of Rhode Island, down from 41,985 in 2009. Further, in 2015, out-of-state boat owners represented 16.34 percent of the total registered boats in Rhode Island. These data are of limited use to our study as they do not reflect the number of boats that visit Block Island or travel through our study area.

2. ***Economic impact of marine trades industry:***
   Planning Decisions, 2014. Economic Impact and Skills Gap Analysis. Presented to The Rhode Island Marine Trades Association. Online at http://www.gwb.ri.gov/pdfs/RIMTAImpactRpt0914.pdf.

This study, commissioned by Rhode Island's marine trades industry association (RIMTA), analyzed the economic impact of RI's marine industry including manufacturers, service providers, professional services, construction, and transportation. It reports state-wide statistics, including how in 2012, the RI marine trades industry included approximately 650 employers providing nearly 7,000 jobs and paying wages and benefits of approximately $325 million. These data are collected state-wide and as such have limited relevance to the project study area. Additionally, analyses like this are not repeated on a regular basis by RIMTA or any other trade association and so a larger dataset is not available.

3. ***Fisheries participation and economic impact:***
   NOAA National Marine Fisheries Service. 2016. "Fisheries Economics of the United States 2015: Economic and Sociocultural Status and Trends Series."
   https://www.st.nmfs.noaa.gov/Assets/commercial/fus/fus15/documents/FUS2015.pdf

This annual report summarizes fisheries economic data nationwide and by state; 2015 is the most recent year for which data are available. For example, in 2015 Rhode Island commercial fishermen landed 75,636,000 pounds of fish worth $81,835,000. Additionally, in 2015, 123,000 Rhode Island recreational anglers and 175,000 out-of-state anglers made 879,000 fishing trips in Rhode Island waters. These data are of limited use as they cannot be further disaggregated into site-specific information about Block Island or other parts of our study area.

4. ***Fishing, sailing, and other charter boat listings:***
   Rhode Island Commerce Corporation. 2017. "Visit Rhode Island." Online at https://www.visitrhodeisland.com. Last accessed January 12, 2017.

The Rhode Island Commerce Corporation is a state agency that promotes industry and commerce in RI, including its tourism industry. Visitrhodeisland.com is the official RI tourism website and includes listings of Rhode Island fishing, sailing, or regular motor charter boats; rental properties; and hotels and motels providing insight into the total number of such businesses serving the state. It is not clear whether or to what extent RI Commerce tracks changes in these industry and records changes in the number or size of these businesses from year to year. These data are of limited use to our study as they do not reflect the number of boats that visit Block Island or travel through our study area.

5. ***Recreational fishing participants and trips:***
   NOAA National Marine Fisheries Service, Fisheries Statistics Division. n.d. Marine Recreational Information Program (MRIP). Online at https://www.st.nmfs.noaa.gov/recreational-fisheries/index.

The Marine Recreational Information Program, or MRIP, is NOAA's program for recording and reporting marine recreational catch and effort data. This program can be queried to identify, for the state of Rhode

Island, the number of recreational anglers (both state residents and out-of-state), number of fishing trips (by mode and by region), species caught, and other metrics. MRIP data are estimates based on a survey program that samples recreational anglers. For example the MRIP indicates that in 2016 over 1,088,736 fishing trips took place in RI (including both private angling and for-hire vessels), and that in 2015, a total of 298,269 individuals participated in recreational fishing (including 123,185 state residents and 175,084 out-of-state individuals). These data are statewide and cannot be further refined to reflect only fishing that took place within the study area.

6. ***Rhode Island party and charter boat listing:***
   Rhode Island Party and Charter Boat Association. n.d. "Rhode Island Charter Boats: UPV Vessels and Inspected Vessels." Online at http://www.rifishing.com/all-charter_boat_listings.html. Last accessed January 19, 2017.

The RI Party and Charter Boat Association is the industry association for Rhode Island charter boats, offering primarily fishing charters as well as other trips including sightseeing tours. As of January 2017, the RIPCBA website lists 60 charter boat business members including both inspected vessels (licensed to take more than 6 paying passengers) and uninspected vessels (6 or fewer passengers). Only a subset of vessels operates in the study area.

7. ***U.S. Coast Guard Marine Event Permits:***
   U.S. Coast Guard Sector Southeastern New England. Online at https://homeport.uscg.mil/mycg/portal/ep/portDirectory.do?tabId=1&cotpId=44. Contact: CDR (ret) Edward G. LeBlanc, Waterways Management Chief.

U.S. Coast Guard Sector Southeastern New England manages the waterways in the study area, which includes issuing Marine Event Permits for sailing regattas, boat parades and other events. These data are not summarized and reported online but can be accessed by contacting the sector directly. Waterways Management Chief Edward LeBlanc reports that Sector Southeastern New England issued 185 Marine Event Permits in 2014, the highest number they had ever issued in one year. These permits include events in the Sector's entire area of authority and are not limited to the study area.

- **Specific Recreation and Tourism Events**

1. ***Block Island Race Week and Block Island Race:***
   Storm Trysail Club. n.d. Online at https://www.stormtrysail.org/. See also http://blockislandraceweek.com/ and https://www.stormtrysail.org/regattas/block-island-race.

The Storm Trysail Club is the yacht club which sponsors two of the largest yacht racing events related to Block Island – Block Island Race Week (a biennial event taking place on the odd years and based on the island) and the Block Island Race (an annual event which circumnavigates but does not touch the island). For the 2015 Race Week, 167 vessels between 26 to 65 feet competed; for the 2016 Block Island Race, 62 vessels from 29 to 100 feet participated.

2. ***Volvo Ocean Race:***
   Performance Research. 2015. "Volvo Ocean Race: Economic Impact on the State of Rhode Island, May 5-17, 2015." Prepared for Sail Newport. Online at

http://www.volvooceanracenewport.com/media/files/m565_volvo-ocean-race-report--2-.pdf.

Sail Newport commissioned a study of the economic impact of the Volvo Ocean Race in 2015, which took place in Newport for 13 days, from May 5-17, 2015. This study reported that total attendance at the race village was 131,346; that over half of visitors traveled from out of state or out of the country; and that the event had a total economic impact of $47.7 million on the state economy. While this event is not directly related to Block Island or our study more broadly, and these data cannot serve as baseline information, this event is important to consider insofar as it may bring a new, larger demographic of tourists to the study area for the 2018 season.

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis (2017)

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis (2017)

June, 2018

Authors:
Hollie Smith, Christine Gilbert

Prepared under M16PC00016
By
University of Rhode Island
45 Upper College Road
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study collaboration and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Agreement Number M16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage (http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

Smith, H., & Gilbert C. 2017. Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis. Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 13pp.

ABOUT THE COVER

Photo: Block Island Wind Farm / Hollie Smith

ACKNOWLEDGMENTS

We would like to thank the Bureau of Ocean Energy Management (BOEM) for their ongoing support and assistance. We would like to thank the broader research team for their feedback, insights, and review. We would also like to extend a sincere thank you to the team at the Block Island Times for their extensive reporting on the Block Island Wind Farm.

Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

BIWF	Block Island Wind Farm
BOEM	Bureau of Ocean Energy Management
CRMC	Coastal Resource Management Council
DEM	Department of Environmental Management
SAMP	Ocean Special Area Management Plan
ESPIS	Environmental Studies Program Information System

1 Executive Summary

This report summarizes key findings from content analysis of newspaper coverage, meeting and hearing transcripts, and public comments related to the Block Island Wind Farm in Rhode Island. The content analysis was performed with intent to identify thematic trends and potential indicators across time beginning in 2008 to 2017. The content analysis findings are intended to inform the latter tracks of the ongoing research project.

1.1 Content Analysis Documents

News media coverage in this study refers exclusively to newspaper coverage of the Block Island Wind Farm. The findings reported in this technical report refer to thematic analysis performed on local, state, and national newspaper articles identified through database searches from 2008 to 2017. The meeting and hearing transcripts refer to the transcripts from the semi monthly meetings held by the Coastal Resource Management Council (CRMC) from 2008 to 2016. The public comments consist of the Department of Environmental Management (DEM) public hearing transcripts held on the Deepwater Wind Project (Block Island Wind Farm) in 2013. See Table 1 for counts of data and most common themes found.

Category	Number (n)	Theme
Media Articles	418	
Public Hearings Documents/Meeting Transcripts	3/75	
Most Common Thematic Code	1,118	"Political Process"
Example: "The CRMC, in league with the University of Rhode Island, has plans to create an ocean special management plan (SAMP) to identify and regulate optimal locations in state waters for such projects (Voskamp, 2008)		
Other Common Thematic Codes	433	"Cable Issues"
	377	"Economic Risk"
	338	"Economic Benefit"

Table 1. Summary of data and top themes.

1.2 Key Findings

1.2.1 Media Analysis

The nature of the Block Island Wind Farm (BIWF) as the first offshore wind farm in the United States dominated newspaper coverage. Articles referenced the complicated permitting process at the local, state, and federal level, and presented the BIWF as a "waterfall" event for the broader offshore wind farm industry.

While this thematic framing is not directly linked to recreation and tourism, the level of emphasis placed on this "first in the nation theme" as a strong trend in newspaper coverage from 2008 to 2017 appears to be important in understanding the broader discourse around the BIWF. It suggests that recreation and tourism, as a thematic topic, is less prevalent in newspaper framing.

Local, state, and federal newspaper coverage noted the unique position of Block Island to gain an underwater cable connecting the island to the mainland for the first time through the construction of the BIWF.

Historically, Block Island has seen some of the highest electricity costs in the nation as a result of having to generate all of their power through expensive diesel generators. But until BIWF, there existed no economically feasible option to connect Block Island to the mainland in order to decrease electricity prices. There was discussion in newspaper coverage of where the cable would be buried and connected on both the Island and mainland, with particular discussion on how it would affect beach activities. Additionally, newspaper coverage noted the cable's promise of bringing high speed internet to the island, which frequently had been unable to run tourists' credit cards because of internet outages and rolling summer brown-outs.

Newspaper coverage frequently relied on presenting the BIWF as an economic risk or benefit; economic framing of the BIWF was more common in newspaper coverage than environmental framing or aesthetic framing.

Supporters of the BIWF were quoted in newspaper coverage as promoting the BIWF as an opportunity for high-paying jobs and as an avenue for Block Island residents to obtain lower electricity costs. This represents an additional opportunity for tourism and recreation sectors, who would benefit economically from increased access to reliable connection and internet. Opponents noted the risk of financially supporting the first offshore wind farm and the increase in electricity costs that mainland Rhode Island would experience. Economic themes were coded three times as often as environmental themes and almost four times as often as aesthetic themes.

Media Word Frequency Counts, Top Five	Number (n)
Wind	5,830
Island	4,504
Deepwater	2,839
Farm	2,675
Block	2,360

Table 2. Frequency of words appearing in news media about the Block Island Wind Farm.

Block Island Specific Media Word Frequency Counts	Number (n)
Tourism	41
Recreation	13
Fishing	70
Boating / Boat(s)	184
Cable	1,364

Table 3. Frequency of words specifically related to recreation and tourism in the media.

1.2.2 DEM Public Hearings and CRMC Transcripts

There were more direct mentions of concerns to tourism and if the aesthetic impact would negatively affect Narragansett.

While some residents from Narragansett expressed concerns over possible negative effects on tourism and if the turbines would be visible from the mainland, other participants also expressed that the turbines had the possibility to spur tourism. Importantly, the wind farm's visibility from a given location is not an impact or benefit in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view.

Concerns of economic effects mirrored concerns stated in the newspaper coverage, with the majority of participants concerned about electricity rate increases to the mainland while recognizing the opportunity for Rhode Island to become an economic leader for the offshore wind industry.

Citizens were primarily concerned with increased electricity rates on mainland Rhode Island. Most opponents who spoke in public hearings said that Rhode Island ratepayers should not be impacted by the wind farm in any negative way. In contrast, many citizens recognized the economic possibilities for America’s first offshore wind farm to bring people to Rhode Island.

Climate change was directly addressed as the primary driver for needing to install the wind turbines.

Climate change was brought up several times by proponents of the wind farm. The argument using climate change as the driving factor seemed to outweigh any costs possibly associated with the wind farm. Several participants mentioned scientific studies about the rate of climate change, sea level rise, and greenhouse gas emissions as evidence for their position on the wind farm.

2 Content Analysis Purpose & Methods

This report summarizes key findings from content analysis of newspaper coverage, meeting and hearing transcripts, and public comments related to the Block Island Wind Farm in Rhode Island. The content analysis was performed with intent to identify thematic trends and potential indicators across time beginning in 2008, when the wind farm was first proposed, to March 3, 2017. The content analysis findings are intended to inform the participant observation and focus group portion of the study.

The overarching goals of this research project are to:

Identify potential indicators for evaluating the effects of the BIWF on recreation and tourism activities, based on a literature review as well as the public record of wind farm-related content including news coverage, meeting and hearing transcripts, and public comments;

Identify and analyze observed effects of the BIWF on Rhode Island recreation and tourism activities and tourism landscape, based on focus group input from each sector, participant observation, and content analysis, as appropriate;

Based on objectives #1 and #2, synthesize observed effects of the BIWF on Rhode Island recreation and tourism activities in a summary assessment, thus presenting the first such empirical data in the US;

Develop for BOEM a suite of indicators, based on the outcomes of objectives #1, #2, and #3, to be used in monitoring the effects of future offshore wind farms post-construction and in evaluating the potential effects of future proposed offshore wind farms pre-construction; and

Recommend a subset of indicators that are most appropriate for monitoring the effects of the BIWF on recreation and tourism moving forward.

This technical report is an overview of the content analysis methods and findings with the expectation that content analysis, particularly of news coverage, will inform the next phases of identification of indicators for the study of the Block Island Wind Farm.

2.1 Study Design

Newspaper articles focused on the Block Island Wind Farm were identified utilizing a number of different news databases. The timeframe for articles remained January 1, 2008 to March 3, 2017. It should be noted, March 3, 2017 is an arbitrary date which was selected in order to create a finite set of articles to be coded for this technical report; articles are continuing to be collected for future coding. Key words entered to identify articles were "Block Island Wind" OR" "Deepwater Wind" AND "Rhode Island." Databases utilized included LexisNexis Academic Search, National Newspapers Core (ProQuest), the Block Island Times, the Boston Globe Archives, and Google News Search. Articles were reviewed by a researcher to ensure proper criteria fit; industry press releases, blog posts, and international news coverage were not included. 419 newspaper articles were identified to be included in the dataset. The vast majority (79%) of articles are from the Block Island Times.

Transcripts for the semi monthly Coastal Resource Management Council meetings were requested directly from the CRMC. Prior to this request being sent, the agendas, as publically available on the CRMC's website, were reviewed by a researcher from CRMC's website in order to specify which dates mentioned the BIWF. A total of 75 transcripts were received and reviewed.

The public comments transcripts were obtained in person by researchers who visited the Department of Environmental Management. A total of three public forums were held, two in Narragansett, Rhode Island, and one on Block Island. The hearings were throughout 2013, April 24, 2013, May 8, 2013, and December 11, 2013, and all three complete transcripts were received and reviewed.

2.2 Methods

Following traditional thematic analysis, a codebook was constructed based on previous media analysis research (Smith et al, 2016; Stephens et al, 2009; Stephens et al, 2008). The codebook consisted of thematic codes developed for and utilized in other media studies of wind energy across the United States (Stephens et al, 2009; Stephens et al, 2008). Using these previously developed codes provides an additional benefit of being able to compare results to other media studies in different geographic locations across the United States. In addition, researchers also conducting source coding, which focused on identifying who was been directly quoted in the mass media (Smith & Norton, 2014; Lacy & Coulson, 2000; Liebler & Bendix, 1996; Smith, 1993). The codebook was refined as coding commenced; this is reflective of coding as an iterative process and is a common and previously supported practice (Smith & Norton, 2014). Researchers also ran queries and coded for the presence of project-specific themes identified by the URI research team, including: tourism, recreation, fishing, and boating. The coding of newspaper articles occurred first and was utilized heavily in coding the meeting transcripts and the public comments. Coding occurred at the sentence level meaning any one sentence could be coded multiple times. To ensure consistency, one coder coded all media articles and one coder coded all public hearings and meeting transcripts. Coders had weekly meetings to discuss any concerns over coding processes or questions about specific articles.

2.3 Study Limitations

The coding performed emphasizes qualitative findings over quantitative due to this being the first study focused on offshore wind farm coverage. This means that statistical tests of significance have yet to be performed; however, this report is submitted with the hope that future research will allow for this type of analysis.

3 Study Findings

3.1 Newspaper Coverage

A. As previously noted, newspaper coverage was dominated by themes related to the BIWF being the first offshore wind farm in the United States. An emphasis was placed on the complicated permitting process and Deepwater Wind's work with local and state agencies in the creation of policies for the wind farm to become operational. In particular, Deepwater Wind and local and state agencies were described as working collaboratively throughout the permitting process, without an overwhelming disparity in negative or positive coverage. Over 1,000 thematic codes were identified as being related to this "process" of developing and building the first offshore wind farm. Risks due to recreation appeared 11 times while maritime risk, including professional and non-professional fishers, etc. were mentioned 47 times. The adoption of the Ocean Special Area Management Plan (Ocean SAMP) was frequently mentioned as a success story of corporate and local interests combining. Throughout the dataset explicit mentions of tourism and recreation were rare. In a word frequency count, the word "tourism" was only mentioned in 21 pieces of data and "recreation" only appeared in 12 pieces of data. **This lack of explicit**

discussion around recreation and tourism is an important finding, as it indicates people were discussing more of the process during the construction of the wind farm. It also denotes that many of the stakeholders involved in the discussion were concerned with economic benefits and risk that did relate to tourism, but also everyday life of Block Island residents and business owners. These complexities can be seen in the next finding.

B. In a word frequency count, "cable" was the seventh most common word with over 1,400 instances; this is reflective of the overall news coverage discourse. Until late 2016, Block Island had remained unconnected to the mainland resulting in frequent summer power outages and slow internet connection. As part of the BIWF, Deepwater Wind and National Grid constructed an underwater cable bringing energy from the wind turbines to the mainland, allowing for Block Island to not only experience lower energy prices, but also have high speed internet. An article notes, **"It's not just a matter of convenience: credit card business shuts down if there is no internet service" (2015, Trodson)**. Block Island residents and tourists were framed as the beneficiaries of an underwater cable and the only economically feasible way to obtain these benefits was through Deepwater Wind's construction of the BIWF.
C. Previous research into media portrayals of renewable energy has suggested that environmental, economic, and aesthetic themes are often broken down into "risks" or "benefits" (Stephens, Rand, & Melnick, 2009). Such a distinction was mirrored in the newspaper coverage of the BIWF. The most common frame was "economic risk" with 377 instances followed by "economic benefit" with 338 codes. A 2016 article from the *Boston Globe* illustrates this common thematic split: **"To some, they're engineering marvels, the ultimate solution to precarious energy prices and dangerous levels of carbon emissions. To others, they're expensive, blinking monstrosities that mar the pristine horizon and will prove a boondoggle for electricity customers"** (Abel, 2016). This split suggests that the discourse occurring around the BIWF at the media level is not yet settled. Rhode Island as a state presented an interesting case study for offshore wind having had at one time the highest unemployment rate in the nation; framing the story of offshore wind as an "economic benefit," while not the most dominant code, seems to have played a significant role in the success of the BIWF (See figure 1). Language about the siting of the wind farm may suggest that a wind farm located near other developed or industrial areas may be perceived to have less of a visual impact and fit with the landscape better than one located in an undeveloped area. Importantly, a wind farm's proximity to other development is not a benefit or an impact in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view.

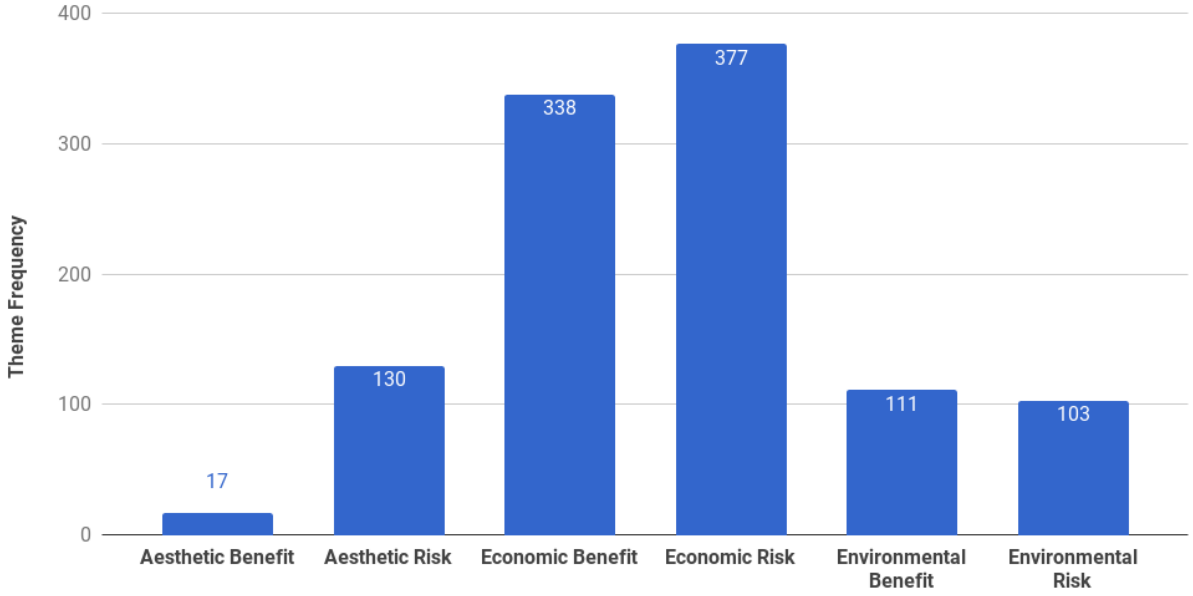


Figure 1. Theme frequency count in newspaper coverage of the Block Island Wind Farm

D. All direct quotations in newspaper articles were coded to understand who or what groups were seen as legitimate sources of information. The most common source of information were developers of wind farms; Deepwater Wind, the company behind the BIWF, was the majority of the 510 codes identified. This high level of quotation is surprising because traditionally, private companies are not present in media coverage of environmental or energy issues (Smith & Norton, 2013). It appears that there was a very obvious push by Deepwater Wind to be as accessible as possible. Again, this may be responsible for the lack of newspaper conversation around recreation and tourism risk. Figure 2 provides number counts for other common sources.

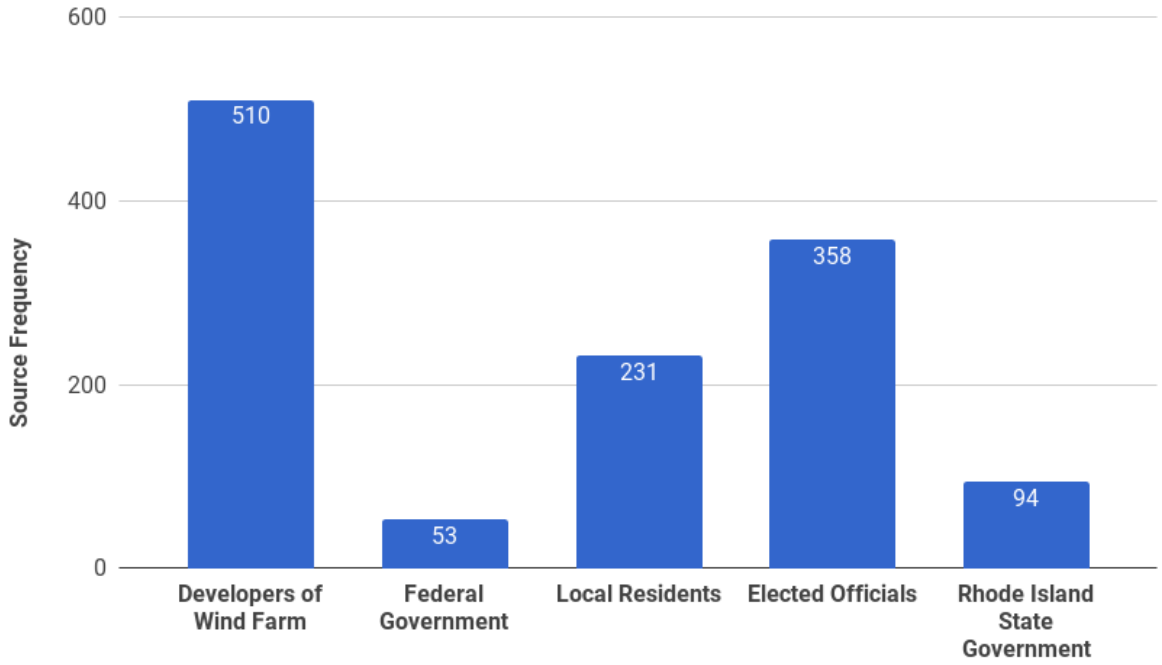


Figure 2. Source frequency counts for direct quotations in media coverage

3.2 Department of Energy Management Public Hearings & CRMC Meeting Transcripts

A. There was more direct mentions of concerns to tourism and if the aesthetic impact would negatively affect Narragansett.

While several residents from Narragansett expressed concerns over possible negative effects on tourism and if the turbines would be visible from the mainland, other participants also expressed that the turbines had the possibility to spur tourism. The location of the meetings, two in Narragansett and one in Block Island, most likely accounts for the increase in Narragansett residents who voiced their opinions on the wind farm. Narragansett residents voiced primary concerns that the turbines would be visible from the mainland beaches and the cable location entering the mainland would disrupt beachgoers routines. Interestingly, some participants noted that many people vacation in South County, while less noted that Block Island is a tourist destination in and of itself. Supporters of the wind farm argued that the wind farm, being the first in the nation, held the potential to be a big tourist draw.

B. Concerns of economic effects mirrored concerns stated in the newspaper coverage, with the majority of participants concerned about electricity rate increases to the mainland while recognizing the opportunity for Rhode Island to become an economic leader for the offshore wind industry.

Citizens were primarily concerned with increased electricity rates on mainland Rhode Island. Most opponents who spoke in public hearings said that Rhode Island ratepayers should not be impacted by the wind farm in any negative way. Opponents of the wind farm talked about the possible negative consequences for all Rhode Island residents who would see an increase in electricity bills. Very few

participants voiced concern over negative economic consequences due to lost tourism on Block Island and were more concerned with electricity costs for full time Rhode Island residents. In contrast, many citizens recognized the economic possibilities for America's first offshore wind farm to bring people to Rhode Island. Proponents of the wind farm emphasized the opportunities associated with being the first offshore wind farm in the United States. Opportunities mentioned ranged from tourists visiting the wind farm, manufacturing jobs created in Quonset, and reputational clout of being an industry leader.

C. Climate change was directly addressed as the primary driver for needing to install the wind turbines.

Climate change was brought up by proponents of the wind farm. The argument using climate change as the driving factor seemed to outweigh any costs possibly associated with the wind farm. Interestingly, many people took a personal perspective to share their concerns over climate change, sharing stories of their children and grandchildren deserving a cleaner and better planet. For these supporters, it seemed that the need to adapt to climate change outweighed any other associated risks or benefits. It was clear throughout public testimony that climate change was understood as a global problem with local effects to these residents. Several proponents of the wind farm talked about studies that raised alarm about the rate of climate change, sea level rise, and changes in greenhouse gas emissions.

D. CRMC meetings were primarily based on the technical details of the wind farm and included conversations of how to word different chapters of the Ocean SAMP.

Meetings were discussing several technical elements of the wind farm, from the Ocean SAMP process, location of the cable, and economic dimensions of the wind farm proposal. Of particular note was the difference in interaction in the CRMC meetings from the other points of data, with communication often being less formal and more conversational between CRMC staff members. While several technical points of the Ocean SAMP were discussed, it dealt with risks and benefits in a much more formal and professional manner than the public hearings and media data. Several comments or concerns voiced in the CRMC meeting revolved around specific wording in different chapters of the Ocean SAMP and how to rewrite sentences or paragraphs to be more legally neutral.

4 Conclusion

As the results above reveal, there is a strong and diverse conversation occurring around the Block Island Wind Farm. By analyzing multiple sources of discourse, the key findings noted above present an interesting case to compare and contrast. The economic focus revealed through newspaper coverage of the Block Island Wind Farm is mirrored in the public forum conversations related to reduced or increased energy rate prices. Recreation and tourism, while not a strong theme in any of the three sources analyzed, is mentioned, often in regards to the offshore wind turbines being a potential *benefit* for drawing tourists to Rhode Island.

What remains unclear is how these conversations will or will not be reflected in actual recreation and tourism impacts. Again, because Block Island is home to the first offshore wind farm, the findings presented above are reflective of a very new conversation regarding a *successful* offshore wind farm. By understanding how the media, the public, and local organizations are framing the offshore wind farm, it is hoped that there will be better understanding into what helped make this wind farm successful where others have failed.

It is clear that year-round Block Island residents had much to gain: lower electricity rates and high-speed internet. This of course is juxtaposed to mainland Rhode Island residents who were worried how their electricity prices would increase.

Future analysis of the data collected should help to reveal additional insights and indicators into how the Block Island Wind Farm stands to impact tourism and recreation. But based on the present analysis, a primary theme is how the offshore wind farm could serve as an opportunity to strengthen its tourist and manufacturing economy with reservations about possible economic drawbacks involved with decommissioning and mainland rate hikes.

Key recommendations for using these finding is the next phases of research are as follows:

1. Ask specific questions in focus groups about if support or resistance to the BIWF would have been different if the cable was not part of the project. Content analysis findings indicate the perceived benefit to the community, both business owners and residents, through the cable could be a potential indicator for future project success.

