



The dynamics of offshore wind perception and acceptance across development models

Bass Connections Offshore Ocean Energy;
Renewables Group

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I. Introduction

A. The potential for offshore wind in the US

The offshore wind industry is in its earliest phases in the United States. The US has extraordinary potential in its offshore resources, boasting 4,000 GW of potential (Baring-Gould, 2014). The “Smart from the Start” initiative under the Obama administration is the first attempt as a coordinated installation of offshore wind power across the US. The strategy calls for achieving 54 GW of deployed offshore wind capacity by 2030, and 10 GW by 2020 (US DOE, 2011). Currently, the US has not deployed any of its proposed offshore wind farms, but that is expected to change by the end of 2016 with the completion of the Block Island Wind Farm in Rhode Island (Smith, et al., 2015). There are currently 15 GW of proposed projects, but most are still in the earliest permitting and approval processes (Smith, et al., 2015). The US DOE is financing three technology demonstration projects in Rhode Island, New Jersey, and Oregon, with the hope that private sector companies will look to develop their own offshore wind farms in the future (US DOE, n.d.). This program will address challenges that have been identified in the permitting and approval process, installing full-scale offshore turbines, and connecting to the grid (US DOE, n.d.).

B. The potential for offshore wind in NC

North Carolina is a state identified by the Bureau of Ocean Energy Management as an area of substantial offshore resource. Over 300 GW of potential offshore wind resource exists within 50 miles of the shore (Voss et. al, 2012). Additionally, North Carolina is one of the pioneers with the Renewable Portfolio Standards, as it was the first state in the southeast to adopt one. This standard calls for 12.5 percent of retail

electricity sales, from investor owned utilities, and 10 percent of public utility generation to come from renewable sources by 2021 (North Carolina State Government, 2008).

The RPS has been crucial in deploying renewable resources statewide, but there are only specific goals set for solar and biomass thus far (North Carolina State Government, 2008).

The southeast hosts a highly skilled manufacturing and maritime workforce, and offshore wind in the Southeast has the potential to generate 1.6-1.7 full time jobs per MW during the life of the plant, and 14-44 full time jobs per MW during construction (Tegen, et al., 2015). Jobs and Economic Development Impact modeling done by NREL shows that the best case scenario (low cost of installation), would lead to 5,830 project development and onsite labor jobs, 10,770 supply chain jobs, and 12,140 induced jobs (supported by worker expenditure), with an average of 31 jobs per MW (Tegen, et al., 2015). If BOEM decides to focus on offshore wind, rather than offshore drilling in the Atlantic, wind would provide 25,000 more jobs than offshore drilling (Oceana, 2015). Moreover, the energy produced from offshore wind would more than double the amount of energy extracted from the outer continental shelf oil reserves (Oceana, 2015).

Even though construction costs are minimized, there is an additional challenge of providing electricity that matches or beats the current electricity costs in North Carolina (10.96 cents/ kWh), which are lower than the average US cost (12.36 cents/ kWh) (EIA, 2015).

II. Literature Review

A. Europe as an example

As of February 2016, Europe had installed 3,230 grid-connected offshore wind turbines, supplying 11,027 MW of power to the continent (The European Wind Energy Association, 2015). This is 3,230 more turbines than the U.S. has installed. To ascertain precisely why Europe has had such success and the U.S. has not requires a deeper delve into the regulatory environment and the social and cultural perspectives of Europeans regarding offshore wind power.

In its 2020 work budget, the European Commission reserved £9.1 billion for energy, of which £565 is explicitly allocated for the purpose of funding offshore wind projects (European Commission, 2011). This specific designation of capital combined with offshore-wind specific legislative framework and measures such as designated offshore wind tariffs, mandatory community benefits or joint-ownership models, make for a regulatory environment conducive to implementing offshore wind energy.

B. Barriers to development

Several barriers have been identified to be at fault for the lack of offshore wind development in the US. First, the economics of unsubsidized offshore wind only make sense in a few locations, where electricity prices are very high. Places like the Northeast and Hawaii have high electricity prices and are close to coastal areas, making them ideal candidates. Industrial barriers include the development of a supply chain and servicing fleet to tend to the turbines once constructed (Daniel, 2014). The European Wind Energy Agency identified the established maintenance supply chain as a major

factor in the decrease in retail electricity prices of offshore wind, and will therefore be very important for the US moving forward (EWEA, 2016). Additionally, the Jones Act (1920) restricts European vessels from being able to install turbines on the US continental shelf (Papavizas, 2011).

Regulatory barriers include streamlining the permitting and approval process, and reevaluating dated legislature. The number one concern of developers in pursuing offshore wind in the US is the uncertainty posed by the permitting and approval process (Van Cleve & Copping, 2010). Indeed, although the DOI has been committed to the development of offshore wind, including through its 20% wind energy by 2030 goal, out of which 54 GW are intended to arrive from offshore wind (DOE, 2008), no overarching federal policy has been put forward to guide the national effort for obtaining that goal.

Moreover, the current regulatory framework is governed by a legislation established for the development of offshore oil. But while offshore oil is extracted on site and shipped to refineries and its price is determined by global markets, the price of offshore wind farm output is determined by local regulatory bodies (regional or at the state level), and the electricity must be delivered by cable to the coast, a requirement that introduces a suite of problems that are not appropriately addressed by the current regulatory framework, from environmental impacts to local opposition. In fact, the current framework is designed to reduce the dangers of oil spills while increasing federal revenue, two goals that are at odds with the development of offshore wind that does not entail catastrophic environmental risks but requires regional cooperation among states and communities. Unfortunately, regional cooperation cannot be met under a fully competitive framework which incentivizes the states to compete against

each other instead of cooperate in the development of regional offshore wind projects (Firestone et al., 2015).

Additionally, the U.S. lacks long-term financial incentives such as tax credits and federal loan guarantees that would motivate developers to invest in offshore wind projects (Firestone et al., 2015). Since state cooperation is a major factor in offshore wind development, many commentators have recommended that Congress create incentives for regional and local cooperation. Such incentives could ask greater sharing of royalties with those states that cooperate or promote the creation of regional interstate compacts similar to those for managed shared natural resources.

Finally, as demonstrated by the Cape Wind project, coastal opposition has proven to be a worthy adversary of the offshore wind industry. Indeed, social acceptance of proposed sites is one of the most significant challenges to the development of offshore wind power in the U.S. (Espinoza, 2015; Economist, 2010, 2015; Klain et al., 2015) and abroad (Walker et al., 2014, Devine-Wright P., 2007). Unfortunately, in the U.S., most studies of obstacles for offshore wind development have focused on other variables such as financial support mechanisms, planning regimes and market structure and only limited resources have been dedicated to the study of causes and factors that drive local opposition or to the development of mitigation techniques for addressing them (Devine-Wright, 2005; Firestone et al., 2015).

C. The “Social Gap”, the NIMBY perspective, and its critique

Studies in the US and abroad consistently find high and stable levels of public support for developing renewable energy in general (Ansolabehere and Konisky, 2014)

and offshore wind in particular (Acheson, 2012; Firestone et al., 2009; 2012; Walker et al., 2014). However, the general support for offshore wind is contrasted with demonstrated intense opposition to specific projects at the local level (Kempton et al., 2005; Wolsink, 2010; Walker et al., 2014; Patrick Devine-Wright, 2005). In North Carolina, a 2009 survey of Kitty Hawk residents found that 91% of respondents supported offshore wind energy (Landry et al., 2012). However when faced with a potential development in their locality, in 2013, the Kitty Hawk Town Council passed a resolution that urged that no wind farm be built within 20 nautical miles of the coastline (Stearns et al., 2015).

The “social gap” in offshore wind acceptance rates is often labeled as NIMBYism (not in my backyard) (Thayer and Hansen, 2002; Patrick Devine-Wright, 2005; Walker et al., 2014; Klain et al., 2015), which is defined as “an attitude ascribed to persons who object to the siting of something they regard as detrimental or hazardous in their own neighborhood, while by implication raising no such objections to similar developments elsewhere” (Simpson and Weiner, 2003, as quoted in Kempton et al., 2005, p. 125). In the context of offshore wind development, the NIMBY view holds that individuals who oppose local development do so because they do not want to take on the burden of a development that deliver a general social good (e.g. a secure energy supply for a nation-state, less GHG emissions worldwide) but localized cost (Walker et al., 2014). In other words, the NIMBY view focuses on individual self-interest as the driving force of local offshore wind opposition (Walker et al., 2014).

However, the labeling of social opposition as NIMBYism or at least the use of NIMBYism as a sole explanation for local opposition to local offshore wind development has been heavily critiqued (Petrova MA., 2013; Devine-Wright P., 2005; Kempton et al., 2005; Wolsink M., 2000, 2007;;Walker et al., 2014). Researchers have found that NIMBYism fails to adequately represent the full scope of interrelated issues underlying local opposition for offshore wind development. Economic impacts, aesthetic perceptions, environmental values, place attachment, cultural identity, and ‘qualified support arguments’ (whereby individuals’ general support of offshore wind is contingent on assumptions and conditionalities that are often unmet in the specific local project development context), influence individual and community acceptance of offshore wind development in numerous ways that cannot be fully understood and researched if we continue to label opposition merely as NIMBY (Klain et al., 2015; Walker et al., 2014, Jones and Eiser, 2010; Toke et al., 2008;Devine-Wright P., 2009; Wolsink M., 2009; Johansson et al., 2009).

D. Strategies to reduce local opposition

If local opposition to offshore wind is multifaceted, varied, and contingent on the specific economic, social, cognitive, mental and environmental characteristics of the proposed project and affected community, then no universal mitigation measure could be suggested as a one-size-fits-all solution to community opposition. However, with the understanding that the drivers of local opposition vary from one development to another comes the realization that in order to increase the feasibility of offshore wind development we must introduce regulatory frameworks that are conducive for

meaningful stakeholder deliberation processes (Klain et al., 2015). Only through meaningful deliberation could developers, regulatory agencies and affected communities find creative solutions that will maximize social welfare by addressing the needs and concerns of all stakeholders (Renn, 2006; Klain et al., 2015) and create opportunities for incorporating local and professional knowledge into the specific development model (Renn, 2006; Cramer et al., 1980; Dietz, 1987).

