

2020

## OFFSHORE WIND AND COMMUNITY BENEFITS IN KITTY HAWK, NC

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OFFSHORE WIND AND COMMUNITY BENEFITS IN  
KITTY HAWK, NC

BY  
JACOB GRANT TYLER

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF  
MASTER OF ARTS  
IN  
MARINE AFFAIRS

UNIVERSITY OF RHODE ISLAND

2020

MASTER OF ARTS THESIS

OF

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2020

## **ABSTRACT**

As offshore wind energy development gains a foothold in the United States, the possibility of conflict between local communities and developers may become increasingly common. Coastal communities within the viewshed or hosting transmission cables may fear several impacts but few benefits. This lack of benefits can influence the level of support in the community for a project and eventually lead toward opposition. Community benefits, provided through the wind farm developer, may help garner local support in communities in close proximity to a wind farm project. In the U.S. offshore wind industry, community benefits are not obligatory but are sometimes offered voluntarily by the developer. This research focused on the federal Kitty Hawk Wind Lease off the Outer Banks of North Carolina, which was awarded to a private energy company in 2017. Remote communities, like the Outer Banks of North Carolina, may see little investment or job opportunities from an offshore wind farm while still experiencing effects from its proximity. The research goal of this study was to understand how key informants think of a proposed offshore wind farm in the context of community benefits. In Summer 2019, we conducted extensive semi-structured interviews with 11 key informants in the area. Using thematic analysis, we developed overarching themes in the data. Our data shows that key informants are skeptical of direct benefits like local employment from the project while showing optimism for indirect, regional benefits. Concerns over impacts center on the landing of a transmission cable and possible effects on the commercial fishing industry. Regarding community benefits, the majority of key informants were interested in a community fund that would be administered by the local government or

a trusted local organization. This study emphasizes the need for more research on community benefits from offshore wind in the United States and makes recommendations on how to incorporate community benefits into the U.S. federal leasing process.

## **ACKNOWLEDGMENTS**

I want to thank my major professor, David Bidwell, for his advice and guidance throughout the master's thesis process and graduate school. It has been a pleasure working with you the past two years. I also want to thank my committee members, Tiffany Smythe and Simona Trandafir, for their interest and feedback on my thesis topic. Lastly, thank you to the entire Marine Affairs department for shaping my career for many years to come.

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# CHAPTER 1

## INTRODUCTION

In the United States, there is only one commercial offshore wind farm, a 30-Megawatt demonstration project, located off the coast of Rhode Island. This industry is currently growing and will become a major source of electricity in the coming decades. The United States is estimated to have an offshore wind potential of more than two thousand gigawatts (American Wind Energy Association, 2019). According to the Bureau of Ocean Energy Management, there are fifteen active offshore wind leases on the eastern seaboard with a projected capacity of twenty-one gigawatts (BOEM, 2019a). The exponential growth of the industry in the United States can be attributed to falling costs of development, emerging federal climate and renewable energy policies, and state renewable portfolio standards (USDOE et al., 2016). Wind energy has also been touted as a pathway to mitigating anthropogenic climate change through the reduction in carbon emissions. This may drive the demand for more offshore wind farms as communities begin to feel the effects of climate change firsthand this century. Yet, communities are often in opposition to local offshore wind developments (Kempton et al., 2005; Devine-Wright and Howes, 2010; Wolsink, 2010; Wiersma and Devine-Wright, 2014).

To aid in the acceptance of local developments, renewable energy developers have begun to provide community benefits to local communities (Walker et al., 2014; Kerr et al., 2017). This approach helps to rectify any perceived inequity between the

impacts and benefits from renewable energy developments while also addressing procedural and distributive forms of justice (Rudolph et al., 2018). Currently in the United States, research on community benefits from offshore wind farms has been concentrated on several projects in the New England area (Klaine et al., 2015). Our study attempts to expand the literature to the southeastern United States by interviewing member of a community near a proposed offshore wind farm in North Carolina.

This research investigates how key informants on the Outer Banks of North Carolina perceive a proposed offshore wind farm in the context of community benefits. Our research consists of three objectives: 1) understand key informant opinion on the proposed wind farm; 2) gauge community benefits that would best meet the needs of the community; and 3) identify their preferred method of administration of benefits. In this case study, we conducted semi-structured interviews with eleven key informants on the Outer Banks. Key informants were identified as having a formal role in the community and likely to be involved in the local policy process for an offshore wind farm.

Our results show that key informants view their community as expanding beyond traditional political boundaries with the majority taking a broader, regional perspective on community. Key informants were skeptical of the availability of direct benefits like local job opportunities from the project while showing more optimism for indirect benefits such as regional economic development and recreational fishing opportunities. Concerns about impacts centered on the possibility of a cable landing on the shoreline and potential effects on the commercial fishing industry. Key informants

identified a community fund as their preferred form of community benefit and identified the county government or a trusted local organization as the ideal administrator of the fund. Based on these results, we offer recommendations that would help offshore wind developers and local policy makers to meet the needs of local stakeholders.

## CHAPTER 2

### REVIEW OF LITERATURE

There is a broad literature on public acceptance of offshore wind and the role of community benefits in fostering acceptance of this and other renewable energy technologies. In this section, we summarize factors that influence acceptance of wind energy developments, provide background on the use of community benefits, and outline potential challenges associated with their implementation.

#### 2.1 Public Acceptance of Wind Energy Developments

During the development of wind energy projects, developers may encounter local opposition that conflicts with the broad public support for renewable energy. This mismatch has been termed the social gap (Bell et al. 2005). A prevalent explanation for local opposition is the self-interest explanation also known as the NIMBY (Not In My Back Yard) response (Bell et al. 2005). NIMBY is based on the presumption that “public objectors are selfish, hypocritical individuals who, while supporting the technology in general, do not want any developments near their place of residence” (Wiersma and Devine-Wright, 2014, p.483). However, the NIMBY explanation has been identified as disparaging of public concerns and viewed as only representing a small proportion of opposition (Burningham, 2000; Wolsink, 2006; Wiersma and Devine-Wright, 2014). Alternative reasons for the social gap include the democratic deficit explanation and the qualified support explanation, as outlined by

Bell et al. 2005. The democratic deficit is the theory that specific wind energy development decisions are controlled by the minority who oppose wind energy, overriding opinion polls that show the majority of people are in favor of wind energy. This may be applicable in specific cases where the opponents fit a particular educational and socio-economic profile that enables them to have greater political clout. The “qualified support” explanation is the belief that wind energy is a good idea but there are limits and controls that should be placed on its development. “Qualified support” may include criteria on the anticipated impacts of the project and the overall fairness of the planning process.

Public attitudes towards offshore wind developments are influenced by several factors including anticipated impacts of the projects, the fairness of the siting process, and place attachment (Bidwell, 2017). Impacts from offshore wind farms may be environmental, visual, or economic. These are very much the same concerns that are associated with onshore wind developments (Haggett, 2008). Environmental impacts that are well documented include bird fatalities and underwater noise pollution for marine mammals like seals or porpoises (Bush and Hoagland, 2016). During the construction phase, extreme noise from pile driving used in the deployment of monopile or jacket foundations is highly likely to cause mortality and tissue damage in fish (Bergström et al., 2014). In a study of the acceptability of the Cape Wind project in the United States, potential environmental impacts associated with the project had the most effect on opinions about the proposal (Firestone & Kempton, 2007; Haggett, 2008). For onshore wind farms, one of the most common complaints is the visual impacts of turbines and this impact has been identified as a crucial part of offshore

wind environmental assessments as well (BWEA, 2002; Haggett, 2008). Concerns over visual impacts may center on the potential declines in local tourism and property values which is fundamentally related to economic activity. In a survey of 1000 out-of-state tourists in Delaware, approximately one-quarter of respondents stated they would switch beaches if an offshore wind farm was located 10 km from the coast (Lilley et al., 2010). Beach visitation is a crucial factor for any coastal community that relies primarily on a tourism-based economy. Beaches are a chief tourist destination in the United States and coastal states collect 85% of tourism-related revenues (Houston, 2008; Lilley et al., 2010). In a survey of 500 residents on Cape Cod, 21% believed that a proposed offshore wind facility in Nantucket Sound would adversely affect property values with the greatest decreases in value for waterfront properties (Haughton et al., 2004). To address concerns over visual and economic impacts, coastal communities may advocate for the siting of wind farms at greater distances from the shoreline. This drives up the overall cost of the project for the developer, increases technological difficulties, and creates higher exposure to risk for workers at the facility (Firestone and Kempton, 2007; Haggett, 2008). This will inevitably affect the feasibility of the project as well.