2. Possibly expand participant observation locations to include areas in South County, RI, where turbines are visible from mainland beaches. As concerns were voiced in the public hearings from mainland residents, it would be beneficial to see if the turbines are a point of discussion for tourists and beachgoers both on Block Island and the mainland.

3. Listen specifically for how the turbines are described over time, in particular to how people describe them as a positive or negative alteration to the oceanscape.

4. Ask if the amount and quality of communication by Deepwater Wind and local and state agencies impact specific groups' level of support for the BIWF. As noted, Deepwater Wind was a primary source of information in the media coverage. Focus groups could provide an opportune time to ask key stakeholders if they felt the communication was legitimate and trustworthy.

5 References

Abel, D. (2016, August 14). The nation's first offshore wind farm takes shape off Block Island. *The Boston Globe*. Retrieved from https://www.bostonglobe.com/metro/2016/08/14/the-nation-first-offshore-wind-farm-takes-shape-off-block-island/243IxkMseo3fDuhI8gN3ML/story.html

Lacy, S., & Coulson, D. C. (2000). Comparative case study: Newspaper source use on the environmental beat. *Newspaper Research Journal, 21*, 13-25.

Leibler, C., & Bendix, J. (1996) Old-growth forests on network news: News sources and the framing of an environmental controversy. *Journalism and Mass Communication Quarterly, 73*(1), 53-65.

Smith, C. (1993). News sources and power elites in news coverage of the *Exxon Valdez* oil spill. *Journalism Quarterly, 70*, 750-752.

Smith, H., & Norton, T. (2013). Environmental groups on par with government sources. *Newspaper Research Journal, 34*(1), 50-61.

Smith, H., & Norton, T. (2014). That's why I call it a task farce: Organizations in participatory processes. *Environmental Communication, 7*(4), 456-474.

Smith, H., Smith, J., Lindenfeld, L., Silka, L., & Gilbert, C. (2016). Media and policy in a complex adaptive system: An analysis of wind energy legislation. *Energy Research & Social Science, 19*, 53-60.

Stephens, J. C., Rand G. M., & Melnick, L. L. (2009). Wind energy in US media: A comparative state-level analysis of a critical climate change mitigation technology. *Environmental Communication, 3*(2), 168-190.

Stephens, J. C., Wilson, E. J., & Peterson, T. R. (2008). Socio-Political evaluation of energy deployment (SPEED): An integrated research framework analyzing energy technology deployment. *Technological Forecasting and Social Change, 75*(8), 1224-1246.

Trodson, L. (2015, July 31). Undersea cable to bring challenges, opportunities. *The Block Island Times*. Retrieved from http://www.blockislandtimes.com/article/undersea-cable-bring-challenges-opportunities/43362

Voskamp, P. (2008, June 9). Seven bids for a wind farm. *The Block Island Times*. Retrieved from http://www.blockislandtimes.com/article/seven-bids-wind-farm/23204

6 Appendix A: Alternative Energy Media Framing Analysis Codebook

Alternative Energy Media Framing Analysis Codebook (Adapted from the original *SPEED Framework* developed by Jennie Stephens and colleagues, based on Niklas Luhmann's Theory of Ecological Communicatio. For more information on the *SPEED* Framework please see Stephen, et al, 2008; Stephens et al, 2009).

FRAMES	DESCRIPTION & KEY WORDS
Technical	The technical frame deals with development of specific technology (wind turbines, sensors Technology, Innovation
Economic	The economic frame puts things in terms of dollars & cents. It deals with the economic impact of job creation or loss, importing/exporting, and growth of the industry or state. It also relates to the cost of alternative energy in comparison to traditional energy. Jobs, Employment, Industry, Export/Import, Manufacturing, Cost,
Environmental	The environmental frame emphasizes the development of alternative energy in relation to the environment. It could encompass concerns of environmental degradation, including loss of wildlife habitats. It could also be emphasizing the need for alternative energy because of the environmental damage caused by fossil fuels. Environment, Wildlife, Habitat, Migration, Degradation, Ecosystem, Earth, Nature
Health/Safety	The health & safety frame covers human health concerns of alternative energy, and also the concepts of national security. National Security, Health
Political	The political frame covers all regulations and policies dealing with alternative energy. If the story is about a town meeting or public hearing, it would be in this frame. If the topic

	talked about in the meeting is about economic issues, you can also could it as that. Also, this frame includes if the story is framed as a political issue (i.e. left v. right wing).
	Regulation, Ordinance, Council, Policy, Licensing, Meeting
Aesthetic	The aesthetic frame deals with the views and oceanscape either from Block Island or the mainland.
	View, Aesthetic, Landscapes, Horizon
Cultural	The cultural frame is probably going to be the most discrete. It deals with resident's way of life and cultural values. This frame will become apparent primarily through quotes about people defending their property or way of life instead of as an investment. There may be several mentions of family in the frame as well.
	Way of Life, Tradition, Culture, Heritage, Family

BIWF-Specific Word Queries

Tourism, Recreation, Fishing, Boating, Cable

Other word queries available upon request of the research team or BOEM.

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix III: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year One)

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix III: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year One)

November, 2017

Author:
Amelia Moore

Prepared under M16PC00016
By
University of Rhode Island
45 Upper College Road
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study concept, oversight, and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Contract Number M16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage (http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

Moore, A. 2017. Appendix III: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year One). Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 30 pp.

ABOUT THE COVER

Photo: Block Island Wind Farm Tour / Amelia Moore

ACKNOWLEDGMENTS

I would like to thank the Bureau of Ocean Energy Management (BOEM) for their ongoing support and assistance. I would like to thank the broader research team for their feedback, insights, and review, as well as the students who have assisted in collecting the data presented here. I would also like to thank the Block Island community for their ongoing participation in this study.

Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

BI	Block Island
BIWF	Block Island Wind Farm
BOEM	Bureau of Ocean Energy Management
CRMC	Coastal Resources Management Center
DWW	Deep Water Wind
PO	Participant Observation
PUC	Public Utilities Commission
RI	Rhode Island

1 Executive Summary

This report summarizes key findings from the first year of ethnographic participant observation fieldwork related to the Block Island Wind Farm (BIWF) with tourist, resident, tourist business, and recreational communities on both Block Island and coastal mainland Rhode Island. In year one, formal participant observation (PO) began in June of 2017 and ended for the purposes of this summary in October of 2017. The participant observation findings are intended to inform the latter tracks of the ongoing research project, including the focus group planning, indicator development, and research planning for year two.

1.1 Participant Observation Sites

Participation in tourism and recreation and observation of tourist and recreational activities took place at a number of sites on both Block Island (BI) and the Rhode Island mainland (RI). Sites were selected because of their proximity to the BIWF, because of their view of the BIWF, or because of their connection to BIWF related tourism business. The findings in this report refer to interpretive analysis of observed events and open ended interviews performed at these sites over the course of the five month year one formal study period (June, 2017- October, 2017). See Table 1 for a list of sites utilized for observation by the participant observation team. Each site was visited at least once, and some were visited repeatedly. Each site visit lasted one to five hours, depending on the level of activity or the nature of the site.

Block Island	Mainland Rhode Island	Regional Waters
Visitor Center	Scarborough Beach	Block Island Commuter Ferry
Water Street Businesses	Fisherman's Memorial Beach	Block Island Express Ferry
Southeast Light	East Matunuk Beach	Frances Fleet Whale Watching
Mohegan Bluffs	Roy Carpenter's Beach	Block Island Ferry Wind Farm Tour
Second Bluff	Salty Brine State Beach	Recreational Fishing Boat
Van Tours	Green Hill Beach	Charter Wind Farm Tour
Real Estate Offices	Charlestown Town Beach	
Ballard's Beach		

Table 1. Summary of year one PO sites.

1.2 Key Findings

1.2.1 Block Island

The effects of the BIWF were more apparent on Block Island itself due to the proximity of the wind farm to the southern shore of the island. The BIWF is at least partially visible except for very foggy or rainy days. Sites like Second Bluffs and nearby cottages, where the BIWF now dominates the view, are particularly affected. Once known for its "view of the infinite" or "view of Antarctica" the BIWF has changed the visitor experience at this site, with taxi tour drivers explaining details about the farm and its history and visitors taking photos and selfies that include the BIWF. At the Southeast Lighthouse, the BIWF has become a focal point included by the docents in the lighthouse tour and often remarked upon by visitors taking in the panoramic ocean view from the field. It is not noticeably common, but some visitors did remark that they came to the lighthouse expressly to see the BIWF, while most others developed questions and curiosity about the farm as soon as they saw it, but would have gone to this site anyway as part of their day on the island. Again, most of the observed reactions expressed a range from positive ("wow!", "this is amazing!") to neutral (often not remarking at all) to curious ("how much power do they generate?", "Why did they put them here?"), with a vocal minority disapproving of the presence of the BIWF because of the political process related to its creation, its expense to build, the fact that electricity rates have not dropped, the fact that it may affect home resale values on the Mohegan Trail (although some say the BIWF may eventually raise values if potential buyers approve of the farm), and the rare aesthetic sense that it does not belong in this area or that the lights are too distracting at night ("like LaGuardia Airport"), although others remarked that the BIWF lights are no brighter than the lighthouse or passing large ships at night. Some retailers have begun to sell BIWF related merchandise like T-shirts or stickers or postcards, and several businesses experimented with tours of the BIWF.

1.2.2 Mainland Rhode Island

Observers could not discern any significant coastal recreation behaviors tied to the presence of the BIWF. The BIWF is a background object, much like the island itself, observable offshore in the distance during the day and night. Weather plays an important role, as the BIWF is often not visible or is difficult to see on overcast, foggy, or overly hazy days. The BIWF is especially easy to overlook from sites where it is not front and center in the view shed, and it is often unnoticed by coastal recreators if it is especially far off to the side of the viewing area (an "oblique view"), or if recreators did not already know it was there. Regional residents are more likely to be aware of the BIWF than out of state visitors. Unsolicited comments about the BIWF were rare as people went about their recreational activities without observable change. Solicited comments revealed a strong sense of approval from some recreators who appreciate green energy or think the BIWF looks "cute" from this vantage, a sense of indifference from many others ("they don't bother me or affect my experience"), and a small but vocal minority had a strong negative reaction tied to concerns about possible effects on whale and bird species, the "wasting" of money in the construction of the BIWF, and a rare aesthetic sense that they are "ugly".

1.2.3 Regional Waterways

From the water, the BIWF is experienced very differently than on the shore, and smaller boats provide a different experience than larger ferries. From a small fishing or charter vessel, the turbines are enormous and dramatic, with visitors referring to them as "majestic", "amazing", and even "prehistoric" (we think this means they are surprisingly large, slow moving, and awe inspiring, like a dinosaur). The turbines make an audible rushing sound as they turn, and getting close to them can be exhilarating. Ferry tours are similar, although the vantage is higher off the water, the height of the turbines is not as dramatic, and the group dynamics are less personal or intimate on a ferry with 100+ people vs. a small power boat with 5.

Boat tours are the experiences that provide the most detailed information about the BIWF and its history. This information is largely provided by Deep Water Wind. From a fishing perspective, the BIWF is said to attract fish to the area. It can be seen from most of the approaches to the island, day or night, even over the top of the island itself as boaters enter into New Harbor. For some fishers we spoke to, this was one downside (seen by some as a fair cost for attracting more fish): you have to have a larger boat and go very far away from BI or the coast of RI to get away from the sight of land or man-made structures, and that is a special feeling but just not cost effective anymore.

1.2.4 Overall

In general, the first season with the BIWF in operation proved to be "not as bad as I thought it would be" for many local recreators and business owners who had been concerned about the impact of the farm on the tourism and recreation experience on BI. There is a noticeable amount of interest and curiosity shown by visitors at sites like the Southeast Lighthouse, and the boat tour business was perceived to be good (no real numbers available yet) for the few businesses that focused on developing BIWF specific offerings. Negative reactions by visitors were minimal. On the mainland, there were also similar bumps in interest and curiosity and a similar lack of negative response except by specific vistitors who knew of the BIWF in advance and already disapproved of its existence for various reasons already mentioned. Mainland reactions were far less obvious or prevalent than reactions observed on BI or on the water. One common observation is that visitors on both the mainland and BI often express confusion over how the BIWF functions, especially when some turbines are not spinning, and there is frequently no information readily available to inform them once they are outside on the coastline. Visitors also referred to the structures as "windmills" as often as they mentioned "wind turbines" or "the wind farm." In terms of residents in the area and especially on BI, the BIWF remains a hot button political issue, and feelings stemming from the controversial inception of the project have yet to be resolved for a vocal minority, even as the tourism impacts appear to be relatively benign or even positive.

2 Participant Observation Purpose & Methods

The goal of the participant observation (PO) component of this project is to document the public, tourist, and recreational engagement with the BIWF in real time in order to collect grounded ethnographic observations of the direct and indirect effects of the turbines on the local tourism and recreational experience.

PO is a qualitative ethnographic social scientific research method for the documentation of human experiences and social interactions in real time (Bernard 2006). Participant observation allows the researcher (the observer) to interact and participate directly in the activities of research subjects in order to capture data that cannot be readily accessed via more abstracted questionnaire methodologies. Participant observation utilizes all the senses of the researcher to collect site-specific information that can be sensed in a number of ways including but also beyond verbal communication such as the audible, visual, tactile, and olfactory. Participant observation is especially useful for data collection involving the use of space, embodied practices, and nonverbal qualities of the human experience, and therefore this project is utilizing participant observation as one method to measure the effects of the offshore wind farm on the Rhode Island recreation and tourism industry.

The overarching goals of this research project are to:

Identify potential indicators for evaluating the effects of the BIWF on recreation and tourism activities, based on a literature review as well as the ethnographic interpretation of real time wind farm-related events and selective open-ended interviews;

Identify and analyze observed effects of the BIWF on Rhode Island recreation and tourism activities and tourism landscape, based on focus group input from each sector, participant observation, and content analysis, as appropriate;

Based on objectives #1 and #2, synthesize observed effects of the BIWF on Rhode Island recreation and tourism activities in a summary assessment, thus presenting the first such empirical data in the US;

Develop for BOEM a suite of indicators, based on the outcomes of objectives #1, #2, and #3, to be used in monitoring the effects of future offshore wind farms post-construction and in evaluating the potential effects of future proposed offshore wind farms pre-construction; and

Recommend a subset of indicators that are most appropriate for monitoring the effects of the BIWF on recreation and tourism moving forward.

This report is an overview of the participant observational methods and findings with the expectation that PO will inform the next phases of identification of indicators for the study of the Block Island Wind Farm.

2.1 Methods

2.1.1 Methodological Steps

Each site was assessed through the following steps:

Site Exploration

Space, Mobility/Access, Sociospatial Dynamics, Environmental Conditions, Key Features

Social Scene

Who (**we do not record proper names or personal identifiers*), How Many, What, When, Social Dynamics, Coherence/Difference, Inclusion/Exclusion, Types of Behaviors/Practices

Situated Listening **researchers are not to record any personally sensitive information that might put subjects at any risk*

Types of Conversation, Key Terms/Phrases (local "language"), Verbalization of Experience

Conversation **researchers may respond to direct questions about their presence with a brief description of the project adapted from the project fact sheet*

Open-ended Responses to Researcher Description of Research Project

Participation in Activities

Embodied Sensations, Aspects of Enjoyment, Key to the Experience

Contextualization

Situate Observations Within Relevant Current and Historical Events and Social, Cultural, and Political Situations

2.1.2 Documentation

Each PO session was documented in the following manner:

Scratch Notes

Hand written: Quick notes to keep track of observations when it is not appropriate to sit and write out notes for a long period

Field Notes

Hand written: detailed observational notes taken at intervals throughout the day's activities and at the conclusion of the activities for the day

Photographs

Visual documentation of key observational points **not to be shared outside of the project if photos contain individual identifiers*

Note Index

Typed and shared: anonymized thematic indexing of key observational points from field notes

Field Summaries

Typed and shared: anonymized summaries of key observational points from each field site for each research season

Data Management

**No socially identifying material can be shown to non-project participants, notes and data cannot be shared outside of the project researchers (except for de-identified indexes and summaries), all notes and data must be stored in locked rooms or on password protected computers or cloud repositories.*

2.1.3 Participation Activities

Depending on the site in question, the following activities were engaged in by the PO team:

Recreational boating
Recreational fishing
Ferry riding
Tour taking

Beach going
Sight seeing
Coastal leisure (dining/lounging)

2.1.4 Key Informants for Open-ended and Unstructured Interviews

The following people were selected for possible interviews in year one:

Advisory Committee Members **membership on the AC is a waiver of anonymity, but interview conversations will remain confidential and all participants will be subject to the informed consent process*

Jessica Willi- BITC
Kim Gaffet- BI resident and TNC representative
Louise Bishop- SCTC
Judy Grey- BI resident
Rick Bellavance- boat charter
Robin Wallace- sailing charter
Aileen Kenney- DWW

Others *(not named for anonymity)*

Charter business owners
Charter boat captains
Local tourism business owners
Local restaurateurs and employees
Tourists/visitors/recreators
BI residents
Regional residents

2.2 Study Limitations

PO emphasizes qualitative and interpretive methods over quantitative methods due to this being the first study focused on offshore wind farm coverage. There is a great deal that is unknown prior to study initiation which requires more open ended and exploratory work and which prevents more targeted research design. This means that statistical tests of significance cannot be performed on this data, nor is that an appropriate expectation for ethnographic information. PO is limited to the time available for researchers to conduct fieldwork and by the spaces, activities, and events they have access to as members of society in general. There are many events we could not attend due to lack of man-power, as well as many social settings it would not have been appropriate for us to attend (such as private functions in private spaces).

3 Year One Results

What follows is a selective distillation of fieldwork notes and interviews collected by the PO team during the year one field season. Site notes have been summarized and the most representative examples or observations provided. Not all sites are addressed here, as not all sites provided relevant information. The least relevant sites were typically only visited once to confirm that they were not suitable for sustained data collection. Not all interviews are presented here as we selected only the most representative examples from the interviews to include in this report. There are only selected examples in this document of the experiential descriptions of site activities, as including them all in detail would impede report length. That phenomenological material will be compiled separately for the purposes of this study for year two.

3.1 PO Fieldwork

3.1.1. Block Island

Visitor Center

Wind farm visibility: None, but there are DWW pamphlets in the Center and one of their maps has the BIWF drawn in, and one of the new sign boards outside has the BIWF pictured on the BI map. A BI charter boat company also has wind farm tour flyers in the Center.

Observed activities: Visitors primarily off the ferry boats asking for BI info and recommendations, looking at pamphlets and advertisements, waiting while a companion uses the bathroom.

Observed people: Almost anyone off the ferry who has not been to BI before and needs advice as to what to do. In many cases one or two people from a group will go in and leave the rest of their party outside because the Center is small and often gets very crowded when a ferry boat has just docked. When there are no boats arriving it can clear out, and on slow days it can be quite empty. The staff in the Center seem to be all older women between their 40's and 70's, and there are at least two (and more often three in peak season) people staffing the Center at any give time.

Recorded commentary relevant to the wind farm: The director shared that she thinks the BIWF will need to cut islander energy costs in order to be accepted. Initially she felt that costs had not come down. Early season observation by older woman staffer: Most people do not ask about the BIWF at all, even when I point it out on the map but people are always taking the DWW brochures and we are almost out already. They should come up more frequently once the weather improves and the season gets busier. Most of the people who live on the bluffs don't like the BIWF and many have put their homes up for sale on Mohegan Trail. They especially don't like it at night. One man has already sold his house of 15 years and bought another on Lake Michigan. But many of the houses for sale have not yet sold because no one would buy them during construction. The rentals are still strong and everything is rented this week as it is Race Week. Some bills are going up rather than down. The grocery store pays around $60k a month. But most people on the island like the BIWF. The turbines are "darling and whimsical" and one man bought a boat to transport people to the BIWF because he senses a profit. You see wind farms in Europe all the time and it isn't a big deal. They don't bother me.

Mid season observation by older staffer: She tells tourists about the WF as a thing to see, and tourists are intrigued. They ask about it. "We are proud of it and tourists are often impressed that the island is off the grid." Islander concerns are largely gone now that the turbines are built. Seasonal residents are more

concerned than year round residents. But the town did not get the economic benefit they expected- "I won't say promised."

BI Ferry tour guide: First trip had 107 people out of a capacity for 290. There were problems with the sound system and rough weather but passengers were interested and she got good feedback. She wasn't initially happy about the BIWF but she now finds the turbines "graceful". She thinks ratepayers in the state are paying more now for the BIWF, and she is not a fan of that. She does think charter boat tour company that utilizes the BIWF is doing well.

Late season observation by head of center: Sense that tourism is down in general because some restaurants are down and some hotels may be charging a bit more but stays are down a bit from a high of two years ago. And electricity rates are only down two cents from 42 to 40 cents so that's not much. But the farm attracts people who want to know if they power the island. People are interested. It's not a detractor. This year tourism maybe down because there is limited overnight parking in Galilee and because the ferry and parking and hotels adds up and people might not be able to afford it. They added more ferry wind farm tours in September and October because they had to cancel some in the summer due to weather but they also had enough demand. The last tour on Saturday had 100 people.

Water Street Businesses

Wind farm visibility: None, but there are postcards, stickers, photographs, a sweatshirt and Tshirts that now depict the BIWF in some way as well as the BI Guide wcich has a turbine on the cover and announces 2017 as the "Year of the Wind Farm."

Observed activities: shopping and browsing and visitor small talk with store staff.

Observed people: families, couples, individuals, children old enough to be unsupervised, cashiers and staff: young female seasonal employees from Eastern Europe, college students, store owners in small stores, and sometimes store managers who are seasonal or annual BI residents.

Recorded commentary relevant to the wind farm: Early season conversation with older woman store staff: "We don't have any BIWF postcards yet but we soon will." She liked the BIWF because of supposed energy savings but she acknowledged that people who own homes on the southeast side don't like having their "perfect view' disrupted and they see the BIWF as a "nuisance."

Early season conversation with one seasonal young woman employee from Europe: She didn't know what a "wind turbine" was.

Malcolm Greenway Photography Staffer: The "Power to the people" photo and at least two others are on display. There is lots of interest in these photos and the project in general. Seasonal residents are more negative but they are mostly quiet now. The town council is supportive.

Cashier at gift shop: The stickers sell as well as all our other stickers. Tshirts and sweatshirts were also popular last year during construction.

Tshirt store cashier: Initial Tshirt order sold out and we had to reorder them right away. They plan to also order stickers and women's shirts.

Southeast Light

Figure 1. Field at the Southeast Lighthouse. Four turbines visible in the frame (Photo by Amelia Moore).

Wind farm visibility: all 5 turbines can be clearly seen offshore from the field adjacent to the lighthouse and from the lighthouse windows and lamp room. On a clear day they are quite distinct and dominate the view. On a foggy day you cannot see them at all, and on a hazy day they seem much less distinct and amorphous. You can look down the coast to the Bluffs and not have them in your field of vision, but otherwise they are quite obvious.

Observed activities: photographing the lighthouse, photographing your companions, picnicking, climbing on the rock that marks the lighthouse's prior location, looking out to sea and at the bluffs and at the BIWF, reading the signage about the antennae, sun bathing fully clothed, taking selfies, visiting the lighthouse museum, touring the lighthouse.

Observed people: couples, families, tour groups, groups of friends, school groups, a rare loner. All ages. More diverse crowds on holidays and weekends. Can be quite busy or nearly deserted depending on the day of the week and the weather. People arrive by taxi, bicycle, moped, or on foot from Old Harbor. Multiple languages overheard. Crowds arrive in waves possibly tied to the ferry schedule.

Recorded commentary relevant to the wind farm:

From the field:

Young men talking: "Do you think these windmills spin as fast as a pin wheel?" "No man, they won't spin that fast" "Do they power the whole island?" "Yeah"

Young woman to group: " I wonder how many megawatts they produce?"

Young woman to family: "They placed these here for a reason. It is the best place to generate wind and the don't obstruct too many scenic views. They placed them so that not everyone would have to look at them."

Woman: "Every time I see the turbines from a distance I think they are not moving at first because they move so slowly."

Two women trying to take a selfie with the turbines: "In real life they look right there but they look so small in the pictures." They seemed disappointed and wanted them to loom large in the photos.

Couple standing at the fence: "Wow they really stand out."

Woman to family: "We gotta take a photo of the wind farm"

Man to group: reading facts out of the brochure and calling them "windmills".

Man talking about sailing: "The clearance does not look like 100 feet."

Woman touring French people: They look "very New England" and the setting is "pretty".

French woman being toured: They are "so awesome and so quiet"

Group of 20 somethings: "Well this is not interesting at all."

Man with family: "Lighthouse, wind farm, check. What's next?"

Young man taking picture of the BIWF with phone: "yeah you can see them" in the photo.

Middle aged couple: "Maybe because they are so big they aren't moving with this wind?"

Young woman: "I don't like them" while shaking her head.

Family with two boys counting the turbines: "one two three four...."

Young couple: "They don't seem like they are generating a lot of energy right now" (not all turbines turning). "Best idea ever." (sarcasm)

Middle aged group: Taking photos of the BIWF. "It doesn't look like three miles" "Do they look bigger from when you're on the ground?"

Middle aged group: "Are there more around the corner? Is that it? They seemed bigger when we were coming in."

Group of college kinds: One said he would swim out to the BIWF as it was only a mile away and take a picture. One said his family worked on building the blades. "Did they consider the problem of barnacles?" "Why isn't this sign (about antennae) telling us about the windmills?" "it takes a whole truck" to transport the blades." "I wonder why they are not turning."

Two older couples: One said "windmills". One said " I am surprised they have windmills". General comments about their size. "Windmills are for their energy, huh?" Noting that there are a lot of boats far away from the BIWF and not near it.

Three man in 40s: "Those things look fake."

Family of four: Want a photo with "windmills in the background."

Older couple: "Nice view of the windmills!" "Yeah! If you like that sort of thing." Laughed.

Many people take photos with the lighthouse or bluffs in the background. Fewer attempt to get the BIWF in the background but some are obviously attempting it. Many visitors are indifferent to the BIWF and take it in as part of the overall scene. Few come for the BIWF itself, although some definitely do.

From the museum docents:

Younger male visitor convo with older man docent: "Do they power the lighthouse?" "They could but they don't. The power is sent to the mainland and then only a smaller amount is bled back to us. We don't know how much power we get from the BIWF."

Older man docent in 60's: "they are beautiful but controversial. People's 5 million dollar homes are now worth 3.5 million. But I live on the highest point in the island and I can see them from there and I like them. They spin according to the direction of the wind that produces the most energy. One problem is the decommissioning cost. DWW will reap all the benefits and won't absorb the costs. We have to pay to take them down in 25 years. Hopefully they will be blown up to create artificial reefs. We could have had a cable to the mainland for electricity 5 years ago that would have been much cheaper. But it wouldn't be renewable energy. I had a $600 electricity bill (monthly) in the summer and $130 in the winter when I am not even here just for the service charge. And my water, stove, heat, and laundry are all gas. The cost of electricity is absurd. I pay $18,000 a year in taxes and this only goes towards the salaries of the police and schools, nothing I need, and I don't have waste disposal, post, water, a sewer or anything municipal like that."

Younger docent in High School early season: Hasn't heard anything negative although some people ask about the controversy and want to know about that but there is less debate about the BIWF now that construction is complete. Vistitors are also surprised to learn they are 3 miles offshore as they seem closer for some people. He tells them that most of the power they produce goes to the mainland and they are surprised because many think the BIWF only powers BI. 30 MW are produced and BI only uses about 6MW. He got this information from DWW reps. He likes them himself and people have called them "unique" and "beautiful" and "intriguing" and some have "never seen anything like them". The docents spend about 25% of their time talking about the BIWF now and answering questions about it. When the weather is poor and the can't be seen they come up less in conversation although some people will remark when it is not a good day to see the turbines.

Other older male docent: Have a house in view of at least two turbines. He and his wife look to see if they are running each morning. They enjoy that. "We like to see them running." They don't know how anyone objects to them because they get energy from renewables. It is much better than from fossil fuels and foreign oil. They are not sure how green the manufacturing process is. The lighthouse is brighter than the turbines at night. The energy is green but not cheaper, but their bill hasn't gone up and they added a dehumidifier and a freezer this summer. They will be even more benign when they are 17 miles off the coast as they build more, but 100 will make more of an impact than 5. He doesn't focus on them too much on the tour but people ask a lot of questions. They think he is an expert but he just reads the DWW pamphlets. He was recently "accosted" by another islander he knew well who is a notorious opponent of the BIWF from day one who said that the benefits of the BIWF are lies and the island gets nothing from it. That was the first negative response he got on a tour all summer. He knew of one other home owning couple nearby who were opposed to the BIWF, but not so vehemently.

Woman visitor in the museum: "Is this the right place to see the WF?" It was a foggy day.

Younger male docent mid season: Had his first negative comment last week from a visitor who found them to be an eyesore. He still got a lot of questions like "why aren't they on?" when they are not moving.

Older male docent mid season: "They are 'elegant'. The DWW brochures are good but they need better information because people "don't understand". DWW and the SE Light Board don't get along so there will be no BIWF sign at the lighthouse for now. We have a house on the water and they are mesmerizing. Soporophic. These are proof of concept turbines. In the future these might be removed and bigger farms will exist farther at sea and these won't be needed but I'd like them to be replaced. The lighthouse used to burn pig oil. All the trees were cut down in the 1800's and so all wood for structures was brought in, also brick and granite by boat. Just like the oil for the BIPCo generators used to be. The lighthouse was once the cutting edge technology that the turbines are today. Its neat that they sit here looking at each other. DWW prefers that they be called 'turbines' and not 'windmills' because they don't mill anything."

Mohegan Bluffs

Wind farm visibility: all 5 turbines can be seen directly from the bottom of the stairs and off center to the left. They are not as distinctive as at the lighthouse, but they are still very visible on a clear day. The same conditions apply as at the lighthouse in terms of weather.