In the US, communities have two main avenues for providing input in the offshore wind development process. The first avenue is by using political capital. A good example is the 2013 Kitty Hawk Town Council Resolution to resist offshore wind development within 20 nautical miles of the town's coastline discussed above. In response to this resolution, the Bureau of Ocean Energy Management (BOEM), the federal agency responsible for designating and leasing ocean blocks for offshore wind development, removed from the Kitty Hawk Wind Energy Area (WEA) blocks within 24 nautical miles from the coastline (BOEM, 2014). BOEM's decision entails significant development costs, as the initial call areas published by BOEM in the federal register in December 2012 were located within 6 nautical miles of the coastline (BOEM 2-15). A rule of thumb generally accepted in the US estimates the cost of offshore wind development at \$2 million per mile (including cable, installation, permitting, and the connection on either end)(Wright et al., 2002). According to this estimate, increasing siting distance from shore by 18 nautical miles (20 miles) has increased development cost by \$40 million (not including the added transmission and maintenance cost).

The second common avenue for providing stakeholder input is by active engagement either by commenting on the federal plan, as published in the federal register, participating in community public information sessions with the representatives of BOEM (BOEM 2015), or providing input to the developer as part of the developer's community outreach and public engagement efforts.

The American private-sector-led development model leaves little control to local communities on the development process (Devine-Wright, 2001, 2005). The question of whether or not concerns raised by the community will be addressed in the absence of protective legislation is wholly dependent on the developer's willingness to voluntarily incorporate mitigation measures (and respectively, on the community's political power to resist, stall, and hinder development). Studies conducted in the UK, where a similar private-sector-led development model is in place, revealed that private sector developers and public sector institutions administered public engagement efforts poorly (Devine-Wright, 2005).

Moreover, empirical data indicates that more than 75% of residents in areas where offshore wind farm development is being suggested are unaware of public engagement processes conducted by developers and local authorities. (Devine-Wright, 2001). Some researchers have therefore contended that local opposition to offshore wind development may be motivated by a sense of lack of control over development or land use planning processes, and dissatisfaction with these procedures (Devine-Wright, 2001, 2005). Feelings of lack of control are oftentimes enforced by views of "big business" invasion of the local landscape, a position prevalent with local communities in states employing the private-sector development model (Bolinger, 2001; NATTA, 1999).

Many countries have introduced community benefits programs as a means to increase public acceptance and local participation. The form of the benefit and the development model that incorporate it vary from one country to another, and policies could be voluntary or mandatory. However, in general, the concept of community benefits typically relates to developer funds or investments that are provided to nearby communities with the objective of increasing local support for the project (Klain et al., 2015; Walker et al., 2014; Cowell et al., 2011, 2012). Studies of community acceptance show that the introduction of community benefits has a positive impact on local acceptance of offshore wind development (Aitken, 2010).

When properly managed, community benefits can build local support and increase local participation (Aitken, 2010; Walker et al., 2014).

However, community benefits are not free of problems. Experience suggests that payments to the local community might be perceived as bribes meant to “buy” local support (Miner 2009; Gray & Haggett, 2005; Aitken, 2010). When such a perception becomes entrenched, either through media coverage or public discourse, community opposition might actually increase as the locals in the affected area might feel that the benefits are not meant at creating greater equity but rather for silencing them (Klain et al., 2015, Aitken, 2010; Walker et al., 2014).

To counter the danger of community benefits being perceived as bribes, Cowell et al. suggest allowing greater control for the community on the development process. It is argued that high levels of community control will create a sense of equity, community empowerment, and a feeling that the community has negotiated “a good deal” (Cowell et al., 2011; Aitken; Walker et al., 2014). The effects of community involvement and

control on the success of wind farm development has been thoroughly studied in the EU. Studies have consistently found that local involvement, politically or economically, increases support and acceptance and tends to have positive effects on the local perception of wind farm development. (Devine-Wright, 2005).

The significance of local community control and involvement for the success of offshore development highlights the potential of community ownership or joint ownership schemes. Prevalent in Denmark, Sweden and certain regions of Germany (and also in the US for onshore wind and recently solar energy), community ownership models allow members of local communities to become owners of a certain share of the project, either by incorporating as a co-op or through buying shares in an entity created by the developer (joint-ownership). A study in Denmark that examined the links between local ownership and acceptance of wind energy found that people who owned shares in wind energy project are significantly more positive toward wind energy than people with no such economic interest. Furthermore, owners were more willing to accept additional turbines and wind energy development in their locality than non-owners. (Krohn & Damborg, 1999; Devine-Wright, 2005)

However, comprehensive quantitative experimental research testing the effects of community benefits and ownership models on local support for wind farms is lacking. Only a limited amount of studies examined the effect of community benefits or ownership models on community acceptance of offshore wind, and to the best of our knowledge, no study has ever compared how the level of local support changes between suggested community benefits and ownership models. Building upon existing studies, our aim is to conduct an original experimental examination of whether the

provision of community benefits can influence local support for wind farms, and how such support will be affected by the further introduction of community ownership schemes. Hopefully, our results will provide effective development guidelines for developers and policymakers alike. salient.” (Walker et al., 2014).

III. Methodology

A. Planning the survey

This research pertains to the thoughts and emotions of human subjects, so an Institutional Review Board protocol had to be followed. Our IRB protocol was reviewed at the end of March and granted an exemption on March 25, 2016.

The University of Delaware study on public perceptions of offshore wind served as a guide in our planning process (Krueger et al., 2011). This sparked the idea of giving the respondents scenarios to vote on, rather than asking questions outright.

In our survey, we use visual simulations of two different sized turbines at varying distances from shore. The visualizations were created by BOEM and the National Parks Service. We selected the Coquina beach location in afternoon lighting, at 10, 15 and 20 nautical miles away with Vestas 7MW turbines and Siemans 3.6MW turbines for our survey. This provided a total of seven visualizations given to survey takers as options, including the viewshed without any turbines visible.

Additionally, we spoke to the Information Initiative at Duke's help center who put us in contact with survey methodology expert, Dr. Steven Snell. Multiple meetings with Dr. Snell resulted in a survey structure that minimized bias, and assurance that the language would be accessible by almost all levels of education.

A pilot version of the survey was tested on Amazon Mechanical Turk respondents residing in coastal states in the Eastern United States between April 2-8, 2016. The pilot survey was used to refine wording and survey format, to ensure that respondents understood the questions, to test the usefulness of the images provided for illustration, to gather information on whether respondents perceived the survey design,

wording of the questions or the scenarios to be biased, and to see if the survey was appropriate in length. In particular, the pilot survey was critical to ensure that the scenarios section was understandable and that respondents understood the differences between the three scenarios and could properly complete the choice experiment questions, and that the questions were producing usable data.

B. Deploying the survey

Coastal communities closest to BOEM's identified leasing areas were identified as target survey areas. Over 1,000 addresses of homeowners were obtained in the ocean front zip codes for Kill Devil Hills, Kitty Hawk, and Oak Island. Of the addresses obtained, 409 were located in Kill Devil Hills, 355 in Kitty Hawk, and 483 in Oak Island. On April 13, 2016, homeowners were contacted via a postcard advertising our survey, and sent a reminder postcard on April 28, 2016.

Each survey response comes with a non-personal locational description of each respondent, including their latitude, longitude, and IP address. This will help to assure that real people have taken the survey, and that no one has taken the survey multiple times, while also maintaining the anonymity of the survey taker.

To view the survey, see Appendix I, or visit <http://sites.duke.edu/ncwind> .

IV. Hypothesis and assumptions

A. Research hypothesis

Coastal communities' opposition to local offshore wind development will decrease with the introduction of community benefits or community ownership, with a greater decrease in opposition for community ownership than for community benefits.

B. Reason for hypothesis

There were three main reasons that we arrived at our research hypothesis: (i) Individual payout addresses individual self interest (NIMBYism) better than community payout; (ii) community ownership creates a bottom-up deliberation process, enhancing autonomy and involvement thereby improving community empowerment and identification with the suggested development; (iii) community ownership and payments received under such a scheme will not be viewed as "big business" invasion, or as a "bribe."

C. Methodological challenges

1. Community acceptance or opposition rate is hard to measure.

One way of doing so is by measuring willingness to pay or receive. Thus, in order to gauge the differences in community acceptance across development models we could have introduced a "payment" scenario whereby respondents would be requested to choose between multiple options describing development models at varying cost to the ratepayer. This approach introduced several challenges: first, in order to identify individual value of each of the three models we would have had to create a large number of scenarios per model at varying cost to respondent. We would then have had to send the survey to a very large group of respondents, dividing respondents to

subgroups, with each subgroup receiving different scenarios and costs per ratepayer. This would have significantly complicated the study. Additionally, a further complication arose due to the difference between models. The first model- the current private-sector-led model only entails cost to the community, while the other two models - community benefits and ownership combine costs and payments. Measuring the differences in willingness to pay between models that introduce payments to the respondent would have been difficult. To overcome these challenges, we have decided to measure community acceptance according to respondents' willingness to accept development at closer distances to shore. The solution is based on two assumptions:

- i. cost per resident increases as the distance of the wind farm from the coast decreases. Thus, as acceptance rate increases (respondents are more willing to accept local impacts), willingness to accept closer development will increase as well.
- ii. Aesthetic responses are tied with individual values and perceptions.

Therefore, negative feelings of resentment, for instance with regard to a project that was concocted by outsiders and imposed upon my community, will affect my aesthetic perception of the project. However, a project that I was involved in its design, choice of location, and features and that is either owned by me or benefiting my community, would create less feelings of resentment, thereby reducing its visual disamenity (Saito,2004).