An individual's relationship with a specific area of the ocean can influence how they feel about a development sited in that area. Coastal communities that hold strong positive bonds with a place may respond negatively to a construed place change as a form of identity threat (Devine-Wright, 2009; Cass and Walker, 2009). Although upcoming projects in the U.S. will be in federal waters, communities may not be aware of this authority and instead believe that the project is within "their territory" of

the ocean (Kempton et al., 2005). In a study of the Cape Wind project in Massachusetts, some opponents displayed this sense of ownership for the project area and saw Cape Cod as receiving the impacts with no benefits in return (Kempton et al., 2005). This perceived lack of benefit may be exacerbated by the view that the wind farm is being controlled by financial interests that are removed from the community with minimal control concentrated locally (Rand and Clarke, 1990; Toke and Elliott, 2000; Jobert et al., 2007; Wustenhagen et al., 2007; Toke et al., 2008; Haggett, 2008).

Procedural and distributive justice are becoming increasingly important in the public's perceptions of wind energy developments (Walker et al., 2014). Procedural justice focuses on individual perceptions about the fairness of processes and decision-making procedures, while distributive justice focuses on perceptions of fairness with regards to outcome distributions or allocations (Walker et al., 2014). Research has identified that more direct involvement of local people in a project contributes to greater project acceptance and support (Walker and Devine-Wright, 2008). Regarding procedural justice, it is complex to determine who the relevant communities are for a proposed development and the extent that they should be involved with project decisions. While it seems straightforward to identify the municipality or county that the project is sited in, this method may overlook user groups that utilize the wind farm area or communities outside those political boundaries (Cowell et al., 2012). These factors will inherently influence how elements of distributive justice are handled as well. Studies have shown that wind energy projects do create impacts that are significant and adverse (Cowell et al., 2012). For example, wind energy development leans towards spaces valued for their openness which influences how people relate to



them (Pasqualetti, 2011; Cowell et al., 2012). In a study of welfare impacts from a wind farm in Norway, researchers found that a significant portion of losses experienced by households were recreational and non-use related (García et al., 2016). These types of impacts fall unevenly on society. Renewable energy projects tend to accrue benefits, like carbon reduction, at a national or global scale while impacts remain at a concentrated, local level (Klain et al., 2015). In some cases, offshore wind farms are sited near economically disadvantaged communities that are geographically isolated and lack the political clout to effectively oppose a project (Milbourne, 2011; Zsamboky et al., 2011; Cowell et al., 2012).

The factors discussed above often make it difficult for developers to nurture positive relationships with coastal communities. Research has shown that renewable energy projects may become more divisive and controversial if benefits are not shared among local residents (Walker and Devine-Wright, 2008). As a result, several strategies have been proposed to generate local support for offshore wind developments (Walker et al., 2014). One of these strategies is the provision of community benefits by the developer. The interest in community benefits comes from European countries, like Denmark and Germany, where the rapid expansion of wind power and associated high levels of support were a direct result of the substantial return of benefits to local areas (Cowell et al., 2011). In a recent survey of community involvement schemes for onshore wind farms in Ireland, respondent project acceptance was highest under a community benefit scenario (Hyland and Bertsch, 2018). Over half of respondents indicated some degree of willingness to accept the local construction of a wind farm under a community benefit scheme compared to just

over a quarter when there was no involvement scheme proposed (Hyland and Bertsch, 2018).

## 2.2 Community Benefits

A community benefit is an “additional, positive provision for the area and people affected by a major development” (Bristow et al., 2012, p. 1008). In addition to the renewable energy industry, community benefits have been used in offshore oil development through state and national benefit agreements like the Alaska Permanent Fund or the Land and Water Conservation Fund, respectively. The Alaska Permanent Fund is a constitutionally established permanent fund that is funded by at least 25% of oil revenues received by the state of Alaska and designated for investment in specifically approved sectors (APFC, 2020). There is also a yearly dividend that is distributed to all permanent state residents. A national community benefit, The Land and Water Conservation Fund (LWCF), was created by the U.S. congress to protect natural resources and provide recreation opportunities for the American population (LWCF, 2020). It is funded through royalties from energy companies drilling for offshore oil and gas on the Outer Continental Shelf (LWCF, 2020).

Developers in the renewable energy industry can offer community benefits for a variety of reasons including: community engagement, statutory conditions imposed by authorities, or demand from local communities (Rudolph et al., 2014). In addition, community benefits have been utilized in renewable energy development as a means to mitigate conflicts over the impacts of these projects (Wolsink, 2007; Zografos and Martinez-Alier, 2009; Bristow et al. 2012). In the offshore wind industry, community

benefit requirements can vary based on the country. In countries like the United Kingdom or the United States, community benefits are not legally required (Aitken, 2010). However, in areas where the onshore and offshore wind industries are well established, it has become a common practice to provide benefits. For example, in the U.K. the majority of wind farm developers offer benefits on a routine basis (Cass et al., 2010; Cowell et al., 2011; Bristow et al., 2012). To promote the practice further, governments in the U.K. have developed protocols to guide benefit discussions and community benefits have been supported in local planning policy (Bristow et al., 2012). In countries like Denmark and Germany, legal requirements for community benefits have been implemented. For example, the Danish Renewable Energy Act of 2009 requires all new wind developments to have at least 20% ownership by local people (Fruhmann and Knittel, 2016).

Developers primarily utilize Community Benefit Agreements to distribute benefits to local communities (Rudolph et al., 2014). A community benefit agreement (CBA) is a private contract between a developer and community representatives that specifies the benefits the developer will provide in exchange for the community's support of its proposed project (Salkin and Lavine, 2008). These types of agreements take a substantial amount of time to negotiate and are most effective if begun early in planning process. Negotiations can be initiated by community members, developers, or through the encouragement of government authorities (Salkin and Lavine, 2008). In the context of offshore wind development, a CBA can help guide community discussions on the potential impacts of the project and possible mitigation or compensation options (Island Institute, 2014). CBAs often acknowledge the potential

for impacts from a project and provide direct monetary benefits or human and material resources to a town, community group, or the state (Island Institute, 2014). Benefits provided by a CBA include community ownership, direct investment, and community funds.

Community ownership is a model where the community becomes investors in the project. Community ownership schemes allow individuals to benefit financially from the wind farm via the purchasing of shares or bonds in the wind farm (Vuichard et al., 2019). Denmark and Germany are viewed as role models in community renewable energy and both countries have legal requirements for wind developers to offer financial participation to local communities (Vuichard et al., 2019). In this model, profits after taxes from the wind farm are distributed back to individuals who purchased shares in the wind farm (Breukers and Wolsink, 2007; Klain et al., 2017). The opportunity for community ownership has been shown to improve acceptance of renewable energy projects in countries like Scotland (Warren and McFadyen, 2010; Kerr et al., 2017) and Germany (Musall and Kuik, 2011; Kerr et al., 2017). In a case study of wind power development in Germany, researchers found that the availability of shares in wind farms enhanced social acceptance of projects locally (Breukers and Wolsink, 2007).

Direct investment is usually a one-off payment for a certain purpose that can take immediate effect and be highly visible to local stakeholders (Rudolph et al., 2014). Developers can invest in improvements to local facilities, environmental improvements, tourism and recreation, or telecommunication improvements (CSE et al., 2007). An increasingly common example is the funding of education programs and

apprenticeships to local populations (Munday et al., 2011). For example, the developer of a wind farm in the state of Texas funded a scholarship to provide financial assistance to students interested in pursuing careers as wind turbine technicians (AT&T, 2018). In addition, the developer committed to interviewing graduates from the program for future wind technician positions and internship opportunities (AT&T, 2018).

The most common model used by wind developers in the U.K. is to provide monetary payments into a community fund (Cowell et al., 2011). This fund is managed by a local organization to support activities in nearby local communities (Munday et al., 2011). The monetary payments can be determined by the megawatt capacity of the project or through an amount of money per annum that is related to the revenues of the project, sometimes referred to as a local resource tax (Cowell et al., 2011). A local resource tax, also known as a wind resource tax, redistributes generated income equally among all residents who are impacted by the development (Vuichard et al., 2019). In a survey of local preferences for wind energy financial participation models in Switzerland, participants who were exposed to the idea of a wind resource tax supported the proposed wind farm most strongly (Vuichard et al., 2019). This resource tax can also be deposited directly into the general budget of the community or earmarked for specific issues that are a priority for the community (Vuichard et al., 2019).