Observed activities: tide pooling, sunbathing, beach walking, relaxing by the water on towels, swimming (no life guards), wading, body surfing, playing with rocks, walking the stairs to get to the beach and for exercise.

Observed people: young families, couples skew younger, few people are alone and few unaccompanied children. People arrive by bicycle, moped, rental car, and occasional taxi and occasionally on foot. People usually come here after visiting the lighthouse. You must be capable of walking up and down a very long and steep staircase to access this site, so it does not attract the disabled or elderly.

Recorded commentary relevant to the wind farm: It is very hard to hear conversations here due to wind and waves and we often have to initiate it.

Couple taking photos of themselves when asked if they wanted the WF in the background: "I don't care."

Family visiting from NY: "Our daughter in college is an environmental studies major and she picked this family vacation because she wanted to see the BIWF. We have never been to BI before."

Second Bluff

Wind farm visibility: all 5 turbines visible front and center and very striking on a clear day. Same conditions apply as at the SE lighthouse. Perhaps this spot more than any other public space is altered by the BIWF.

Observed activities: Taxi tour stop for several taxi companies, group photos that include the BIWF, talking about the BIWF, taking pictures of the lighthouse up the coast, walking beyond the fence along the bluffs, talking about cliff erosion caused by walking beyond the fence.

Observed people: Groups on taxi tours, taxi drivers providing color commentary, couples and small groups on self-guided tours, individuals and young people walking beyond the fence to smoke or for unknown reasons walking around the bend and out of sight only to return some time later.

Recorded commentary relevant to the wind farm:

Woman in 40's and BI resident: "I used to go there and stare at the infinite ocean and party and drink as a kid. That might still happen but it is different there now, you can't deny that. I like clean energy, but it is different here now."

Male taxi driver, 75, to tour group of middle aged couples from Alabama: "This is just a demonstration farm that makes money for investors. Not all the turbines are running at once so it can't be powering the whole island. It was very expensive to build."

Another older make taxi driver: "GE put the turbines in."

Middle aged male taxi driver: "A big boat from overseas came to put the turbines in. It had four legs. The outside of the blades spin at 200mph."

Man on tour: "I wish I had a better lens to get a better picture of the turbines."

Taxi driver: He loves to look at them and is proud his island is the first to have them and he gets to show people. But the rates are high and the fiber optic cable is becoming more and more expensive to install on the island. The islanders may be getting taken for a ride.

Man on tour: "I can tolerate them but I don't love them. They are important for saving the planet." He is sure it will be approved to build another Wind Farm off Long Island.

Sotheby's Real Estate

Observed people: middle aged woman realtor.

Recorded commentary relevant to the wind farm: Realtor- late season: "Most homeowners are now happy with the BIWF. There was no impact on rentals and no real impact on sales although the market hasn't been good since 2009. Some who put their houses on the market had a change of heart and took them back off the market now that they know what its actually like. One couple wanted to sell their place on Mohegan Trail because the wife was unhappy but what they had was still better than anything else so they decided not to sell. It ended up not being as intrusive as they feared. The BIWF is great for tourism and someone is doing well with tours (mentioned the charter boat). But this is a 'middle class island'- not the Vineyard or Nantucket."

Flyer for house for sale on Mohegan Trail: "Own a piece of history with the nation's first offshore windfarm."

3.1.2 Mainland Rhode Island

Scarborough Beach

Wind farm visibility: all 5 turbines can be seen in the distance when looking out to sea and far to the right to the end of the beach near the sewage treatment area (an oblique view). You have to turn your head south to see them- they are not front and center. They are not visible unless conditions are clear.

Observed activities: frisbee (even though prohibited), soccer, corn hole, wading, relaxing by the water on towels, blankets, beach chairs, or tents, beach umbrellas, life guard on duty, swimming, boogie boarding, reading, looking at smart phones, sea gazing out to sea, surf fishing, playing the sand with sand toys.

Observed people: groups of young people engaging in sports, families with young children, older couples in middle age, young women sun bathing, can get quite crowded with hundreds of people in peak summer, multiple languages overheard beyond English, including Spanish.

Recorded commentary relevant to the wind farm: A beach manager expressed the opinion that he did not like the look of the turbines but did not go into detail. He was also concerned that the power cable running from the farm to the mainland and then to the power station may not have been buried deep enough and may need to be re buried.

A lifeguard said she never heard anyone talk about the wind farm at the beach and that you cannot see the wind farm from the beach (which is incorrect). Another lifeguard said they were hard to see.

Last summer the lifeguards fielded many questions about the work boats building the wind farm, but this summer there are far fewer questions.

Fisherman's Memorial Beach

Figure 2. PO team students at Fisherman's Memorial Jetty (photo by Amelia Moore).

Wind farm visibility: all 5 turbines can be seen in the distance front and center from the central jetty on a clear day. When it is hazy they are less visible and less noticeable except to the trained eye. They can also be seen better through polarized lenses on a hazy day.

Observed activities: pole fishing off the jetty ('east wall'), dog walking, beach walking, relaxing in parked cars, sunbathing on the beach and on beach chairs in the parking lot, tail gating, kite and wind surfing, swimming, beach bonfires, relaxing by the water on towels or blankets or in tents with beach umbrellas and coolers, drinking alcoholic beverages, no life guard, corn hole, playing in the sand.

Observed people: lone walkers, lone fishers, fathers fishing with sons, small groups of fishers and beach goers, couples sunbathing, young women sunbathing, Spanish speaking was overheard.

Recorded commentary relevant to the wind farm: No one mentions the wind farm when visibility is poor and fishers have not been talkative about the BIWF, even when visibility is good. No one was observed reacting to the BIWF in any way.

East Matunuck State Beach

Wind farm visibility: all 5 can be seen when looking out to sea and slightly left on a clear day. When there is humidity haze in the summer they are not visible, even if it is sunny on the beach. When fishing from the jetty you face away from them so it is possible not to notice them even on a clear day. The "red tide" was very prevalent in July.

Observed activities: fishing on the jetty ("west wall"), walking on the jetty and beach, can be crowded with hundreds of people, hard to find parking on busy days, swimming, sunbathing, drinking, boogie boards, reading and looking at phones, sleeping, lifeguard on duty, fishing boats pass nearby coming and going from Pt. Judith.

Observed people: individuals fishing alone or in pairs or small groups, beach "campers" and picnickers, families, large groups of people on peak days.

Recorded Commentary: When it is hazy and you cannot see the wind farm, you can listen for hours and no one will mention them of their own accord. On a good day, the jetty is a good place to hear comments from fishers.

Young man in 20's: The WF is "dope" and there should be more. He is from Narragansett and knows a lot about the BIWF.

Older man in 50's: He doesn't mind them and doesn't pay much attention to them and thinks they are good for clean energy but he wouldn't want them in his backyard (this jetty is not his "backyard" although he spends hours here fishing often in the summer).

Two men in 20's: Being from MA and never having fished here before, they had ever heard of the BIWF and never noticed the turbines, not even today when they are visible.

Man in 40's: "I never noticed them."

Young man in 20's: From South County so knows about them and likes them and thinks they are "fish aggregators" which is good, although fishing in other areas has not been as good (unclear if he thinks that is related to the BIWF).

Two men in 40's: Had never noticed them and didn't care about them and were in no way affected by them.

On the beach:

Middle aged women: URI employee. Thinks they are good for the environment and "does not really mind them" even though they are "kind of ugly" and "one already fell down" (not at all sure what she meant by this- perhaps the land turbine at Salty Brine?).

From lifeguards:

They do get questions about the BIWF and they tell visitors that the objects are the BIWF. Some people think the turbines are cool, and some think they are a "waste of money". However, when a lifeguard explained that they powered all of BI, the visitor thought more highly of them.

Roy Carpenter's Beach

Wind farm visibility: all 5 turbines visible on a clear day. Hard to see in hazy conditions.

Observed activities: beach walking, sunbathing, relaxing by the water on blankets or towels or in tents, boating near shore, wading, swimming, lifeguard on duty, sea glass collecting, paddle boarding, reading.

Observed people: couples and small groups, people are part of the Roy Carpenter's summer cottage gated community and have permission to be there.

Recorded Commentary:

Middle aged man in a group: He supports renewable energy and is a "green kind of person". He thinks the wind farm is clean and a good area for fishing. He thinks turbines are "really cool" and he likes to look at them but he doesn't try and see them from this beach. They don't stand out here, but when he does bother to look for them he finds them "cute" because they are so little. He would like to see more.

Middle aged woman in same group: The wind farm is "beautiful" and she actively looks to see if they are visible every time she is out on the beach and she sees them all the time. She thinks they are a tourism draw and would like to see more.

Middle aged couple in same group: Already likes land turbines in the Midwest and wants to see more. Has a son that says these ones are good for fishing. "Renewable energy is awesome".

Man in 40's: Notes the days when he can see the wind farm as good days and points them out to others. He would like a small turbine for his own house to have more reliable power.

Woman in 40's: Mixed feelings- she is for green energy but doesn't like that the wind farm "kills whales and birds" and that they are loud and have unknown effects (has never been close to the wind farm or seen it from BI).

Young woman in 20's: Has no feelings about the BIWF either way. They do not affect her.

Young man unknown age: Strongly opposed to the BIWF. Doesn't like the way they look and thinks they "kill many birds".

Young woman 18: Sits out on the beach at night and doesn't notice them.

Woman in 60's: Notices them but they don't bother her.

Male couple in 30's: Only notices them on clear days and finds them "cute" and they look better than a nuclear plant.

Couple in 50's: Likes them and went to BI to see them and put a picture of them on Facebook. Likes that extra energy they produce comes to the mainland. "All for sustainability".

Man in 60's: Looks at them all the time and finds them interesting but otherwise they don't affect him.

Man in 60's: Has lived here all his life and the BIWF doesn't bother him. Went to BI to see them up close and can't believe they are really only 3 miles offshore there.

Young woman 18: "I like them."

Young man 18: The lights on them at night are no more visible than the lighthouse or other existing light sources. Good for BI. "They won't affect tourism".

Salty Brine State Beach

Wind farm visibility: 3 visible on a clear day fairly front and center but less visible when it is hazy and invisible when foggy. The other 2 turbines are blocked by the breakwater.

Observed activities: Sunbathing and sitting in beach chairs, picnicking, wading, swimming, sitting under umbrellas or tents.

Observed people: families there for the day on a sunny day, can get crowded in peak summer with limited parking

Recorded commentary:

Lifeguard: people are curious and want to know how they were built and how much energy they create and if they kill whales.

Man in 60s: Thinks people will come to see the BIWF.

Woman in 60s: Didn't notice the BIWF on her own.

Woman in 60's: "Why would the BIWF bother me?"

Couple in 60's: The BIWF is necessary but doesn't worry about it.

Woman 35: Owns a beach house and barely notices them but took a boat out to see them and thinks they are cool and a "novelty".

Woman in 40's: would live next to a Wind Farm if it lessened her energy costs. Thinks they are "cool" and made a trip to see them.

Woman 25: They do not dissuade her from going to the beach.

Couple 25: "Wind turbines are the shit" and there should be more. Has been to BI and saw them there and liked them.

Three women in 50s: Wind farm is "excellent" because it is renewable and they are nice to look at. Other woman is concerned for wildlife and doesn't know how they are affected and heard it impacts whales and that the parts were expensive. Other woman thought the old turbine inland next to Salty Brine was loud and noted that it fell down recently.

Man in 30s: The BIWF is "gross" and ugly. They are ruining the "oceanography" and they tore up the bottom to build them and destroyed habitat, "unlike shipwrecks which are placed where there is nothing to destroy". "Why not put turbines on land where there is plenty of room and not ruin the ocean?"

Woman in 30's: wonders of they affect birds.

Woman 60's: thumbs up gesture for the BIWF and renewable energy.

3.1.3 Regional Waterways

Block Island Ferry from Pt. Judith and Block Island Express Ferry from New London

Figure 3. Passengers on the BI Ferry appreciate or ignore the BIWF (photo by Amelia Moore)

Wind farm visibility: On a clear day the BIWF is visible all the way from Pt. Judith to BI with all 5 visible for most of the trip. However, there is a point about midway to BI where they become large enough to inspire occasional commentary and they become quite large as the ferry approaches Old Harbor and then they are obscured by the island except for a few blades once the ferry is docked. You can only see them from the left side of the boat on the way to BI and from the right side on the way to Pt. Judith. People are more likely to observe them on the way to BI than on the way to Pt. Judith as most people tend to look in the direction the boat is headed or straight out the side. On a foggy day you cannot see any of the BIWF from the ferry. On a hazy day they may become more visible the closer you get to BI but they do not stand out.

Observed activities: sitting on or below deck, walking around the boat, talking to companions, drinking bloody marys/eating boat snacks, sleeping, sea gazing, looking at smart phones, feeling sea sick on rough days, observing jet ski "wolf pack" surfing in the ferry waves on Saturday mornings, occasional viewing of the BIWF through binoculars.

Observed people: couples, families with children, groups on outings, bicyclists, day trippers, beach goers, over nighters, dog lovers, bird watchers, boy scouts, all ages, more diverse crowds on holidays, more

crowded on holidays (hundreds to a thousand people on board) and weekends, can be quite sparse on weekdays with poor weather. Multiple languages overheard and possibly Portuguese.

Recorded commentary relevant to the wind farm: Generally the conversation about the BIWF is minimal on the upper deck on an average day. They do not inspire a lot of excitement or pointing, or animated conversation. However, some people do talk about them and take a picture and point them out to their children or companions. Frequently, you can go entire trips without observing anyone taking observable notice of them.

Middle aged couple: "Look at the windmills!" They thought they were "cool".

Convo with middle aged man on the boat railing in view of the BIWF: Mohegan Bluffs used to be the best spot on the island but the turbines ruined it. He hates them but understands the benefits they provide. He is taking his kids there for the first time today and wishes they could experience it like he did as a kid without the turbines.

Mother and child: Explaining that the turbines produce energy by spinning.

Older couple: Noted that the turbines are not spinning. Takes pictures in that direction.

Older group: The Danish have windmills and windmills produce 50 to 60% of their energy.

Couple: "Look at how many there are! Oh Wow!" "Boats must go through, there's plenty of space." "They're off the island." "They're not running, I can't see. No not really running."

Couple referring to the cell tower on the island: "What a shame they couldn't disguise it."

Father pointing out BIWF to children: "Why did it take so long for them to think about that?" Recognition that this farm was less controversial than the Vineyard proposed project.

Teenagers: The BIWF will create so much power "they will have to get rid if it."

Adult couple: Discussing the pile driving and transport of the parts by boat. "How does a turbine work? We are going to Block Island!" Also discussed solar power.

Group: The turbines here are "much bigger than in other places." "They are huge, are they in the water?" "They are down in the ground."

Middle aged group: It must power the island. Is there "regular power" backing it up? "There must be something else. They must have had something before."

Return trip group of women: "The BI ferry tour was a great trip."

Older man in bike gear: "the first offshore wind farm in the United States."

Younger couple with parents: "there's supposed to be a huge wind farm around here" parent: "I don't mind them on the horizon. To me they are something to look at but some people don't like them. If you're hosting you can run into them." Son: "there's a good documentary. They build them with helicopters."

Charter Fishing

By boat you can see the tops of the blades over the top of the island as you enter New Harbor or if you are fishing on the Northwest side of the island. You can also see the full BIWF from the Southern side, and they are known to attract fish so many fishers have ventured into that area with interested clients.

Recorded commentary:

Charter Captain based in RI in his 30's: "They bring fish and that is a good thing, but I don't like them. I like renewable energy and I get that, but I don't like them here because they are just another man-made structure in the scenery and it changes the fishing experience. Its harder to get to any place without man made structures now. That is something that I liked about going south. Some clients liked that too. There was something special about feeling far out to sea. You have to go farther for that now and its not cost effective. But I guess I wouldn't change it now."

Dock Master Responsible for Recreational Fishing Boats: "Charter fishermen have increased their business with the BIWF. Better than they expected dramatically. Quite a few boaters at the dock here go and take trips out on their own or on a friend's boat. It's interesting because it's the first of its kind and some think they're beautiful but they are just impressive when you get close. I've been to go look at them. People claim there is Mahi out there that normally wouldn't be this close to the island. Fish that like shelter. I think it will become a standard part of the tourism. here. It feels like you're only halfway there forever, and then suddenly they are bigger than skyscrapers."

Charter Wind Farm Boat Tour

Figure 4. Passengers on the charter tour of the BIWF (photo by Amelia Moore)

The charter tour is an enjoyable experience for those who like small boats on the water, especially if they don't often get the opportunity. On a clear and calm day the water is sparkling, the air is fresh, there can be a steady breeze to keep away the heat, and the atmosphere in the boat is full of excitement. Most people take the tour in small groups with people they know and like, so spirits are generally high. The turbines get larger and larger as the boat approaches, and they are quite dramatic, especially if the visitors have never been close to structures like this before, and you feel very small next to them in a small boat. If the turbines were living things it would be terrifying to be so close to something that large.

Recorded commentary relevant to the wind farm:

Owner: He got the idea when he was chartered by DWW to take photographers out to the BIWF. On a nice day he can take up to 6 people with the spray curtains down. On a wavy or windy day he can take 4. The boat costs $175 to charter for one hour plus transit time. This is very different from charter fishing which can be a 10 or 12 hour day. In June he had already done about 17 trips despite the bad weather. If it is profitable he will get a bigger boat and do more trips. He thought there were about 5 other people offering charters to the BIWF but he is the only one he knows only doing that now. He thinks 90% of the islanders like the BIWF, except those affected by the view changes. Everyone who takes the tour says positive things "amazing, ballerina, calming, surreal, peaceful, prehistoric" and he also thinks they are amazing and that he wouldn't mind living where he could see them every day. There is mussel growth on the turbines and species from higher trophic levels coming around in what wasn't a great space for charter fishing before. Many people fish out there now and some days you can see 40 - 70 boats at once. There is a strong current out there so you have to be careful around the turbines and someday someone is going to get pinned on one of them." One bad trip can crush you on social media" so he has to talk clients up when it's swelling to distract them from feeling ill. He wonders if anyone has named the turbines? "There's a good competition." Now they are just Bravo 1-5. "People sit back and take pictures and are just amazed." Now it's something new for people who have been coming for years. "The negative impact has yet to be seen."

Son: My father is frequently slammed with tours on a good weather day.

Charter client: "these are majestic"

Block Island Ferry Wind Farm Tour

The ferry takes around 100-200 people out for an hour long tour that is narrated by a female member of the Visitor Center staff who speaks through a loud speaker. It is harder to hear her on the upper deck where most people congregate for the best views, and some people don't listen and talk through her presentation. The information is supplied by DWW and is read aloud by the presenter. While not quite as dramatic or visceral of an experience as the charter boat tour, due to the much larger size of the boat and the crowds of people on the upper deck (making it feel less intimate), the BIWF is still quite dramatic, standing out boldly on a clear day, drawing the eye and countless photographs from the tour members. When the service boat is out you can see men getting off it and on to the turbines, which is a bit like watching men leaving a space shuttle to enter a space station.

Recorded commentary:

Tour presentation highlights: The Initial message from the presentation is that this is the nation's first offshore wind farm and that it entirely powers the island thanks to DWW. The presentation goes on to say that Block Island had an "environmental disaster" on its hands with diesel power and the highest electricity costs in the country. Businesses were suffering. How do the turbines produce

electricity? They turn into the wind and spin and that's attached to a generator. 6.5mph winds required minimum. It powers 1mw (1000 people) in winter vs. 3-4mw (20k people) in summer. The BIWF can power 17k homes. It is monitored remotely by a company in North Carolina. The global supply chain to build spanned from Korea to Louisiana, and this makes it expensive. "5 turbines will not change the world but you've got to start somewhere." This is a test project. Producing tons less greenhouse gases per year than before. "Many block islanders are delighted that the smallest town in the smallest state is ground zero for a renewable energy industry."

General tourist comments from multiple people: They're really graceful. I think they're gorgeous. They are ginormous! They're very loud. They put BI on it! (misreading the label for Bravo 1). Walking off the boat after the tour, middle aged couple: "What a day. That was great."

Whale Watching Tour

Wind farm visibility: The ride passes the wind farm and BI to the east and south. The turbines stand out and look large in the misty sun, with some optical effects that make them look larger than BI.

Two college age girls saw them on the upper deck and said, "look, the wind farm!" The other said "Cool!". They took a picture of it with their phones and then didn't mention it again

The boat announcer pointed out the BIWF and he explained that they were turned on in May and that they now power all of BI. He also mentioned they were the first in the country. This was the only thing he pointed out besides shearwaters and other seabirds. We saw no whales that day, so the BIWF made for a more visually interesting ride than passengers might otherwise have had.

3.2 PO Initial Interviews

3.2.1. BI Gift Shop Owner

He had Tshirts made that he designed with a "first in the nation" quote, but he is actually not a fan of the BIWF himself, although he said "they are not as ugly as I thought they would be". He feels they have not delivered on savings. The town was promised 50% savings and he saved $10 last month. He thinks the last CEO of DWW went on to work with the ex governor. "It's all an inside political deal".

"And why didn't they negotiate the fiber optic distribution? Another $10million to complete the deal wouldn't have stopped them when they were "giving out free lunch and promising everything" but now "we're left holding the bag". So the Tshirts are an attempt to get something out of it like the charter and the ferry."

"The fiber optic is a big deal issue and now we have to come up with millions and the town doesn't have any money. We've made a board to figure it out. If they only would have included the internet as part of the deal, but that's on us. We thought it was part of the deal. You have to decipher the legalese from the negotiation records. I think they would have agreed to anything but now we don't have the money to do it. It affects my credit card machines. Can't have all internet linked things working. People have to pay high rates for rentals without internet! So they choose to go other places. We can't have online classes for the school. $8mill to borrow to do this? There will be a special town meeting to vote. We're still a couple years away from it even if we vote on it."

"Philosophically of you want renewable energy they are good but otherwise the island gets no benefit. Our bills haven't gone down and I don't have enough bandwidth to run my credit cards, stream music, and run my nest cameras at the same time. I have four sitting in a box because I don't have enough bandwidth to run them."

"I guess my feelings of negativity are based on the permitting process and none of the promises have come through. My electricity isn't high like restaurants and hotels and I'm all led lights. So if my bill has gone down it's because of things like that. The internet is something we're struggling with as a community."

"People were trying to recruit me to a side but I feel like the process wasn't fair or truthful. The fix was in at the higher level. DWW was pursued in state waters for easier permitting. I couldn't go to all the hearings so I know what I read in the paper. The PUC had a lengthy process and they voted against it because the power purchase agreement was going to be too high of a cost to rate payers. The governor at the time wanted it to be his legacy though and create jobs so he changed some rules and forced them to have another hearing and it passed the second time. Wealthy people here were assisting in the opposition too and raising money to fight it but all hurdles were jumped through. Cape cod had more resources than we did. But the town council were all in favor also except for one member. An engineer wanted to investigate more energy options. But the mayor was a heavy supporter and she was elected by us."

"CEO of DWW used to be the old governor's chief of staff but no one is looking at that. I don't know how many jobs have been created. I don't lay awake at night or lose sleep over it and we have to something to get off our fuel dependence, but my pride in being the first is overshadowed by the process. Once they had what they wanted they left. Their representative is still here but no longer offering anything to the community."

3.2.2. BI Hotel Manager:

"BI is a polarized community. People are either pro or anti tourism. Pro tourism people are year rounders and more blue collar: contractors, home renters, utilities, small business. Anti are more retirees and people who don't work. There are class and age divisions. they don't want a lot of people in the summer to protect the character. Used to be more polarized and then the recession hit and it's not as bad. But it still exists. It's very difficult to do business on BI. A lot of families have had business for a long time. I guess we enjoy it. But anything is for sale at the right price."

In general we're satisfied with business but the local regulations are not really legal such as the signage rules. No franchise signs allowed. That is a violation of freedom of speech. Taxi cab commission makes rules too, but it's illegal to regulate interstate commerce. These are anti business rules. People will just ignore rules that are too restrictive. But it prevents tourism. The Lyme Disease controversy is maybe made up or exaggerated to keep people away."

"The market can regulate tourism. We don't need to over do it. Day trippers come from two hours away from Point Judith. Overnight business comes from NYC, Boston, NJ. Boaters are overnighters too. From CT and MA. I doubt the summer that the island tourists are that different from MV and Nantucket but we are more seasonal."

"I go to town council meetings but I don't plan to run for office ever. My wife would kill me. And I don't live out here full time. Every town has issues and it's not abysmal on BI although it's so much more difficult to get things done on BI and the town does the best it can. Good roads, great police. It's all in place. But it's hard to get employees to live out here and find housing. And the winter is hard. Supply chain is hard. Rely on the ferry and shipping. Things cost more. We house our staff. You are restricted by how many you can house. We shut down in October. Hire 100 and 150 people. Every year we hire 50% to 60% new people because staff only really want to work 2

years. Block Island Reservations and the Spring House and the National and other hotels have large staff. Workers work between 35 to 40 hours a week."

"Hurricane Sandy destroyed our building and we needed to renovate. Our other property is doing phenomenal because it's modern with AC and fixtures. Modern amenities. If all the hotels did this it would be the best. Think of it like a giant food court. If they are all good the whole place is good. Other hotels have renovated. We don't compete with one another we compete with other destinations. Guests spread their money around."

"After 2 to 3 years the wind farm novelty will wear off. Tourism business based just on the wind farm is not viable in the future. Anyone with two eyes can see that. I never thought to invest in the wind farm myself."

"The hedge fund that invested in the BIWF is Elliott Management. This cost them nothing and they don't get much ROI but they get massive tax credits. You can't stand in the way of them. It's not up to the communities. Why try? The wind farm would never get built without the tax credits."

"I don't know about renewable energy but it is the way of the future. The costs come down and it's gonna happen once it's cheaper than oil."

3.2.3. BI Charter Boat Owner:

"I had a feeling that there might be interest there (with the BIWF) because every time I go out I'm amazed. I'm still getting calls (in October). July and August were real busy. I'm really happy. Next year I'm thinking to do even more if Interstate (the ferry tours) will stay out of it. It hurt me on Wednesdays and shut others down. I can't do both fishing and wind farms. That doesn't work. I went out every two hours."

"If I double what I did this year I'd buy another boat. The ferry won't tell me what they are thinking. 100-125 people on the ferry is a lot. What if they add more days? But new people will always want to come and see them. And there are always new people. I have hope for a 3-4 year run. But I don't know. Not a lot of info out there."

"I market it as a personalized tour. I have my background in that. The ferry is like head boat fishing vs. me, which is going out with your friends. 2-4 people. I don't like taking more than one group at a time (no split charters). Mostly families have been going. Some DWW people and Colorado Institute, but 99% is family. Age group is 50-80 years old primarily. I took a 90 year old. Older people are a bit scary because they are delicate. I won't put anyone in a dangerous situation. I turned around on one trip but otherwise I pay attention to the weather and it can change fast. Fishing clients were 30-60 age. A bit younger. 70% men. There is a more even gender split for the farm tour. Parasailing and banana boats in are the younger charter group. And it's cheaper."

"I had one person out of 400 people all summer who didn't like the BIWF. He was sitting back. He didn't ever like them. He didn't want to see them, but his family did. That family summers here."

"We've been doing charters for 16 years. Started going to FL for two weeks at a time and now we go for 5-6 months. We can take summer gear down there. I moved here in 1980. Parents had a summer home and we did summers. Came out after school and stayed. Wife's family is an old BI family. My kids are 11th generation. I tell my kids not to brag. There are rich people dinner parties I'm not invited to where they brag about how long they have been here. In FL and Key West they are called conchs. It's huge down there. They sound Cajun. Very tight knit. My sun goes to key west high and so experiences the dynamics. It's not as tight here. Not as tight. There's always that thing: I'm an islander but you are not even if you've been here a long time and own property and you give back to the community for 20 -30 years. Some people think you have to have been born here for multi generations."

"The community has changed. Big big homes now vs. summer cottages. Now mansions are only used for a couple months. Buildings were falling down in the 70,s and 80's but the new money brought

tourism and we need that. I'm pushing for cruise ships in the off season, but they don't want it. We could get 6 weeks more business. But people are resistant to change. If the tourism wasn't here the place would be done."

"This place is bad in the winter. Club Soda is full of guys who have no companions and who drink starting at 4pm. Also opiates and heroin. It's dark here. People are bored. If you have a fire and friends and a companion you can get through, otherwise you're bored and you get addicted to heroin. Two or three people die every year from overdose. No one talks about it. It's swept under the rug. I get my son out of here for school. He needs to play ball and he'll drink otherwise. I don't give him any time to get into trouble."

3.2.4 BI Cottage Owners (Summer Residents- married couple), Noted BIWF opponents:

The couple owns a cottage with a front and center view of the BIWF. It seems as though the cottage was designed to have a view of the BIWF, that is how dominant it is in their ocean view. "We are at ground zero. We are one of only a few houses with this view."

Man in his 60's: 35-40 years in consulting. Environmental studies for agencies in a science and biology company. Conducted EIAs under NEPA and WA and CA state regulations. EPA was a client in the 70's and he has worked with them since then on clean water projects. Waste water and planning at first. He was a wildlife biologist and then consultant and learned about engineering. When on shore wind came on he did studies in WA and all along the west coast. He managed wind turbine studies. He has an idea of what is involved.

Woman in her 60's: Was a mayor in the US for 16 years and was in charge of sustainable development at the conference of mayors. Grew that to a group of 50 plus people. "So it's ironic we are opposed to the BIWF. In 2009, a Danish scientist gave a presentation on offshore wind here on BI. I went to it. The scientist showed us what a turbine looked like at different distances. He was talking about 100 turbines. I remember thinking the view will never be the same. If I can see Point Judith from here.... it's the views that are extraordinary. A spiritual thing."