2. The survey does not measure effective community acceptance under any development models

What we are measuring is how attitudes toward development changes according to *suggested models*. There is a difference between the two because both the community benefits and the joint-ownership model, when applied, introduce frameworks and processes that increase engagement, involvement, and empower communities. Thus it is very well possible that attitude toward development will effectively change when the models are applied in real life, but no significant change in acceptance rate will appear when they are merely suggested as a development *option*.

V. Results

The preliminary results are very promising. To make definite conclusions we need more responses, as we are currently hovering around 70. The raw data can be found in Appendix II. So far, the most striking result is the increase in acceptance between the traditional model and the revenue sharing model, in addition to the cooperative model.

Our survey respondent population is largely homogenous. We have mostly white males over 60 years old. In the future, we should try to send postcards to a different subgroup of the population than the 1,200 addresses we already purchased.

While we wait for more responses, see Appendix III for a preliminary regression analysis.

VI. Conclusion

Our results demonstrate that community acceptance increases with the transition from the current private-sector-led model to the suggested alternative models, with the highest increase under the community ownership model. Acceptance was measured by willingness to vote for development locations at varying distances from shore. The increase of which affirmed our methodological assumptions.

A. Aggregate social benefits

The increase in acceptance rate indicates that there are substantial social benefits to introducing community benefits and joint ownership models in the US. At least two studies can be employed in calculating the potential social aggregate benefits associated with each of the models. Krueger et al. (2011) valued the aggregate external cost of visual disamenity imposed on Delaware residents by offshore wind development at 0.9, 3.6, 6, and 9 miles to be \$7.6 million, \$4.2 million, \$1.1 million, and \$870,000 annually in perpetuity. An increase in acceptance rate for closer offshore wind development locations entails a decrease in aggregate external cost of visual disamenity as measured by Krueger et al. (2011). Additionally, as explained earlier, development cost (not including transmission and maintenance) increases about \$2M per mile, a cost to be saved if wind farms are located closer to shore. Lastly, decreased local opposition means less litigation, PR, and campaigning expenses, which, as demonstrated in the the Cape Wind could accrue until a project becomes economically unfeasible.

B. Policy Recommendations

Our results have led to two primary policy recommendations moving forward.

First, many studies suggest revenue sharing with states as a measure for addressing local opposition (e.g. Firestone et al., 2015). However, the “social gap” phenomenon demonstrates that, if anything, revenue sharing with states will not address local opposition as it will only increase general support, which is already high, and do nothing to address local opposition which is the key obstacle in offshore wind development.

Indeed, Krueger et al. (2011) found that participants preferred payments to be made to a local Beach Nourishment Fund rather than a State General Fund.

Secondly, Thus, in order to reduce local opposition policymakers should consider introducing regulatory support for development models that directly benefit impacted communities. For instance, in the UK, the Community Benefit Protocol requires onshore wind farm developers to provide £5000 to local communities for every megawatt of installed wind energy capacity (Walker et al., 2014); In Denmark, the country with the highest rate of community ownership schemes, a 2009 act imposes an obligation on developers to offer at least 20% ownership interest to local communities (Danmarks, 2009). Other policies that support and enable community ownership models include feed-in laws, tax advantages, and standard interconnection agreements (Bolinger, 2001). Lastly, BOEM’s January 29, 2015 Massachusetts auction included a 10% non-monetary credit for submitting a qualified Community Benefits Agreement, a small step in the right direction (BOEM, 2015).

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Appendix I- Blank Survey

Informed Consent Block Options ▾

Q3 You have been invited to take place in a research study

Title of Research Study: Wind Development in North Carolina

This consent form asks you to take part in a research study. The study is being conducted by three Duke University students: undergraduates Molly Rosenstein and Emily McAuliffe, and law student Ori Sharon, with oversight by their advisors Dr. Jay Golden and Dr. Lori Bennear.

Reasons for the study: This study seeks to investigate your opinions on current and future wind energy projects in North Carolina.

What you will be asked to do: Your participation involves taking a 10-minute survey in which you will be asked about your opinions regarding wind energy. You will be asked how certain aspects of wind farm design affect your perceptions and beliefs about wind power in North Carolina.

If you complete the study you can be entered in a raffle to receive one of five \$100 Amazon gift cards by participating in the study. In order to qualify, you must answer every question and provide a contact email address at the end. Your participation is completely voluntary, and you can stop at any time by closing your web browser. It is our hope that you try to answer all of the questions in order for us to better understand your thoughts and opinions about North Carolina wind energy.

How your confidentiality will be maintained: If you chose to participate, we will store email addresses temporarily, in order to contact gift card winners. If provided, they will be stored separately from the survey responses. The individual responses to this study will not be publicly available, but will be displayed as overall results. No individual response form will be accessible.

Benefits and risks: This research will not benefit you personally, but will be beneficial to policymakers, academics and local governments. We know of no risks to you for participating in this study.

If you have any questions regarding the progress or results of this study, or your rights as a participant, please do not hesitate to contact Molly Rosenstein (mkr14@duke.edu), Emily McAuliffe (erm34@duke.edu), Ori Sharon (ori.sharon@lawnnet.duke.edu), or their advisors Dr. Golden and Dr. Bennear.

Researchers:
Molly Rosenstein mkr14@duke.edu and 970-274-1231
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Faculty Advisors:
Dr. Jay Golden jay.golden@duke.edu and (919) 613-3646
Dr. Lori Bennear lori.bennear@duke.edu and (919) 613-8083

Q2 By continuing, you accept the terms listed above



[Add Block](#)

▼ BOEM activities

Block Options ▾

Q48 In this Survey, **offshore wind development** refers to the building of wind farms in the ocean to produce electricity.



----- Page Break -----

Q7 The federal government is proposing to lease ocean blocks for offshore wind development in North Carolina. Are you familiar with these plans?



- Yes
- No
- I don't know

----- Page Break -----

Q9

The areas shaded in green, blue, and orange in the map below are the areas designated by the federal government for offshore wind development in North Carolina. This means that companies can purchase these ocean blocks with the aim to develop offshore wind facilities within them.



Wind Energy Areas (WEAs) - North

 Q10

Generally speaking, how strongly do you support or oppose the Federal Government's plans to develop offshore wind in these areas?



- Strongly support
- Support
- Somewhat support
- Neither support nor oppose
- Somewhat oppose
- Oppose
- Strongly oppose

----- Page Break -----

Display This Question:

If **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Neither support nor oppose Is Selected

Q77

You indicated that you neither support nor oppose, which way are you leaning?

- Support
- Oppose

----- Page Break -----

Display This Question:

If **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Strongly support Is Selected



Or **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Support Is Selected

Or **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Somewhat support Is Selected

Or **You indicated that you neither support nor oppose, which way are you leaning?**

Support Is Selected

Q72

You indicated that you support the federal government's plans. Please list any reasons you support the federal government's plans (please list in order of importance, from most influential to least):



Display This Question:

If **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Somewhat oppose Is Selected



Or **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Oppose Is Selected

Or **Generally speaking, how strongly do you support or oppose the Federal Government's plans to devel...** Strongly oppose Is Selected

Or **You indicated that you neither support nor oppose, which way are you leaning? Oppose Is Selected**

Q74

You indicated that you oppose the federal government's plans. Please list any reasons you oppose the federal government's plans (please list in order of importance, from most influential to least):



Add Block

Scenario 1

Block Options ▾

- Q50  We will now present you with three scenarios where you are asked to select between seven potential offshore wind development locations (for a two hundred turbine wind farm off the coast of NC). Scroll through all of the images before answering the questions. You may page back between any of the images to see them again.

----- Page Break -----

- Q47  The further a wind farm is located from the coast, the more expensive development and transmission become and the more ratepayers will have to pay through electricity bills. Note that each alternative represents a potential offshore wind farm at a different distance from the coast and at varying cost to ratepayers (the images are provided for illustration in order for you to gauge how the wind farm will be visible from the coast if developed at the suggested distance).

- Q42  Option A - 11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.



skipping over rest of the large displays



----- Page Break -----



Q13

Scenario 1:

The further a wind farm is located from the coast, the more expensive development and transmission become and the more ratepayers will have to pay through electricity bills. Note that each alternative represents a potential offshore wind farm at a different distance from the coast and at varying cost to ratepayers (the images are provided for illustration in order for you to gauge how the wind farm will be visible from the coast if developed at the suggested distance).



Q14

Which of the following options would you vote for (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?



11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.



- 11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.



- 17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.



- 17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.



- 23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.



- 23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.



- 39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.



Add Block

Scenario 2

Block Options ▾



Q60

Scenario 2:

NC is considering legislation requiring developers to share a certain amount of their revenue with coastal communities, and to work in conjunction with coastal communities to determine project design and measures to reduce potential negative impacts on coastal communities. With this legislation, coastal communities would receive a payout from the developer and would have a say in the project features.

However, since development cost increases with distance from the coast, the further the wind farm is from the coast, the less likely your community is to receive a payout from the developer or to implement expensive measures to reduce potential negative impacts on residents.



Q61

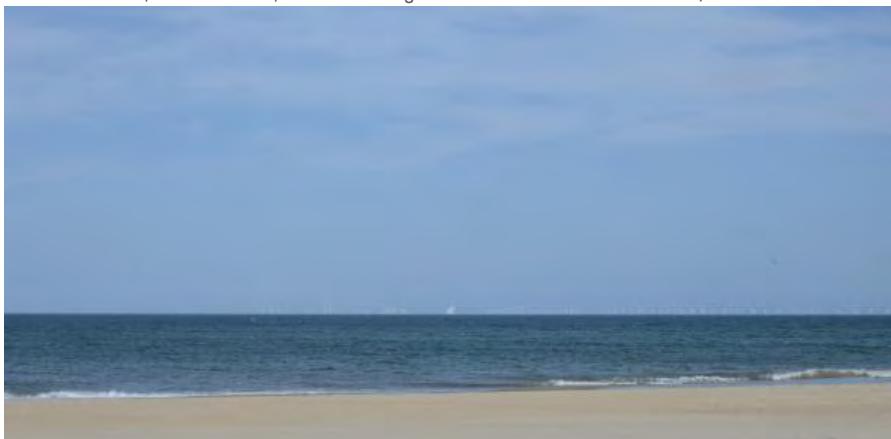
If NC passes legislation requiring developers to share a certain amount of their revenue with coastal communities, and to work in conjunction with coastal communities to determine project design and measures to reduce potential negative impacts on coastal communities. The community receives a payout from the developer, in addition to having a say in the project features.