When determining who should receive benefits, communities have been defined in two ways by developers. A community can be a group of individuals living in the geographical vicinity of an energy development known as a community of

locality (Walker, 2011; Rudolph et al., 2014). For renewable energy development, identifying communities of locality is the most common approach to distributing benefits (Kerr et al., 2017). Sometimes proximity to a development may include communities that are separated by a significant distance. Offshore wind farms usually span more than one administrative body due to their scale and location of their onshore construction (CSE et al., 2007). A project may be located off one area of a state while the transmission cables are brought onshore in another area of the state several hours away. However, a community does not necessarily need to represent traditional political boundaries. A community can also be defined by grouping individuals who have common social outlooks which has been termed a community of interest (Kerr et al., 2017). In the case of offshore wind development, communities of interest may be stakeholders whose activities share the same space as the project like fishermen or recreational boaters (Rudolph et al., 2014). When defining a community, there is also the question of who decides which communities will receive benefits. The main actors involved with this decision are developers, communities, and local government officials (Cowell et al., 2011). Since most community benefits from renewable energy developments are voluntary, it is usually up to the discretion of the developer to determine who will receive benefits (Walker et al., 2014). Once a community affected by a project is identified, developers are inclined to negotiate benefits on a case-by-case basis directly with the community in question (Cowell et al., 2011).

Developers in the U.K. have expressed a desire to adapt community benefits to the context of individual projects rather than have a standardized package for every

project (Cass et al., 2010). There are exceptions to this trend as well. Government policy in Germany requires states to distribute tax revenue from offshore wind farms while the Highland Council in Scotland has emphasized that community benefits from wind energy should be distributed widely and as often as possible (Rudolph et al., 2014). Depending on the necessity of local planning approval, communities may be able to exert influence and demand a share of the benefits. In onshore wind development, communities have been able to use property rights and the local planning process to leverage developers to provide benefits (Johnson et al., 2013). For offshore wind development, there is minimal need for developers to seek local planning approval because communities have little jurisdiction over adjacent waters (Kerr et al., 2017). Planning approval is concentrated in a centralized decision-making process with state and national governments rather than local governments (Johnson et al., 2013).

In the United States, community benefits from wind energy development may be voluntary or required by law (Klain et al., 2015). For example, Maine passed legislation in 2010 requiring onshore wind developers to pay host communities based on the number of installed turbines (Maine State Legislature, 2010; Klain et al., 2015). In contrast, to date, there are no legal obligations to provide community benefits in offshore wind development but developers have provided benefits in two projects so far. Vineyard Power, a power cooperative on Martha's Vineyard, Massachusetts, signed the nation's first, federally recognized, offshore wind community benefit agreement with a developer, Vineyard Wind, in 2015 (Vineyard Wind, 2020). This agreement was the product of incentives that the Bureau of Ocean Energy

Management (BOEM) offered developers bidding on the Massachusetts Offshore Lease Area (Klain et al., 2017). This is a unique incentive that has not been offered, as of yet, for other offshore wind lease areas in the United States. As a result of their community benefit agreement with Vineyard Power, Vineyard Wind received a 10% discount on their bid price for the lease area (Klain et al., 2017).

According to a member of Vineyard Power, the agreement was effective because community engagement began early and a long-term dialogue existed between the developer and community (E. Peckar, personal communication, March 22, 2019). In the agreement signed, Vineyard Power is obligated to: 1) advocate and support offshore wind legislation in Massachusetts, 2) support the Vineyard Wind project through education and outreach, and 3) provide advice and guidance to Vineyard Wind throughout the permitting and financing process (Vineyard Power, 2020). In exchange, Vineyard Wind is obligated to: 1) investigate local job creation on Martha's Vineyard and possible benefits associated with a transmission cable landing, 2) investigate opportunities for Vineyard Power to own up to 100 megawatts of the offshore wind capacity, and 3) provide reimbursement for operation costs up to \$100,000 (Vineyard Power, 2020). Vineyard Wind also signed a formal agreement with the town of Barnstable, MA where the project's transmission cables will make landfall (Vineyard Wind, 2020). In this agreement, Vineyard Wind will provide funds for beach access improvements where the cable makes landfall and the town will receive tens of millions in property tax revenue over the life of the project in addition to \$16 million in host community payments (Vineyard Wind, 2020). Vineyard Wind's



utility-scale project off Martha's Vineyard is still in the planning process and is not operational as of yet.

The Block Island Wind Farm, located off Block Island, Rhode Island, is an example of an operational offshore wind farm that has associated community benefits. In the community benefit agreement between the developer, Deepwater Wind, and New Shoreham, the sole municipality on Block Island, the developer agreed to pay for infrastructure improvements where the transmission cable made landfall (Klain et al., 2017). The town also negotiated for a fiber optic cable to be included in the electricity cable bundle coming from the mainland grid to the island. Benefits that were not part of the formal agreement included the increased reliable flow of electricity to the island and the generation of three hundred jobs during the construction phase.

### 2.3 Challenges Associated with Community Benefits

Although community benefits have helped to improve community support and acceptance for renewable energy projects in some instances (Walker et al., 2014; Rudolph et al., 2014; Rudolph et al., 2018), there are several challenges associated with their implementation as well. These challenges include but are not limited to defining the community, determining how best to administer benefits, and perceptions of bribing the community into acceptance of a project. As mentioned above, a community is a “multi-dimensional concept based on identity, practice, objectives, and the places to which these apply” (Cowell et al., 2011, p. 544; see also Brown, 2007). When defining the community, the physical distance between an offshore wind farm and coastal communities makes it difficult to define a beneficiary community

(Rudolph et al., 2014). Offshore wind farms are located far out to sea and are visible from a very wide area (Haggett, 2011). When determining who should receive benefits, it can range from the nearest coastal communities to the whole country (Rudolph et al., 2014). Developers are dealing with complex geographies where there is “a high likelihood of encountering groups who feel that their concerns have gone unmet” (Cowell et al., 2011, p. 544; see also Gross, 2007 and Clinch et al., 2008). To address the spatial ambiguity, some policy makers advocate for an equal distribution of benefits at a national level where a net benefit is provided to the majority (Klain et al., 2017). Developers may challenge the necessity of community benefits because an argument can be made that the whole nation is receiving indirect benefits like job creation, supply chain benefits, and tax revenues (Rudolph et al., 2014). However, this approach may leave communities closest to the development feeling like they are bearing the brunt of the costs while others reap the benefits. In a case study of offshore wind development off New England islands, individuals expressed concern that specifically impacted groups, like fishermen who could lose fishing grounds, may require compensation (Klain et al., 2017). The spatial ambiguity also affects who is able to have proportionate representation in the discussion of benefits (Haggett, 2011). If input is gathered at a regional level, then the voices of those most directly affected by the project may be undermined to an extent. During the construction of the Middlegrunden offshore wind farm in Copenhagen Harbor, Denmark, there was an expansive and open consultation process that led to widespread public support but left some stakeholders who regularly utilized the ocean in permanent opposition to the project (Haggett, 2011). This broad consultation process may have diminished the

representation and influence of stakeholders, boaters and fishermen, who would be most affected by the project.

When determining how monetary benefits should be administered, there are various perspectives on what sort of limitations should be put on the use of the fund (CSE et al., 2007). Some believe that since the fund is for the community's benefit, the community should have full discretion in its allocation. The administration and disbursement of funds by local representatives is preferred by developers as a "way of taking decisions on disbursement out of their hands and putting responsibility into the locality" (Cass et al., 2010, p.265). A democratic decision-making process can be used to administer the fund where the community determines the purpose of the fund (Rudolph et al., 2014). But this can be difficult to implement because of the diversity of viewpoints, attitudes, and interests in a community (Rudolph et al., 2014). Alternatively, the funds can be administered by trusted local organization or a new independent body, like a community trust (Cowell et al., 2012). This arrangement is popular with developers and local communities but there are limitations. Small communities may not have the funds to cover the costs of administering the fund or to raise additional matched funding from other sources (CSE et al., 2007). In addition, based on the discretion of the trustees, restrictions may exist on who can apply and what the fund may be used for based on the discretion of the trustees (Rudolph et al., 2014). There is also the possibility that disadvantaged members of the community may not be represented by the interests of the majority or reside outside of the political boundaries where the fund is designated (Cowell et al., 2012). This raises concerns

whether the disadvantaged are receiving benefits and whether the trust is addressing problems that affect wider areas than the immediate locality (Cowell et al., 2012).

An underlying problem with community benefits is the perception of “bribing” communities into accepting a development (Cass et al., 2010). If community benefits are offered early in the planning process, some may view the developer as trying to influence the planning board’s decision for approval. As a result, developers are inclined to offer benefits after planning consent has been granted. This scenario places the community in the position of accepting any form of post hoc payment even if it is not commensurable with the costs placed on the community (Cowell et al., 2011). Under liability rules, post hoc payments are a form of compensation that takes on symbolic function of recognizing that some reparation is needed but acknowledges that compensation will most likely not be fully equivalent to what is lost (Goodin, 1989; Cowell et al., 2011).

## CHAPTER 3

### STUDY CONTEXT

#### 3.1 Regulatory Framework for US Offshore Wind Development

In the United States, coastal states have jurisdiction over waters extending three nautical miles from shore except for Texas and the Gulf Coast of Florida who have jurisdiction extending to nine nautical miles from shore (USCOP, 2004). In these waters, states have the “authority to manage, develop, and lease resources throughout the water column and on and under the seafloor” (USCOP, 2004, p.71). Beyond state waters, the Bureau of Ocean Energy Management (BOEM) has the authority to issue leases, easements, and rights of ways for renewable energy developments on the continental shelf (BOEM, 2020). This authority is derived from section 388(a) of the Energy Policy Act of 2005 (Pub. L. 109-58).