"It was kept under the radar then (2009). We didn't think anything immanent was brewing. We left for 6 weeks and I get back and I read a letter in the BI Times about barges off the bluffs. The BIWF was going to be right off the shore. We only knew from the barges doing sampling. The mayor was clearly pro wind farm. But we had questions. We had a conversation and I asked her for a white paper. There was none. How could she be pro if she didn't have the facts? CRMC then came next that year. In the middle of the SAMP process. This was their first hearing here. DWW had just had their first meeting with good food and drink and everyone goes like a feeding frenzy. We got some good info there about the size. But CRMC is only 9 months into the SAMP and they are already telling us DWW is a win win? The chair said that in the opening of the meeting! Not even a charade of a fair process. I enjoyed the meeting but I knew we had to pay attention. Not passing the sniff test."

Couple speaking together as a unit: "No information available or plan of study or engineering report available. No idea what they were trying to do. DWW was dictating the conversation from the outset. The spin was coming from them and the average person wasn't able to discuss it outside of them. I think they were in the governor's office directing the whole process. It was rigged. One of your team members did a publication analysis and she saw the DWW influence. They controlled the *Pro Jo* and they didn't report objectively. The state forum was quite rigid through CRMC and the PUC on who could object."

"We weren't allowed to represent those opposed on the island. You had to point to a specific damage or you couldn't complain. We sent 30 pages of citations to the CRMC but no one responded. No feedback to commenters. And we know what is an acceptable level of response, but the cake was baked. We eventually got a perfunctory response."

"We read so many documents about the public process. There had been no more than one public meeting at that point. I focused on the process. I was known for process when I was mayor to guide policy. We both wrote to the PUC objecting. They came out once in 2010 in March and everyone went. A lot of us were opposed. We didn't even know how tall they would be (67 stories tall). The PUC held its hearing in Warwick and we saw other groups there against it. That wasn't reported. It was a unanimous no against the farm at the PUC. They were also telling us the price of the energy before they knew the costs! And hiding behind proprietary information. National Grid bought energy for 24 cents/kilowatt hour. But they had other sources of green energy options for 5-11 cents. But they got a $19 million signing bonus and the ratepayers absorb the costs. Residential rate payers have no say."

"We were amazed the PUC said no. But we were naive. The governor's appointees on the PUC voted against it and he was livid. He went ballistic. He decided to appoint someone who would approve the project. Common Cause came out against it. I was called by the attorney general at that time concerning my emails to an appointee-a woman- trying to understand the process. I was told the PUC is the authority on this and that I should participate in their process. But meanwhile the people voting against it got crucified. So they asked me to testify in front of a committee."

"I emailed Buddy Cianci. He said it was a done deal. But we testified and asked the tough questions. The governor was mad. In June of 2010 we got a call to come to Providence because of a bill that says the project would go back to the PUC with no consideration of negative impacts. Only advice from the development council (responsible for 38 Studios)! We flew in and saw the corruption at the committee meetings. They packed the meetings with pro DWW people. It passed to go back to PUC."

"5 turbines that can hardly power BI. We have opposed it at every turn. Narragansett council also voted not to allow the cable on their beach. The SAMP and the state are all doing dirty work with the state now. The last month of the SAMP introduced renewable energy zones in the last month. The only zone they picked is right here. No hearing about this on the island. Not about 5 turbines. You could fit another 60-70 turbines in here."

"Hedge funds and banks are involved in this farm. The real draw is production tax credits that they can get and sell too! Making billions. And none of the materials are American. The only thing that is under oath is the PUC. DWW can lie all it wants in other places. The Obama administration wanted it no matter the process. Sheldon Whitehouse' wife is a consultant to DWW. Policy maker's spouses work for DWW. That's the tip of the iceberg."

"A weed is a plant out of place. Here we have 5 weeds where they should not be. They should be in an industrial area, not the most scenic area in RI. You could look out here and not see a man made structure here. One of the rare places. CRMC ignored the visual impact and the designation of the bluffs as significant by the state. I would have no problem if they were in a place that made sense. They are giving up the value of the island. Tourists don't know how it was. People who live here forever don't mind either. They felt the benefits would outweigh the detriments. One alternative for a cable to the coast was never evaluated because the town couldn't afford it but we didn't look into funding options. BIWF proponents killed that option."

"Watch *Windfall* the movie. Developers go to vulnerable areas where they can keep people silent. They pit people against each other. In NY it was poor farmers. Here it was the highest energy costs in the us. Promised up to 40% reduction in bills. Promised the BIWF would free up money. Fiber optics promised for broad band. Non profits would look into details and learn bad things, but they didn't want to alienate their donors. SE Lighthouse could have stopped it due to their location but DWW gave them $1.25 million and also to the historical society. They seduced people. The island sold itself and got nothing from it. The price of electricity hasn't changed. We didn't ask for free electricity. We only asked for $350k for an access point at town beach. Narragansett got $2 million. We didn't ask for broadband distribution. The island isn't even completely green. We get a mixture of wind and mainland energy. DWW wasn't really about the people of the island. An upgrade of the electricity system wasn't asked for. No improvements. Only that the island is first in the nation."

"When I came here in in 1967 I could see the Azores and Portugal and Antarctica (metaphorically speaking). You can't quantify the amazing. Generations of people won't come back. Our family has had this since the 1920's. For us it will never be the same."

"I don't lookout at the ocean as much as I used to. At night it's like the port of LA. It really is the most significant visual impact. Multiple lights on each turbine. They won't pay for motion sensors. The lighthouse is green and beyond the trees, not standing at attention like these turbines."

"Some other people were against it too, but it was too hard to stay against it on an island. Retribution. People know if you were opposed."

"The sin of deceit by omission is pervasive here. We want to minimize our carbon footprint but we don't have a big footprint here. It can power 17k homes but for how long? 5 seconds? 5 minutes? And how much carbon is removed? It's proprietary information. We don't have accountability on the electricity metrics."

"If the process had been fair we still wouldn't like them, but it's about the process for us. Tax credits going to big business. I had an environmental platform in 1992. We needed to model environmental business in my city. Not many choices for recycling at that time. We spent more to buy recycled. I expected my staff to research this. I got permission to spend more on green investment. But DWW had us spend 500% more for this kind of green. That's hard for the working poor in the state. It's a travesty. It will eventually cost $48 cents/kw hour. It's not moral."

"Legislation made CRMC an agent on getting DWW approved rather than assessing it. How does that pass the sniff test? They had to get this project approved come hell or high water. This is not the process you want moving forward. You want a voice for the average person. Not just having standing to testify at the PUC. We had standing as a group for BI people and hired an expert to present our view. We had the consultant that exposed Enron. But he didn't get a hearing. He said it wasn't commercially reasonable, but that wasn't part of the law at that time."

"We believe in climate change and green. I went to Sundance with Al Gore and Robert Redford. But it has to be done fairly."

"The argument for visual effects didn't get much traction. They did visual analysis for the mainland that was overkill due to distance but they didn't give enough analysis to BI specifically. They didn't look at existing views very well. I had some issues. They never came to the island to see. It was a table top exercise. That was odd. Didn't seem credible to me. And now it takes a lot of work to look past them."

4 Conclusion

Just as the content analysis component of this study (Smith 2017) showed, the PO observations and conversations above reveal that there is a strong and diverse conversation occurring around the Block Island Wind Farm, especially among the BI community, but also spilling over into the coastal recreational sector in general. The selective distillation of PO qualitative data presented above provides a detailed glimpse into the dynamics of coastal tourism and recreation, showing that regional relationships to energy infrastructure are complex and necessitate careful social study (Larkin 2013, Howe 2014, Smith & High 2017). Acceptance leading to social and economic flourishing around renewable energy infrastructure involves far more than just a belief in anthropogenic climate change or commitment to being green, and understanding these complex dynamics often means considering existing social relationships, social memories, and social divisions tied to place and history that inform practices of value generation (enjoyment and livelihood) in the landscape.

BI is extremely dependent on the day trip and short term rental tourism season from May through October, and this seasonal tourism industry is dependent on the younger members (pre-retirement adults) of the BI community whose management and labor make the industry functional and tolerable for the older residents and retirees (who make up the longer term cottager and seasonal home owner community), as well as for the year round and multi-generational BI families. However, older members of the community, seasonal visitors and owners, year round residents, and younger workers don't always agree on how the tourism industry and island energy planning should be managed or on the outcomes of the planning process or on the organization of the planning process itself. These appear to the most meaningful divisions on the island, and they become more or less significant depending on the issue in question. The issue of the BIWF's inception and construction and the region's ties to DWW, the related issue of the fiber optic cable distribution, and the issue of who can best capitalize on the BIWF as a tourism product vs. who is stuck "holding the bag" are all examples of these longstanding social divisions bubbling to the surface of social life.

As the content analysis study also discussed, year one PO reveals that the offshore wind turbines are well on their way to becoming a potential *benefit* for drawing tourists to Rhode Island for the time being, following emergent trends in global change centered tourism (Moore 2015). Real time observations, especially on BI, show the BIWF did not become the eyesore that some had feared it would be, with visitors reacting positively or at least neutrally when encountering the BIWF in their frame of vision. For many people (but importantly not for a vocal minority), it seems to fit into the land and marine-scape as a tourist aggregator (for the right kind of curious visitor), just as it is likely a fish aggregator below water (for certain species). On BI, this is in large part because the BIWF is so accessible to the island, both for viewing from the southern end of the island and from the water. This proximity to a "boutique" 5 turbine wind farm is becoming a resource in itself that some well-positioned businesses are learning how to capitalize on, although the longevity of this new tourism resource is unknown and uncertain.

PO reveals that the mainland experience of the BIWF, from a beach and coast-bound (non marine) tourism and recreation standpoint, is far less dramatic and far less lucrative, although it does not appear to be functionally detrimental to coastal business or enjoyment of place, unless the mainland rate payers do believe that they are paying more for energy as a result of the BIWF (unclear at the time of this report). This is significant if we consider that the majority of offshore wind farm installations in the US will be more like the mainland RI experience of the BIWF than the BI experience, which is likely going to be fairly unique.

4.1. Key recommendations for the next phases of research:

1. Conduct PO on BI during the winter off season, even if limited, in order to better understand year round resident reactions to the BIWF and the tourism industry.

2. Initiate informal conversations with tourists and visitors who have taken a BIWF tour (by ferry, charter boat, or helicopter) to determine their desire to take the tour more than once or to recommend it to others and the specific aspects of their enjoyment or any displeasure with the tour.

3. Make sure to observe the interactions around the helicopter tour booth at the airport.

4. Confirm if the mainland beach and coastal experience is really as negligible in regards to dynamics tied to the BIWF as observed in year one and continue to refine why that might be so.

5. Determine if perceptions of improved fishing around the BIWF are supported by ecological or fisheries data (collected by other scientists outside the scope of this study).

6. Monitor the persistence of rumors about BIWF threats to whales and birds as well as rumors about state corruption tied to the BIWF and DWW to see what effects if any they may have on regional perceptions of the BIWF.

7. Monitor the evolution of the arguments about the fiber optic cable installation and its effect on the tourism industry of BI and community dynamics.

8. Track perceptions of changes in energy costs, BIWF tour numbers, and changes in business investment in BIWF based tourism products.

9. Continue to collect PO data on terms used to describe the BIWF.

10. Continue to collect PO data on the experiential (non verbal) qualities of regional tourism and recreational activities related to the BIWF to compile for the year two report.

5 References

Bernard, H. R. (2006). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. (4th Edition). Lanham, MD: AltaMira Press.

Howe, C. (2014). Anthropocene Ecoauthority: The Winds of Oaxaca. *Anthropological Quarterly 87(2),* 381- 404.

Larkin, B. (2013). The Poetics and Politics of Infrastructure. *Annual Review of Anthropology 42*, 327-343.

Moore, A. (2015). Tourism in the Anthropocene Park?: New Analytic Possibilities. *International Journal of Tourism Anthropology 4(2),* 186-200.

Smith, H., & Gilbert C. (2017). *Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis*. Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-068. 14 pp.

Smith, J. & High, M.M. (2017). Exploring the Anthropology of Energy: Ethnography, Energy, and Ethics. *Energy Research and Social Science 30,* 1-6.

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix IV: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year Two)

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix IV: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year Two)

October, 2018

Author:
Amelia Moore

Prepared under M16PC00016
By
University of Rhode Island
45 Upper College Road
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study concept, oversight, and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Agreement Number M16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage (http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

Moore, A. 2018. Appendix IV: Identifying Indicators of Offshore Wind Benefits: Participant Observation (Year Two). Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 20 pp.

ABOUT THE COVER

Photo: Block Island Town Beach / Amelia Moore/ Summer 2018

ACKNOWLEDGMENTS

I would like to thank the Bureau of Ocean Energy Management (BOEM) for their ongoing support and assistance. I would like to thank the broader research team for their feedback, insights, and review, as well as the students who have assisted in collecting the data presented here. I would also like to thank the Block Island community for their ongoing participation in this study.

Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

BI	Block Island
BIWF	Block Island Wind Farm
BOEM	Bureau of Ocean Energy Management
DWW	Deep Water Wind
PO	Participant Observation
RI	Rhode Island

1 Executive Summary

This report summarizes key findings from the second year of ethnographic participant observation fieldwork related to the Block Island Wind Farm (BIWF) on both Block Island and coastal mainland Rhode Island. Year two participant observation (PO) began in May of 2018 and ended in September of 2018. PO findings reveal a continued neutral to positive interest in the BIWF from visitors and recreators in the region, as well as the need to consider the power and fiber optic cable (part of the negotiated benefits of the BIWF) as an integral part of wind farm infrastructure with potential effects on tourism and recreation. Although the transmission cable became unburied, it did not inflict noticeable harm on the tourism and recreation experience.

1.1 Participant Observation Sites

Participation in tourism and recreation and observation of tourist and recreational activities continued at a number of sites on both Block Island (BI) and the Rhode Island mainland (RI). Sites were selected because of their proximity to the BIWF, because of their view of the BIWF, or because of their connection to BIWF related tourism business. The findings in this report refer to interpretive analysis of observed events and informal open ended conversations performed at these sites over the course of the five month year two formal study period (May, 2018- September, 2018). See Table 1 for a list of sites utilized for observation by the participant observation team. Each site was visited at least once, and some were visited repeatedly. Each site visit lasted one to five hours, depending on the level of activity or the nature of the site.

Block Island	Mainland Rhode Island	Regional Waters
Visitor Center	Scarborough Beach	Block Island Commuter Ferry
Water Street Businesses	Fisherman's Memorial Beach	Block Island Ferry Wind Farm Tour
Southeast Light	East Matunuck Beach	Charter Wind Farm Tour
Mohegan Bluffs	Salty Brine State Beach	
Second Bluff	Charlestown Town Beach	
Fred Benson Town Beach		
Block Island Airport		

Table 1. Summary of year two PO sites.

1.2 Key Findings

1.2.1 Block Island

The effects of the BIWF remain more apparent on Block Island itself due to the proximity of the wind farm to the southern shore of the island. Taxi tour drivers now systematically bring visitors on tours to the overlooks on the south shore where the wind farm dominated the conversation and photographs. At the Southeast Lighthouse, the BIWF remains a focal point included by the docents in the lighthouse tour and often remarked upon by visitors taking in the panoramic ocean view from the field. It is still not common, but some visitors do come to the lighthouse expressly to see the BIWF. Again, most of the observed reactions expressed a range from positive to neutral to curious, with a vocal minority disapproving of the presence of the BIWF. Some retailers continue to sell BIWF related merchandise like T-shirts or stickers or postcards, but they have not sold as many items as last season. The same businesses that experimented with tours of the BIWF in year one (taxi tours, helicopter tours, ferry tours, charter boat tours) continued to offer tours of the BIWF in year two, although there is the general sense on the island that business is down overall from last year. This general downturn is not attributed to the BIWF but to factors like weather, over saturation of day trippers, the lack of state advertising campaigns, and the high cost of visiting the island. No individuals or businesses encountered in this study reported that their electrical bills had gone down in any significant way as a result of the BIWF. The largest difference between year one and year two on BI was the unearthing of the power cable off the shore at the Town Beach on Block Island in year two. This gradual and unintentional unearthing required that twelve buoys be placed off shore of the beach to warn swimmers and boaters away from the site. After initial concerns that these buoys would deter people from enjoyment of the beach, the summer season proceeded as usual, with no noticeable adverse effects on beach activities or enjoyment as a result of the buoys, except for those few residents who feared that the power cable might be sending unhealthy vibrations or currents into the surrounding area. The lack of fiber optic capacity remains a point of contention about the wind farm development process, and tourism businesses express a real need for more internet bandwidth.[1]

1.2.2 Mainland Rhode Island

Observers could still not discern any significant coastal recreation behaviors tied to the presence of the BIWF. The BIWF remains a background object, much like the island itself, observable offshore in the distance during the day and night. Weather still plays an important role in its visibility, and the BIWF is easy to overlook. Unsolicited comments about the BIWF remain rare.

1.2.3 Regional Waterways

The BIWF is still experienced very differently from the water than from the shore, and smaller boats still provide a different experience than larger ferries. Information provided on tours is still largely provided by Deep Water Wind, although the ferry boat tour narrator has collected information from a number of sources in year two, conducting their own interviews with wind farm maintenance workers and various researchers to collect information they find pertinent to the tour.

[1] Residents had negotiated with Deep Water Wind to bring a fiber optic cable for broadband internet to the island along with the power cable connected to the mainland. However, the distribution of the broadband around the island was not part of the negotiation and the Town must now pay for it, which has delayed implementation.

1.2.4 Overall

In general, the second season with the BIWF in operation is best characterized as one in which the BIWF is well on its way to becoming an accepted part of the scenery and a useful addition to the tourism and recreational suite of activities in the region. There remains a noticeable amount of interest and curiosity shown by visitors at sites like the Southeast Lighthouse, and the tour business is perceived to be stable for the time being for the few businesses that focused on developing BIWF specific offerings. Negative reactions by visitors remain minimal but passionate for those still opposed to the presence of the BIWF. Mainland reactions remain far less obvious or prevalent than reactions observed on BI or on the water. One common observation that remains is that visitors on both the mainland and BI often express confusion over how the BIWF functions, and there is still no information readily available to inform them once they are on the coastline. In terms of residents in the area and especially on BI, the BIWF is less of a hot button political issue, and concerns about the unearthed power cable and fiber optic cable distribution are more commonly brought up in conversation than the appearance of the BIWF which is rapidly becoming a part of the seascape that many people admire.

2 Participant Observation Purpose & Methods

The goal of the participant observation (PO) component of this project is to document the public, tourist, and recreational engagement with the BIWF in real time in order to collect grounded ethnographic observations of the direct and indirect effects of the turbines on the local tourism and recreational experience.

PO is an ethnographic research method for the documentation of human experiences and social interactions in real time (Bernard 2006). Participant observation allows the researcher (the observer) to interact and participate directly in the activities of research subjects in order to capture data that cannot be readily accessed via more abstracted questionnaire methodologies. Participant observation utilizes all the senses of the researcher to collect site-specific information that can be sensed in a number of ways including but also beyond verbal communication such as the audible, visual, tactile, and olfactory. Participant observation is especially useful for data collection involving the use of space, embodied practices, and nonverbal qualities of the human experience, and therefore this project is utilizing participant observation as one method to measure the effects of the offshore wind farm on the Rhode Island recreation and tourism industry.

The overarching goals of this research project are to:

Identify potential indicators for evaluating the effects of the BIWF on recreation and tourism activities, based on a literature review as well as the ethnographic interpretation of real time wind farm-related events and selective open-ended interviews;

Identify and analyze observed effects of the BIWF on Rhode Island recreation and tourism activities and tourism landscape, based on focus group input from each sector, participant observation, and content analysis, as appropriate;

Based on objectives #1 and #2, synthesize observed effects of the BIWF on Rhode Island recreation and tourism activities in a summary assessment, thus presenting the first such empirical data in the US;

Develop for BOEM a suite of indicators, based on the outcomes of objectives #1, #2, and #3, to be used in monitoring the effects of future offshore wind farms post-construction and in evaluating the potential effects of future proposed offshore wind farms pre-construction; and

Recommend a subset of indicators that are most appropriate for monitoring the effects of the BIWF on recreation and tourism moving forward.

2.1 Methods

2.1.1 Methodological Steps

Each site was assessed through the following steps:

Site Exploration

Team members examined and record the character of each study space, the kinds of mobility required to access the site, the sociospatial dynamics of visitors to the site, the daily environmental conditions experienced during each site visit, and the key features that define the site and set it apart from other sites.

Social Scene **we do not record proper names or personal identifiers*

Team members document who visits each site, how many people utilize the space at a given site visit and how that changes depending on conditions, what people are doing in the site, the temporality of site activities, the social dynamics between site visitors, the similarities and differences between site visitors, the people who may be excluded and included at particular sites, and the types of behaviors observed at each site.

Situated Listening **researchers are not to record any personally sensitive information that might put subjects at any risk*

Team members unobtrusively observe the content of conversations held at each site, including the key terms and phrases (local "language") commonly used to describe the site and the activities therein. The team focuses on specific verbalizations of site-based experiences.

Conversation **researchers may respond to direct questions about their presence with a brief description of the project adapted from the project fact sheet*

The team will document open-ended responses to researcher descriptions of the research project.

Participation in Activities

Team members will participate in site-based activities with visitors in order to document embodied sensations, the aspects of enjoyment for each activity, and the key aspects of the experience overall.

Contextualization

Team members also make time to collaboratively situate observations within relevant current and historical events and the social, cultural, and political context of the site.

2.1.2 Documentation

Each PO session was documented in the following manner:

Scratch Notes

Hand written: Quick notes to keep track of observations when it is not appropriate to sit and write out notes for a long period

Field Notes

Hand written: detailed observational notes taken at intervals throughout the day's activities and at the conclusion of the activities for the day

Photographs **not to be shared outside of the project if photos contain individual identifiers*

Visual documentation of key observational points

Note Index

Typed and shared: anonymized thematic indexing of key observational points from field notes

Field Summaries

Typed and shared: anonymized summaries of key observational points from each field site for each research season

Data Management

No socially identifying material can be shown to non-project participants, notes and data cannot be shared outside of the project researchers (except for de-identified indexes and summaries), and all notes and data must be stored in locked rooms or on password protected computers or cloud repositories.

2.1.3 Participation Activities

Depending on the site in question, the following activities were engaged in by the PO team:

Recreational boating
Recreational fishing
Ferry riding
Tour taking
Beach going
Sight seeing
Coastal leisure (dining/lounging)

2.1.4 Key Informants for Open-ended and Unstructured Interviews

The following people were interviewed in year two:

Advisory Committee Members **membership on the AC is a waiver of anonymity, but interview conversations will remain confidential and all participants will be subject to the informed consent process*

Jessica Willi- Block Island Tourism Council
Kim Gaffet- BI resident and Nature Conservancy representative
Louise Bishop- South County Tourism Council

Others *(not named for anonymity)*

Charter business owners
Charter captains
Ferry tour employees
Local tourism business owners
Local restaurateurs and employees
Tourists/visitors/recreators
BI residents encountered in field sites
Regional residents encountered in field sites

2.2 Study Limitations

PO emphasizes qualitative and interpretive methods over quantitative methods due to this being the first study focused on offshore wind farm coverage. There is a great deal that is unknown prior to study initiation which requires more open ended and exploratory work and which prevents more targeted research design. This means that statistical tests of significance cannot be performed on this data, nor is that an appropriate expectation for ethnographic information. PO is limited to the time available for researchers to conduct fieldwork and by the spaces, activities, and events they have access to as members of society in general. There are many events we could not attend due to lack of man-power, as well as many social settings it would not have been appropriate for us to attend (such as private functions in private spaces).

3 Year Two Results

What follows is a selective distillation of fieldwork notes and interviews using select paraphrases and quotes to highlight key themes collected and identified by the PO team during the year two field season. The goal of this summary is to display representative sentiments and experiences without being overly redundant with the year one summary. Therefore this summary will be shorter than year one. Not all sites are addressed here, as not all sites provided relevant information. The least relevant sites were typically only visited once to confirm that they were not suitable for sustained data collection. Not all interviews are presented here as we selected only the most representative examples from the interviews to include in this report. There are only selected examples in this document of the experiential descriptions of site activities, as including them all in detail would impede report length.

3.1 PO Fieldwork

3.1.1. Block Island

Visitor Center (VC)

Early season observations by head of VC: There are no brown outs on BI anymore and no more lost appliances. The power never went out at all over the winter except for scheduled maintenance outages. Prior to the BIWF the Southeast Lighthouse was the newest tourist attraction, and no one thinks of that as new these days. In April of this year someone came to BI for a week, only to see the BIWF. He was a teacher on the Cape. But we are fearful that the mainland will start running tours and bypass us completely. We will see. But people are calling up and asking about the BIWF. The word is getting out. We used to have to hide negative comments about the WF on our Facebook page, but now we don't really have much come up, although we still don't post about it often and I don't post about it when I don't have time to monitor the comments. But we will certainly advertise the BIWF tours on the ferry once we have the schedule. Last year I wouldn't have done that. People also want more facts at overlook spots, more information. The lighthouse is now even more of an attraction with the BIWF there.

Early season observations by local hotel owner in the VC: Our power bill did not go down at all, but the energy is more regulated. That is the only positive thing about the energy. We had a busy summer last year after a slow June. There were no hurricanes. If you can have your bills paid by August then the fall is all profit. Bookings start to fill up summer weekends starting in January and last year was busy, but this year we are still slow (in April). Bookings are down for the whole summer so far.

The BIWF will remain an advantage for BI. Other offshore farms will be too far away and you will need to invest in big boats and Dramamine to see them. Their proximity to BI won't change and you can see them from shore here. I like looking at it. And we are not burning a million gallons of fossil fuels. But we need the fiber optic cable here very badly. Our guests complain about the lack of internet.

Water Street Businesses

Figure 1: Sticker sold in Water Street retail business (photo by Kaytee Canfield), Summer 2018

T-shirt shop owner: He supposed people are used to the BIWF now because it isn't as common a topic of conversation in his shop or around the island. Last year he had to order several rounds of the wind farm related shirts but this year he is still on his first order in August. He wonders of the exposed cable is dangerous, but he doesn't think the buoys are bothering anyone because "people expect to see buoys in the ocean." He remains frustrated with the fiber optic situation which is now delayed getting to the anchor institutions and the town has to take on debt to pay for that. He doesn't think it will reach his businesses for at least another year. Business has been intermittent this season with very busy days and very slow days. He hopes they have steady business through September, which tends to be better than June. He would like to retire from the shop and drive a taxi, but someone would have to die to relinquish a taxi license. He has been on the waiting list for 15 years.

High end retail employee: She has a house on BI and can see the BIWF from her house- all five turbines. She thinks they are "beautiful" and not at all an eye sore.

Southeast Light

Figure 2. View of boats in the Block Island sailing race with the BIWF in the background from the Southeast Lighthouse field (photo by Dina Elias), Summer 2018

Generally year two was similar to year one. Many visitors still take pictures of the turbines while some still ignore them completely. Boats can still be observed fishing near the turbines, and they do not seem to have become a sailing obstacle. Visitors still expect the signage for the bird study antennae to provide wind farm information. People were overheard referring to the turbines as "pretty." The BIWF is now a permanent part of the scenery at this site.

From the museum docents: The feeling is that direct questions about the wind farm from visitors have dropped off since last season and the docents mostly field questions about the lighthouse. This may be because visitors are no longer surprised by the turbines as they have been so well publicized in news media. There is still a Deep Water Wind pamphlet in the lighthouse, and this is still where docents get most of their information about the BIWF.

One docent who works every summer and who is retired from BIPCo said that he has come to like the BIWF. He finds their slow spinning contemplative and he likes that they represent clean energy. He knows that they will have to go back on the generators for a few weeks this fall when they fix the cable, and he will temporarily have his night manager job back at BIPCo. He thinks that if people are coming to the lighthouse to see the BIWF that they tend to skip the lighthouse tour. When he is leading

tours he still likes to tell people that the entire lighthouse could sit under the turbines in the yellow base structure in the space above the water line. He thinks that is a great way to describe how large they are.

General remarks heard at the lighthouse:

Older gentleman: the BIWF “creates energy, and it saves people from buying billions of dollars in oil”

Older man: “they power the island…can’t believe it is sufficient”

Young woman: "I think they are graceful."

Young man: "Why are they white?"

Woman: "But are they bad for birds?"

Group of older people: "Oh look there's the wind farm."

Older man: "This is a good opportunity for them to provide some information about the wind farm next to this other sign."

Older women: "What are those towers? They are pretty."

Group of young people: "The base attracts fish and mussels."

Town Beach

Figure 3: View of the turbine visible from the Town Beach (photo by Kaytee Canfield), 2018

Wind farm visibility: One blade of one turbine can be seen from the beach pavilion area all the way down to the right over the top of the hotels, but this is not obvious. Instead, the cable buoys that mark where the National Grid cable is coming unearthed (see Interview 3.2.3) are visible directly to the left of the pavilion, a few yards out into the ocean (see cover photo). They are bright white and stand out on calm days, but not on choppy days when they blend into the waves. Despite their easy visibility, they do not seem to deter swimmers and recreators at all, and do not stand out any more than passing ships or parasails.

Observed remarks:

Father and daughter walking on the beach, daughter asked about the "big white turning thing". Dad stated "it is a windmill, and it uses the wind to provide energy."

Mohegan Bluffs

Figure 4: Visitors walk the beach at Mohegan Bluffs. All five turbines are visible in the background (photo by Dina Elias), Summer 2018

Remarks overheard at the bluffs:

Older woman: "I wouldn't want them in my backyard because of the noise (you cannot hear them from the bluffs) but I don't understand why anyone wouldn't like them."