As a resident in a coastal community that receives these benefits, how will you vote on the following options (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?

- 11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.



- 11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.





- 17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.



- 17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.



- 23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.





- 23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.



- 39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.



Add Block

▼ Scenario 3 Block Options ▾

 Scenario 3:
Q70

 A third approach is a joint-ownership model, where developers and residents jointly own the offshore wind farm. This allows residents of coastal communities to determine by themselves the project's design and measures to reduce potential negative impacts on coastal communities, while enjoying a certain amount of the profits.

However, since development cost increases with distance from the coast, the further the wind farm is from the coast, the less likely you are to receive a payout from the developer or to implement expensive measures to reduce potential negative impacts on your community.

Q71

Assume your community decides to jointly develop and own an offshore wind farm. As one of the project owners who gets to determine project features and receives a certain amount of the project revenue, how will you vote on the following options? (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?

- 11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.



- 11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.



- 17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.





- 17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.



- 23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.



- 23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.



- 39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.

[Add Block](#)

▼ Demographics

Block Options ▾

- Did your location choice change between the first and second scenario?
Q78 Yes
 No



Display This Question:
If **Did your location choice change between the first and second scenario? Yes** Is Selected

- In a few words, please explain why you changed your location selection between the first and second scenario.
Q79



----- Page Break -----

Display This Question:

If Did your location choice change between the first and second scenario? No Is Selected

Q80

In a few words, please explain why your location selection did not change between the first and second scenario.



----- Page Break -----

Q81

Did your location choice change between the second and third scenario?

Yes

No

----- Page Break -----

Display This Question:

If Did your location choice change between the second and third scenario? Yes Is Selected

Q82

In a few words, please explain why you changed your choice between the second and third scenario.



----- Page Break -----

Q83

Display This Question:

If Did your location choice change between the second and third scenario? No Is Selected

In a few words, please explain why your location selection did not change between the second and third scenario.



----- Page Break -----

Q17 Please describe your home or rented/ owned second home that is near the beach in NC.



- Oceanfront
- Semi-oceanfront
- Oceanside
- Soundside
- None of the above
- Other
- I don't know

----- Page Break -----

Q18

Wind Energy Areas (WEAs) - North



 Q19 If erected in one of the three suggested ocean blocks (above), do you think turbines will be visible from your property?



- Yes
- No
- x I don't know

----- Page Break -----

 Q29 Have you participated in any of the following activities concerning offshore wind development?



- Town council meetings
- Local elections
- Public comments on the federal government's plan
- Public information or stakeholder meetings with representatives of the federal government

 Q20 What is your age?



- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 - 74
- 75 - 84
- 85 or older

 Q21 What is your family household income before taxes?



- Less than \$10,000
- \$10,000 - \$19,999
- \$20,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$89,999
- \$90,000 - \$99,999
- \$100,000 - \$149,999
- More than \$150,000



What is the highest level of education you have completed?

Q22



- Less than high school
- High school graduate
- Some college
- 2 year degree
- 4 year degree
- Professional degree
- Doctorate



What is your gender?

Q23



- Male
- Female
- Other



What is your political orientation?

Q24



- Strongly liberal
- Liberal
- Somewhat liberal
- Independent
- Somewhat conservative
- Conservative
- Strongly conservative



What is your race?

Q25



- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other



How would you rank your attachment to the coastal area from which turbines would be visible (if erected)?

Q26



- Extremely attached
- Very attached
- Moderately attached
- Slightly attached
- Not at all attached

Q27 Would you consider the ocean, and especially the area where wind farm development is being suggested, as part of your identity?

-  Definitely yes
 Probably yes
 Might or might not
 Probably not
 Definitely not

Q28 Do you consider yourself to be politically active on the topic of offshore wind in your local government?

-  Yes
 No
 x I don't know

Q31 How often do you visit the beach in a calendar year (number of visits)?



Q32 How important is it for you to live by the ocean

-  Extremely important
 Very important
 Moderately important
 Slightly important
 Not at all important

Q33 How often do you participate in sea-related activities in an average year (Boating/ Fishing/ Surfing/ paddle board/ kayak/ boogie board/ etc.) (number of times engaged in such activity in an average year)?



Q49 Enter your email to be entered into the drawing for one of 5 \$100 Amazon gift cards. Your email address will not be attached to your responses of this survey.