The federal leasing process involves four phases: 1) planning and analysis, 2) lease issuance, 3) site assessment, and 4) construction and operations. The leasing process is subject to environmental compliance reviews under the National Environmental Policy Act (NEPA) which is a legal obligation for federal agencies to “undertake an assessment of the environmental effects of their proposed actions prior to making decisions” (Council on Environmental Quality, 2007, p.2). Federal agencies, like BOEM, are also required to “make efforts to provide meaningful public involvement in their NEPA processes” (Council on Environmental Quality, 2007, p.26). This is achieved through public meetings and public comment throughout the

leasing process. In the planning and analysis phase, the agency attempts to identify suitable areas for wind energy development through a collaborative process that involves a wide array of stakeholders including the general public (BOEM, 2019b). BOEM also establishes Intergovernmental Renewable Energy Task Forces in states that have expressed interest in development of offshore renewable energy (BOEM, 2017). The Task Forces help to identify areas of significant promise for offshore development and provide early identification, and steps toward resolving, potential conflicts (BOEM, 2017). During the leasing phase, the general public has the opportunity to provide public comment in the proposed sale notice stage before the lease is awarded to a developer (BOEM, 2016). In the site assessment phase, the developer submits a Site Assessment Plan (SAP) detailing the construction plans they have in order to observe the lease area (BOEM, 2019b). This plan requires the approval of BOEM and sometimes requires another environmental review under NEPA (BOEM, 2019b). Lastly, the construction and operations phase consists of the submission of a Construction and Operations Plan (COP) by the developer that details the plan for the construction and operation of a wind farm in the lease area (BOEM, 2017). In this stage of the leasing process, the general public has another opportunity for public meetings and to provide comments regarding the COP (BOEM, 2016). In addition, this phase requires BOEM to conduct an environmental compliance review under NEPA and their subsequent approval of the COP (BOEM, 2016).

### 3.2 Kitty Hawk Wind Lease

The Kitty Hawk Wind Lease is a 122,405-acre lease area located approximately 24 nautical miles off the coast of the Outer Banks in North Carolina (see Figure 1). Avangrid Renewables is the lessee of this portion of seafloor and aims to have an offshore wind farm in commercial operation by 2025 (NC Coastal Federation, 2019). This lease area has a potential generating capacity of 1,486-megawatts and is the first offshore wind lease to be secured off North Carolina (Skoplijak, 2019). While the lease area is closest to the coast of North Carolina, the proposed cable corridor will make landfall in Sandbridge, Virginia just past the North Carolina border (NC Coastal Federation, 2019). As of right now, no element of development will be based on the Outer Banks. In the context of this study, the Outer Banks encompasses the roughly 100 miles of barrier islands in coastal Currituck and Dare County which includes six incorporated municipalities: Duck, Southern Shores, Kitty Hawk, Kill Devil Hills, Nags Head, and Manteo.

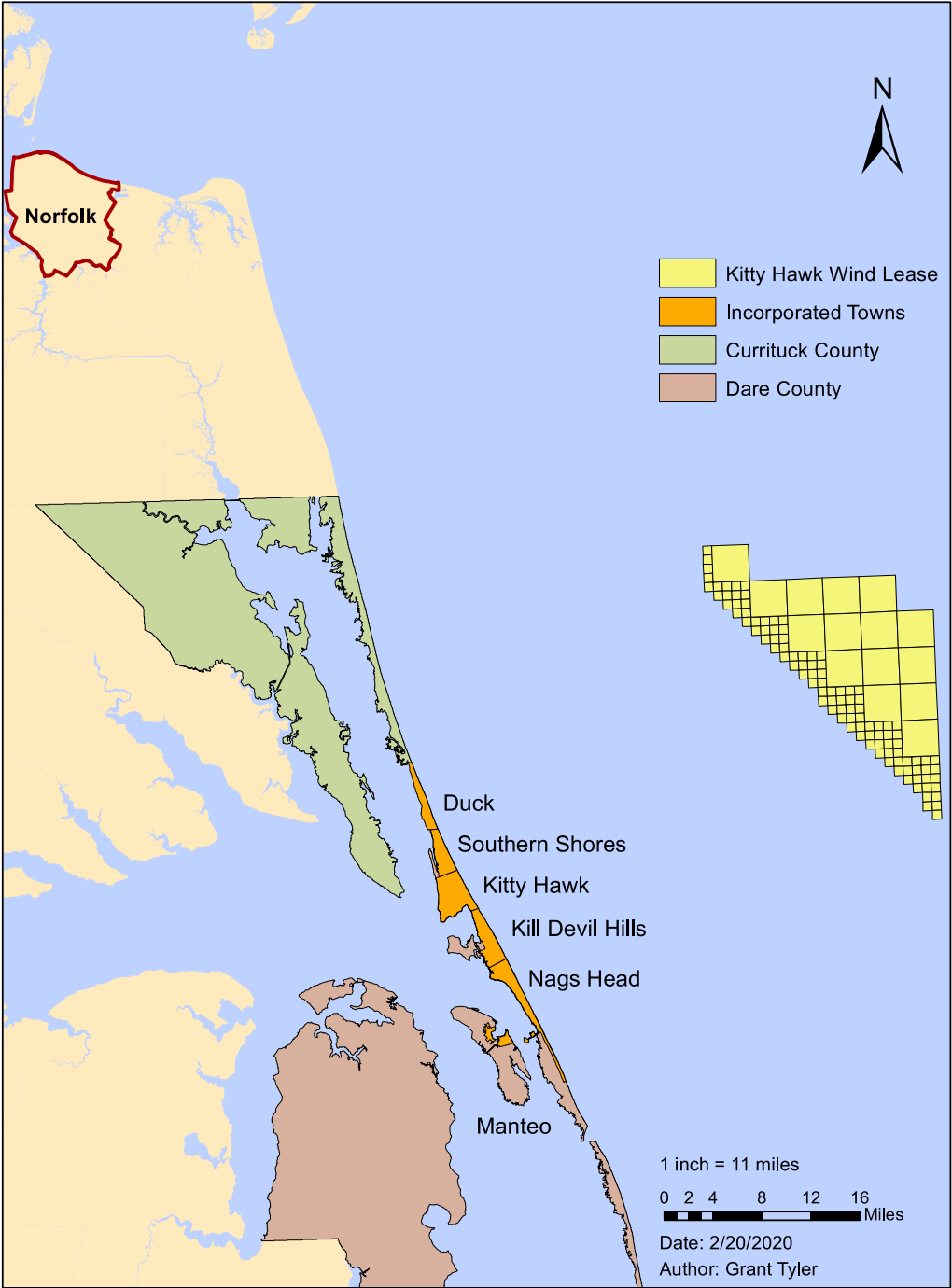
For this study, the majority of interviews were conducted in Dare County which is the easternmost county in North Carolina (see Figure 1). Dare County has an estimated population of 35,964 with a median household income of \$54,787. The poverty rate is 8.2% and, in a county wide survey of residents, 57% of residents felt there was not a lot of economic opportunity in Dare County (Healthy Carolinians of the Outer Banks, 2019). The top three industries are hospitality, retail, and construction which account for 38.8% of the local workforce. Other key industries in Dare County are commercial fishing, boatbuilding, and recreational fishing (Moffatt & Nichol, 2014). Commercial fishing creates approximately 600 jobs and contributes

\$25 million to Dare County (Moffatt & Nichol, 2014). The Outer Banks is world renowned for boat building which represents a substantial portion of manufacturing jobs in the area. Boat building creates approximately 530 jobs and contributes \$94.6 million to Dare County (Moffatt & Nichol 2014). The Outer Banks is also known as one of the best sportfishing regions on the East Coast. Recreational fishing creates approximately 2000 jobs and contributes \$247.7 million to Dare County (Moffatt & Nichol, 2014). It is evident that much of the Outer Banks economy is highly dependent on some dimension of the ocean.



# Study Area: Outer Banks, North Carolina

Coordinate Sysytem: NAD 1983 State Plane North Carolina FIPS 3200 Feet



Sources: BOEM, NCDOT, VITA

**Figure 1. Map of study area: Adjacent communities to the Kitty Hawk Wind Lease.**

## CHAPTER 4

### METHODS

This research uses a qualitative case study method to understand how a coastal community perceives a proposed offshore wind farm. Qualitative research is useful when a concept or phenomenon needs to be explored and understood because little research has been done on it (Creswell, 2014). By using a qualitative research approach, we are able to gather information on a new topic, community benefits in offshore wind development, which has not been covered in as great depth in the United States as it has in European countries. We chose to use a case study approach which is an “empirical inquiry that investigates a contemporary phenomenon in-depth and within its real-world context” (Yin, 2014, p. 16). The use of a single-case study allows us to gather data that will inform further research into the use of community benefits in U.S. offshore wind development (Yin, 2014).