Older couple: "Are there any other wind farms like these anywhere?"

Older man: "The island finally got some clean power."

Man: " People complained that they would ruin the scenery but I think it goes perfectly."

Second Bluff

Figure 5: The view of the BIWF from the southern bluffs (photo by Dina Elias), Summer 2018

Remarks heard at the bluffs:

Older woman: "Take a picture with the wind farm in the background."

Older man: "They don't run them all at the same time you know."

3.1.2 Mainland Rhode Island

In year one we learned that although mainland coastal areas do have views of the BIWF in the distance, the WF itself does not affect the tourism and recreation experience on the coast. This was confirmed in

year two at a number of beaches where the BIWF is visible but almost totally ignored. Recreators still say that "you can see the wind farm on a good day", meaning when the weather is sunny and clear, but they have to be prompted to mention it at all. Because of this lack of effect, the experience of various mainland RI beaches and coastal fishing areas will not be included here. Please see the year one descriptions for information about coastal tourism activities on mainland RI.

3.1.3 Regional Waterways

Block Island Ferry from Pt. Judith

Figure 6: Foggy day with no visibility from the Block Island Ferry (photo by Amelia Moore), Summer 2018

The ferry ride to and from the island remains a key site to view the BIWF, although most ferry riders are familiar with the turbines now and most do not display any signs of noticing them. The weather conditions still dramatically affect the visibility of the BIWF and visitor's desire to ride on the top deck where visibility is best.

Charter Wind Farm Boat Tour Office

Figure 7: Charter boat with wind farm tour ad on the side, Old Harbor, Block Island (photo by Amelia Moore), Summer 2018

Business Owner in June: This season he started tours to the BIWF on June 1st and had done several tours in the first three weeks of June with several more booked for later in the season. People are taking tours again after taking them last year and bringing friends and family. He will make the call soon to get a bigger boat that can handle more variation in weather. He would definitely not take a tour out to the larger proposed farms as it would be too far each way, although he would bid to be a service boat for construction as that pay rate is totally different. If the weather allowed he would go out to the BIWF every day with tours, and he hasn't lost interest in it himself.

Business Owner in July: July was overall pretty busy except for the last week, which had some bad weather. He had some days doing runs to the BIWF from 7am to 8pm and those were good days. But when the forecast is poor people don't come out, even if they weather on BI is better than on the mainland. Despite this he has decided he wants a new boat. He wants one that will still only take 6 passengers, but that can handle bigger waves and spray. He would get a 32 footer (he currently has a 26 footer). He almost bought one at a great price at a boat show but someone else bought it while he was deliberating. He feels that the ferry tours take some of his business even though he offers a different experience. But between his operation and the ferry, there isn't really enough of a market for anyone else

to run boat tours. Other charters have backed off from it while he has pursued it aggressively with advertising. On his end, he doesn't see interest diminishing, and he still takes people out on repeat trips. He has bookings into August.

Business Owner in August: The weather has not been great for taking tourists out due to big swells and rain. But he has been contracted by DWW to take out potential investors so that is helpful.

Business Owner in September: His overall assessment of the weather this summer was that it was "terrible" and that his charter business was way down by a third under last year and his shop business is down 15%. But he still had many calls and reservations he couldn't fill due to weather. He had to tell people no. It can look calm from the shore but there can be 8 foot waves out by the turbines. His little boat can barely handle that. He knows this from experiences when someone convinced him to take them out and they nearly capsized. He had to "white knuckle" them back in. It is not worth the stress. But he is sticking with the wind farm based charter business plan for now because the interest is still strong and he is still looking for the right kind of bigger boat.

Block Island Ferry Wind Farm Tour

Figure 8: Ferry tour rider who came to Block Island specifically to see the wind farm (Photo by Amelia Moore), Summer 2018

The ferry takes around 100 people out for an hour long tour that is still narrated by a female member of the Visitor Center staff who speaks through a loud speaker. It is still harder to hear her on the upper deck where most people congregate for the best views, and some people don't listen and talk through her presentation. Tour takers are partly fascinated by the turbines and the technology and partly just happy to take a boat ride and be out on the water. They come in small groups of friends or family and larger student groups or organizational groups interested in offshore wind development. Many photos are

still taken, especially with smart phones, and the overall impression is still one of awe and being in the presence of something massive and important.

The experience of the ride is pleasant and pretty when it is flat and calm, and a bit exhilarating and adventuresome when it is very wavy. On some rides people screamed with excitement when the boat went up and down the swells.

BI Ferry tour guide in mid-summer: The tours are happening every Wednesday and are decently attended. There is steady interest. They leave in the late afternoon from Old Harbor and last about an hour. The tour guide really enjoys doing it and has taken the initiative to update her script so that she talks about the underwater archeology and Deep Water's relationship to the Narragansett Tribe. She also talks about what it feels like to climb up a turbine from the perspective of the crew men she interviewed. This is in addition to the information she provides about the turbines energy generation and the difference between power usage for the island pre and post BIWF. The impression she conveys is that this was an overdue transition and that everyone is quite proud that it happened here.

BI Ferry tour guide in late summer: They stopped the ferry tours at Labor Day this season but they averaged 100 people per ride once a week from June to August. They plan to do it again next summer. Interstate Navigation hired a video team to use drones and make a commercial out of it for next year. Interest remains consistent and she plans to update her script again for next season and interview more people who work on the turbines for more personal details. She thinks people like that kind of information. She would also like to see more interpretive signs that have information about the BIWF around the island, especially at the lighthouse. This may happen with the next round of historical signage that is in progress.

3.2 Longer PO Interviews

The following are quoted passages of discussions with stakeholders.

3.2.1. Long Term BI Resident

The people who were really opposed to the BIWF have mostly quieted down now. Some people still ask about rate changes but all the changes at BIPCo make this confusing for most of us to follow. There is a new plan for fiber optic distribution lines and it will reach "anchor institutions" first. The plan for the rest of the island to get hooked up is not yet resolved, but there are plans to vote on choices. This is progress. The other offshore wind developments won't affect us at all. People who like wind here are happy we invested in it and lead the way. The next big fight will come when the permit is up in 20 years. Maybe the town will take over the BIWF then.

People are still concerned about the cost of energy and the fiber optic situation. People are also occasionally concerned with sea level rise and climate change, but mostly only when a hurricane hits. We need a more comprehensive plan for this. We can't adapt with emergency money. Garbage is exposed at the landfill and that needs regrading. Some people think tourist rentals are down this year but this is hard to prove. Memorial day was incredibly busy. The bagel shop ran out of bagels before noon. The food and beverage tax numbers should be good indicators. Fog prevents people from seeing the BIWF but that is about it. Weather makes the most difference.

We don't need more tourism, we need better tourism. We could do more to welcome the day visitors instead of dissing them. We don't need to go for the top dollar all the time. But I am a minority in this view. I am sure any downturn in rentals has nothing to do with the turbines. It’s mostly due to rental costs.

The quality of tourism here would actually be better without mopeds. We have an uneasy truce about them. They are noisy and dangerous. People end their vacation with disabilities. And coming just

to drink at Ballard's? That is not good tourism to me. The most powerful businesses here are the hotels, restaurants, and the bike/moped shops. They have all the employees, resources, and advertising. The more money you put in the more voice you have. This is not black and white in terms of fairness. I grew up here and I know we need tourism. We are much more affluent now than we were in the 60s and 70s. In the 60s the land here was deemed worthless. You couldn't get loans to buy it. No one went on vacation. Its better now. Healthier, more opportunities, more services. I don't know why anyone complains.

3.2.2. Head of the BI Tourism Council

The Interstate Ferry tours start again in June. They were full last season. The season is off to a strange start. Pre bookings are down for the summer but some places were fuller than usual on Memorial Day. The BIWF has mostly faded in to the background in terms of being an object of concern. We don't talk about it every day like we did last year. The new management structure at BIPCo is a plus and makes people feel more secure. Power is steady and rates don't vary so much. But bills are not down overall. And the institutions getting fiber optic is great. These are all positive things moving in the right direction, but of course tourists have no idea about any of this. However, we do advertise the BIWF now in our magazine for 2018 and we put an ad in the Providence Journal. We banned plastic bags and balloons and sent an email blast about BIWF tours and also added info on the WF to the bike tour information. We are "keeping it green." People coming here already are interested in seeing the BIWF. They know it won't ruin their vacation. They won't avoid a place just because there are turbines. It doesn't ruin the view from beaches.

2016 was the busiest summer in 10 years since the recession. 2017 was insane in July. Last August was down due to rain. So 2017 was similar to 2016 in terms of numbers. But bookings are down for 2018. Although you just don't know about day trippers. These numbers seem to be increasing. One mystery is that we lost $50k from our usual hotel tax revenue this past year despite good numbers, so we know hotel tax is not a reliable indicator. I had to testify at the Statehouse about this issue.

BI tends to follow the path of the country in terms of travel trends. In good years people stay longer and bring more people with them. They eat out and buy more. But now the economy fluctuates with a tweet! It is hard to know how people are feeling about summer vacations this year. But we are getting requests for information from far and wide. The national economy and the weather are our biggest influences. When the winter is bad pre bookings for summer are usually good. But spring never really came this year so that shoulder was slow. The tourism trends are very cyclical in my opinion. I think we peaked in the last two years and now will see a bit of a downturn for a couple years and prices will fall. The middle of the road tourism will pick back up over the high end stuff. You will soon see declines across the board unless the weather is perfect.

We don't necessarily want new tourism due to our limited capacity, but we don't want a steep drop either. We don't want a whole new ferry line in here with a sudden influx of 2000 more people a day. But we would take a smaller boat coming from Providence with a higher end customer. We don't have enough trash cans and bathrooms for more mass tourism. The infrastructure for these two months that has to be maintained year round is incredibly expensive. Summer day trippers are not good for hotels and rentals and groceries that sustain the island year round. We really want "heads in beds." We want BI "to be BI and not the Jersey Shore." The biggest issue, however, is that we have no housing for employees. It all goes to rentals.

3.2.3. BI Resident Concerned About the Power Cable

The National Grid cable at the Town Beach has started to become exposed because it was laid down in a hustle. The Deep Water cable was laid appropriately, but the National Grid cable had to be

encased in a sleeve last year to protect it about 80 feet of it that was exposed. But now almost 300 feet are exposed. More sleeve will be needed but that is only a temporary fix. Reinstalling the cable will be a major deal. They will have 12 buoys to mark it to prevent anchoring. Some of them will have to have lights. Then in October National Grid will have to bring out a barge and relay the cable. National Grid hustled just to save $275k in late fees in laying the cable the first time, but now they will have to pay millions. Hopefully the town won't take on any of these costs. They drilled the cable at Scarborough into the seabed. Why didn't they do that here?

One of the reasons that National Grid was behind schedule initially was from dealing with the Tribe, as there is displaced archeological site as a result of the cable, but no one will tell me where that is. Deep Water only paid $350k for the Town Beach easement, but this isn't close to being able to fund the fiber optic cable, which will be $550k for the first phase. The BIWF has far reaching ripple effects in the roads, fiber optic cable, power cables, easements, etc.

The Town Beach is the most popular beach on the island. If there is any sense of danger from the power cable that could hurt tourism and property values. They didn't enforce the law for National Grid. This could be a disaster. But I have two little girls and I need to leave them a better world so I support wind power. But I am worried about the cable energy leaking into the ocean. And they decommissioned the boat that laid the cable in the first place. What will they do now to fix it? And how will they splice the cable? It's so big and carries all that energy. But I don't know how it will work.

I don't think there is a BI without tourism. Without it it's just an elite island with a bunch of big homes.

3.2.4. BI Helicopter Tour Employee

The company has been working on Block Island for three years. The BIWF came on stream in their second year of operation and they added it as a feature of their mid length and long tours. Last year they had a lot of positive feedback about the BIWF and there is still steady questioning and interest in it from their customers. Many people ask what the BIWF does for the island. Local residents take the tour too, even if they hate the turbines (some think they "ruin the view"), but most of the tour takers think they are positive.

I personally like them. They are something else to point out for us. We even took a film crew from California up just to film the BIWF. They were hired by an aquarium to get footage so that they could study them ecologically. So we designed one of our standard tours to focus primarily on the wind farm. Everyone finds them amazing. We can weave between them and its actually fun to fly.

Most of the information we provide comes from local residents. One of our flight trainees is 11th generation BI resident so he gives us information about the island. And we take engineers up as well and they gave us technical information. We tell everyone this is the 1st offshore wind farm in the country.

Larger offshore developments may be limited by distance and will make a tour too expensive for most people. 30 miles is 20 to 30 minutes each way and can cost $500 to $700. Our longest tour is out of Westerly to BI and the BIWF and it takes 40 minutes total and costs $189 per person. It is pretty popular. We take up to three people out at a time. Some people have taken the ferry tour and then they want to take the helicopter tour.

Business has been better every year and now people are also booking the longer tours. The wind tour is the most popular. The only thing that limits us is weather. Humidity and fog. We have had super busy weeks and off weeks. This may be an off year overall so far. We may work through October if it stays worthwhile.

4 Conclusion

The BIWF is not nearly as controversial as it was in year one as the planning process recedes from recent memory, and residents and visitors to coastal RI and BI are rapidly adapting to life with an offshore wind farm. The selective distillation of PO qualitative data presented above continues to provide a glimpse into the dynamics of coastal tourism and recreation, showing that regional relationships to energy infrastructure necessitate careful social study (Larkin 2013, Howe 2014, Smith & High 2017).

BI remains extremely dependent on the day trip and short term rental tourism season from May through October, and this seasonal tourism industry is still dependent on the younger members (pre-retirement adults) of the BI community whose management and labor make the industry functional and tolerable for the older residents and retirees (who make up the longer term cottager and seasonal home owner community), as well as for the year round and multi-generational BI families. The issue of the unearthed power cable at the Town Beach and the related issue of the fiber optic cable distribution are examples of the way that offshore energy infrastructure is about far more than just the visual impacts of distant turbines. Engagement with energy infrastructure occurs on parts of the island where the BIWF is barely visible, and cables can unearth fears about social inequities around access and exposure to infrastructure. In the BI case, these fears are fairly benign overall, but that may not be the case everywhere.

As the Focus Group study also discussed, Year two PO reveals that the offshore wind turbines have become a *benefit* for the tourism industry of Rhode Island and Block Island for the time being, following emergent trends in sustainable tourism (Smythe and Bidwell 2018; Moore 2015). Real time observations, especially on BI, continue to show that visitors react positively or at least neutrally when encountering the BIWF in their frame of vision. For many people (but importantly still not for a vocal minority, although that minority has mostly stopped commenting), it seems to fit into the land and marine-scape as a tourist aggregator (for the right kind of curious visitor), just as it is likely a fish aggregator below water (for certain species). On BI, this is in large part because the BIWF is so accessible to the island, both for viewing from the southern end of the island and from the water. This proximity to a "boutique" 5 turbine wind farm is a resource in itself that some well-positioned businesses are capitalizing on and planning to continue indefinitely.

Year two PO continues to show the mainland experience of the BIWF, from a beach and coast-bound (non-marine) tourism and recreation standpoint, is far less dramatic and far less lucrative, although it does not appear to be functionally detrimental to coastal business or enjoyment of place. This is significant if we consider that the majority of offshore wind farm installations in the US will be more like the mainland RI experience of the BIWF than the BI experience, which is likely going to be fairly unique, although cable considerations will apply to mainland sites as much as to BI.

5 References

Bernard, H. R. (2006). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. (4th Edition). Lanham, MD: AltaMira Press.

Howe, C. (2014). Anthropocene Ecoauthority: The Winds of Oaxaca. *Anthropological Quarterly, 87(2),* 381- 404.

Larkin, B. (2013). The Poetics and Politics of Infrastructure. *Annual Review of Anthropology, 42*, 327-343.

Moore, A. (2015). Tourism in the Anthropocene Park?: New Analytic Possibilities. *International Journal of Tourism Anthropology, 4(2),* 186-200.

Smith, H., & Gilbert C. (2017). *Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis*. Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-068. 14 pp.

Smith, J. & High, M.M. (2017). Exploring the Anthropology of Energy: Ethnography, Energy, and Ethics. *Energy Research and Social Science, 30*: 1-6.

Smythe, T. and D. Bidwell. (2018). *Appendix V: Identifying Indicators of Offshore Wind Benefits Focus Groups*. Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-068. 34 pp.

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix V: Identifying Indicators of Offshore Wind Benefits: Focus Groups (2018)

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix V: Identifying Indicators of Offshore Wind Benefits: Focus Groups (2018)

July 2018

Authors:
Tiffany Smythe, David Bidwell

Prepared under M16PC00016
By
University of Rhode Island
45 Upper College Road
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study concept, oversight, and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Agreement Number M16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage (http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

Smythe, T. and D. Bidwell. 2018. Appendix V: Identifying Indicators of Offshore Wind Benefits: Focus Groups. Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 33 pp.

ABOUT THE COVER

Photo: Block Island Wind Farm from Mohegan Bluffs/David Bidwell

ACKNOWLEDGMENTS

We would like to thank the Bureau of Ocean Energy Management (BOEM) for their ongoing support and assistance. We would like to thank the broader research team for their feedback, insights, and review. We would also like to extend a sincere thank you to all of our focus group participants and Advisory Committee members who helped us identify and recruit participants.

Table of Contents

List of Tables

1. Executive Summary

This report summarizes key findings from focus group sessions related to the perceived effects of the Block Island Wind Farm (BIWF) on tourism and recreation activities on both Block Island and in coastal mainland Rhode Island. The research team hosted six focus groups between October 30, 2017 and December 5, 2017, each lasting 105 minutes (1 hour 45 minutes). The groups engaged forty individuals total, including operators of recreation and tourism businesses, representatives of tourism and recreation organizations, and participants in recreational activities from across five sectors: recreational boating and sailing, recreational fishing, charter excursions (e.g., fishing charters), Block Island tourism and recreation, and mainland coastal tourism and recreation. The focus group findings are intended to inform the latter components of the two-year project "Identifying Indicators of Offshore Wind Benefits: An Analysis of the Effects of the Block Island Wind Farm on Rhode Island Recreation and Tourism Activities," including the indicator development and research planning for a second year of participant observation research.

As the research team learned during the focus groups, the proximity of the wind farm to Block Island and continued open access of boat traffic to the area make it relatively easy for the public to interact directly with the development. Focus group discussions frequently addressed the aesthetics of the wind farm and its fit into the coastal Rhode Island environment, known for its natural character. Words used to describe the project ranged from "elegant" and "beautiful" to "eyesore." Participants indicated that the wind farm is attracting tourists and recreationists, who are interested in seeing the wind farm, learning about its features, or taking advantage of the perceived benefits of fishing near it. While the feedback heard in the focus groups was predominantly positive, there are indications that people acknowledge both pros and cons, as well as questions and uncertainties, when thinking about this new feature of this high-value seascape.

Focus group participants felt that the wind farm provides a unique opportunity for tourism and recreation marketing (particularly for recreational fishing), but that neither the developer nor the state has seized upon this opportunity thus far. They also believe that quality information resources are needed, a point emphasized by confusion among the focus group participants regarding how the wind farm works. The research team notes that the lack of information has, in some cases, supported negative perceptions about the wind farm. The research team further notes that many participants in tourism and recreational businesses and activities in the area are Rhode Island residents, and their experiences with the process of siting and developing the wind farm color their current opinions of the project and how it affects their experiences.

2. Focus Groups Purpose and Methods

This report details the methods and findings from Task 5 of the approved work plan for BOEM project number M16PC00016. This section will place the focus group task into the broader context of the project and detail the methods used to recruit participants and conduct the focus group conversations.

2.1. Focus Groups Purpose

As the first commercial offshore wind farm in the United States, the Block Island Wind Farm (BIWF) provides a unique laboratory for understanding how broader development of offshore wind farms could influence the environment, economy, and quality of life in U.S. coastal communities. One of the key issues raised regarding offshore wind energy is how it will impact recreation activities and coastal tourism, which are critical and growing industries in coastal regions.

Recreation and tourism activities may be affected–either positively or negatively–by both the physical presence and visual impacts of offshore wind farms, and studies in Europe and the U.S. have begun to explore this issue (e.g. Lilley et al. 2010, Westerberg et al. 2013). Yet, this literature has focused almost exclusively on preferences of beachgoers and oversimplifies the tourism and recreation landscape. The BIWF presents a rare and timely opportunity to understand the scope of tourism and recreation impacts of an offshore wind energy development. Our project employs three social science methods--a media content analysis, participant observation, and focus groups--to gather empirical data on the observed effects of the nation's first offshore wind farm on these activities in Rhode Island. The research team will then use these data to develop indicators for use in assessing the impacts of future offshore wind farm projects in other tourist landscapes.

This report describes the methods and findings of focus groups conducted in 2017 with members of key tourism and recreation sectors in the study area, Block Island and Coastal Rhode Island. The research team had two primary goals for this research activity: 1) Understand the experiences and perceptions of people engaged as participants in and providers of tourism and recreation services in the project area regarding the effects of the BIWF, and 2) receive feedback on key findings from the content analysis and first season of participant observation. The ultimate aim was to provide the research team with a better understanding of the scope of tourism and recreation impacts of the Block Island Wind Farm and identify potential indicators that could be used to measure those impacts.

2.2. Focus Group Methods

2.2.1 Overview

Focus groups are a social science data collection method that relies on bringing together a group of individuals to discuss a specific topic. In this case, conversations were focused on the interaction of tourism and recreation activities on Block Island and Coastal Rhode Island with the Block Island Wind Farm.

The strengths of the focus group method are that it allows ideas to be generated through interaction among individuals and captures any interpersonal dynamics within the group. In keeping with accepted focus group methods, the research team sought to bring together individuals with common concerns, as defined by tourism/recreation *sector.* Five sectors were selected: recreational boating and sailing, recreational fishing, charter excursions (e.g., fishing charters), Block Island tourism and recreation, and mainland coastal tourism and recreation (Table 1).

Table 1. Description of tourism and recreation sectors engaged in focus groups

Sector	**Description**
Recreational Boating and Sailing	Represents recreational boaters, sailors, and yacht racing organizers. Includes day-trippers and cruisers, most of which originate from Long Island (NY), Connecticut, Rhode Island, or Massachusetts and either travel to Block Island or pass through the BIWF area. Sailing activities include round-the-buoy and distance yacht races including Block Island Race Week, the (around) Block Island Race, and the Newport-Bermuda race, which take place at regularly scheduled times either annually or biennially.
Recreational Fishing	Recreational fishing encompasses either angling from private boats or private individuals fishing aboard charter or party boats, as well as fishing from shore. Private angling activities may also include spear fishing and recreational lobstering or shellfishing that involves the use of a boat.
Charter	Charter excursions includes for-hire passenger excursions taking place by sea

Sector	Description
Excursions	or by air. This includes charter boat (certified to carry up to 6 passengers) or party boat (more than 6 passengers) excursions that take place within the vicinity of the BIWF. Charter/party boat excursions in that area offer a range of activities to customers: fishing (including spearfishing), scuba diving, shark cage diving, whale watching, bird watching, lighthouse cruises, general sightseeing, and–newly–wind farm viewing. This sector also includes air-based excursions, such as helicopter tours, which also may include views of the wind farm.
Block Island Tourism and Recreation	This sector represents the range of tourism and recreation activities, and the supporting businesses, that take place on the island without use of a boat. This includes both attractions and activities that directly involve a view of or interaction with the BIWF as well as others that are not in direct view of the BIWF. Thus this sector includes accommodations, restaurants, and shops and services supporting both day trippers and multi-day visitors; businesses and organizations that promote Block Island-related tourism and recreation; and other island-based tourism and recreation activities.
Mainland Coastal Tourism and Recreation	This sector encompasses tourism and recreation activities that take place on land and along the shore, without use of a boat, on the south coast of the Rhode Island mainland. Only specific attractions, activities, accommodations and services that are potentially within view of the BIWF were included. These included dining, sightseeing, nature tourism (e.g., bird watching), photography, beachgoing, and near-shore activities such as surfing, as well as entities promoting such businesses and activities. In addition, there are lodging and events locations (such as beach rentals and historic seaside inns) that offer ocean views.

Importantly, many of the boat-based sector activities do not directly touch Block Island. While a handful of boaters keep their boat on the island all summer (these are not necessarily Block Island seasonal or year-round residents), and some charter boat fishermen and recreational anglers operate out of Block Island harbors, Block Island is most often a destination or waypoint rather than a point of origin for boaters, sailors, boat-based fishing, and charter excursions.

It is also important to note that some individuals may represent more than one sector. For example, many charter boat captains also engage in fishing activities as a personal recreational activity.

2.2.2 Focus Group Recruitment

To select focus group participants, the project team assembled a database of contact information for individuals and organizations engaged in each of the five sectors. Names of individuals and organizations were identified based on team members' prior knowledge of stakeholders and organizations throughout the study area (e.g., through interaction on prior planning exercises and research studies), recommendations of the study Advisory Committee, and internet searches.

For each sector, a list of potential participants was developed to include major types of activities that comprise the sector. For example, the list for Mainland Coastal Tourism and Recreation included contacts for beaches, event venues, vacation rental properties, restaurants, lighthouses, near-shore recreation, and local tourism councils. Potential participants were contacted by telephone and/or email to explain the project and to invite them to participate in the study. Recruitment continued until likely participation in each group was maximized or all potential participants were contacted. Note that recruitment for some sectors proved problematic, based on scheduling conflicts. Moreover, recruitment for the Mainland Coastal Tourism and Recreation sector presented a unique challenge, in that several potential participants noted that they had not experienced positive or negative impacts from the wind farm and did not feel that their participation would be relevant.

2.2.3 Focus Group Implementation

Focus groups were conducted in locations which were centralized and convenient to the participants in each group, including a sailing school facility at Fort Adams in Newport, the Island Free Library on Block Island, and the Coastal Institute at the University of Rhode Island's Narragansett Bay Campus. The focus group events took place between October 30 and December 5, 2017, with a total of 40 participants across the six groups.

To maximize participation by residents of Block Island, two groups were held on the island and included representatives from the Block Island Tourism and Recreation, Charter Excursions, and Recreational Fishing sectors. This was particularly appropriate for the participants for Block Island, as residents often play more than one role on the island and some participants represented more than one sector.

Table 2. Dates, locations and topics of focus group meetings

Date	Sector	Place	Location
10/30/17	Recreational Boating and Sailing	Sail Newport Building at Fort Adams	72 Fort Adams Dr., Newport, RI 02840
11/2/17	Block Island Tourism and Recreation	Island Free Public Library	9 Dodge St., Block Island, RI 02807
11/7/17	Block Island Tourism and Recreation (Boat Based)	Island Free Public Library	9 Dodge St., Block Island, RI 02808
11/17/17	Charter Excursions	Conference Room in Coastal Institute at URI Bay Campus	220 South Ferry Rd., Narragansett RI
11/21/17	Recreational Fishing	Conference Room in Coastal Institute at URI Bay Campus	220 South Ferry Rd., Narragansett RI
12/5/17	Mainland Coastal Tourism and Recreation	Conference Room in Coastal Institute at URI Bay Campus	220 South Ferry Rd., Narragansett RI

The focus groups were co-moderated by two project co-PIs, with one graduate student assisting the facilitators and taking handwritten notes. All focus groups were audio recorded in order to ensure the reliability of the data.

2.2.4 Description of focus group agenda

Each of the five 105-minute focus group sessions followed the same basic agenda (see the Appendix for agenda and handouts). While the agenda allowed the moderators to introduce the purpose and structure of the study, as well as cover key findings from the project's previous research, the bulk of each session was devoted to discussion among the participants.

Following brief introductions and a review of an informed consent form at the beginning of each session, the moderators provided a brief overview of the study and its purpose. A moderator then engaged the participants in conversation by asking them about their experience with the Block Island Wind Farm. During the 35-minute discussion, the moderators largely listened, while occasionally guiding the conversation (e.g., bringing participants back to the topics of recreation and tourism) or asking specific follow-up or clarifying questions in regard to something that was said. Moderators then took turns describing key findings from the media content analysis and

participation observation components of the study, allowing participants to ask questions and comment on the validity of this research. In this way, this 25-minute discussion provided another opportunity for participants to share their observations and experiences within the sector.

Moderators then explained the process and purpose of developing indicators, which will include those which could be used to assess the potential effects of future offshore wind energy projects throughout the U.S., as well as a subset of indicators that can be used to monitor the effects of the BIWF on Rhode Island's recreation and tourism activities moving forward.

As an outreach service to the participants, the moderators completed each session by reviewing a map of BOEM's federal lease areas and giving an update of offshore wind energy projects and policy in states in the Northeast U.S. This brief session provided a final opportunity for participants to reflect on general beliefs and concerns regarding the effects of offshore wind energy on tourism and recreation in the region.

2.2.5 Focus Group Data Analysis

The audio recordings from each of the six 105-minute focus group meetings were transcribed. To maintain confidentiality of the participants, coded labels were employed to distinguish individuals within the transcription text. Transcribers used meeting attendee lists and detailed notes taken at each focus group meeting to best distinguish among individual speakers and to capture parts of the conversation in which multiple individuals spoke at once. Each transcript was then analyzed using thematic analysis, a qualitative data analysis approach involving coding (Braun and Clarke 2006), with the assistance of NVivo 11 software (Bazeley 2007).