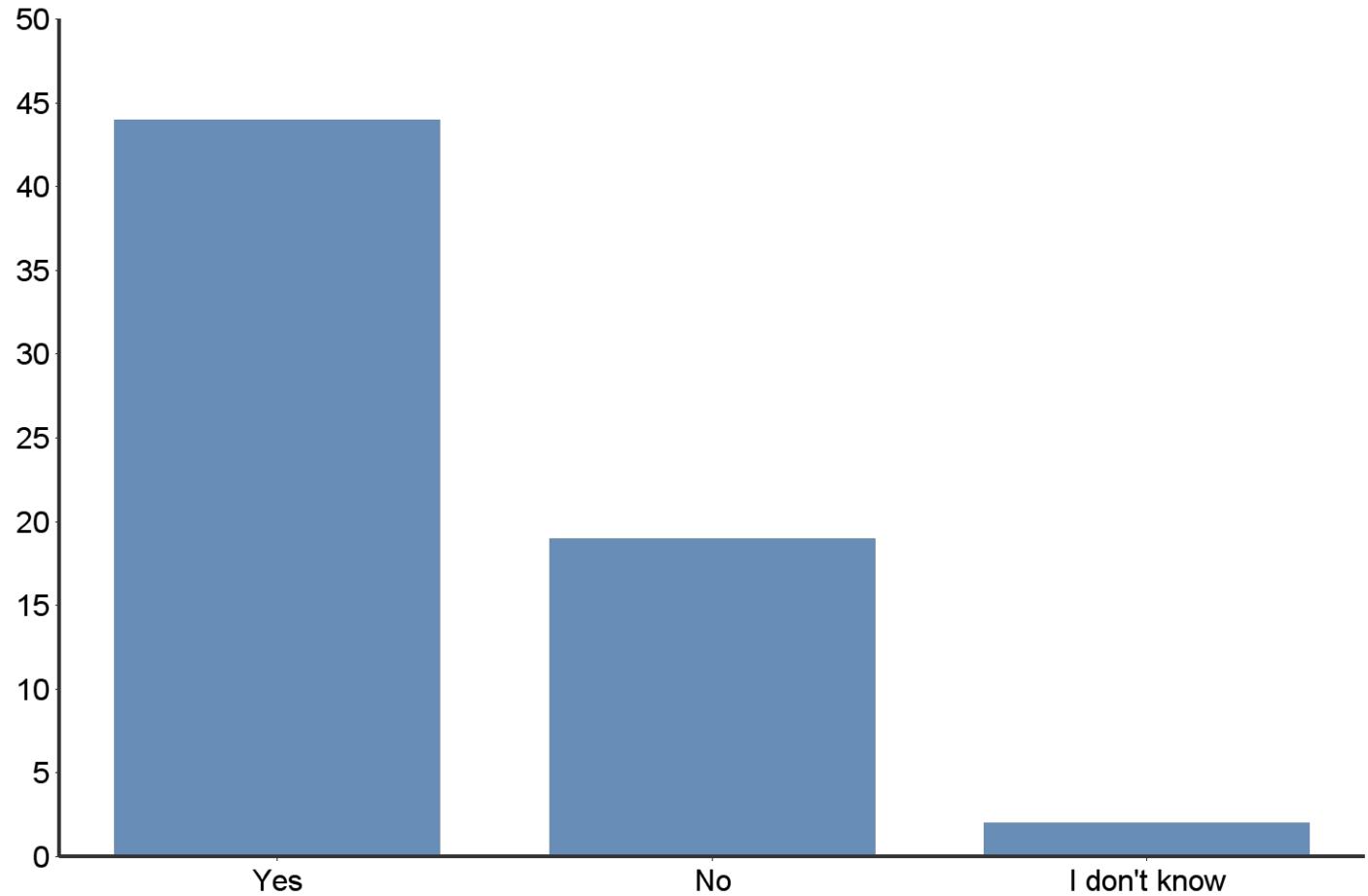


Add Block

IX. Appendix II- Raw Data

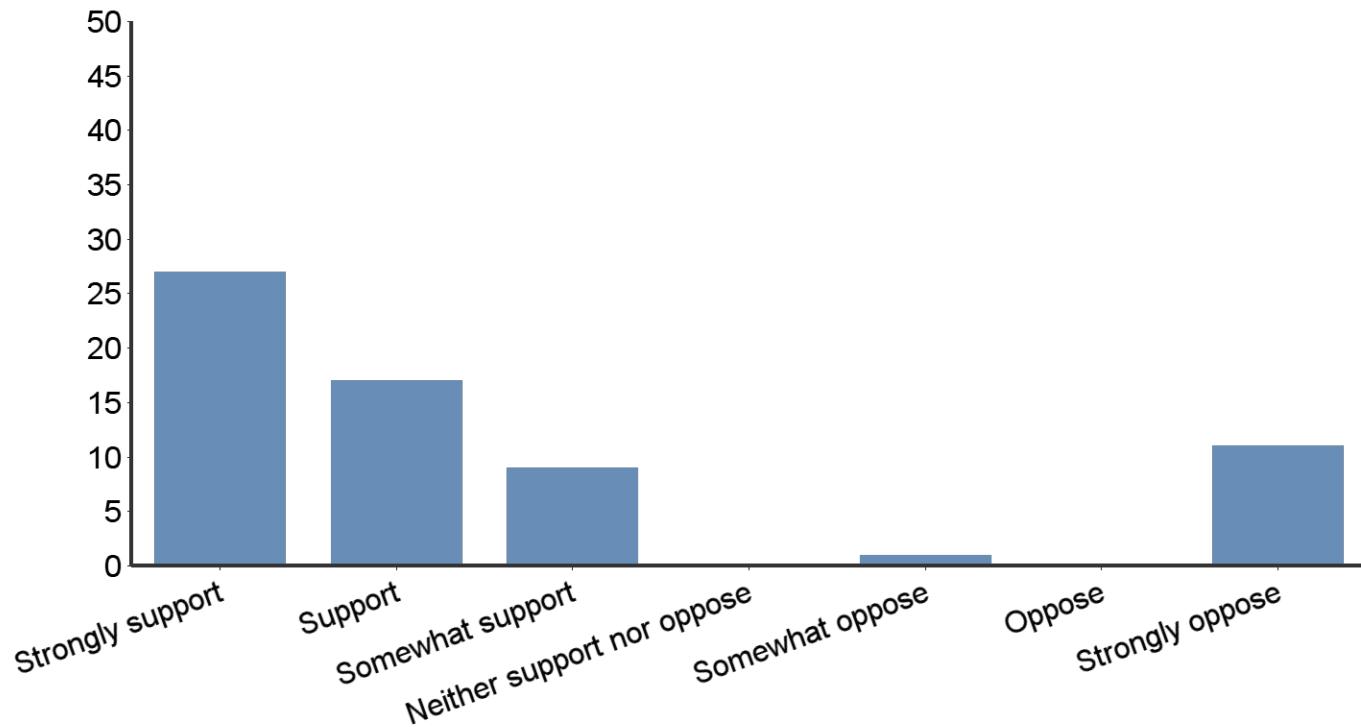
See Below

The federal government is proposing to lease ocean blocks for offshore wind development in North Carolina. Are you familiar with these plans?



#	Answer	Bar	Response	%
1	Yes	44	67.69%	
2	No	19	29.23%	
3	I don't know	2	3.08%	
	Total	65	100.00%	

Generally speaking, how strongly do you support or oppose the Federal Government's plans to develop offshore wind in these areas?



#	Answer	Bar	Response	%
1	Strongly support	27	41.54%	
2	Support	17	26.15%	
3	Somewhat support	9	13.85%	
4	Neither support nor oppose	0	0.00%	
5	Somewhat oppose	1	1.54%	
6	Oppose	0	0.00%	
7	Strongly oppose	11	16.92%	
	Total	65	100.00%	

You indicated that you support the federal government's plans. Please list any reasons you support the federal government's plans (please list in order of importance, from most influential to least):

& Air Alternative Area Benefit Bill Bring Built Carbon Chance Clean Cleaner Coast Costs Country Create Dare Demand Dependence Develop Drilling Drop

Economic Economy Efficient Effort Electricity

Energy

Environment Environmental Estuary Farms Foreign Fossil Free Fuels Gasses

Generation Good Government Great Greatly Green Greenhouse Harmful Higher Impact Improved Include Income Increase Jobs Lesser Local Long Lower Make

Means Methods Natural Nuclear Ocean Offshore Oil Oppose Part Patterns People Plan Pollutants Potential Power Prefer Production Progress Provide Pursue

Rational Reduce Reliance Renewable Resource Rigs Save Shore Solar Source State Strongly Support Sustainable Term Type Underutilized

Unsustainable Weather Wind World 1 2 3

Text Entry

environmental safety economical energy

Lower consumer costs. Preserve natural fossil fuels. Clean energy.

"GREEN" energy estuary improvement shut down local nuke facility

1. Self-sustaining energy production 2. Reducing reliance on fossil fuel energy production 3. Clean energy production

fossil fuels are unsustainable in the long term .

1)Alternative energy source that can create electricity without producing the pollutants that bring about climate change 2)Save almost 60% in greenhouse gasses 3)Could provide the world with energy that is renewable, clean, and efficient 4) Would cut down on costs and all other types of pollution

Would rather have clean energy wind farm than an oil rig with the potential for an environmental disaster. As long as the wind farms do not require seismic surveys.

Winds are always blowing in this area. Could bring down the price of electricity., no drilling except to put in the pilings,no chance of oil spillage,How would this benefit Dare Co.?

Renewable energy source to keep us from being dependent on the oil industry. Least impacting on our ocean ecosystem and beauty of our beaches.

Safe energy production; reduce foreign dependency

[View More](#)

You indicated that you oppose the federal government's plans. Please list any reasons you oppose the federal government's plans (please list in order of importance, from most influential to least):

& Alternatives Areas Beach Beautiful Begin Benefit Birds Build Construction Cost Costly Danger Debris Degrade Dependent Discourage Disrupts Due Economy

Fish

Effect Envioroment Erect Ether Expense Exposed Family Fear Fisherman Fisherperson Generated Grounds Happen Headache

Hurricane Hurt Industry Inefficient Injures Instantly Island Kills Life Live Low Maintain Maintenance Make Mammals Marine Mills Night Noise

Noreaster Number Oak Obstructed Ocean Plans Pollution Poor Problem Put Ratio Recreational Reduce Reports Roi Sea Service Shore Species Strewn Strong

Strongly Structures Terrifically Therefor Tourism Tourist Turbines Turtle Unsightly View Visible Water Wildlife Wind Worth 1 2 3 4 5

Text Entry

the plans will hurt the envioroment

effects on marine life, especially sea turtle fishing- as a recreational fisherperson may reduce the number and species of fish

What happens during a hurricane?

kills and injures many birds and fish exposed to turbines. also disrupts sea mammals due to noise generated by structures in water. not worth expense to build and maintain.

These areas are strongly dependent on the tourist industry & I fear turbines would discourage tourism & therefor out economy. 2. What will happen to the fish etc? 3. Yes there are strong winds here, how much maintenance would there be after a nor'easter or hurricane? 4. Costly to erect. 5. the wind mills are unsightly.

If placed to near shore, I think that they will be unsightly. Danger to wildlife / birds. Pollution of ocean waters either during construction or maintenance.

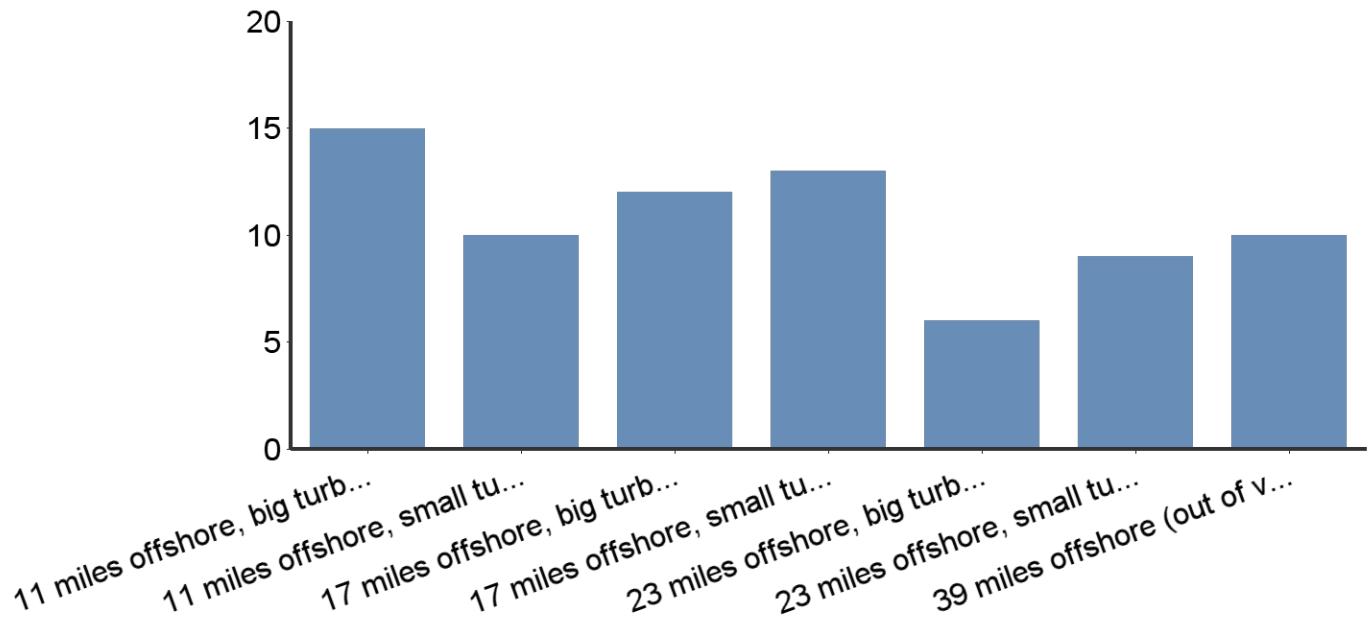
Very low cost-benefit ratio...poor ROI. Better alternatives, Unsightly

1. This will be just another problem for the Ocean fisherman to put up with 3. more than likely they will ether be in some of the best fishing grounds or go way around them to get to their fishing grounds. and could be a danger for them at night. 4. just another headache for the fisherman trying to make a living for his family.

I live on oak island and there has been reports that the turbines might be visible from the beach. Turbines are terrifically inefficient and begin to degrade almost instantly upon being placed in service. I fear the effect of hurricanes and beaches strewn with debris.

I live here. My beautiful view will be obstructed.