The Outer Banks is a unique case study for several reasons. North Carolina is considered to have some of the best wind energy resource potential along the East Coast (Schwartz et al., 2010) and the Kitty Hawk Wind Lease is the first proposed offshore wind farm in North Carolina (Murawski, 2017). It is also the most southern, proposed offshore wind farm project on the U.S. east coast and is located in federal waters (Marcacci, 2020). Another unique characteristic of this case is that, currently, no element of this project will be hosted on the Outer Banks while this island

community is in closest proximity to the proposed project (NC Coastal Federation, 2019).

#### 4.1 Sample Selection

Interviews were conducted with key informants who may be involved in the local policy process for an offshore wind farm. Key informant interviews have been identified as one of the most common sampling strategies for qualitative studies (Patton, 2014). A key informant helps to “inform our inquiry when we tap into their knowledge, experience, and expertise” (Patton, 2014, p.284). In the context of this study, a key informant was defined as an individual who would be able to provide input on potential concerns for the community regarding the Kitty Hawk Wind Lease and identify problems in the community that could be addressed through community benefits. These individuals meet the criteria of occupying a position of responsibility and influence with a formal role in the community (Marshall, 1996).

Eleven in-person interviews were conducted from June to August 2019 on the Outer Banks at a location of the participant’s choosing. Key informants were located based on their proximity to the Kitty Hawk Wind Lease and data collection concentrated on the northern end of the Outer Banks: the villages and towns from Corolla to Wanchese. The justification for this action was that the geographic conditions of the Outer Banks leads to a large spatial disconnect between the localized effects of the wind energy development and the southern portion of the barrier islands. In addition, all local administrative bodies were concentrated in the area of interest.

A combination of purposive and snowball sampling was used to recruit interviewees. Purposive sampling involves identifying individuals who are knowledgeable about or experienced with a topic of interest (Creswell and Plano Clark, 2011; Palinkas et al., 2015). We concentrated on recruiting individuals from the various sectors of the Outer Banks including municipal governments, local industry, environmental NGOs, and university extension agencies. Recruitment began by emailing or calling key informants that we identified as potentially being affected by the project. After these initial interviews, we used snowball sampling to identify additional individuals to interview. Snowball sampling is a method where “one interviewee gives the researcher the name of at least one more potential interviewee who, in turn, provides the name of at least one more potential interviewee, and so on” (Kirchherr and Charles, 2018, p. 1; see also Patton, 1990; Atkinson and Flint, 2001; Cohen and Arieli, 2011; Bhattacharjee, 2012 ). In our study participants were asked to provide recommendations of other key informants, along with their contact information, whether applicable or possible.

#### 4.2 Data Collection and Analysis

Interviews followed a semi-structured format where a researcher asks informants a series of predetermined but open-ended questions (Given, 2008). These open-ended questions focused on offshore wind energy and community benefits (see Appendix A). Each interview began with questions on the interviewee’s role in the community, followed by questions on offshore wind development and the Kitty Hawk Wind Lease, and finished with questions on the possibility of community benefits. The

use of semi-structured interviews allowed for all interviewees to respond to the same questions while also giving the interviewee the opportunity to provide their own perspective on the topic. In addition, semi-structured interviews provided the interviewer with the option to ask follow-up questions when a unique response was given (Robson, 2011). Interviews were recorded on a password-protected laptop, transcribed in Microsoft Word, and entered into the qualitative data coding software, NVivo.

Data analysis utilized a thematic analysis approach, following the procedures established by Braun and Clarke 2006. Initial codes were developed in NVivo based on interview questions and frequent responses that emerged throughout the interviews. Afterwards, a subset of nodes of interest, guided by our research questions and the literature, were selected and the text coded at each of these nodes was reviewed. From these subset nodes, we developed overarching themes from the data. The initial coding followed a theoretical approach where the thematic analysis is driven by the researcher's theoretical or analytic interest. Secondary coding followed an inductive approach where the themes produced cannot be tied to specific questions asked of participants. While using both approaches, all data was analyzed at a semantic level. Under a semantic approach, themes are identified "within the explicit or surface meanings of the data, and the analyst is not looking for anything beyond what a participant has said or what has been written" (Braun and Clarke, 2006, pg. 84). In the Results section, overarching themes are supported with data extracts from the interviews to provide the essence of what each theme is about.

## CHAPTER 5

### RESULTS AND DISCUSSION

Our research consists of three objectives 1) understand key informant opinion on the proposed wind farm; 2) gauge community benefits that would best meet the needs of the community; and 3) identify their preferred method of administration of benefits. This section presents analysis of responses, illustrated by examples from interviews with various Outer Banks key informants who may be involved in the policy process for an offshore wind farm. Each interviewee was assigned a number ranging from 1 to 11 for anonymity in all quotes used in the following paragraphs. Our analysis focuses on the Kitty Hawk Wind Lease and the hypothetical provision of community benefits by the developer. We will structure our discussion of results around six main ideas: 1) stakeholder perceptions of their community; 2) familiarity with offshore wind energy and the Kitty Hawk Wind Lease; 3) benefits of the Kitty hawk Wind Lease for coastal communities; 4) impacts of the Kitty Hawk Wind Lease on coastal communities; 5) stakeholder community benefit preferences; and 6) administration of community benefits.

#### 5.1 Defining the Community

In the initial series of questions, key informants were asked to identify what they considered their community. The purpose of this inquiry was to address the common problem in community benefit schemes of defining the perceived boundaries

of the community in question (Cowell et al., 2011). This is a challenge because perspectives on community depend largely on residents' collective sense of belonging and shared purpose (DTI, 2005). A majority of key informants viewed their community as expanding beyond the political boundaries of their locality. For example, several key informants worked for Dare County but viewed their community as encompassing a broader portion of eastern North Carolina. One key informant explained that *"our primary purpose is on Dare but....we have a very collegial management group if you will in northeast North Carolina...we do have a larger focus"* (#3). This perspective was reinforced by another key informant who emphasized that *"Dare County has such a key role in northeast North Carolina...and North Carolina overall...we certainly give consideration to our role in the broader community"* (#8). This is considered an all-embracing community perspective which consists of diverse communities or a wider area that may encompass areas not affected by an offshore wind development (Rudolph et al., 2018). But there were exceptions to this broader community perspective as well. Some key informants' view of their community was at a slightly smaller geographic scale that consisted of the Northern Outer Banks from Corolla to Hatteras. Although they generally talked about community in the context of the Outer Banks, they also explained that *"there are community issues at a small resolution level...what Hatteras Village is dealing with is vastly different than what Kitty Hawk is dealing with"* (#11). One key informant viewed the community as the six incorporated towns of Dare County and clarified that the *"the managers of the towns and the county meet once a month to discuss things that affect all of us together and we try to find ways to complement each other"* (#5).

These varying perspectives on community show the difficulty in defining a beneficiary community and demonstrates the necessity for an open-consultation process with a wide array of local stakeholders.

A topic not discussed by key informants was how marine resource users may define their community. This is relevant for the Outer Banks community because commercial and recreational fishing are significant components of the local economy. Commercial or recreational fishermen may view their community as a certain area of the ocean rather than ports or land-based operations associated with the industry. In a study of New England commercial fishermen, participants viewed their community as tied to specific locations of the ocean where cooperation, sharing of local knowledge, and mutual dependence took place ( St. Martin and Hall-Arber, 2008a). Fishermen detailed the “boundaries (social and geographic) of their fishing communities and their relationship to specific resource areas over time” ( St. Martin and Hall-Arber, 2008b, p. 781). Although no key informants in this study described an area of the ocean as their community, it is important to not disregard the possibility that there are community members on the Outer Banks or in the surrounding region who identify with a part of the ocean space within the Kitty Hawk Wind Lease.

## 5.2 Familiarity with Offshore Wind Energy and the Kitty Hawk Wind Lease

A majority of key informants had substantial experience with offshore wind planning and policy decisions. Several interviewees were actively involved in the policy process for renewable energy in North Carolina. For example, two key informants routinely had discussions with project leaders at Avangrid about the



concerns of the commercial fishing industry and were working collaboratively with the developer. In addition, one key informant was a researcher who was actively involved with the NC Renewable Ocean Energy Project. This is a collaboration between various academic institutions in North Carolina to research and develop technologies to harness the energy of the ocean (Coastal Studies Institute, 2020). In contrast to active involvement, there were key informants who had previous policy experience as well. One key informant had experience with North Carolina energy decisions in the past when they served on the governor's committee for offshore wind. Another key informant had experience with offshore wind development when they worked as a Business Development Manager in Norfolk, Virginia.