Codes can be descriptive or interpretive labels for topics or themes and are applied to units of text to facilitate either qualitative or quantitative analysis. Codes can be applied to larger sections of text (e.g. a few sentences or a paragraph) as well as small sections of text (individual words or phrases). The team's coding approach included both broad-brush coding, identifying overarching topics, and a more fine-grained "splitting" approach, identifying specific topics and themes (Bazeley 2007), to facilitate qualitative analysis. First, all content was coded by the most relevant recreation and tourism sector (e.g. Recreational Fishing). This involved the broad-brush approach, coding entire paragraphs at a time, and was employed because focus group discussions often jumped from sector to sector. Second, all content was coded to identify overarching topics or themes that illustrated the positive, negative, or neutral effects of the wind farm on recreation and tourism. Here, the research team use the word "positive" to mean that participants viewed some aspect of the wind farm as a benefit or enhancement to their recreation or tourism activities or experiences, to tourism and recreation sector businesses, or to the tourism and recreation communities more broadly. The word "negative" means that participants viewed some aspect of

the wind farm as detracting from recreation or tourism activities or experiences. The word "neutral" means that participants described experiences that had neither a positive nor a negative effect on tourism and recreation. Topic or theme nodes were largely descriptive (e.g. fishing discussions were coded as "fishing"); however, discussions in which participants were describing the wind farm, or their interactions with it, in explicitly positive, negative, or neutral terms were coded analytically (e.g. "wind farm negative"). Individual segments of text could be coded at several nodes.

For both steps, a hierarchical coding approach was used. For coding by sector, five "parent nodes" were defined in the software at the outset of coding: Recreational Boating/Sailing; Recreational Fishing; Charter Excursions; Block Island Tourism and Recreation; and Mainland Coastal Tourism and Recreation. For each parent node, child nodes were defined to code sector-specific topics that were only relevant to that specific sector. These were identified in an iterative way through the coding process (see Braun and Clarke 2006). This included either specific places (e.g. Southeast Light on Block Island, which was a child node of "Block Island Tourism") or specific activities or events (e.g. yacht racing or the Block Island Race, which were child nodes of "Recreational Boating/Sailing"). All child nodes were aggregated into their respective parent nodes--for example, any content coded at "Southeast Light" was automatically also coded as "Block Island Tourism and Recreation." Please see the Appendix for the complete codebook including all sector-specific parent and child nodes.

For the second step, a fine-grained approach to coding, codes were developed to capture general overarching topics and themes that were not necessarily specific or limited to any one sector (e.g. aesthetic/visual considerations; environmental/science topics). All nodes were identified in an iterative manner throughout the coding process and organized into node hierarchies, with overarching parent nodes, through the process. Parent nodes identified through this process were the following descriptive nodes: Aesthetic/Visual; Cable; Comparison (Other Events/Projects); Economy; Environment/Science; Navigation; Public Process; Tourism and Recreation Marketing and Promotion; and Wind Farm Operations. Parent nodes also included the following analytical nodes: Wind Farm Negative; Wind Farm Positive; and Wind Farm Neutral. Each parent node included relevant child nodes; for example, "Aesthetics/Visual" included child nodes such as "View from BI," "View from Mainland" and "Lights at Night." Again, all child nodes were aggregated into their respective parent nodes; for example, any content coded at "Lights at Night" was automatically also coded as "Aesthetics/Visual." Please see the Appendix for the complete codebook including all general overarching thematic parent and child nodes.

2.2.5 Methodological Limitations

Like all research approaches, focus groups have methodological strengths and limitations. While focus groups are a terrific means of generating data in a social context, some individuals will be more expressive than others in a group setting. Some focus group participants may be reluctant to share minority opinions or to contradict their colleagues or neighbors. In this study, researchers paid close attention to group dynamics, seeking to give opportunities for all participants to share their viewpoints; however, some participants were more vocal than others. Moreover, focus groups can only capture the perspectives of those community members who participate in them. Researchers in this study recruited a diverse group of participants for each focus group; however, some targeted activities were poorly represented, particularly in the Mainland Coastal Tourism and Recreation sector (see subsection 3.1.5 below). In these cases, researchers looked to the Participant Observation component of the broader project to seek input from those representing under-represented activities. Both Focus Group and Participant Observation research was in turn used to inform the subsequent development of indicators.

3. Results

3.1 Findings - Composition of Focus Groups

The process of recruitment was influenced by prospective participants' interest and availability, and resulted in a wide range of meeting sizes with varying representation of the key activity types within each sector. Following is a rough description of the composition of actual focus group participants, organized by sector, with personally identifying information omitted in accordance with the confidentiality provisions of the University of Rhode Island's Institutional Review Board for Human Subjects Research.

3.1.1 Recreational Boating and Sailing

Through the recruitment process the research team noted extremely high interest from this sector in this topic. Focus group participants in this sector included active *participants* (recreational boaters/sailors), as well as several who are either *paid professionals* or well-known *paid or unpaid leaders* in the region's boating and sailing community. Examples include a marina owner; a sailing school program director; representatives of national sailing and cruising organizations; representatives from several regional yacht clubs which organize major racing and cruising events; a professional yacht delivery captain; and several avocational sailors. This group

included significantly more representation from the sailing and yacht racing community than from the powerboating community. This is due partly to recruitment challenges and partly to the less structured nature of the powerboating community (e.g. there are no races or power boat clubs and very few organized cruises in the region). This group did not include any Block Island-based individuals or organizations, due partly to recruitment issues but primarily because the vast majority of Block Island-related boating and sailing activity is based out of mainland marinas and yacht clubs.

3.1.2 Charter Excursions

Through the recruitment process the team noted high interest from this sector, but somewhat limited participation due to scheduling challenges (due in part to a warm fall that caused charter businesses to run well into November) as well as an overall sense that professional fishing charter captains were experiencing saturation with the number of wind farm-related meetings, research projects, and other ongoing fisheries management activities. Focus group participants included fishing charter boat owners and captains; fishing charter boat crew; a party boat owner/captain offering fishing and wildlife viewing charters; helicopter excursion company owners and pilots; and passenger sightseeing/education vessel owners and captains. Fishing charter participants included those offering smaller family-oriented trips closer to shore; those offering offshore trips focused on big game species; and a spearfishing/diving boat. This included representatives from both Block Island and the mainland, including Connecticut (a charter captain who runs a boat out of Rhode Island). Because of scheduling issues and the fact that some charter boats are based on Block Island, the team engaged this sector in three separate meetings - two in Narragansett (one charters only, one mixed with recreational anglers), and one on Block Island (mixed with other BI tourism professionals). Notably, despite recruitment efforts, charter excursion participants excluded representatives from some of the businesses offering dedicated wind farm charters or sightseeing excursions.

3.1.3 Recreational Fishing

Through the recruitment process the team noted very high interest in this topic. Focus group participants included recreational fishing hobbyists as well as some who work in recreational fishing related industries. Participants include avocational recreational fishermen from both Block Island and the mainland (including Connecticut). Participants also included those who fish from their own boats and from ashore (surfcasting), as well as those who engage in spearfishing/diving. Those involved in surfcasting were based on Block Island. Participants also included owners of fishing tackle shops. Some recreational fishermen participants also run their own charter boats or are involved in the recreational fishing industry in some other way.

Recreational fishermen were grouped together in a Narragansett focus group and some also joined a Block Island focus group (mixed with other BI tourism professionals).

3.1.4 Block Island Tourism and Recreation

Through the recruitment process the team noted high interest in this topic, but limited participation due to scheduling conflicts. Although the team scheduled focus group meetings after the busy summer tourism season, it proved difficult to catch prospective participants after the tourism season but before many leave the island for off-season vacation or travel to their off-season homes. The team convened two separate Block Island meetings in an effort to maximize participation from this sector. Ultimately, across the two meetings, participants represented activities and businesses including iconic tourist destinations/scenic overlooks; the promotion of island tourism; hotel and rental accommodations; taxis; nature tourism; and beaches. Notably, participants did not include representatives of several other important Block Island businesses and activities including retail shops, some of the major restaurants and hotels, and some forms of coastal recreation (e.g. stand-up paddle boarding or biking).

3.1.5 Mainland Coastal Tourism and Recreation

The research team encountered challenges recruiting for this sector. As stated above, in the process of recruitment, many prospective participants suggested that they had not experienced either positive or negative impacts of the wind farm and did not feel that their participation would be relevant. Participants who did join the meeting represented mainland beaches; the promotion of coastal tourism; historic inns and resorts offering nature tourism and sightseeing programs for guests; and Pt. Judith/Galilee-based fishing/port activities. Participants did not include restaurants and hotels; retail shops; mainland iconic destinations/scenic overlooks; and some forms of mainland coastal recreation (e.g. kayaking or surfing).

3.1.6 Overarching Observations Regarding Participants

Through the process of identifying, recruiting, and working with focus group participants, our team refined its understanding of Block Island and Rhode Island coastal and marine tourism and recreation, as well as associated activities and the identities of those who participate in them. First, the team determined that in order to accurately understand the scope of coastal and marine tourism and recreation in this region, the research team needed to include both tourism and recreational professionals and participants in these groups. This was not always possible to achieve, in part due to scheduling constraints (e.g. it is difficult to include Block Island tourists

in focus group meetings taking place in the off-season). Second, the team determined that there is a great deal of overlap both among the five activity sectors, and between those who are professionals and participants. For example, many charter boat captains are also recreational anglers; many recreational sailors are also Block Island tourists; and many Block Island tourism professionals participate in all of these coastal and marine recreation activities in their free time. Last, Block Island and Rhode Island tourism and recreation professionals are, in most cases, Rhode Island residents; many participants in recreational activities covered by this study are also residents of the state. As such they have a broader perspective on the BIWF, beyond its specific effects on tourism and recreation, and would frequently incorporate these broader views into focus groups discussion. The research team found that their experiences with the process of siting and developing the wind farm colored their opinions of the project and how it affects their tourism and recreation experiences.

3.2 - Findings by Sector

3.2.1 Sector: Block Island Tourism and Recreation

Discussion of Block Island tourism and recreation was not limited to the two Block Island focus groups. Rather, this topic was raised in all six of the focus groups. Both Block Islanders and other tourism and recreational professionals or participants commented on or speculated about the effects of the BIWF on Block Island tourism or on the community of Block Island as a whole. With regard to tourism, discussion focused on how the BIWF appeared to have had either a neutral or somewhat positive effect on tourism, or at least did not appear to have had a negative effect. There were only a few exceptions to this, which are discussed below.

The most commonly discussed Block Island sector-specific topics, identified as child nodes under the "Block Island Tourism" parent node, included: the **opinions and reactions of Block Island visitors, seasonal residents, and permanent residents**; **Block Island property values** and **real estate**, including **home sales** and **rentals** (largely mentioned in connection with seasonal residents); **Block Island's natural open spaces** and the importance of the island's natural character to tourists; tourism-related activity at the **Block Island Visitor's Center**, which is run by the **Block Island Chamber of Commerce**; and **activity at Block Island tourist destinations**, most importantly Southeast Light. There was very little discussion of Block Island hotels, retail, or other businesses, though this may be attributed to the composition of the focus groups (see Section 3.1 above). The exception to this is taxi businesses, as taxis provide tourists an opportunity to view the BIWF whether through an ordinary taxi ride or an organized tour.

A wide range of overarching topics and themes were discussed within the context of the Block Island tourism sector. As stated above, thematic coding for overarching topics and themes was designed to capture content that was not limited to any one of the individual sectors. Coding results were as useful for revealing the topics that were raised repeatedly, as well as those that were not major focuses of discussion. Topics of greatest importance to participants were **aesthetic and visual issues**, including the **view of the BIWF** and surrounding seascape from Block Island and the problem of wind farm lights at night; **economic considerations** including the cost of electricity on the island; **tourism marketing**, including how to market the BIWF as part of the tourist experience; **tourism activities and experiences,** including fishing from the island and BIWF tours offered by the Block Island ferry company; and broader discussion about the BIWF **public process** and **environmental and science issues**. Topics of greatest importance also included tourists' and others' reactions to the wind farm, focusing in particular on **positive and/or supportive reactions**, as well as broad **curiosity, interest, and inquiries for wind farm information**. However, this also included some **negative reactions** to the wind farm, including negative reactions to viewing the BIWF.

Positive: Several focus group participants noted that the BIWF had been, and might continue to be, a somewhat positive contribution to Block Island as a tourism destination. For example, participants described the numerous inquiries received about the BIWF at the Block Island Visitor's Center in positive terms, interpreting visitors' interest and curiosity (described above) as excitement and support for the BIWF. In some cases participants noted that the wind farm had become a tourist destination in itself, and that some visitors had come to the island just to see the wind farm. Participants noted that some new tourism business opportunities had taken off in connection with the BIWF, including the wind farm tours offered by Interstate Navigation, which runs the Block Island Ferry, and a private charter business dedicated to running wind farm tours. Participants also described some visitors' apparent appreciation of the wind farm for its aesthetic value, or as an engineering feat (e.g. "*there's an appreciation for just the engineering that goes behind it, for the - the people*"). Some also described the wind farm as a symbol of an environmental ethic, and noted that this is consistent with the values and interests of those who choose Block Island as a tourism destination.

Negative: There were a few exceptions to the overall theme of positive or neutral effects on tourism, though these exceptions were not insignificant. Rather, they were topics of extended conversation and were raised by multiple different individuals in different groups. These include the negative views of a subset of Block Island seasonal residents, who are considered a part of the tourism economy (e.g. "*They come for the day or they rent an apartment, and - 'you have to look at this? This ruins my view*'"). There were also some negative views of the public process leading up to the construction of the BIWF. Negative reactions to the project also included two accounts of tourism concerns related to the undersea cable connecting the wind farm to the island and its perceived impact on sharks (e.g. "there was a question of what that [cable] could draw in

sharks…it's a story and if that story gained legs then you would have a tourism impact. A big one, because people are terrified of sharks and the cable lands right at our town beach." Last, participants reported rumors that the BIWF was the cause of several whale deaths which took place during the 2017 tourist season and resulted in whale carcasses washing up on popular island beaches (e.g. "*There was a dead whale on Columbus Day weekend that made town smell bad. It was washed up at Ballard's [beach]. It's our last weekend for tourism and everyone's coming to the [Visitor's Center] desk. All those people were talking about the windmills possibly being the reason why that happened.*") Participants focused in particular on the negative views of visitors and seasonal residents. One commented, "*I've been in conversations with people who hate it, and I, I agree, I, I don't think I've ever had this conversation with someone who actually lives here; it's often people who are summer residents who have some of those really, the big houses that overlook that wind farm who were very concerned about it ruining their viewshed*." And another commented, "*I think the seasonal people were more about the look [of the wind farm]*." A third was even more specific: "*There is a sizable group of second home property owners that think they're an eyesore*."

Neutral: A dominant thread in focus group discussions of Block Island tourism was that the BIWF had seemingly had a neutral effect on tourism. One participant stated as much outright: "*I think...it's neutral, I don't think it has a positive effect or a negative effect. I - so many people that come up there [to Southeast Light] either don't know about it at all or find them elegant*." In some cases participants framed this as a double negative, noting that the BIWF had not had a negative effect (e.g. "*I haven't heard one negative complaint, or you know, one negative comment*"). More often, participants described the windfarm as a change and as a source of interest and questions–but not as having had a real impact one way or another. A dominant discussion thread was the dual problem of inquiries for wind farm information, coupled with widespread misinformation and lack of understanding of the wind farm. For example, visitors evidently made numerous inquiries about the BIWF at the Block Island Visitor's Center, in some cases asking detailed engineering and scientific questions that staff were unprepared to answer. This suggests broad interest and curiosity in the BIWF. Conversely, however, participants described the lack of information as leading to rumors and misunderstanding about the BIWF. For example, they noted questions about why a given turbine might not be turning on a given day, as well as the impact of the BIWF on marine life.

3.2.2 Sector: Mainland Coastal Recreation and Tourism

Discussion of mainland coastal recreation and tourism was far less prominent in the focus groups. As discussed above in Section 2.2.2, the research team had difficulty recruiting participants for a mainland tourism focus group, and heard from a number of prospective participants that the BIWF is largely not a topic of interest or concern among the mainland tourism industry. While the small number of people contacted as part of the focus group research

does not represent a statistically valid sample, these recruitment challenges coupled with these observations nonetheless suggest that the mainland tourism community may have a notably different relationship with the BIWF than the BI tourism community.

The topic of mainland tourism was raised in four of the six focus group meetings, by all sectors other than the Charter Excursions sector. However, references to mainland tourism were extremely limited in three of those four groups (Block Island Tourism, Sailing/Boating, and Recreational Fishing). Discussion overall focused on how the BIWF appeared to have had a largely neutral effect on mainland tourism.

The mainland-specific thematic codes that were identified in this study, under the parent node of "Mainland Tourism," are: the **opinions and reactions of mainland residents and mainland tourists**; possible effects on **mainland tourism businesses**; and activities in the town of **Narragansett**, as well as two tourism promotion businesses, the **Narragansett Chamber of Commerce Visitor Center** and the **South County Tourism Council**. Interestingly, discussion frequently returned to the opinions and reactions of mainland residents, whereas participants in some cases seemed to search for information to share about mainland tourists. This is somewhat similar to discussions about Block Island tourism, where discussion frequently shifted to residents' views and experiences.

Numerous other overarching topics and themes were raised within the context of mainland tourism; again, this thematic coding exercise was designed to capture content that was not necessarily limited to any one of the sectors. Topics of conversation included **aesthetic and visual considerations**, most notably the **extent to which the BIWF could be seen from the mainland**; South County **tourism marketing**; the broader **economic effects** of the BIWF; two other sectors, **Charter Excursions** and **Recreational Fishing**; and the **public process** surrounding the BIWF. With regard to the charter and fishing sectors, related discussion largely focused on the **demand for boat-based sightseeing excursions** and the **Block Island Ferry's wind farm tours**.

***Positive*:** A fair amount of Mainland Coastal Tourism and Recreation discussion focused on positive aspects of the BIWF. For example, participants discussed mainland tourism marketing, including advertising for and broad interest in the Block Island Ferry's wind farm tours. One participant also emphasized the general demand for boat-based sightseeing excursions in southern Rhode Island, noting that more wind farm tours from the mainland would be of interest to tourists. The mainland tourism focus group also discussed the economic aspects of the BIWF. Some of this focused on the positive economic impacts of construction on tourism businesses. For example, one participant noted that construction had had a positive impact on tourism businesses during the off-season: "*I mean, Deepwater Wind kept those hotels open all off-season… the Holiday Inn devoted two floors, I think, to Deepwater Wind and half of the*

Lighthouse Inn in Galilee was devoted to Deepwater Wind. So, I mean, it brought a huge boom to the town…. In the off season, you know, they all have to slash their rates and there is, you know, low occupancy rates and things like that, but Deepwater Wind picked up that slack. Quite frankly they kept the Lighthouse Inn in business." Importantly, some of the more positive BIWF discussion with regard to this sector had to do with potential future benefits, rather than benefits which had already been experienced. For example one participant noted, "*I think that there is a benefit potential for Rhode Island and for enterprising entrepreneurs*."

***Negative*:** There was relatively little negative discussion about the BIWF within the context of mainland tourism. Discussion of aesthetic and visual considerations, and in particular the view of the BIWF from the mainland, revealed that one participant had overheard complaints about the visibility of the wind farm lights at night: "*I have heard some people complain about it, about the lights. Not loudly, it is not something I hear very often, but yes, I have heard people talk about that.*" Importantly, this participant could not recall whether these complaints had been made by tourists or by residents. Discussion of the BIWF public process did reveal some negative views; however, this was a minor topic of discussion within this group, and focused not on tourism but on other mainland residents' views.

***Neutral*:** As stated above, the overarching theme of the Mainland Coastal Tourism and Recreation focus group was that the BIWF seemed to have had a neutral effect - i.e. neither positive nor negative - on tourism and recreation. In particular, discussion of aesthetic and visual considerations, and in particular the BIWF view from the mainland, focused on how the BIWF was not easily visible from the mainland. In fact, participants described how visibility of the BIWF from the mainland was used primarily to describe the weather. For example, one participant noted, "*people we talk to at the beach, the biggest comment we probably hear about the wind farm is 'look how clear it is, you can see the turbines turning today*.'"

3.2.3 Sector: Recreational Boating and Sailing

Topics and themes relevant to the Recreational Boating and Sailing Sector were discussed in four of the six focus groups - the Boating and Sailing group as well as Block Island Tourism and Recreation, Mainland Coastal Tourism and Recreation, and Recreational Fishing. Overall, discussion within the context of this sector characterized the BIWF as having either a neutral or a positive effect on their activities, though some participants also noted that their views may well change in response to proposed larger-scale wind farm projects.

The boating- and sailing-specific codes identified in this study under the "Boating and Sailing" parent node are: **specific sailboat/yacht races**; **sailing** in general (as distinguished from powerboating); **sailboat racing** in general; and **specific yacht clubs**. Specific races, and the

yacht clubs which host these races, were discussed repeatedly in this group. Examples include Block Island Race Week and the Newport-Bermuda Race, both hosted by the Storm Trysail Club. Topics which were much less frequent topics of discussion were **cruising boats visiting Block Island**; **private yacht deliveries**; and **organized cruising events in the region**. It is important to note that there was nearly no discussion focused on powerboating or on cruising powerboats visiting Block Island, though this may be attributed to the composition of this focus group (see Section 3.1 above).

The overarching thematic codes discussed within the context of boating and sailing activities were **navigational considerations**; **aesthetic and visual considerations; positive wind farm experiences and descriptions,** in part based on the **view from a boat or on the water**; activities within the **Charter Excursions** sector**;** and **how the BIWF compares to other projects** including existing infrastructure and potential future wind farms.

***Positive*:** Of particular note in the Boating and Sailing sector were the numerous positive aesthetic/visual descriptions and characterizations of the BIWF. Many of these positive descriptions were related to sailors' and boaters' view from the water. One participant commented, "*I think people are impressed by what it looks like, as we said it's an awesome sight. For those who haven't seen wind farms in person, especially up close while sailing, it's almost like you're in a sci-fi movie, at least at first. And people appreciate them*." Another participant noted, "*It is an aesthetic thing. Just sitting and looking at them, they just look - they look wonderful, and I can't articulate it, but it's sort of a calming thing*.'" A third explained, "*the chatter…it's been positive, overwhelmingly, from boaters: 'Isn't that neat? They are out there. There they are. It's really a marvel of engineering*.'"

Other participants reported positive discussions among sailors and boaters within the context of specific events. For example, one described sailing with a yacht club annual summer cruise during the BIWF construction phase: "*We sailed from Montauk to Block Island and they lay directly in our path...and the discussion when we got to Block Island that evening with all the cruisers was about how cool it was to see them up close during the construction process*." Other positive descriptions were framed largely by how little the turbines disrupt specific sailing/yacht racing events from a navigation perspective. For example, a participant involved in regional yacht racing events including the Block Island Race and Vineyard Race, whose "*courses go around the southeast corner of Block Island*," noted that the race organizers "*have received no complaints from any competitors. There has actually been very little chatter about it. When we sail by it during a race there are a couple of things we comment on: how close can you get, what will the wind effect be, and also how cool they look. - and what amazing technology it is, and it's not as bad as everyone said it might be.... It has been pretty much a non-event in terms of negative feedback, and any feedback we do hear has been positive*."

***Negative*:** The Recreational Boating and Sailing sector had very little to say with regard to negative impacts of the BIWF. Some participants noted overhearing some negative chatter, but clarified that this was not from among the boating and sailing community, and attributed this to misinformation about issues like the 2017 whale mortality events (see Section 3.3.5 for further discussion). One participant noted that he would prefer not to look at them, because of the aesthetic/visual impact, but nonetheless saw their benefit to the community of BI: "*I'd just as assume they weren't there. I spent a good bit of my life out on the ocean looking out at the horizon and it's just a wonderful thing, looking out over the empty sea horizon. However, if it's a net benefit to the people of Block Island - it reduces their energy cost and provides their energy - then I think overall I'm in favor of them. And I think that's one of the main things. Aesthetically, I think it's a negative, but if it's a benefit to the people there, then it's good*."

***Neutral*:** Some of the neutral discussion within the boating and sailing sector characterized the wind farm as simply another item in the environment, neither good nor bad - "*it's just part of the terrain*," said one participant. Others framed this somewhat differently, noting the BIWF as a definite change to the seascape, but neither a negative nor a positive one: "*What was once an empty horizon now is - not marred, but is marked by man-made objects out there, so I think that shouldn't be overlooked, that we are putting something semi-permanent where there wasn't anything before. And to my own thinking, it's not a negative. It doesn't take away from the view. It is something interesting to look at. And there are humans in this part of the world, so it is part of our mark*." Other neutral aspects of the discussion considered the possible integration of the BIWF into sailing-related educational programs, such as those run by local community sailing programs.

Perhaps the most interesting topic of conversation with this particular sector, that was not necessarily positive, negative, or neutral with regard to the BIWF, is how this project compares to other projects, including existing infrastructure and potential future wind farms. In some cases the BIWF was compared very favorably: "*I remember, maybe you all can, the first time you went sailing. And all of the sudden the sail went up and magic happened…. This relates to your point about the difference between an oil rig versus something that is moving to the spirit*." Other comparisons included the Newport Bridge and airports, in part with regard to lights at night. The third comparison, which is most important to this project, is between the scale of the BIWF and other potential future wind farms: "*It occurs to me that our acceptance or tolerance of the wind farm is highly dependent on the size of the wind farm…. So it would be interesting to see how our answers, our experiences would change if this was a six by six - 36 turbine - wind farm off Block Island. And I would think our answers would be a bit different in that case, if it were quite a bit larger. And a lot of our answers now are based on its current size, of course*." Importantly, much of this discussion about scale, including this particular quote, took place in the focus group meeting *before* the agenda item in which facilitators presented a brief update on other potential future offshore wind developments in the region.

3.2.4 Sector: Charter Excursions

Charter Excursions, as described above, includes both boat-based charters (including fishing trips, wind farm tours, and other trips with paying passengers) and other forms of charters, such as helicopter trips. Charters were a topic of conversation, in some way or another, across all six of the focus groups. Primary charter-specific themes under the parent node "Charter Excursions" which dominated discussion were: the **interest of current or prospective charter clients in the BIWF**; **actual BIWF boat tours or charters**; the **Block Island Ferry's wind farm tours**; and the **charter clientele** more broadly, including the **demand for sightseeing charters**. Topics of lesser discussion included **specific types of charter trips**, like dive trips, helicopter trips or whale watching trips, as well as types of charter vessels and specific routes.

The **Recreational Fishing** sector dominated Charter Excursions-related discussion, which is logical because of the number of charter fishing businesses operating in the area as well as the number of fishing charter captains who participated in the focus groups. Because discussion of fishing charters focused largely on fish and the practice and experience of fishing, this is discussed below under "Recreational Fishing." **Block Island Tourism** was also raised within the context of charter excursions, insofar as Block Island-based charters (fishing, wind farm, and helicopter trips) and related trips, like the Block Island Ferry's wind farm trips, base their business off of Block Island tourists. Similarly, **Mainland Coastal Tourism and Recreation** was raised within this context regarding charter boat operators who operate out of mainland ports, offering trips to mainland tourists.

Numerous other overarching topics and themes were brought up within the context of Charter Excursions. Excluding fishing-specific topics (discussed below), these topics and themes included both **neutral and positive wind farm reactions and experiences**; **aesthetic and visual considerations**, including the **view from a boat, the water, or the air** (the latter via helicopter); **tourism marketing**, both charter- and wind farm-related; the need for **wind farm information**, particularly in response to client questions; **navigational considerations**; **environmental and/or scientific topics**; and **increased fishing and boating activity in the BIWF area**.

Positive: Several charter operators commented that they had heard largely positive commentary about the BIWF from their passengers. Some participants used positive language to describe their passengers' reactions to the aesthetic/visual aspects of the BIWF (e.g. "*they're astounding*" or "*they're attractive, when you get up next to them, they're pretty awestruck*"). Others described this more in terms of the absence of negative reactions (e.g. "*In the conversations I've had on the boat going out, there is never any…. I didn't have a crew or any people that had a negative take on it. They thought it was great*.") Further, some charter operators commented that the wind farm

has enhanced their business. Several fishing charter captains noted that their clients ask about, and want to see, the BIWF as part of these trips. One described it as "*it's an entertainment thing*." Another said, for "*the trips that I make [out of Block Island] the wind farm is always a discussion. It is like a tourist item - an attraction. We fish, but we go to the wind farms to get close to them, to look at them. People are interested in them. It has enhanced my business, that part of my business*." A participant who operates a passenger vessel similarly commented that prospective clients view the wind farm as an "*attraction*" and a "*destination*": "*people want to go to Block Island anyway, but now the wind farm is one more thing that you can't walk to*."

Although focus group participants did not include any charter operators who are offering dedicated wind farm tours, participants referenced these new business endeavors as positive examples of BIWF business opportunities. Some discussion focused on tourism marketing, i.e. how best to advertise and sell such trips to tourists. Importantly, however, several spoke of such opportunities cautiously, noting that there is a limited market for such trips. Some charter operators noted that any of these business enhancements may be short-lived, describing the BIWF as a "*novelty*" that was unlikely to last.

Similarly, helicopter charter operators commented that their clients were most definitely interested in the BIWF: "*90 percent of the tourists are for the wind farm...very interested in how it is built, how big they are*." They elaborated on how the BIWF has directly enhanced their business: "*[the wind farm tour] was definitely one of the most popular tours that we had...it was something - not only could you see Block Island, but you could see this...extra structure out in the middle of the ocean, which as pretty cool*." One elaborated that they were "w*orking on advertising material for next year. That is the number one thing we are showing off, is that we can show you the only offshore wind farm in North America*."