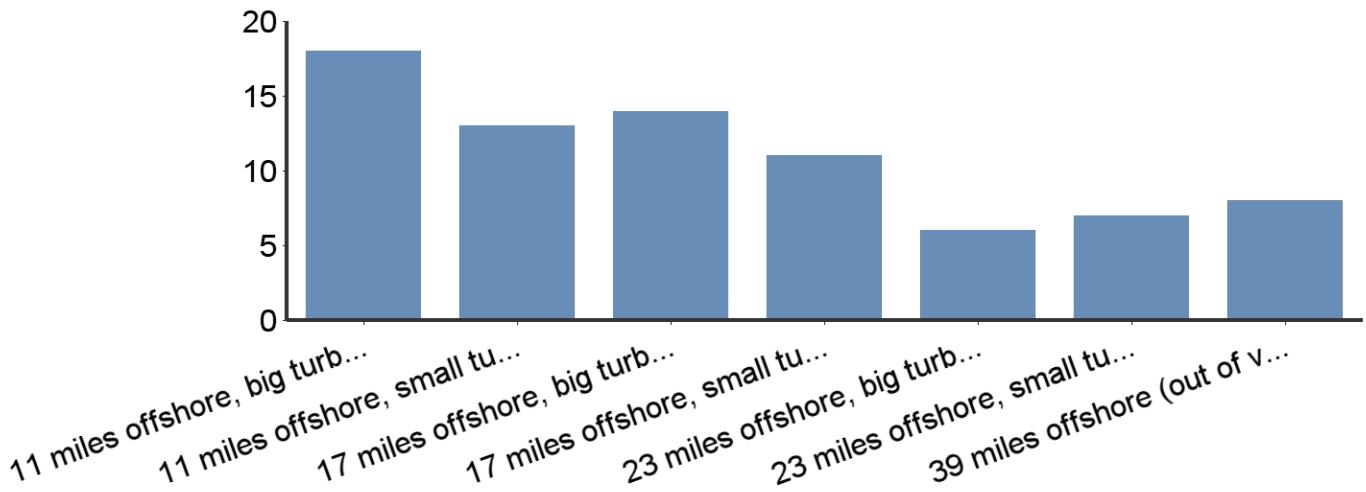
Which of the following options would you vote for (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?



#	Answer	Bar	Response	%
1	11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.		15	33.33%
2	11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.		10	22.22%
3	17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.		12	26.67%
4	17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.		13	28.89%
5	23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.		6	13.33%
6	23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.		9	20.00%
7	39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.		10	22.22%
	Total		75	100.00%

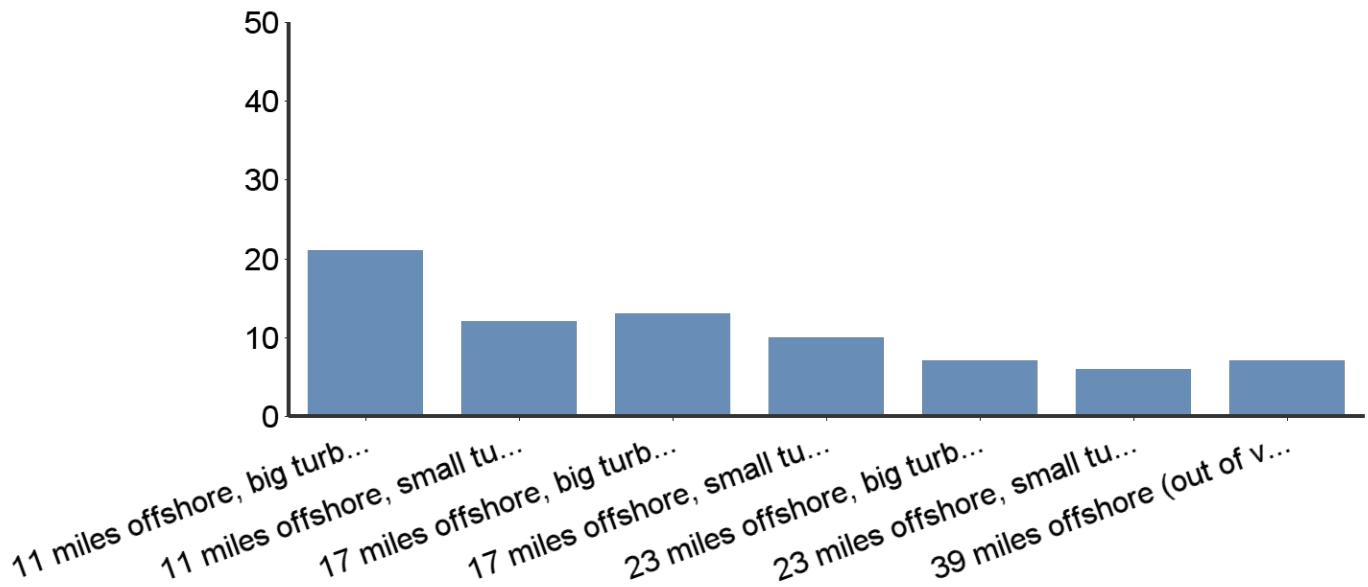
If NC passes legislation requiring developers to share a certain amount of their revenue with coastal communities, and to work in conjunction with coastal communities to determine project design and measures to reduce potential negative impacts on coastal communities. The community receives a payout from the developer, in addition to having a say in the project features.

As a resident in a coastal community that receives these benefits, how will you vote on the following options (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?



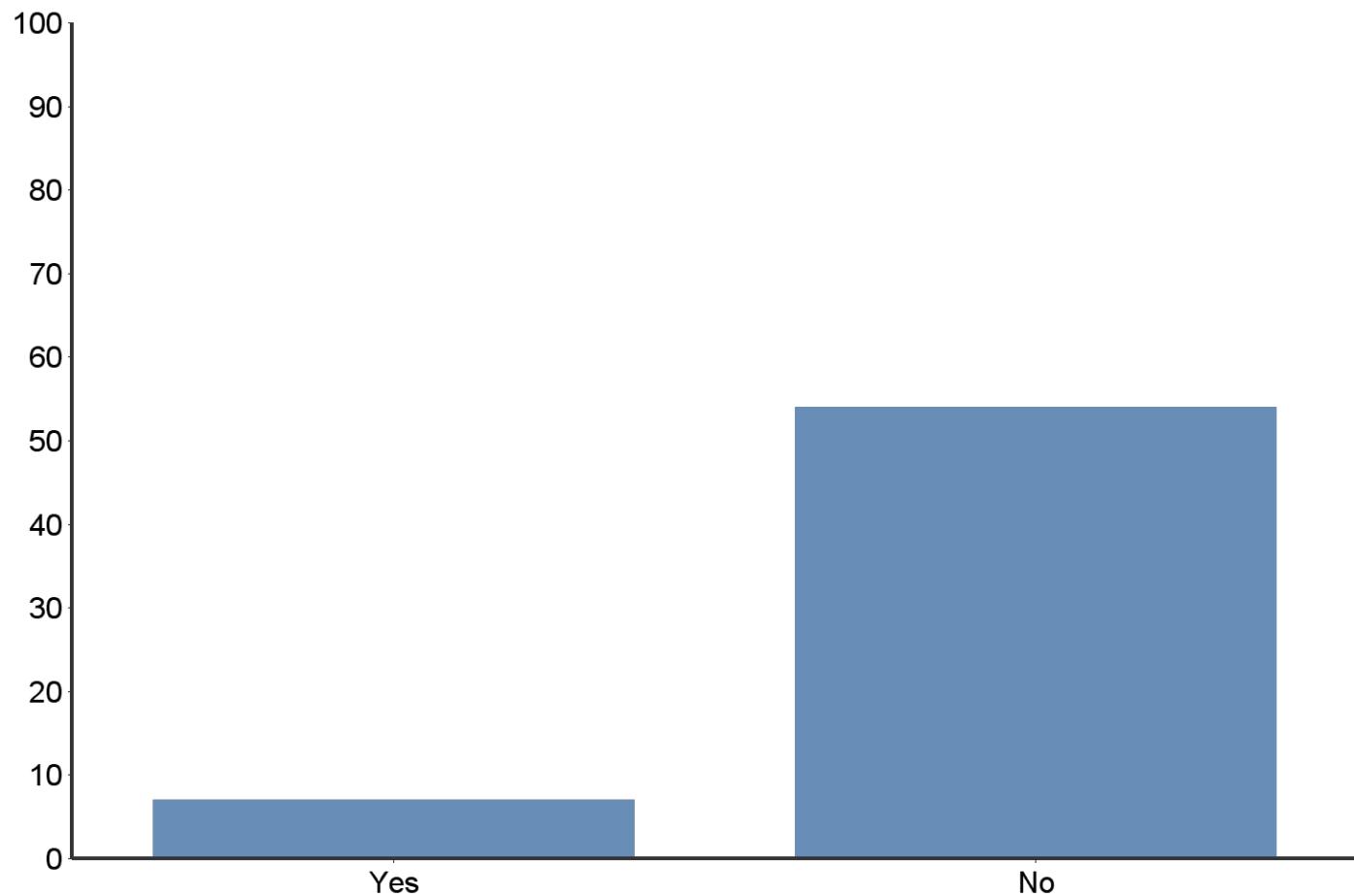
#	Answer	Bar	Response	%
1	11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.		18	37.50%
2	11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.		13	27.08%
3	17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.		14	29.17%
4	17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.		11	22.92%
5	23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.		6	12.50%
6	23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.		7	14.58%
7	39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.		8	16.67%
Total			77	100.00%

Assume your community decides to jointly develop and own an offshore wind farm. As one of the project owners who gets to determine project features and receives a certain amount of the project revenue, how will you vote on the following options? (you can vote for more than one option, assume that the option that receives the most votes will be carried out)?



#	Answer	Bar	Response	%
1	11 miles offshore, big turbines, cost of locating the wind farm at this distance is \$20 million.		21	43.75%
2	11 miles offshore, small turbines, cost of locating the wind farm at this distance is \$26 million.		12	25.00%
3	17 miles offshore, big turbines, cost of locating the wind farm at this distance is \$32 million.		13	27.08%
4	17 miles offshore, small turbines, cost of locating the wind farm at this distance is \$38 million.		10	20.83%
5	23 miles offshore, big turbines, cost of locating the wind farm at this distance is \$44 million.		7	14.58%
6	23 miles offshore, small turbines, cost of locating the wind farm at this distance is \$50 million.		6	12.50%
7	39 miles offshore (out of view), cost of locating the wind farm at this distance is \$76 million.		7	14.58%
	Total		76	100.00%

Did your location choice change between the first and second scenario?