For the section of the interview protocol focused on the Kitty Hawk Wind Lease, interviewees were provided with a basic overview of the proposed project (see Appendix B). All key informants were aware of the project and had knowledge of its planning for several years. This is consistent with trends in awareness for offshore wind within the NC general population awareness for offshore wind as well. In a study conducted by BOEM, NC coastal residents reported more awareness of offshore wind development in their own state compared to residents living further inland (Goedeke et al., 2019). This may be attributed to the public meetings hosted by BOEM along the NC coastline from August 2013 to September 2016 and the local media coverage focused on the possibility of offshore wind development in the state (Goedeke et al., 2019). Key informants were knowledgeable on the proposed project's distance from the shoreline but several key informants lacked information on the possible megawatt capacity of the project and Avangrid's planned timeline for operation.

### 5.3 Perceived Benefits of the Kitty Hawk Wind Lease

In this study, most key informants were uncertain if there would be any direct benefit from offshore wind for coastal communities near the proposed project. One interviewee best exemplified this perspective by explaining that: *“I think that by permitting it we’re kind of making a larger contribution to society by doing it. I’m not sure that the benefits are as direct”* (#2). Research has shown that there is often a perceived disparity between global benefits of wind power and the localized effects of projects (Haggett, 2011). While national discussion may focus on macroeconomic issues, energy, and climate politics, local level discussions are usually focused on the risks and benefits for the coastal area (Glaeser, 2004; Haggett, 2011). During the Cape Wind project in Massachusetts, local residents opposed the project partly due to the lack of direct benefits (Kempton et al., 2005). Other interviewees shared similar doubts of direct benefits due to the geographic isolation of the Outer Banks and the lack of infrastructure necessary to support land-based operations which would in turn provide benefits in the form of jobs and localized economic activity. The Outer Banks *“does not have a big shipyard so a lot of that work would be done out of Norfolk and the Chesapeake Bay”* (#10). In addition, interviewees pointed out that *“we have a real impediment with our inlet [Oregon Inlet] and Virginia has got deeper water so if I’m a boat that’s supplying the windmills...I’m gonna go in there [Virginia]... It’s a no brainer versus coming here [Oregon Inlet]”* (#4).

Availability of local jobs was voiced by several key informants as a benefit they hoped for but acknowledged that employment would most likely be located one

and a half hours away in Norfolk. As an interviewee put it: “*Where are those jobs going to be? Probably in Norfolk...that’s really not going to benefit our people necessarily unless they are going to move there*” (#6). Economic benefits to remote communities hosting wind farms, like the Outer Banks, can be modest due to low operational and maintenance requirements (Munday et al., 2011; Cowell et al., 2012). For example, goods and labor are often brought in from other parts of the country to construct the wind farm with the developer’s local presence normally limited to a regional, representative office (Munday et al., 2011). However, one key informant in Currituck County was much more optimistic about local jobs because the northern end of their county shares a border with Virginia and is “*part of the MSA [Metropolitan Statistical Area] for Virginia Beach, Norfolk, and Williamsburg*” (#7). They see the opportunity for residents in this part of the county to commute to the port at Norfolk for employment with the wind developer. This area has historically catered to commuters who work in Virginia Beach and Norfolk so this is an opportunity for the county to expand their tax base in the northern end of the county.

Several key informants expressed interest in the possibility of electricity discounts to relieve the cost of living for many residents on the Outer Banks who rely on a seasonal income from tourism. One interviewee explained: “*I would hope that this project would tie into our power system to reduce our costs...because this is a tourism-based community and all of the workers are usually living paycheck to paycheck...so if we can cut any kind of reoccurring bill...*” (#1). Electricity discounts were identified as an important quality of life indicator and positive impact of offshore wind development by North Carolina residents (Goedeke et al., 2019). A community’s

desire for electricity discounts has been a recurring theme in wind farm literature but is complex to implement in practice. Discounts must be negotiated with an energy utility and, in a case study of existing offshore renewables, researchers found no electricity discount schemes from offshore renewables in place so far (Rudolph et al. 2014).

In contrast to direct benefits, key informants were more optimistic about indirect benefits from the offshore wind development. From the perspective of economic development, key informants viewed the proposed wind farm as stimulating the regional economy. As one key informant explained: “*Bottom line at the end of the day is that it’s money*” (#11). The offshore development would bring “*better jobs into Norfolk*” and then “*more people are going to come down here [Outer Banks] and vacation*” (#6). Developers have framed indirect benefits as a form of community benefit in international offshore wind developments like in the U.K. and Germany (Rudolph et al. 2014).

From the perspective of recreational fishing, several key informants were hopeful for the opportunity to fish around the turbines and saw the wind farm as a new fishing destination. One key informant mentioned that the wind farm would “*probably be good for some habitat*” and predicted that there would be “*charter fishing and recreational fishing around these windmills*” (#4). There is evidence that offshore structures, like wind farms, are viewed as beneficial to fishing by providing habitat that facilitates an increase in fish abundance (Hiatt and Milon, 2002; Fikes, 2013; Smythe et al., 2018). As a new fishing destination, the thought of fishing around turbines was “*just as exciting as having the oil rigs offshore or other major fishing*

*destinations*” (#10). Studies have shown that offshore wind farms can attract tourist-related activities, such as recreational fishing, because the wind farm acts as a novelty destination (Lilley et al., 2010; Smythe et al., 2018). For the Block Island Wind Farm, fishermen noticed an increase in recreational fishing in the area after the wind turbines were constructed with several fishermen explaining that the wind farm acted as destination for recreational fishermen in the area (ten Brink and Dalton, 2018).

One key informant saw the offshore wind farm as an opportunity to market the community as a “green destination” that could appeal to a new aspect of the tourism market. In Europe, offshore wind farms like the Middlegrunden Offshore Wind Farm in Denmark and the Scroby Sands Offshore Wind Farm in the United Kingdom provide visitors with lectures, presentations, and boat tours related to the wind farm (Albrecht et al., 2013; Smythe et al., 2018). One interviewee involved with coastal tourism saw the possible wind farm as giving the Outer Banks the “*great reputation that we are environmentally sound because we are using wind energy*” (#6). Wind farms have the potential to attract environmentally concerned visitors (Bergmann et al., 2008; de Sousa and Kastenholz, 2015) and it has been identified that more research is needed to promote wind farms as “green destinations” (de Sousa and Kastenholz, 2015). Another interviewee expressed a similar sentiment by suggesting that the “*Outer Banks Tourism Board use the wind farm as a marketing board because more and more people are looking for greener vacation destinations*” (#1). An increase in tourism has been linked to the Block Island Wind Farm in Rhode Island. In a study of the local Airbnb rental market on Block Island, researchers found that the Block Island Wind Farm acted as a tourist attractant and caused a 19% increase in occupancy

during peak tourism months (Carr-Harris and Lang 2019). In addition, businesses that developed wind-farm related promotions viewed business as being good in the first year of the wind farm's operation (Smythe et al., 2018).

A noteworthy theme that developed through the interview process was that all key informants were adamantly opposed to offshore oil development. No question in the interview protocol specifically addressed this topic and all responses focused on offshore oil originated unsolicited from the interviewees. Key informants viewed the wind farm as decreasing the chance that oil development would occur. Currently, there is no offshore oil development along the U.S. east coast but the current administration has proposed opening the entire coastline to drilling (Cama, 2018). Some key informants explained that the Kitty Hawk Wind Lease was “*one of the best alternatives that we [the Outer Banks] currently have*” relative to offshore drilling (#8). Another key informant emphasized that “*the biggest benefit to us is getting themselves [Avangrid] up and running to supplant all possible oil well locations*” (#2).

#### 5.4 Perceived Impacts of the Kitty Hawk Wind Lease

Key informants had concerns about impacts from the proposed offshore wind development as well. The main concern was over the possibility of a transmission cable making landfall on the Outer Banks. Many informants saw a cable landing as a potential point of contention in the community. The transmission of electricity from an offshore wind farm to the shore is when residents will most likely have a personal interaction with an offshore wind project (Firestone et al., 2018). Residents can object

to a cable landing due to visual effects to the landscape, concerns over property values, and attachment to a certain location (Batel and Devine-Wright, 2015; Devine-Wright and Batel, 2017; Devine-Wright, 2013; Firestone et al., 2018). One interviewee expressed the view that: *“Now if they try to come here onshore with a transmission cable and all the attendant expansion that requires.... I think then people would say wait a minute what are you doing...”* (#5). From the perspective of key informants, a cable landing *“would be a concern because tourism is our number one driver for our economy and we don’t want to disrupt that”* (#7). There is some support that these concerns are founded; in a survey of tourists’ perspectives on transmission lines in Iceland, participants indicated that the proposed transmission lines would have a negative effect on their desire to visit that area in the future (Stefánsson et al., 2017).