Negative: Charter operators of both boat and helicopter trips identified some negative aspects of the BIWF. Charter boat operators' concerns about the negative impacts of the wind farm included increased fishing and boating activity in the BIWF area as well as navigational challenges around the turbines. There appeared to be consensus among the charter boat participants that boating and fishing activity in the wind farm area has increased in comparison to usage of that area prior to the wind farm's construction. For example one charter operator commented, "*I would agree with [another participant] that the [wind farm] towers concentrate the boats because it is very clear that people are there. Boats attract boats.*" He elaborated, "*I prefer to fish alone…. And that area now, you can't fish in that area and be alone. It is hard to say why. Whether people, a lot of people might not have known that that area was good prior to now...now it is 'oh yeah, check out the windmills, we're catching fish there.*'" Notably, many charter operators commented that navigational challenges included wind and sea conditions immediately around the turbines that required special caution when operating in close proximity. This was primarily an issue for fishing charter operators, and had some effect on fishing

technique, such as drift fishing. Helicopter operators noted that, while the vast majority of tourists who take their trips were supportive of the BIWF, some held negative views: "*The 10% [of the tourists] that aren't [supportive] are typically people that have been renting houses out there for twenty or thirty years and they don't want to look at it*."

Neutral: Many charter operators commented that the wind farm was a source of interest to their clients, such that they had developed their own wind farm "*spiels*." This caused several of them to emphasize the need for more and better wind farm information so that they could better respond to clients' questions. One charter operator commented, "*In the beginning of the trip, one of the very first conversations that usually arises is, are there any changes from the wind farm? Where does the power go?... Most of the conversations are more about what - where the energy is going and who's benefiting from the energy...as opposed to what the environmental impact is, or the impact on the fish*." Charter operators also discussed a range of environmental and science topics, including possible impacts of the BIWF, but largely did not frame these topics negatively. Rather, they described observations of environmental characteristics and changes. For example, charter operators spoke at length about whale observations in the BIWF area, but notably did not discuss the perception held by others that 2017 whale mortality events were caused by the BIWF.

3.2.5 Sector: Recreational Fishing

Recreational fishing was a topic of discussion in all six focus groups, and in many cases was a topic of substantial interest, regardless of the composition of the particular focus group. Recreational fishing-specific topics under the parent node "Recreational Fishing," which were the focus of discussion, included, in general, **the wind farm's effect on fish and fishing** and **the experience of fishing near or in sight of the wind farm.** These more general codes captured much of the broader discussion, including storytelling about specific fishing trips, that did not necessarily touch on specific fish or fisheries issues or concerns. More focused topics included **specific fish species observations; fishing around structure; specific named fishing grounds; increased fishing effort or activity** around the wind farm; **fish aggregation or enhancement**; and specific fishing practices, namely **spearfishing/diving** and **surfcasting** from land. It is notable that one of the most commonly discussed topics in the category of recreational fishing was **commercial fishing**. This is not surprising given that both industries target many of the same species and are subject to fisheries regulations. This topic is beyond the scope of this study, and therefore not discussed in depth in this report, but is noted because of its unexpected prevalence in these discussions.

Numerous other overarching topics and themes were brought up within the context of recreational fishing. The **Charter Excursions sector** was a common topic brought up in this context, particularly the topic of **charter clients' interest in the wind farm** (see above for

further discussion). This focus on charters is logical because of the overlap between sectors (most charter operators - in the region as well as in the focus group - offer fishing charters) and because many individual recreational fishermen also run fishing charters on their boats. Other topics of particular focus included **environmental and science considerations** (particularly **long term trends/environmental change**); **scientific questions** (including the need for **scientific research** and the topic of **whales and the wind farm**); **comparison to other events or projects** (specifically **other new wind farm proposals**); **navigation considerations** (most importantly **fishing and boating access**); the **wind farm as destination**; and **wind farm operations** (particularly the **construction process**). Discussion about all of these topics was largely framed in positive or neutral terms, with very few negative impacts identified.

Positive: Participants were most interested in talking about fishing, and as such, their positive comments focused more directly on their fishing experiences than on the wind farm itself. Fishermen emphasized the wind farm's function as an artificial reef, resulting in positive impacts in terms of fish aggregation or enhancement, specific fish species observations, and anglers' experience of fishing around structure. One participant commented that when he first heard about the project, "*One of the reasons why I was very interested in these structures is because we were having a very difficult time with developing artificial reefs [within Rhode Island waters]... so we saw this as something that is pretty big, and as long as we can fish next to it, it provides fishing structure for us*." Another participant with experience in spearfishing/diving commented, "*It has brought a lot of life to that area… and because of the structure that is there, it is interesting to dive on it. It is a beautiful structure underwater and has got a ton of marine life on it. When they were building it, we started diving before they got the blades on it, and it had - it started to develop crustaceans and small mussels right away. By this year, now, it is loaded with mussels, so a huge food source there, and if you run alongside it, you will see... there are scup, and we have seen big hammerheads on it, we have seen mahi on it, we have seen big schools of stripers on it…*"

Recreational fishermen also spoke positively of having full fishing and boating access around the turbines. They further commented that it is a sight or a destination that for many is now part of their experience. For example one angler commented, "*I am excited about it. I think it is fantastic. And I think people are excited about it. People ask me,"What is going on out there?" and then they go see it and they're like, 'Wow.' They can't believe it, it's huge. Even us coming back from Cox's [Ledge].. .during the day, and it's a super nice day, we're sitting under the towers, driving through them…. I think they are - I think they are pretty good looking…. I think they are an amazing piece of engineering*."

Last, recreational fishermen spoke about the broader benefits of wind farms to Rhode Island, assuming future projects also provide structure and that full fishing and boating access are granted. They emphasized these potential future benefits with regard to recreation and tourism

marketing, in some cases even questioning why the offshore wind energy industry isn't promoting this aspect. For example, one participant commented on Citi's 2017 television advertisement,[1] which featured a Deepwater Wind employee and the wind farm, and commented, "*I was surprised... had they shown, you know, a boat like mine in the area, or [another participant's] boat diving or something like that, so not only was it a good impact because we are doing this for the environment… [but] we have positive effects... show someone catching a fish, show us whale watching, show someone else sailing by where it didn't affect it*."

Negative: Recreational fishermen referenced a few negative impacts of the wind farm, though these comments were limited. These focused on increased fishing effort or activity around the wind farm, as well as some comments on negative experiences related to surfcasting from land within sight of the wind farm. Some participants commented that they have seen an increase in the number of fishing boats in the vicinity of the wind farm, noting that this is because the wind farm is now seen as a fishing destination--an easily locatable fishing spot. For example one participant commented, "*The rec guys can drive up to it [the wind farm]. They can't find the [fishing] spots that we [charter boat captains] know, so for them it makes it easy. It is easy pickings.*" Several described this within the context of greater fishing pressure and its possible impact on fish stocks, noting that this level of fishing activity could degrade the wind farm fishing experience over time. One commented, "*The [fishing] pressure, you know, if there were 25 boats there before, now when I go there, there are like sometimes 80 to 90 boats there*." Another commented, "*So the [fishing] pressure, depending upon the day, as time goes on, that is only going to increase because more people, of course…. When fish stop biting there, that is when that will decrease. So all of that added pressure is, is a concern.*"

Finally, one surfcaster who frequently fishes from Block Island shared the perspective of some of his fellow Block Island fishermen, who feel that the wind farm has negatively affected their fishing experience: "*I sought comments out from a lot of my peers and some of them live on the island, and it has come down with a lot of them to an aesthetic opposition. When they go to the south end, they have always been surfcasting the south end, and... when you are on the south end of Block, there is nothing. And there is nothing until you reach the Caribbean or wherever, depending on which way you are looking. And what they have told me now is some of them are really upset, when they go down to the south end, they have these things staring at them in the face... or at night you have the blinking red lights going on the whole time. And they are not thrilled about it*."

Neutral: Recreational anglers were particularly inclined to raise scientific questions about the impacts of the wind farm on fish and other species, or about changes in the environment more broadly. However, these questions were most often raised in a neither positive nor negative manner. For example, in discussing possible effects of the wind farm on species observed and

[1] https://www.youtube.com/watch?v=vn78IdI9O5A

caught at specific fishing grounds, one fisherman commented, "*I participate in a black sea bass research program and last fall I was anxious to try a spot that was a little bit to the left of turbine number five in a spot I had always caught sea bass for years. And I went there and I caught the same amount of sea bass that I thought I would, and the same size I thought I would. One trip, one example [of no change], I don't know if you would call that science.*" Another one added, "*And is a year or two enough time to change behavioral patterns of fish?*" Anglers also commented on wind farm operations, particularly the construction process. This was primarily within the context of describing fishing in the vicinity during this time, and, again, comments were largely not framed either positively or negatively.

3.3 Discussion: Overarching/Crosscutting Themes

In this section, the researchers report what they gleaned as overarching themes that cut across the discussions of multiple sectors. To some degree, this section functions as a broader "lessons learned" from the focus group sessions.

3.3.1 Aesthetic/Visual Descriptions and Reactions

The aesthetic and visual aspects of the BIWF were discussed across all five sectors, in all six focus group meetings, and were a dominant thread in these discussions. Participants used a broad range of words to describe the sight of the BIWF and described the view of the BIWF from different vantage points (on land; on water; from various locations on Block Island); in different weather conditions; during the day and at night; and in relation to other features on the surrounding land and seascape. This focus on aesthetic and visual aspects of the BIWF was notable, especially in contrast to the content analysis component of this study (Smith and Gilbert 2017), which found that economic considerations were much more commonly used in framing the BIWF in the media and public record than aesthetic or environmental considerations.

Focus group participants' responses to the aesthetic and visual aspects of the BIWF were predominantly either positive or neutral. Words and ideas used to describe the appearance of the turbines included but were not limited to "*elegant*," "*beautiful*," "*amazing*, "*engineering marvel*," "*awesome*," "*astounding*," "*pretty cool*," "*calming*," and "*aesthetic beauty*." Those who described the aesthetic/visual aspects of the BIWF in negative terms (in several cases repeating the views of others rather than of themselves) focused on the lights at night disrupting a previously dark sky, an "*eyesore*," or something that "*ruins*," "*disrupts*," or "*blocks*" the view.

A consistent thread throughout discussions of the aesthetic and visual aspects of the BIWF was the extent to which the wind farm fit with the landscape and the natural character of the surrounding area. For example, participants would discuss the BIWF's appearance in comparison

to other signs of development or large-scale infrastructure (e.g. the Newport Bridge, or Block Island itself), describing it in context and in relative terms to other aspects of the environment. At times, this discussion framed the wind farm in terms of its relatively small and accessible scale. Some participants noted that they would likely feel different about the visual impacts of a larger wind farm.

Some described the aesthetics of the wind farm in overtly positive and even artistic terms. For example one participant commented:

> "*When you look out there…. I like to say to people, Winslow Homer - he didn't paint a picture of a field, he painted pictures of houses in fields.... So if you don't have something to break the plane then you don't have an artistic arrangement, right? So yes, the view out there was nice - if there was a ship in it. So the tanker ship was going by, that was a beautiful view, right? If there were fishing boats out there, that was a beautiful view…? [but] if there was nothing out there and it wasn't a sunset...you can get that a lot of places. I think that you go out there at night, those structures break the plane, there's something to look at, the light reflects beautifully off of them. Like, you go out there at twilight and it is stunning... because the sun's setting on the other side, but it's all purple and pink and blue and the light is shining off of those [blades]. It's beautiful*."

Conversely, some described the aesthetics of the wind farm in explicitly negative terms, especially with regard to the loss of a dark night sky: "*I think we can all appreciate it, especially being boaters and sailors. We know what it's like to be out there on a black night with the stars just unbelievably blowing us away, and you get something like this out there…. It just sort of reduces that particular magic that we all love about the ocean*."

3.3.2 Wind Farm as 'Attractant'

A constant theme across all five of the sectors, and all six of the focus groups, was that the BIWF has become an 'attractant' - in many cases drawing tourists or recreational participants to the site in some way. In the case of boat-based activities, participants described either their own interest of that of their clients, friends and family, or other fishermen in seeing the BIWF. This was in many cases described in positive terms, such as tourist interest in the wind farm "*attraction*" leading to the development of new business opportunities including wind farm-focused ferry and charter boat tours, or the turbine foundations seeming to physically attract new marine life, thus enhancing the fishing experience and attracting more anglers to the area. The wind farm was also seen to offer benefits to regular charter fishing trips, providing another point of interest as part of a trip, and a possible destination in case the fishing isn't great: "*It is like a tourist item, an attraction. We fish, but we go to the wind farms to get close to them, to look at them. People are interested in them. It has enhanced my business, that part of my business*." Others saw potential

downsides to this phenomenon, especially due to the increase in fishing and boating activity within this small area of ocean. Some fishing participants raised concerns about increased fishing pressure in this area, and pointed out that the turbines drew inexperienced anglers to the area. Others noted that this increase of activity somewhat reduced their own enjoyment of fishing that area.

In the case of land-based activities, especially on Block Island, the BIWF was described as a site of great interest to visitors, with many visitors asking about it in the Block Island Visitors Center or up at Southeast Light, where lighthouse docents and staff have been fielding many questions about the BIWF.

Importantly, however, several participants pointed out that the wind farm's role as 'attractant' may only be due to its current status as a "*novelty*" - a brand-new development and the "*first in the nation*" - which may fade with time. In particular, focus group participants who were involved in the charter boat industry expressed caution about making large business investments in the wind farm. One commented, "*five years from now, it's not… I don't know, it's just gonna fade into the background*."

3.3.3 Physical and Visual Access to the Wind Farm and Environs

Related to the cross-cutting theme of the wind farm as 'attractant' is that of access. Participants in all five sectors spoke in largely positive terms about the BIWF specifically because they have access to it in some way - either physically, to the waters immediately surrounding it, or visually, due to its close proximity to shore and to nearby ports and harbors. One element of access is physically being able to navigate or fish in the immediate vicinity of the turbines, right around their bases. Charter and recreational fishing participants noted in no uncertain terms that this kind of fishing access was central to their positive attitudes toward the BIWF: "*As long as access is not shut off it is only going to be a positive addition to the offshore program.*"

Another element of access is distance by boat to the wind farm. Charter, boating, and fishing focus group participants emphasized that the wind farm is most efficiently accessed from Block Island harbors, whereas the distance from mainland harbors (e.g. Point Judith) is inconvenient for a sightseeing trip. One participant commented, "*Coming from Point Judith out there is...16 miles, that is 32 miles round trip. That is a lot of time, and you have to charge for it, and people don't want to spend that money*." This participant further clarified that this cost includes fuel as well as "*hours on the engines, everything*."

A final element of access is visual access, i.e. the ease of viewing the BIWF, either from shore or by boat. Boating or fishing participants who described the aesthetic/visual aspects of the BIWF in positive terms emphasized the benefits of viewing the project "*up close during the*

construction process" or "*up close and personal*." Similarly, those describing the view from Block Island - again, in positive terms - emphasized their proximity. Several participants described their perceptions of the turbines' size from different vantage points on land. One noted that from Southeast Light, people think "*That's not three miles; it can't be three miles. It's a matter of perspective… These things are massive*." Another commented, "*you come in on the ferry or you're sitting on the beach, they look larger than if you're standing at the Southeast Lighthouse or looking straight out at it.*" One participant explicitly linked close visual access to the wind farm with potential benefits to tourism: "I*'m just thinking...whether you're saying it's a benefit or detriment to tourism, it wouldn't be either for them [other communities and other proposed future wind farms], it's so much further away…. So really… if they decide that it's a benefit to tourism, then we're the ones that are benefitting. Do you see what I'm saying? - because you as a tourist want to go look at a wind farm*." Another participant was even more explicit:

> "*My understanding is the next stage is a farm of thirty or something like that, that will be much further out to sea, thirty miles out or something that you won't see…. So here is my point…. If you have these big projects that people are reading about in the paper and they're seeing about on TV and they are thirty miles out or they are fifty miles out or they are a hundred miles out, they are never going to see them, but the Block Island Wind Farm is so totally accessible, you know - you can see them from the Bluffs, you can hop in a boat if someone ran regular trips and you can see it. Why doesn't Rhode Island position that as we are 'The Gateway to the Future'? In terms of energy, you know… have the turbine signs on Mohegan Bluffs, make it a tourist destination because you can see the future right there….something that is normally way, way out of sight, beyond the reach of most of us. You can experience firsthand. Turn it into a benefit*."

3.3.4 Public Process

Across all five of the sectors, focus group participants spoke about aspects of the public process through which the BIWF was planned, sited, permitted, and constructed. This topic was never prompted as a point of discussion; in all cases participants chose to raise this topic. In some cases, discussion focused on the project proponents (e.g. Deepwater Wind) while in other cases, this focused on state and/or local decision-making (e.g. decisions made by the town of New Shoreham (Block Island) or the Rhode Island Public Utilities Commission). Throughout these discussions, focus group participants - who in most cases were also Rhode Island residents - made it clear that their views of the BIWF's effect on tourism and recreation were informed by their views and broader experiences as Rhode Islanders. Further, in several cases - such as recreational fishing and Block Island tourism - participants' views were shaped by the extent to which they had participated in the BIWF planning, siting, and permitting process. For example, recreational fishermen participants referred repeatedly in somewhat positive terms to their

involvement in the RI Ocean Special Area Management Plan planning process. By contrast, Block Island participants referred repeatedly in negative terms to the state decision-making process as well as the work of their own town council in dealing with this project. One Block Island participant explained that a common complaint "*is more process, how these, this was a done deal. Let's just be realistic about this - this started ten years ago, but it was a done deal before it even hit, the news came to this community. Alright?... Whether or not we wanted it, it would have happened with or without us, and that's the reality of it and, and that has to be realized…. You know, we have zero jurisdiction beyond 600 feet of our shores. So they could do whatever they want, the state…. And so this was a done deal…. I think it would have happened with or without us*." Another commented, "*I think the negatives revolve around more the politics behind it than the actual physical structures*."

3.3.5 Wind Farm Information and Misinformation

In each of the five sectors, the topic of wind farm information - either participants' questions about how the wind farm worked, or the demand for such information from tourists and recreational participants - was raised. Again, this was an unprompted topic of discussion and an unexpected finding from this research. Whereas the research team coded the interest in or need for wind farm information as neutral, i.e. neither a positive nor a negative effect, it is possible that this demand for information could be interpreted positively as an opportunity for Rhode Island's tourism and recreation industries to capitalize on wind farm interest in connection with their own marketing and business planning. In some cases, discussion of wind farm information focused on questions that participants had fielded from tourists or recreationists (e.g. charter boat clients or Visitors Center patrons). Some participants sought access to informational signs, pamphlets, or other items that could convey factual information about the BIWF to visitors and clients. In other cases, discussion of wind farm information meandered into participants' own questions about how the wind farm worked, revealing in some cases fundamentally different understandings of how the BIWF provided electricity to both Block Island and the mainland.

One of the most important aspects of these wind farm information discussions had to do with rumors, misunderstanding, factually incorrect information, or "*misinformation*" (i.e. inaccurate information which appears to be deliberately spread). These discussions took many forms. Some participants pointed out how misunderstanding sometimes led to BIWF criticism or broader opposition. For example, some pointed out how people are "*very quick to criticize*" when they notice that all five turbines aren't turning: "*The opposition [says] - 'why aren't they all running'?*" and another added, "*Yeah, people are suspicious when one is down. 'Look, they're broken already!' Even though it's probably just turned off, you know.*"

In another example, participants in five of the six focus group meetings raised the subject of whale mortality events in the area during 2017, including two groundings on Block Island. They

further observed that these events were broadly attributed to the BIWF despite the fact that there was no evidence to support this. In one participant's words, "*You know, just this past summer, there were dead marine mammals washing up on Block Island, and that has come up, and there are, you know, people blaming the windmills for that*." This event, which played out in the news media, on social media, and in the interpersonal interactions of many focus group participants, both on Block Island and the mainland, was characterized by several participants as "*fake news*" or "a *lot of misinformed negative buzz. Sort of idle chatter*."

3.3.6 Tourism and Recreation Marketing and Promotion

Another topic of discussion that spanned most of the sectors and focus group meetings was that of tourism and recreation marketing and promotion. This topic arose, entirely unprompted, within the context of both Block Island and mainland tourism and within the context of charter excursions and recreational fishing. Focus group participants, including tourism professionals, charter boat captains, and even private recreational anglers, discussed how the BIWF was, or could be, used in marketing and promoting tourism and recreation. In particular, charter operators and recreational anglers emphasized what they saw as the positive benefits of the BIWF to fishing, and argued that this could be used to both promote wind farms and promote Rhode Island, more broadly, as a recreation and tourism destination. This was discussed as a potential opportunity both for the state of Rhode Island and for Deepwater Wind and the offshore wind industry more broadly (see e.g. discussion of the 2017 Citi ad above). For example, one participant commented, "*I'm just surprised that the tourism and the recreation component [of the wind farm] wasn't explored more...you know, like, from a PR perspective… for the positive [impacts]*." At times, some participants - particularly charter captains and fishermen - broadened this discussion to what they saw as the need for a statewide marketing strategy that better capitalizes on the state's unique recreation and tourism assets, including its fishery. Last, it is notable that both during the focus groups and in other correspondence related to this research, Block Island tourism participants shared how they are trying to determine how best to address the BIWF in their marketing materials.

3.3.7 Weighing the Costs and the Benefits

Finally, a common theme through much of the focus group discussion was the ways in which participants weigh the costs and the benefits of the BIWF when discussing the project. This informal individualized 'cost-benefit analysis' was part of discussions of the wind farm's effect on tourism and recreation, as well as the wind farm's effect more broadly on the community and region. Some participants in the recreational boating and sailing focus group explicitly used the language of cost-benefit analysis to frame their discussion. One participant commented, "*I'd just as assume they weren't there. I spent a good bit of my life out on the ocean looking out at the horizon, and it's just a wonderful thing, looking out over the empty sea horizon. However, if it's*

a net benefit to the people of Block Island - it reduces their energy cost and provides their energy - then I think overall I'm in favor of them. And I think that's one of the main things. Aesthetically, I think it's a negative, but if it's a benefit to the people there, then it's good." A second followed up with "*...it's like your comment about the cost-benefit, basically putting up with it because it's doing good. When does it start becoming a bad?*" And a third added, "*But the cost-benefit analysis - it's would you rather have some wind turbines, or would you rather have two more massive cooling towers like we have in Brayton Point? So change is hard, progress is good…. We are kind of at, I don't want to use the term tipping point, but at a transition where, you know - we are going to embrace the transition.*" With regard to tourism and recreation, participants described potential costs and benefits, particularly on Block Island, with costs being the negative reactions of some people including seasonal residents, and the benefits being the positive reactions of some tourists who are interested in the wind farm and paying for wind farm taxi or boat tours. Other types of trade-offs were expressed by other participants as well, including weighing benefits such as clean energy, environmental ethics, and fish habitat with a changed viewshed, changes to fishing grounds, and the possibility of larger-scale developments. Several participants noted that their personal cost-benefit calculations would likely be different for a larger scale wind farm.

4. Conclusion

Focus groups were a valuable component of our broader study of tourism and recreation impacts of the Block Island Wind Farm. Throughout our six 105-minute sessions, the 40 participants from five different sectors, including both boat-based and land-based activities, were enthusiastic about sharing their experiences from the construction and first two summer seasons of wind farm operations. In sum, these experiences were largely positive, although there are certainly critics of the wind farm and some drawbacks were acknowledged. Much of their input centered on the aesthetics of the development and its fit into this coastal environment, known for its natural character. By and large, the wind farm is acting as an attractant, with tourists interested in seeing or experiencing the development, particularly with regards to perceived fishing benefits. This is, in part, due to its proximity to Block Island and the continued open access of fishing and boating traffic to the area. Focus group participants felt that the wind farm could be featured in tourism marketing, and that this opportunity has been mostly a missed one thus far. They also believe that quality information resources are needed, a point emphasized by confusion among the focus group participants regarding how the wind farm works and electricity is distributed. The research team notes that the lack of available information has, in some cases, supported negative perceptions about the wind farm. The team further notes that, for Rhode Island residents, their experiences with the process of siting and developing the wind farm colors their current opinions of the project and how it affects their recreational experiences. While the focus group method has some limitations, the insights through these six group sessions are an important addition to a

multi-methods assessment and will contribute significantly to the ultimate goal of developing a suite of indicators of tourism and recreation impacts of the Block Island Wind Farm.

4.1 Focus Groups and Year 2 Participant Observation

The outcome of focus group research underscores the importance of focusing participant observation in 2018 (Year 2) on some sectors in particular, most importantly mainland coastal recreation and tourism. The focus group team's challenges in recruitment for this sector, and the findings with regard to this sector, suggest that there *may* be neither positive nor negative effects of the BIWF on mainland tourism and recreation. However, more research is needed to corroborate this, and Year 2 of participant observation provides an immediate opportunity to gain further insight into mainland tourism. Year 2 also provides an additional opportunity for the PO research team to conduct targeted interviews with activities which were under-represented in the focus groups due to recruitment challenges.

To a lesser extent, focus group research underscores the importance of expanding Year 2 participant observation in the boat- or excursion-based sectors. For example, no Year 1 participant observation focused on the boating/sailing sector, and 2018 provides many opportunities for PO in connection with some high-profile boating and sailing events. Further, focus group research provided insight into the experiences of some other non-fishing charter excursions, including helicopter trips and passenger vessel excursions not specifically focused on the wind farm. Participant observation of these activities will provide further insight into the ways in which these trip operators and clients experience the wind farm.

4.2 Focus Groups and Indicators

Upon initial analysis of the focus group transcripts, the research team identified a series of possible indicators for inclusion in the indicator development process, as well as ideas for measuring/tracking these indicators and for organizing them in a logical manner. These included possible draft indicators addressing boating in general; charters; fishing activities (charter or private recreational); the tourist experience and tourism products and services; aesthetics/visual; Block Island-specific indicators including real estate and other topics; community considerations; demographics; media/marketing; and the broader concept of place attachment. The focus group team intends to propose focus group findings and indicator ideas to the entire research team, compare findings and ideas with those from the content analysis and participant observation phases of research, and develop an overarching set of draft indicators. Methods and findings for this phase of the project will be detailed in the final project report.

The focus group team also plans to share draft indicators with stakeholders who had participated in the focus group meetings described herein. This will be done in the form of a series of stakeholder meetings to be convened in April 2018. The purpose of these meetings will be to solicit stakeholders' feedback on the draft indicators. Specifically, stakeholders will be asked to propose additional indicators, suggest refinements or improvements of proposed indicators, and prioritize the most important indicators. These meetings are beyond the scope of the focus group scope of work and will be reported in the final project report.

5. References

Aitchison, C., N. E. Macleod, and S.J. Shaw. 2000. *Leisure and Tourism Landscapes: Social and Cultural Geographies.* New York, NY: Routledge.

Bazeley, P. 2007. *Qualitative Data Analysis with NVivo*. London: Sage Publications.

Braun, V. and V. Clarke. 2006. "Using thematic analysis in psychology." *Qualitative Research in Psychology* 3: 77-101.

Frantal, B. and J. Kunk. 2011. "Wind Turbines in Tourism Landscapes: The Czech Experience." *Annals of Tourism Research 38(2)*: 499-519.

IHS Consulting. 2013. *Rhode Island Tourism 2013*. Online at http://www.Discovernewport.Org/Documents/Industry-Resources/Ri-Tsa-2013-With-Regional-Data.Pdf

Lilley, M.B., Firestone, J. & Kempton, W. 2010. "The Effect of Wind Power Installations on Coastal Tourism." *Energies* 3:1-22.

NOAA Office for Coastal Management. 2014. NOAA Report on the U.S. Ocean and Great Lakes Economy. Online at https://coast.noaa.gov/data/digitalcoast/pdf/econ-report.pdf.

McCann, J. (2012). *Developing Environmental Protocols and Modeling Tools to Support Ocean Renewable Energy and Stewardship.* U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Herndon, VA., OCS Study BOEM 2012-082, 626 pp.

Reed, M.S., E.D.G. Fraser, and A. J. Dougill. 2006. An adaptive learning process for developing and applying sustainability indicators with local communities. *Ecological Economics* 59: 406-418.

Smith, H., & Gilbert C. (2017). *Appendix II: Identifying Indicators of Offshore Wind Benefits: Content Analysis.* Kingston (RI): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-068. 14 pp.

Stoffelen, A. and D. Vanneste. 2015. "An Integrative Geotourism Approach: Bridging Conflicts in Tourism Landscape Research." *Tourism Geographies: An International Journal of Place, Space, and Environment* 17(4): 544-560.

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).

OCS Study
BOEM 2018-068

Appendix VI: Social Indicator Sets: Measuring the Effects of Offshore Wind Farms on Recreation and Tourism

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

OCS Study
BOEM 2018-068

Appendix VI: Social Indicator Sets: Measuring the Effects of Offshore Wind Farms on Recreation and Tourism

2018

Prepared under Agreement Number MP16PC00016
By
University of Rhode Island
45 Upper College Rd.
Kingston, Rhode Island 02881

US Department of the Interior
Bureau of Ocean Energy Management
Office of Renewable Energy Programs

BOEM
Bureau of Ocean Energy Management

DISCLAIMER

Study collaboration and funding were provided by the US Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Agreement Number MP16PC00016. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the US Government, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

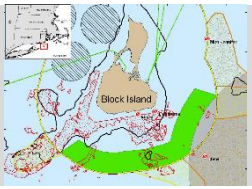
REPORT AVAILABILITY

To download a PDF file of this report, go to the US Department of the Interior, Bureau of Ocean Energy Management website at www.boem.gov/Environmental-Studies-EnvData/, click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2018-068.

CITATION

University of Rhode Island. Appendix VI: Social Indicator Sets: Measuring the Effects of Offshore Wind Farms on Recreation and Tourism. 2018. US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. OCS Study BOEM 2018-068. 25 pp.

I. CONSIDERATIONS FOR PLANNING



What should be considered when planning to develop and implement an offshore wind farm?