#	Answer	Bar	Response	%
1	Yes		7	11.48%
2	No		54	88.52%
	Total		61	100.00%

In a few words, please explain why you changed your location selection between the first and second scenario.

Accept Actives Aesthetics Analysis Aspect Beneficial

Benefit

Bit Brunswick Budget

Carolinians Chose Closer Coastal Commissioners

Community

Contribute Cost County Cut Decided

Decisions Development Drilling Equation Expensive Feels Found Front Gained Governments

Greater Happened Heard Impact Important Increased Infrastructure Jobs Leading Local Make

Meant North Offshore Options Part Pay Profits Project Require Residence Revenue Sharing Shore

Solid State Strongly Support Tourism Turbines Understanding Viewscape Visual Vote Waters

Withdraw

Text Entry

Sharing in the profits will help the community. I still chose one of the same options

Greater benefit to my community.

When I heard about the decisions that the coastal communities would be able to make, I decided to vote for the less expensive options to cut down on the costs.

It became more of a cost-benefit analysis -- what was I willing to part with on the aesthetics front if it meant that some revenues could contribute to the state budget --- leading to other beneficial actives for North Carolinians. Also, I was willing to accept a bit more impact on the viewscape if it meant I had more of a say in project development.

If there is no benefit to the local community, other than jobs gained, I withdraw my support all together. This will require increased infrastructure that local governments will have to pay for. If you want a solid understanding of just how strongly our community feels about our waters and tourism, just ask the Brunswick County commissioners what happened when they voted for offshore drilling without the support of the community.

With revenue sharing in the equation, I found myself more willing to accept development closer to shore.

Where there were benefits for coastal residence the visual aspect of the Turbines became less important.

In a few words, please explain why your location selection did not change between the first and second scenario.

Aesthetic Assume Banks Barely Beach Benefit Build Built Care Change Choice Close Coast Coastal Community Compromise Concerns
Cost County Day Decision Development Distance Distract Due East Economic Economy Effective Elected Electric Energy
Environmental Estuary Europe Expense Expressed Fact Farther Feel Financial Find Fish Good Government Impact Important
Inadequate Increased Individual Install Interested Intrusion Investment Land Large Larger Line Local Location Lower Makes Miles Minimal Money
Natural Nc Noticeable Ocean Offensive Offshore Operation Outer Part Personally Prefer Previously Problem Profit Project
Reasonable Reduced Relevant Revenue Selection Sharing Shore Sight Significantly State Swim Tourism
Option Scenarios View Visibility Water
Turbines Wind 11

Text Entry

The environmental impact and economic benefits to consumers are the same under both scenarios

I would not vote for any of the locations. I fish off shore and don't want to deal with a bunch of wind turbines.

further out the less noticeable they will be, then the tourist wont be swimming out to them. or trying to rent a boat to venture out to them. But any further outto price.

In my option, with the information supplied, there are minimal risks in putting wind farms on the NC coast. Personally I do not have a problem with the "look" of the turbines out in the water. In fact the white specks could be mistaken for seagulls.

estuary impact

the first scenario is far enough offshore to have little impact on my decision .

My location selection didn't change because the distance from the beach to the farm (aesthetic view) is an agreeable compromise to the cost. I assume that the energy company, (whether it is jointly owned with the community or with an individual) will find a "service" fee (or some other charge) to prevent an individual or a community from receiving any part of the profit.

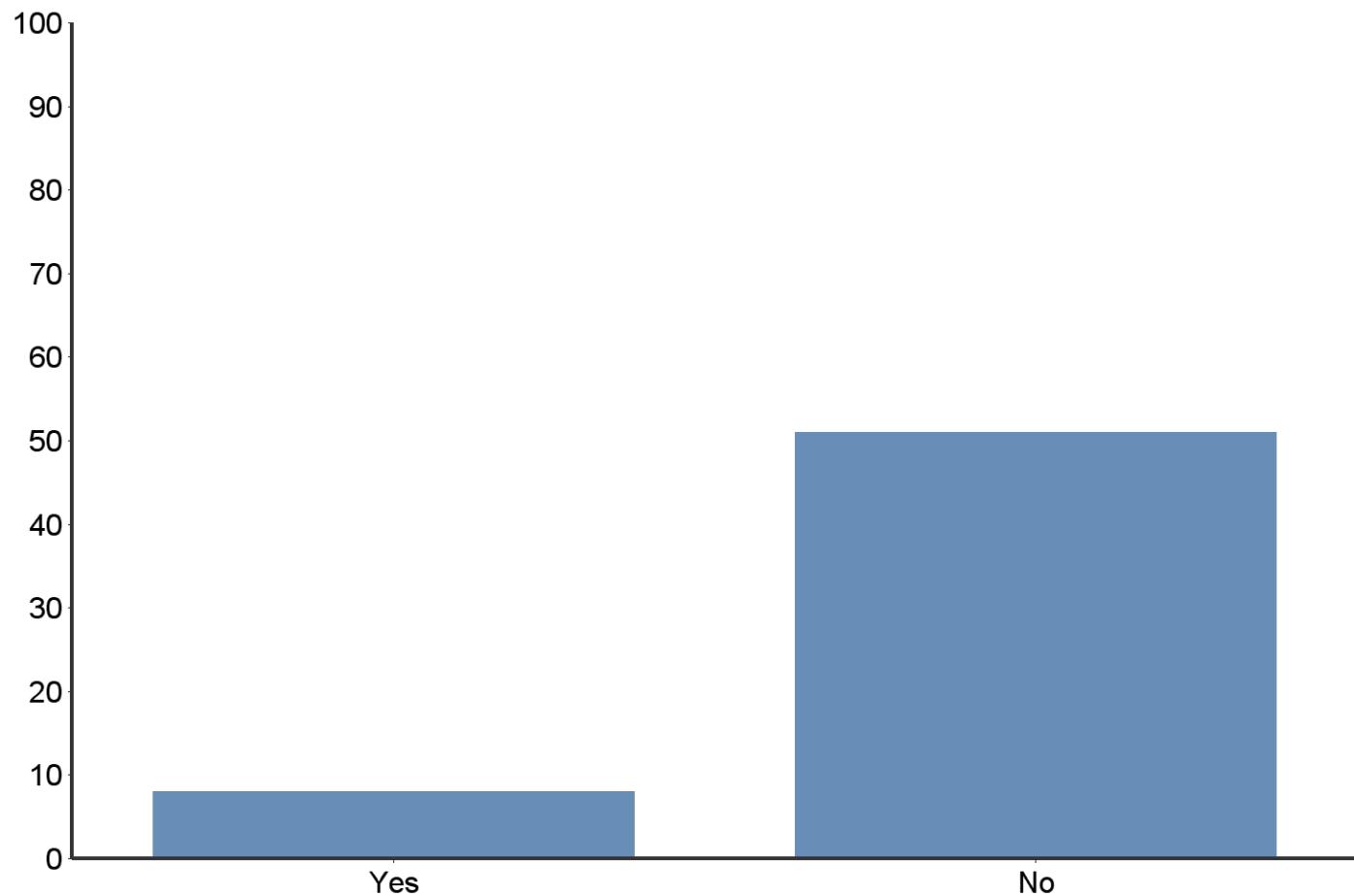
Small turbines at 11 miles off shore would be barely visible from the beach. Provide clean energy and become a marine habitat to eventually improving fishing closer to shore.

no matter the distance from the beach, I do not want any wind field not even when I can not see it

I did have one question. Because of the larger turbines do you need less wind turbines? In some of pictures they look really crowded.To me either option will work.

[View More](#)

Did your location choice change between the second and third scenario?



#	Answer	Bar	Response	%
1	Yes		8	13.56%
2	No		51	86.44%
	Total		59	100.00%

In a few words, please explain why you changed your choice between the second and third scenario.

Accomplished Aesthetic Amount Assume

Bit

Capital Center Checked Coast Comment Community

Cost

Debt Decision

Degree

Distance

Doctorate

Dolphins Education Expense Find Fyi Give

Higher Huge Impact Impede Income Increase Investment

Jump

Knowledge Lawyer Leaving Liberal Makers Masters Maximum Medical

Minimal Ocean Offset

Option

Ownership Page Partnership Parts Peace Pinch Placing Plan Position Previous Professional Reasons

Revenue Scenario Schooling Sharing Simply Small Sunrises Sunsets Tolerable Turbines Viewscape Visibility Wallet Write

Year

2 4

Text Entry

I believe leaving the liberal decision makers on various parts of the plan will impede anything getting accomplished.

My community does not have the capital for such an investment--nor is it in a position to assume debt without a known income.

Some minimal visibility seemed tolerable given the huge increase in cost when placing the turbines a maximum distance from the coast.

Same as previous comment.

cost sharing

Same reasons as before. Except, I did get with a bit higher cost option over scenario 2, because I rather less aesthetic impact, but I know it will pinch my wallet. If I could get, even a small amount, of revenue for partnership ownership, it might offset the little bit more expense for a better viewscape. The ocean is where I find peace and center myself. All I want to see are sunrises/sunsets and jumping dolphins. FYI -- I had nowhere else to write it, but on the last page under education, you jump from 4-year degree to doctorate, and only give the other option of a professional degree (i.e., lawyer, medical doctor, etc). I have a master's, but checked doctorate because I have way more knowledge and schooling than simply a four-year degree.

In a few words, please explain why your location selection did not change between the second and third scenario.



Text Entry

The environmental impact and economic benefits to consumers are the same under both scenarios

Don't want wind turbines off shore!

Further out the better it will be for tourist. and closer in they will be swimming out to them or renting boats to go see them. out of sightout of mind.and safer all way round.

I believe that all parties could benefit from windfarms.

esruary impact

My choices reflected the two scenarios where the proximity of the development was as close to shore as I felt comfortable.

The different scenarios are political considerations unrelated to need or consequence .