An interesting concern voiced by one key informant involved the possibility of a cable landing disrupting the routine beach nourishment that occurs in Dare County. From their perspective, the developer was never going to *“fully understand what they are getting into with the nature of the currents and the shifting sands and just how dynamic this area is”* (#8). They viewed the buried cable as a hazard and emphasized that they did not want a *“cable getting hit when we are doing beach nourishment”* (#8). Concerns about cable landings of offshore wind farms are common. Residents of Cape Cod have raised concerns over Vineyard Wind’s cables that are set to land at Covell Beach in Barnstable, Massachusetts (South Coast Today, 2019). On Block Island, transmission cables have become exposed off a popular tourist beach raising concerns about possible damage from anchoring boats in the area (South Coast Today, 2019). Since the Kitty Hawk Lease was in the early stages of planning during data

collection, there was minimal information on the proposed cable route for the project. The possibility of a cable landing on the Outer Banks seemed likely at the start of interviews as the most immediate and cost-effective route for transmission. During the process of conducting interviews, Avangrid Renewables released a Notice to Mariners that they would be conducting geophysical surveys of the lease area and proposed cable corridor to Sandbridge, Virginia (NC Coastal Federation, 2019). This news release reduced the uncertainty over the cable route and latter interviews included information on the proposed cable route to Virginia.

Another concern voiced by several key informants was the potential impacts on the commercial fishing industry. The overall sentiment was that *“if it [the wind farm] negatively impacted the fishing community anywhere in Dare County...we would object to that”* (#5). The concern for the commercial fishing industry has emerged in coastal communities in New England as well. During the planning of large-scale developments like the Vineyard Wind project, commercial fishermen objected to the orientation and spacing of the project’s turbines (Kuffner, 2019). From the perspective of commercial fishermen, the orientation and spacing of turbines both affect their ability to fish and navigate through the wind farm safely (Kuffner, 2019). This was a concern for commercial fishermen around the Block Island Wind Farm who thought that turbines could be a navigational hazard (ten Brink and Dalton, 2018). When interviewing commercial fishing interests on the Outer Banks, key informants thought there would be less of a conflict associated with the Kitty Hawk Lease compared to projects that are proposed in the New England region due to the relative lack of fisheries in the project area. One interviewee explained in detail that: *“It*



*appears to me that there is not a lot of active fisheries in that area. So that is a great thing...and it is kind of in the middle where there are fisheries inside of it and offshore of it but not particular to that area” (#4). From the key informant’s perspective, “it [the wind farm] may have some effect...miniscule...but nowhere near the effect of what is happening up there [New England]” (#4). This perspective was reinforced by another key informant who is actively involved in commercial fishing issues as well. When speaking with commercial fishermen about the lease area, they learned that “the vast majority of our guys are not that far off...they are closer in” and that the majority thought “there would be less impact than they originally supposed” (#11). This perspective contrasts with commercial fishermen in New England who feel threatened by the offshore wind developments in the region. Commercial fishermen who fished the Block Island Wind Farm felt like they had lost productive fishing grounds which they attributed to the wind farm’s footprint and vessel crowding from an influx of recreational fishermen in the area (ten Brink and Dalton, 2018).*

## 5.5 Community Benefit Preferences

In the interview process, key informants were presented with basic information on community benefits and examples of benefit schemes in the offshore wind industry (see Appendix C). When asked about their preferred community benefit scheme, the majority of key informants showed interest in a community fund. This is the most common benefit model used by offshore wind developers in the U.K. (Cowell et al., 2011). These funds may be set up with the purpose of supporting economic, social, and environmental investment in affected communities (Cowell et al., 2011). Study

participants saw a community fund as a way to address problems in the community like dredging Oregon Inlet, building affordable housing, and beach nourishment. Tackling affordable housing was referenced as a main priority for the majority of key informants. A recent community survey shows that 75% of survey respondents felt Dare County did not have affordable housing options (Healthy Carolinians of the Outer Banks, 2019). From the perspective of key informants in this study, finding affordable housing for the local workforce is “*our number one issue in Dare County*” (#3). They saw a community fund as a way to “*purchase lands or offset the costs for housing projects here*” (#6). In addition to affordable housing, the shoaling of Oregon Inlet was identified as an economic impediment for the region. Oregon Inlet frequently experiences extreme shoaling with water depths as low as 3 feet at times (Outer Banks Voice, 2019). One key informant viewed the community fund as a way to help the commercial fishing industry “*through participation of a community fund to maintain safe and open passage through Oregon Inlet*” (#8). This perspective was reinforced by another key informant who saw the dredging of Oregon Inlet as a way to provide a “*regional benefit...not just for Wanchese and Dare County...but allows boats to come into all these other ports [Englehard and Swanquarter] to unload their fish*” (#4).

Several key informants expressed interest in a community ownership model where members of the community are investors in the wind farm. This is a common trend in European countries like Denmark and Germany where over 50% of existing renewable energy projects are at least partially owned by communities (Fruhmann and Knittel 2016). For example, the Middelgrunden Wind Farm outside of Copenhagen Harbor is half owned by the local utility and half owned by a general partnership of

municipal citizens (Fruhmann and Knittel 2016). One interviewee thought that a community ownership model was a good way for “*bringing in some of the demonstration power projects*” like a turbine or a wave energy converter that are being studied off Cape Hatteras (#10). They identified the local energy cooperative on Hatteras Island as a possible owner of these marine renewable energy demonstration projects. Renewable energy cooperatives allow citizens to collectively own and manage renewable energy projects (Huybrechts and Mertens, 2014; Yildiz et al., 2015; Bauwens et al., 2016) while focusing on very local issues (Bauwens et al., 2016). Countries with extensive wind development like Denmark and Germany both have a long history of energy cooperatives as well (Bauwens et al., 2016).

The hope for the opportunity of employment was referenced by several key informants as a benefit they would like to see provided by the developer. Specifically, the opportunity for “*management type positions that would not have to be on site in Norfolk but work remotely*” (#6). Two key informants thought “*it would be nice to have an opportunity in Wanchese to utilize that port*” (#6) with the hope that the developer would offer some jobs doing “*smaller scale stuff.... like getting an engineer out to the lease block*” (#11). One key informant was interested in the developer incentivizing solar to combat energy peaks in the summertime when residents and visitors air condition their homes. Developers may be inclined to offer benefits in the field of energy where they have wider expertise like, for example, providing funds for low-energy light bulbs or offering grants for improving the energy efficiency of homes (Cowell et al. 2012).

The last benefit referenced by a key informant was “*investment in the schools for developing a curriculum around wind power*” (#10). Educational programs do not bring immediate benefits to a community but are aimed at future generations through the development of skills at the local level (Rudolph et al. 2014). In relation to the funding of educational programs, the key informant was interested in the “*opportunity to apply for grants to provide observations that Avangrid may be interested in having about the ocean or the wind environment out there (the lease area)*” (#10).

## 5.6 Administering Benefits

In the interview process, key informants answered questions about who they thought should administer benefits if Avangrid funded a community fund. No key informants thought the State of North Carolina should administer the fund because “*we’ll never get the money*” (#6). This mistrust of larger levels of government has been reflected in results of research on political trust in westernized nations (Fitzgerald and Wolak, 2016). People tend to see local government as more representative and responsive compared to the national government (Jennings, 1998; Fitzgerald and Wolak, 2016). In the case of the Outer Banks, the small-scale population and rural characteristics of the region may play a factor in their trust of local government. In a study of trust in local governments in western Europe, researchers found that those living in rural areas or small villages were more trusting of local authorities than those who reported living in larger towns or cities (Fitzgerald and Wolak, 2016). Most interviewees suggested administration of benefits at the local level through the county government or a trusted local organization. One key

informant explained that: *“I would say Dare County because the closer you get to local the better it is. Because we know what the needs are”* (#4). This view was reinforced by another interviewee that saw local government administration as making the most sense because *“elected officials are held accountable for that funding rather than having an unelected group of individuals in control of that money”* (#7). However, some were hesitant to delegate authority to the county because *“the county does not have a good mechanism for granting and is the least nimble in rolling it [money] out”* (#11).

As an alternative to county administration, several key informants suggested that the Outer Banks Community Foundation (“The Foundation”) would be an ideal candidate because they are a nonprofit that *“manages a collection of trusts and grants”* (#1). The Foundation is public charity that was created to help meet local needs in Dare County and across all Outer Banks communities from Corolla to Ocracoke Island (Outer Banks Community Foundation, 2020). Key informants saw the Foundation as having the ability to oversee *“a fund with specific criteria and specific uses”* (#6). Currently, the Outer Banks Community Foundation manages assets worth approximately \$20 million (Outer Banks Community Foundation, 2020). The use of a trusted local organization is commonly employed in the administration of community benefits from energy developers (Cowell et al. 2012). One key informant suggested an administration model where a board is formed that has *“local community representation, you have someone from Avangrid, maybe you have an academic, maybe you have some local fishermen, you have everybody”* (#11). Another suggestion was that a new organization be created as a nonprofit and *“a position*

*funded to administer the fund” (#1).* This approach would help to address one of the weaknesses of community funds which is the lack of provision for the costs of management of the funds (Cowell et al. 2012). Local communities usually do not have room in their budget for the administration of a high value fund on their own. Regardless of who key informants thought should administer a community fund, all participants suggested it should operate at a local geographical scale.