Why this is important: Fishing charter operators, recreational fishermen, and other charter excursions are economic drivers for coastal dependent tourism communities. The construction and operation of an offshore wind farm at too great a distance may inhibit the `potential economic benefits to their business due to practicality or cost-effectiveness. Additionally, the wind farm's visibility from tourism and recreation destinations, locations, and activity areas may affect individuals' choices of whether or how frequently to visit these sites and engage in related activities, potentially having positive, negative or neutral effects on the recreation and tourism sector.

How to measure: You can choose one or more of the following indicators to understand how planning elements change the wind farm's effect on recreation and tourism. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Considerations for planning can also be affected by other overarching aspects of the wind farm that measured by all other indicators sets.

Indicator	***What is this?***	***How do I measure it?***	***Notes***
1. Distance from ports/harbors to wind farm	The effects of a wind farm on fishing are related to its distance from ports and harbors. Fishing charter operators or private anglers may not experience potential benefits to fishing if the wind farm is too far to travel from ports/harbors than is practical or cost-effective.	Threshold based on average charter boat speed; could also involve fuel costs/fuel efficiency.	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
2. Distance from ports/harbors or airports to wind farm	The effects of a wind farm on charters are related to its distance from ports, harbors and airports. Charter operators may not experience potential benefits to charter businesses if the wind farm is too far from these locations than is practical or cost-effective to reach for a charter trip.	Threshold based on average charter boat speed; could also involve fuel costs/fuel efficiency.	
3. View from tourism/recreation destinations, locations, and activity areas	The sight of the wind farm may affect tourists and recreational participants' choices of where to go and what to see. The wind farm's visibility from tourism and recreation destinations, locations, and activity areas may affect individuals' choices of whether or how frequently to visit these sites and engage in related activities. Importantly, the wind farm's visibility from a given location is not an impact or benefit in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view. This indicator is best used in combination with others that directly measure individuals' reactions to the wind farm and/or tourism and recreation choices.	Number of sites/activity areas from which turbines are visible; number of days visible in a given season; distance of WF from locations and activity areas; visibility in different weather; light characteristics at night	

II. RECREATIONAL BOATING/SAILING

How is the wind farm affecting recreational boating and sailing activities and participants' experiences?

Why this is important: Recreational boating and sailing is economically, socially, and culturally important to many coastal tourism-dependent communities. The construction and operation of an offshore wind farm may disrupt or enhance these activities due to its physical location, may positively or negatively affect boaters' recreation experiences, or may have no impacts. In Rhode Island, stakeholder input and social science research confirmed that a wind farm may have a range of effects on recreational boating and sailing.

How to measure: You can choose one or more of the following indicators to track the effect of the wind farm on recreational boating and sailing. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Recreational boating and sailing can also be affected by other overarching aspects of the wind farm that are measured by our ***Coastal/Marine Tourism, Tourism/Recreation-Dependent Communities***, and ***Visual Effects*** indicator sets. Please also see ***Recreational Fishing/Charters*** and ***Boat and Aircraft Charters*** indicator sets for related topics.

Indicator	***What is this?***	***How do I measure it?***	***Notes***
4. Dives	Recreational diving is a popular coastal activity that may take place at the wind farm site. The wind farm may positively or negatively affect diving access or the quality of diving in that area, or it may become a popular new diving destination. There may also be no effect.	Number and/or type and/or quality of dive trips (e.g. spearfishing, general recreation)	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
5. Navigational access	Recreational boaters and sailors rely on navigational access around the wind farm and cable route. Open access and wind farm placement could enhance boating and sailing, while area closures or navigation limitations could negatively affect these activities. Alternatively, it may have no effect.	Presence/absence of boats in the area, acreage of closure, or length of closure; height limitations (clearance under blade tip); anchoring limitations (turbine base or cable).	
6. Navigational effects	Boating safety and convenience are important to boaters and sailors. The wind farm may cause safety concerns, or may cause boaters to detour from traditional routes. Wind farm location and charting could also enhance boating by functioning as additional navigational aids. There may also be no effect.	Number of marine incidents directly related to WF; location of WF along predominant boating routes; length of detour from these routes.	
7. Vessel traffic	The quantity and character of boating traffic can affect boaters' and sailors' recreational experience. The wind farm may result in an increase or decrease of traffic, or a change of the types of vessels in the area. There may also be no effect.	Number and/or type, and/or density, of vessels.	

III. RECREATIONAL/CHARTER FISHING

How is the wind farm affecting fishing activity and the fishing experience for recreational anglers and charter operators?

Why this is important: Recreational and charter boat fishing is economically, socially, and culturally important to many tourism-dependent coastal communities. The construction and operation of an offshore wind farm may affect fishing activities due to its location and effects on the ecosystem, and may affect anglers' fishing experience, either positively or negatively. In Rhode Island, stakeholder input and social science research confirmed that a wind farm can have a wide range of positive, negative, or neutral effects on recreational and charter fishing.

How to measure: You can choose one or more of the following indicators to track the effect of the wind farm on recreational/charter fishing. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Recreational/charter fishing can also be affected by other overarching aspects of the wind farm that are measured by our ***Coastal/Marine Tourism, Tourism/Recreation-Dependent Communities***, and ***Visual Effects*** indicator sets. Please also see the ***Recreational Boating/Sailing*** and ***Boat and Aircraft Charters*** indicator sets for related topics.

Indicator	*What is this?*	*How do I measure it?*	*Notes*
8. Boat-based tourist and recreation trips or businesses related to wind farm	A wind farm may directly affect fishing charter businesses. Existing fishing charter businesses may offer new wind farm-related trips or packages or purchase new vessels to accommodate more clients, or new businesses may open. There may also be no increase or only a temporary increase in business.	Number of new businesses, or business investment in new boats, or tours/trips/packages offered by existing businesses; number of participants on tours/trips/packages; or percent of business revenue based on wind farm-related business. Measurement should consider scale differences between businesses (e.g. ferry v. charter boat) and should be longitudinal to account for possible short-term effects to these businesses.	
9. Visitor interest in seeing wind farm by boat	A wind farm may indirectly affect fishing charter or party boat businesses. Existing and new clients may ask to see the wind farm as part of a fishing trip, or may request a special wind farm fishing trip, which could result in more clients or an enhancement of the client experience. Alternatively, there may be no effect.	Number of requests to charter boat captains or charter businesses; client perception of charter experience/quality of trip (measured through surveys)	
10. Fish abundance and distribution around wind farm and cable route	A wind farm and cable may have actual or perceived effects on the abundance and distribution of recreationally popular species. Turbine base design and materials function as an artificial reef. This could positively impact fish abundance and distribution through aggregating fish and increasing productivity. In contrast, it could deter or negatively affect populations of popular species. Anglers/captains may perceive changes in abundance/distribution which would affect their fishing experience. There may also be no effect. This is a social indicator which may be evaluated with social and/or biological data.	Changes as measured by fish surveys, or attitudes toward this topic	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
11. Fish diversity around wind farm and cable route	A wind farm and cable may affect the diversity of recreationally popular species. The structure provided by the wind farm and cable acts as an artificial reef and may attract popular species not previously found in the area, or deter popular species. Anglers/captains may also perceive changes in diversity which would affect their fishing experience. There may also be no change. This is a social indicator which may be evaluated with social and/or biological data.	Changes as measured by fish surveys, or attitudes toward this topic	
12. Fishing access around wind farm and cable route	Anglers and captains rely on access to prime fishing areas. Official or de facto short- or long-term access limitations would limit anglers' ability to experience the potential benefits of fishing the wind farm.	Presence/absence, or acreage of closure, or length of closure; anchoring limitations. This is distinguished from navigational access because fishing access relies on access to the benthos and the entire water column.	
13. Fishing activity and practices near wind farm	The wind farm may change fishing activity and practices that can be conducted in the area. Anglers and captains may change gear types or techniques to maneuver around the wind farm. These changes may negatively or positively affect anglers' and captains' fishing experience or may have no effect.	Presence/absence, and/or type, and/or density of fishing boats, gear and practices. Includes previous use of wind farm area for fishing as well as type of fishing practices (e.g. drifting) in area.	
14. Fishing pressure around wind farm	The wind farm may change recreational fishing effort around the wind farm. More anglers and charter operators may make more trips to fish around the wind farm. This change could negatively affect fish resources in the area or perceptions of the fishing experience, or it could have no effect.	Changes in fishing effort (to measure actual or perceived impacts on fishery resources at the site).	

IV. BOAT AND AIRCRAFT CHARTERS

How is the wind farm affecting boat and aircraft charter businesses and the experience of their clients?

Why this is important: Charter businesses offering sightseeing or pleasure cruises by boat or aircraft are common in many tourism-dependent coastal communities. The construction and operation of an offshore wind farm may affect charter business opportunities and the experiences of charter clients, either enhancing or diminishing business and clients' experiences. Alternatively, it may have no effects. In Rhode Island, stakeholder input and social science research demonstrated that a wind farm may have a range of effects on charter businesses and clients.

How to measure: You can choose one or more of the following indicators to track the effect of the wind farm on boat and aircraft charters. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Boat and aircraft charters can also be affected by other overarching aspects of the wind farm that are measured by our ***Coastal/Marine Tourism, Tourism/Recreation-Dependent Communities***, and ***Visual Effects*** indicator sets. Please also see the ***Recreational Boating/Sailing*** and ***Recreational/Charter Fishing*** indicator sets for related topics.

Indicator	*What is this?*	*How do I measure it?*	*Notes*
15. Boat or aircraft tourist and recreation trips or businesses related to wind farm	A wind farm may directly affect boat or aircraft charter businesses. Existing charter businesses may offer new wind farm-related trips or packages or purchase new vessels or aircraft to accommodate more clients, or new businesses may open. There may also be no increase or only a temporary increase in business.	Number of new businesses, or business investment in new boats/aircraft, or tours/trips/packages offered by existing businesses; number of participants on tours/trips/packages; or percent of business revenue based on wind farm-related business. Measurement should consider scale differences between businesses (e.g. ferry v. charter boat) and should be longitudinal to account for possible short-term effects to these businesses.	
16. Visitor interest in seeing wind farm by boat or aircraft	A wind farm may indirectly affect boat or aircraft charter businesses. Existing and new clients may ask to see the wind farm as part of a trip, or may request a special wind farm trip which could result in more clients or an enhancement of the client experience. Alternatively, there may be no effect.	Number of requests to boat or aviation tour operators, charter boat captains, charter businesses, etc; client perception of charter experience or quality of trip (measured through surveys)	

V. COASTAL/MARINE TOURISM

How is the wind farm affecting tourism businesses and tourists' experiences in adjacent coastal communities?

Why this is important: Coastal and marine tourism is a critical component of many coastal economies. An offshore wind farm may affect tourism businesses and tourists' experience in adjacent coastal communities. It may affect tourists' choice of destination, the numbers of tourists visiting destinations, or tourists' choices of things to do, see, or purchase during their visit. Tourism businesses may expand or contract in response to these changes, and tourists' experiences may be enhanced or diminished. In Rhode Island, stakeholder input and social science research revealed that an offshore wind farm may have direct and indirect positive, negative, or neutral effects on tourism businesses and the tourist experience.

How to measure: You can choose one or more of the following indicators to track the effect of the wind farm on coastal and marine tourism. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Coastal/marine tourism can also be affected by other overarching aspects of the wind farm that are measured by our ***Tourism/Recreation-Dependent Communities***, and ***Visual Effects*** indicator sets. Please also see the ***Recreational Boating/Sailing***, ***Boat and Aircraft Charters***, and ***Recreational/Charter Fishing*** indicator sets for related topics.

DIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
17. Tourist interest in wind farm educational, scientific or environmental information	A wind farm may affect tourists' experiences and choices at their destination, particularly when the wind farm is visible or accessible from that destination. Tourists' interest in obtaining wind farm information may provide an indication of the extent to which the wind farm is influencing their tourism experiences. The number or character of requests for wind farm-related educational, scientific or environmental material suggests interest and curiosity and thus may potential tourism benefits, whereas the absence of requests may indicate no effect.	Number of asks for educational, scientific, environmental or technical information about the wind farm in visitors center or other venues. Should include consideration of context (i.e. availability of information which may prompt interest).	
18. Tourist interest in viewing the wind farm	A wind farm may affect tourists' choices of what to see or do at their destination, particularly when the wind farm is visible or accessible from that destination. Tourists may ask to see the wind farm as part of a tour, or may seek out sites from which the wind farms can be viewed, suggesting interest or curiosity. Tourists may also ask for locations from which the wind farm cannot be viewed, suggesting a negative effect on their experience. Alternatively, there may be no effect.	Number of requests to visitors centers, tour operators, taxis, or other land-based tourism businesses. Should include consideration of context (i.e. availability of information which may prompt interest).	
19. Tourists at sites in viewshed of or proximity to the wind farm, cable and related infrastructure	A wind farm may affect tourists' choices of what sites to visit at their destination, particularly when the wind farm is visible or accessible from that destination. Tourist visitation may increase at sites within view of the wind farm, or perceptions of the tourist experience/quality of the visit may be enhanced, suggesting a potential tourism benefit, or alternatively visits may decrease or perceptions of the experience may be diminished at those sites, suggesting a potential tourism impact. Alternatively, the wind farm may have no effect on site visits.	Number of visitors or perceptions of the tourist experience or quality of the trip.	

DIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
20. Tourists and recreators at beaches in view of the wind farm	A wind farm may affect tourists' choices of what beaches to visit at their destination, particularly when the wind farm and infrastructure is visible from or affects that destination. Visitors to beaches within view of or near the wind farm and infrastructure may increase, suggesting a potential tourism benefit, or alternatively may decrease at those sites, suggesting a potential tourism impact. Alternatively, the wind farm may have no effect on beach visits.	Number of visitors.	
21. Wind farm-related land-based tourist programs and tours	A wind farm may affect tourism businesses offering land-based programs, packages, and tours. Businesses may offer new wind farm-related programs and tours, or may incorporate the wind farm into existing programs and tours. Alternatively, businesses may see no such expansion opportunities, or such opportunities may be temporary.	Number of new tours, trips, programs, or packages, and/or inclusion of wind farm on existing tours and packages, and/or number of participants in those experiences, or percent of business revenue based on wind farm-related business. Should be measured longitudinally to account for possible short-term effects to these businesses.	
22. Wind farm-related retail products and sales	A wind farm may affect the market for retail products developed and sold at tourism destinations. Retailers may design and sell wind farm-related products as part of that tourism destination, suggesting a tourism benefit. Alternatively, retailers may make and/or sell no related products, indicating no benefit.	Number and/or variety of new products and/or sales of products or percent of business revenue based on wind farm-related business	

DIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
23. Tourist demographics	A wind farm may affect the demographics or tourism markets attracted to a tourism destination, especially if the wind farm is visible or accessible from that destination. Visitors from different points of origin, or with specific interest in science, engineering or the environment may increase, suggesting a potential tourism benefit. Alternatively, visitors seeking a remote or natural area may decrease, suggesting a potential tourism impact. Alternatively, there may be no effect.	Changes in point of origin, reason for visit or activity, tourism/recreation interests, tourism markets, or other demographic attributes	
24. Shoulder season use for wind farm tourism/recreation activities	A wind farm may influence the seasonality of coastal tourism and recreation businesses. Businesses may use the wind farm as an attraction to help market shoulder season (spring and fall) tourism because it does not rely on beach weather. This suggests a potential tourism benefit. Alternatively, businesses may not use the wind farm this way, suggesting no effect.	Number of new wind farm-related trips, programs, packages, or discounts pre-June or post-August	

INDIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
25. Wind farm clustering with other attractions/destinations	A wind farm's clustering with, or proximity to, other attractions or destinations may shape its potential effect on tourism and recreation. Tourism/recreation businesses and participants may be more likely to incorporate the wind farm into their activities if they consider it convenient to other points of interest (e.g. scenic overlooks or fishing grounds), suggesting potential benefits. Conversely, they may not do so if they consider the wind farm too far from other attractions, suggesting no effect.	Conducting ongoing assessments of the wind farm's distance from or proximity to new, developing, or existing destinations or scenic areas may provide insight into this potential tourism benefit. This indicator spans both boat- and land-based attractions, destinations, and tourism experiences.	
26. Effect of wind farm and cable on marine and avian species popular with wildlife viewers	Tourists' and recreational participants' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on wildlife. A wind farm and/or cable may have actual or perceived effects on species with popular wildlife viewers, such as whales and birds. Tourists or participants perceiving positive effects (e.g. wildlife attraction) may increase their tourism and recreation activities in the area, suggesting potential benefits, whereas those perceiving negative effects (e.g. wildlife harm or death) may decrease their activities in the area, suggesting potential impacts. Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data.	Presence/absence, and/or change, and/or perceived change in abundance/distribution of or harm to local populations of popular viewing species including birds, whales, dolphins, turtles and other charismatic species. Spans both boat- and land-based tourism and recreation experiences.	

INDIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
27. Effect of wind farm and cable on species considered undesirable	Tourists' and recreational participants' choices of where to go and what to do may be influenced by the wind farm and cable route's effect on species considered undesirable. A wind farm and cable/or cable may have actual or perceived effects on species considered undesirable (e.g. sharks for those swimming, or seals for those fishing). Those perceiving negative effects (e.g. attracting sharks) may decrease their activities in the area, suggesting potential impacts. Alternatively, there may be no effect. This is a social indicator which may be evaluated with social and/or biological data.	Presence/absence, and/or change, and/or perceived change in presence or abundance/distribution of species considered to be undesirable. Characterization of any species as undesirable is based on tourists/recreationists' perceptions.	
28. News coverage related to wind farm	Coastal and marine tourism is affected by tourists' choices of where to visit and what to see and do. The amount of wind farm-related coverage in general news or tourism and recreation-specific publications has the potential to shape tourists' knowledge, perceptions, and behavior, including choice of tourist destination. The character of wind farm coverage in general news or tourism and recreation-specific publications could also affect tourism choices. Coverage of the wind farm as a positive development, in terms of technology, the environment, and new opportunities for recreation, could indicate potential tourism benefits, whereas coverage of the windfarm as a negative development, in terms of viewshed, the coastal experience or impacts to wildlife and the environment, could indicate potential tourism drawbacks. Alternatively, there could be no effect.	Number of articles, number of references to environmental or economic risk or benefit, or character of reporting; must exclude any publications/articles paid for by developer or wind energy advocate; only includes pieces written by journalists and published in an edited publication.	

INDIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
29. Social media trends	Coastal and marine tourism and recreation are affected by tourists' and participants' choices of where to visit and what to see and do. Wind farm-related social media posts provide insight into one form of public discourse that illustrates how people are currently interacting with the wind farm. Images and hashtags shared through social media can shape potential tourists' and participants' knowledge, perceptions, and behavior, including choice of destination and activity. The extent and character of positive wind farm-related social media posts, in terms of technology, the environment, and new opportunities for recreation, could be an indicator of potential tourism and recreation benefits, while negative posts, focusing on the viewshed, the coastal experience, or impacts to wildlife and the environment, could be an indicator of potential tourism and recreation impacts. Alternatively, there could be no effect.	Number of mentions in individual tourist or recreational participants' posts on social media. Can include text, photos and video. Use hashtags - e.g. #Block Island - positive, negative, or neutral coding for language. Can include wind farm-specific postings, or general social media postings about BI or RI. Should exclude comment responses to other media postings (e.g. comments posted in response to a news article).	

INDIRECT			
Indicator	***What is this?***	***How do I measure it?***	***Notes***
30. Use of the wind farm in tourism and recreation-related advertising	Coastal and marine tourism and recreation are affected by tourists' and recreational participants' choices of where to visit and what to see and do. The literal or symbolic positioning of the wind farm in tourism and recreation advertising, marketing, promotional materials, artwork, and real estate listings may provide insight into how businesses feel the wind farm may influence tourist and participant choices. Businesses' choices to incorporate the wind farm, by itself or framed around science/engineering, environmental, 'first in the nation,' or other themes, may be an indication of potential wind farm benefits, whereas the absence of the wind farm in advertising and related materials may suggest no effect.	Assessing the character of use can distinguish between themes such as science/engineering, environmental, or "first in the nation." Measuring the number or character of wind farm uses as a means of representing or symbolizing a place or idea may provide insight into this indicator. Additionally, general proximity to or view of the wind farm may be included in property listings, suggesting it is viewed as a selling point and therefore a potential tourism benefit, whereas distance from the wind farm, or a wind farm-free view, may suggest a potential tourism impact. Alternatively, there could be no effect. The number or character of listings and advertisements explicitly referencing the wind farm and related infrastructure's visibility from the property in these listings may provide insight into this potential tourism effect.	

VI. TOURISM/RECREATION-DEPENDENT COMMUNITIES

How is the wind farm affecting tourism-dependent communities and economies?

Why this is important: For some coastal communities, the tourism and recreation industries are vital to the local economy. A wind farm may affect tourism and recreation-dependent communities beyond the immediate effects to tourism businesses and the tourism experience. Communities may reap benefits, incur costs, or develop views associated with their participation in wind farm development, or they may experience effects to their tourism-related real estate market, which encompasses seasonal residences and rentals. These effects may be positive, negative, or neutral. In Rhode Island, stakeholder input and social science research confirmed that a wind farm can have a range of effects on tourism-dependent communities.

How to measure: You can choose one or more of the following indicators to track the effect of the wind farm on tourism/recreation-dependent communities. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: Tourism/recreation-dependent communities can also be affected by other overarching aspects of the wind farm that are measured by our ***Coastal/Marine Tourism***, and ***Visual Effects*** indicator sets. Please also see the ***Recreational Boating/Sailing***, ***Boat and Aircraft Charters***, and ***Recreational/Charter Fishing*** indicator sets for related topics.

Indicator	*What is this?*	*How do I measure it?*	*Notes*
31. Seasonal residential properties in viewshed or in proximity to wind farm and infrastructure	Seasonal residents, who are part of tourism-dependent communities and economies, may be affected by the view of the wind farm or related infrastructure. Seasonal residents within view of the wind farm or infrastructure may dislike the view and choose to sell their homes, or sales, property values of such homes may decrease, suggesting a potential tourism impact. Conversely, seasonal residents may like the view, and sales, property values, or the construction/expansion of new seasonal residential properties may increase, suggesting a potential tourism benefit. There may also be no impact.	Measuring changes in the number of properties over time, their distance from the wind farm and/or related infrastructure, and their number of days visible in a given season, weather, or time of day may provide insight into this potential effect.	
32. Seasonal rentals and other tourism-related properties in viewshed or in proximity to wind farm and infrastructure	Seasonal rentals and other tourism-related real estate (e.g. commercial properties) is critical to tourism-dependent communities and economies and may be affected by the view of the wind farm and related infrastructure. Seasonal rentals and other properties within view of the wind farm or related infrastructure may experience an increase in business or property values over time, suggesting potential tourism benefits, or may experience a decline in business or property values over time, suggesting potential tourism impacts. There may also be a change in real estate sales of such properties. As benefits and impacts experienced by tourism-related properties may occur intermittently over time (i.e. benefits and impacts related to the 'novelty' of being America's first and only offshore wind farm), there is a need to monitor for this effect.	Measuring changes over time in the number of tourism-related properties in the viewshed or in proximity to the wind farm and related infrastructure over time, and/or the days that these properties remain on the market may provide insight into this potential effect. Property values and/or the real estate sales of such properties, rental prices, occupancy rates, or change in the number of seasonal rentals may also capture potential effects.	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
33. Tourism/recreation community benefits	A wind farm may result in the provision of direct financial benefits to tourism and recreation communities or community organizations. A wind farm developer or government agency may provide incentives, subsidies, or mitigation to a community or community organization where an offshore wind farm is developed, suggesting potential tourism benefits. Alternatively, no benefits may be provided, or benefits may be viewed negatively, suggesting either no impact or negative tourism impacts.	Actual benefits (subsidies, incentives; offered by government or developer) or attitudes/perceptions about benefits. Actual benefits measured post-wind farm; attitudes/perceptions measured longitudinally.	
34. Costs to tourism/recreation community of engagement in the wind farm process	A wind farm may result in direct financial costs to tourism and recreation communities related to their participation in the wind farm planning, siting, permitting, construction, and monitoring process. Such costs could include hiring outside consulting firms or experts, building capacity through training and education, producing materials to support community participation, traveling to meetings, adapting local infrastructure to new infrastructure, or other costs, suggesting potential tourism impacts. Tourism communities may also perceive costs to be too high. Alternatively, there may be no costs, suggesting no impact.	Financial costs of hiring outside consulting firms or experts, building capacity through training and education, producing materials to support community concerns, traveling to meetings, adapting local infrastructure to new infrastructure, or other costs; or attitudes toward these issues. Must not include any costs reimbursed by developer.	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
35. Engagement of tourism/recreation sectors in wind farm process	The quantity and character of community members' engagement in the wind farm process may influence how they view the effects of the wind farm on tourism and recreation. This includes the engagement of tourism and recreation professionals as well as participants in these activities, and includes engagement in any part of the planning, siting, permitting, construction, and monitoring process. Community members who were actively engaged, and who found that engagement meaningful, may be more inclined to view the wind farm as having a neutral or a positive effect on tourism and recreation, whereas those who feel they were not engaged, or dissatisfied with their engagement, may view the wind farm as having a negative effect. Alternatively, there may be no effect.	Includes planning, site selection, permitting, construction, and operation/monitoring. Both professionals and stakeholders. Number of meetings, format of meetings/engagement, or other metric. Can include actual engagement and/or perception of. Should include planning, site selection, permitting, construction and operation/monitoring phases.	
36. Costs of electricity to tourism businesses	Tourism professionals and other coastal residents and business owners may anticipate reductions in electricity costs as a result of a new offshore wind farm. Actual reductions in these costs, or perception of reductions, may suggest a positive effect of the wind farm on the local tourism industry. No change, or a perception of no change, may suggest no effect on tourism.	Actual changes in rate per kwh, and/or attitudes about rate changes	
37. Stability/reliability of new electricity sources for tourism businesses	Tourism professionals and other coastal residents and business owners may anticipate increased stability and reliability of electricity provided by a new offshore wind farm. Actual improved reliability, or perception of improved reliability, may suggest a positive effect of the wind farm on the tourism industry. No change, or a perception of no change, may suggest no effect on tourism.	Number of black- or brown-outs, and/or attitudes about stability of new source	

Indicator	*What is this?*	*How do I measure it?*	*Notes*
38. Internet access and speed for tourism businesses	Tourism professionals and other coastal residents and business owners may anticipate increased reliability and speed of new Internet service to which they would have access in connection with a new offshore wind farm. Actual improved reliability and speed, or perceptions of this, may suggest a positive effect of the wind farm on the tourism industry. No change, or a perception of no change, may suggest no effect on tourism.	Actual Internet speed, reports of outages, and/or attitudes toward this issue	

VII. VISUAL EFFECTS

How is the wind farm affecting the tourism and recreation experience through its visual effects and perceived fit in the landscape?

Why this is important: A wind farm can affect tourists' and recreational participants' experiences through its visual impacts and perceived fit in the landscape. Tourists and recreational participants visually interact with the wind farm and its surroundings by land and by sea, from different sites surrounding the wind farm, from tourist sites and residential properties, during the day and at night, and on a one-time or regular basis. Individuals view the sight of the wind farm positively, negatively, or in neutral terms (i.e. neither positive nor negative). In Rhode Island, stakeholder input and social science research confirmed that the wind farm's visual effects were very important across the full range of tourism and recreation businesses and experiences.

How to measure: You can choose one or more of the following indicators to track the visual effects of the wind farm. For more information on how to select indicators, when and how to measure each indicator, and who can help you perform this work, please see the Indicators Guidance for Managers.

Other considerations: The visual effects of the wind farm can also be related to other overarching aspects of the wind farm that are measured by our ***Coastal/Marine Tourism***, and ***Tourism/Recreation-Dependent Communities*** indicator sets. Please also see the ***Recreational Boating/Sailing***, ***Boat and Aircraft Charters***, and ***Recreational/Charter Fishing*** indicator sets for related topics.

Indicator	*What is this?*	*How do I measure it?*	*Notes*
39. Tourist' and recreational participants' responses to viewing the wind farm	Tourists and recreational participants' experiences may be affected by the sight of the wind farm. The words individuals use to describe the sight of the wind farm may provide an indication of its effect on their experience. Individuals may use positive descriptions (e.g. "astounding") or descriptions suggesting interest and curiosity (e.g. "feat of engineering"), which may suggest potential tourism benefits. Individuals may also use negative descriptions (e.g. "eyesore"), which may suggest potential tourism impacts. Alternatively, there may be no effect.	Number or character of positive, negative or neutral words used to describe or characterize wind farm, as measured through surveys, interviews, social media. Should distinguish between first time visitors and regular visitors.	
40. Visibility of wind farm relative to other developed or industrial areas or activities	The wind farm's effect on tourism and recreational participants' experiences or choices of where to go and what to see may be influenced by its proximity to other developed or industrial areas or activities. A wind farm located near other developed or industrial areas, such as an airport or bridge, may be perceived to have less of a visual impact and fit with the landscape better than one located in an undeveloped area. Importantly, a wind farm's proximity to other development is not a benefit or an impact in itself, but could result in potential tourism benefits, tourism impacts, or no effect depending on individuals' reactions to the view. This indicator is best used in combination with others that directly measure individuals' reactions to the wind farm and/or tourism and recreation choices.	Addresses perceived fit in landscape. Visibility of wind farm from different angles in relation to other developed land areas or industrial/commercial ocean uses.	

Photo Credits

Page 1- RI CRMC (2010)

Page 3 - Stephen R. Cloutier/Photogroup.us (2015)

Page 5 - Rooster Fishing Charters (N.D)

Page 8 - Restless-Sportfishing Charters (2018); Heliblock Tours (2018)

Page 10 - Ballard's of Block Island (2018)

Page 18 - Lars Trodson (2018)

Page 23 - New England Inns & Resorts (2015)

Department of the Interior (DOI)

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)

The mission of the Bureau of Ocean Energy Management is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program

The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).