## CHAPTER 6

### CONCLUSION AND RECOMMENDATIONS

This case study aimed to strengthen understanding on the use of community benefits in a small, coastal community in North Carolina. Through interviews with key informants, we gained insight into community benefit scheme preferences and how community members viewed the administration of said benefits. Our research showed that key informants preferred the use of a community fund for distributing benefits to a community and that administration of the fund should go through a local government or trusted organization. From the perspective of key informants, these two elements of a benefit scheme would allow the community to directly address problems that they deem as a priority.

Based on this research, it is evident that community members may view their “community” as expanding beyond traditional political boundaries and this is something that offshore wind developers should acknowledge when distributing benefits at the local level. When negotiating community benefits, a developer should start with affected communities which BOEM has defined in the context of offshore wind development as “any locality that is, or is proposed to be, the site of gathering, transmitting, or distributing electricity” and “any locality in which there is a reasonable probability of significant effect on land or water uses from activities approved” (BOEM, 2020a, p. 489). But in addition to BOEM’s definition of community, developers need to consider communities of interest like marine resource users who may view their community as a specific part of ocean within the lease area

rather than a land-based location (St. Martin and Hall-Arber, 2008a). This broader definition of community would help to incorporate affected parties that may be overlooked through BOEM's proximity-based definition of community.

Not only will perspectives on community vary on a case-by-case basis but so will the needs of community in question. It is unlikely that a single form of benefit can be effectively administered as a universal approach. Developers will need to collaborate with individual communities in order to formulate benefits that best fit their existing conditions. Most importantly, these collaborations should begin in the early stages of the project's development. Research has shown that early involvement of the public in planning and development processes can have positive outcomes on acceptance and it is entirely feasible for this approach to be taken in the development of community benefits (Breukers and Wolsink, 2007; Aitken, 2010). In BOEM's leasing process, there are multiple opportunities for public participation as required by NEPA. Negotiations for community benefits could be included in the leasing process.

The lease issuance stage is part of the leasing process where it would be feasible for the developer to initiate negotiations with a community for community benefits. This gives the developer and community ample time to reach an agreement that is satisfactory to both parties. A community benefit agreement can take years to negotiate so initiating a dialogue with the developer in the leasing stage allows for a time frame of several years to pass before a COP is released. Once a COP is released, the developer and communities at large would have a better idea of what the project entails and the scale of impacts associated with it. At this phase, a developer could be required to sign a community benefit agreement with affected communities. For the



lease areas that have already passed the leasing phase, these areas are still in a SAP phase where a COP has yet to be released (BOEM, 2020b). While not as early in the leasing process as we have recommended, negotiations could still be initiated between both parties.

Legislation could be passed that makes community benefits a requirement in all proposed projects. This could be achieved through an amendment to the Energy Policy Act of 2005, the federal legislation that BOEM derives its authority from to lease the Outer Continental Shelf for renewable energy development. Legal obligations do exist in parts of the European wind market like the Danish Renewable Energy Act of 2009 which requires wind developments to offer at least 20% ownership to local communities (Fruhmann and Knittel, 2016). The role of the federal government in the community benefit process would be to institute this legal requirement for a community benefit agreement with affected communities. The state governments will have role to play in the community benefit process in a limited capacity similar to the federal government. The states could incorporate community benefit guidelines into their Renewable Portfolio Standards (RPS). This may be an effective approach because roughly half of the growth in U.S. renewable energy generation can be attributed to state renewable energy requirements (National Conference of State Legislatures, 2020). However, state and federal government should not be involved in the actual negotiation process. As shown in my research, communities may be more trusting of local government rather than state or national government. Community benefit negotiations should happen at a local level between affected communities and the developer. The legal obligation of benefits gives coastal

communities greater agency to begin discussion of benefits early on while also eliminating the perception that the developer is bribing the community into accepting the project. It would put the developers and coastal communities on an equal footing.

This research was case-specific and provided a unique perspective on the needs of a single coastal community. Two limitations exist in this study: 1) the low number of interview participants, which can be partially attributed to the residents' busy schedules during peak tourism season, and 2) the focus on a single case study. It should be noted that, although interview numbers were low, key informants consistently suggested the same individuals to reach out to and the majority of these contacts were incorporated into our study. In addition, the use of a single case study can contribute to the understanding of community benefits in U.S. offshore wind development and provide a foundation for future research to build upon. As previously mentioned, most research on the use of community benefits in U.S. offshore wind development has taken place in the northeastern United States and this is the first study to focus on a community in the southeastern United States concerning community benefits from offshore wind. This study provides theories on community definition, community benefit preferences, and administration of benefits that could be tested in a broader, multiple case study format along the U.S. east coast.

A multiple case study could expand on this study by interviewing key informants in other coastal communities where offshore wind leases have been located. Specifically, areas along the mid-Atlantic and northeast coastline where the majority of lease areas exist. These communities will likely offer unique perspectives of their own on community benefits and reinforce the need for case-by-case

negotiations as suggested above. By conducting a multiple case study, researchers would be able to analyze data within each case and across cases to develop broader conclusions about community benefits (Gustafsson, 2017). Moreover, comparisons among cases could lead to theories of community benefits for offshore wind that could be tested quantitatively with a broader, more representative sample of coastal community members.

## APPENDICES

### Appendix A: Interview Protocol

#### **Background**

1. Tell me about your role in the town, county, or organization.
  - a. What do you do?
  - b. How long have you been working here?
2. Can you identify problems in the community that are in need of investment?
3. What do you consider the “community”? ( one of the north beach towns, the Outer Banks, eastern NC, etc.)
4. Where do you see the Outer Banks 20 years from now?

#### **General Offshore Wind Questions**

5. What do you know about offshore wind in general?
  - a. Benefits?
  - b. Impacts?
6. What is your opinion of offshore wind development?
7. Do you think the Outer Banks is a suitable location for an offshore wind farm?
8. How do you think offshore wind benefits nearby coastal communities?

#### **Kitty Hawk Wind Lease (introduce information about project)**

9. Did you know about the Kitty Hawk Lease development before this study?
10. What is your opinion of the project?
  - a. Are you supportive/ unsupportive?
11. Do you think the (town, county, organization) should have a say in the siting of the wind farm?
12. How do you think the community would be affected by the project?

#### **(Introduce information on Community Benefits)**

13. How do you think the project could benefit the community?
14. Who do you think should administer community benefit funds? (local organization, the state, the developer)
15. Do you have any advice / suggestions for the developer of this project?

## **Appendix B: Kitty Hawk Wind Lease Information**

In 2017, Avangrid Renewables became the winner of the lease sale for a wind energy area of 122,405 acres off the shores of Kitty Hawk. This area has potential megawatt capacity of 2500 MW (~250 turbines) and there is the potential for a transmission cable landing on the North Carolina coastline. In the following years, Avangrid will be conducting geophysical, geotechnical, benthic, and biological surveys of the wind energy area. They will also begin stakeholder outreach. The developer will have 4.5 years to submit a Construction and Operations Plan (COP) to BOEM for approval. This plan will provide a detailed proposal for the construction and operations of a wind energy project within the lease area. Once BOEM receives a COP, it will conduct an environmental review of the proposed project and reasonable alternatives. If BOEM approves the COP, the developer will then have a term of 25 years to construct and operate the project. Avangrid is projecting project permitting in 2021-2022, 2023 for onshore construction, and 2024-2025 for offshore construction.

## **Appendix C: Community Benefits Information**

The concept of community benefits is to provide a gain for the community as a whole, rather than enriching individual members within that community. Community Benefits can be provided voluntarily by the developer or as a direct response to pressure from communities arguing for their involvement in offshore renewables and the distribution of benefits. Benefits can come in the form of a community fund, community ownership in the wind farm, direct investment, jobs, or electricity discounts.

Community benefits can be viewed in a variety of ways. They may be used to increase local acceptance of the project, accounting for local impacts from the project, or to recognize that the community is “hosting” (ex. hosting a substation on land or the cable landing) a development. In the U.S., there has only been one form of community benefits, as of yet, between an offshore wind developer and a coastal community. In Martha’s Vineyard, the island signed a community benefit agreement with wind developer Vineyard Power. The contract stated that the community would advocate for and support the project in exchange for jobs and partial ownership of the wind farm.

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