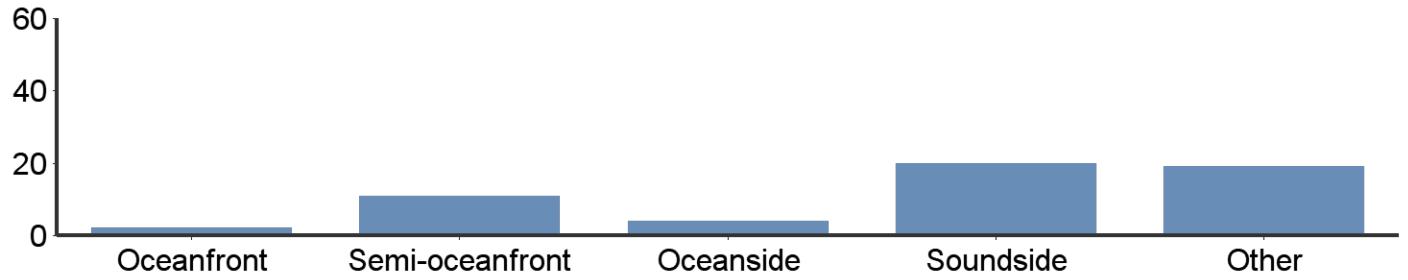
I assume that the energy company, (whether it is jointly owned with the community or with an individual) will find a "service" fee (or some other charge) to prevent an individual or a community from receiving any part of the profit, so the aesthetic view and cost is more of a reality.

There will be a cost to tax payers regardless. How and if the developer shares anything but the cost of installation will be determined by the contractor and what ever politician(s) is in their pocket. My choices are for tax payer cost, distance, clean energy and environmental benefits.

again, no matter how far out it is, I oppose this farm totally

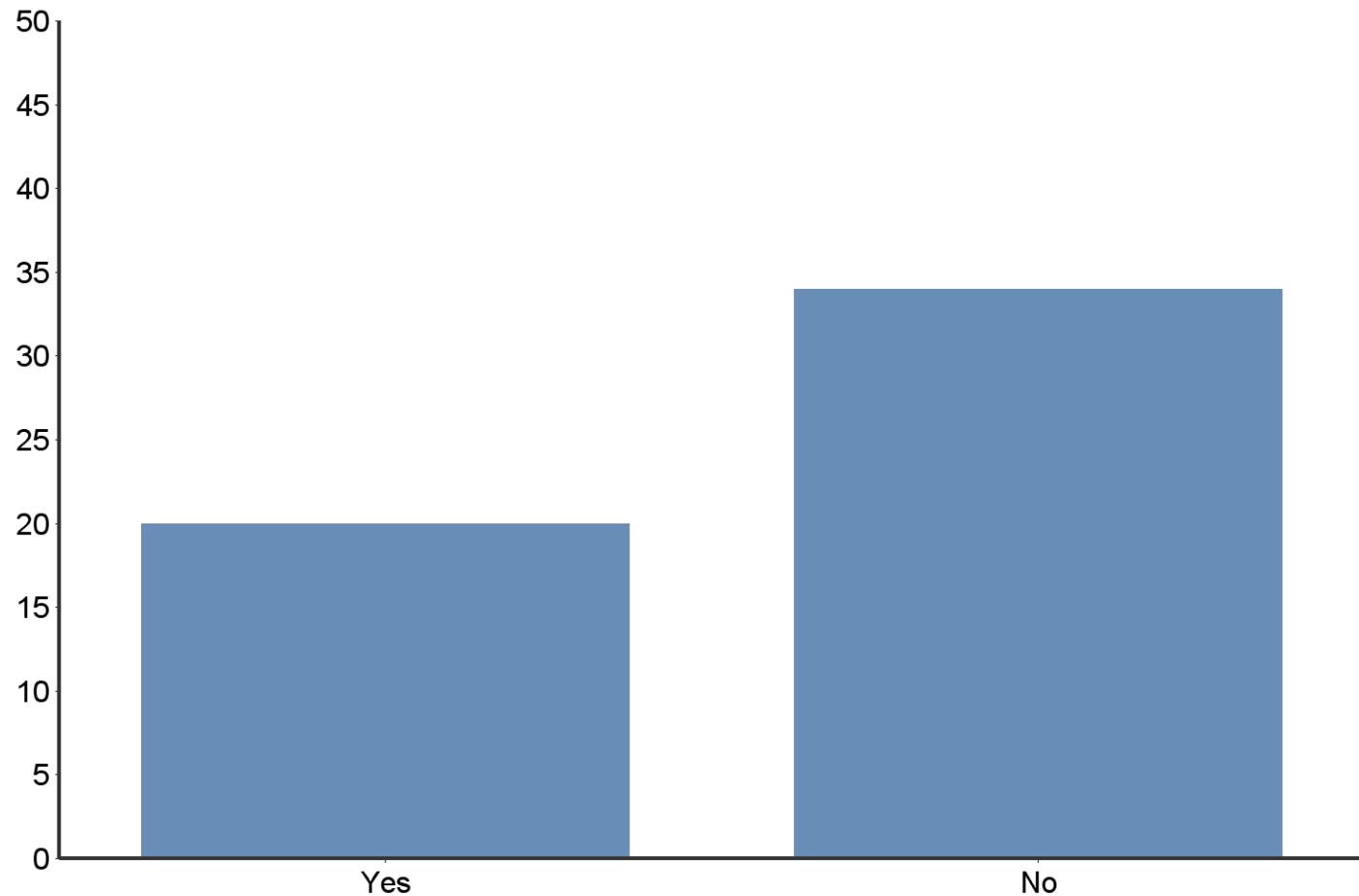
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Please describe your home or rented/ owned second home that is near the beach in NC.



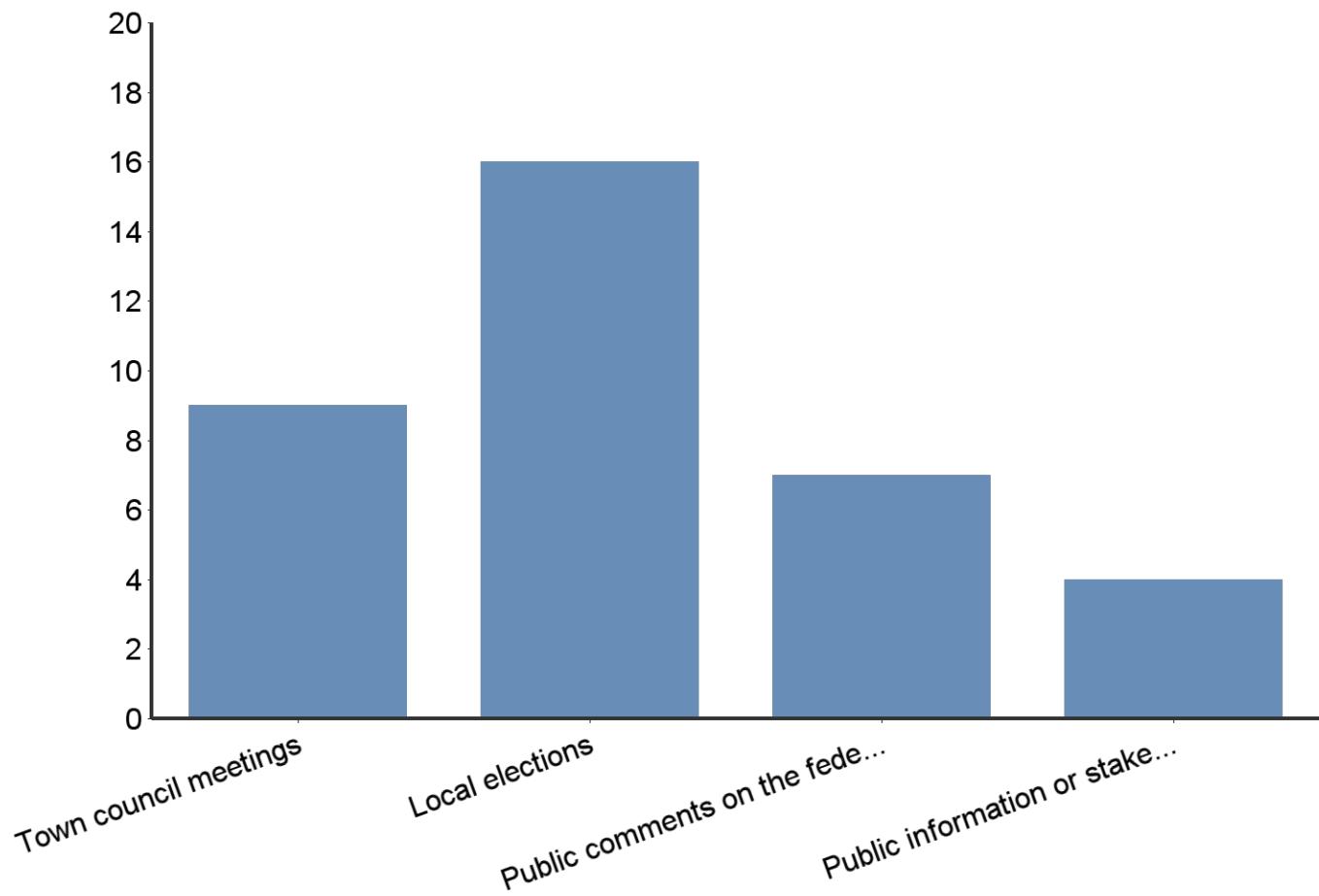
#	Answer	Bar	Response	%
1	Oceanfront	■	2	3.57%
2	Semi-oceanfront	■■■■■■■■■■■	11	19.64%
3	Oceanside	■	4	7.14%
Other				
between sound and ocean, no direct views				
I live in a maritime forest but can walk to the beach.				
Marsh front				
Between the major roads				
<i>Corolla Island</i>				
Total				
				56 100.00%

If erected in one of the three suggested ocean blocks (above), do you think turbines will be visible from your property?



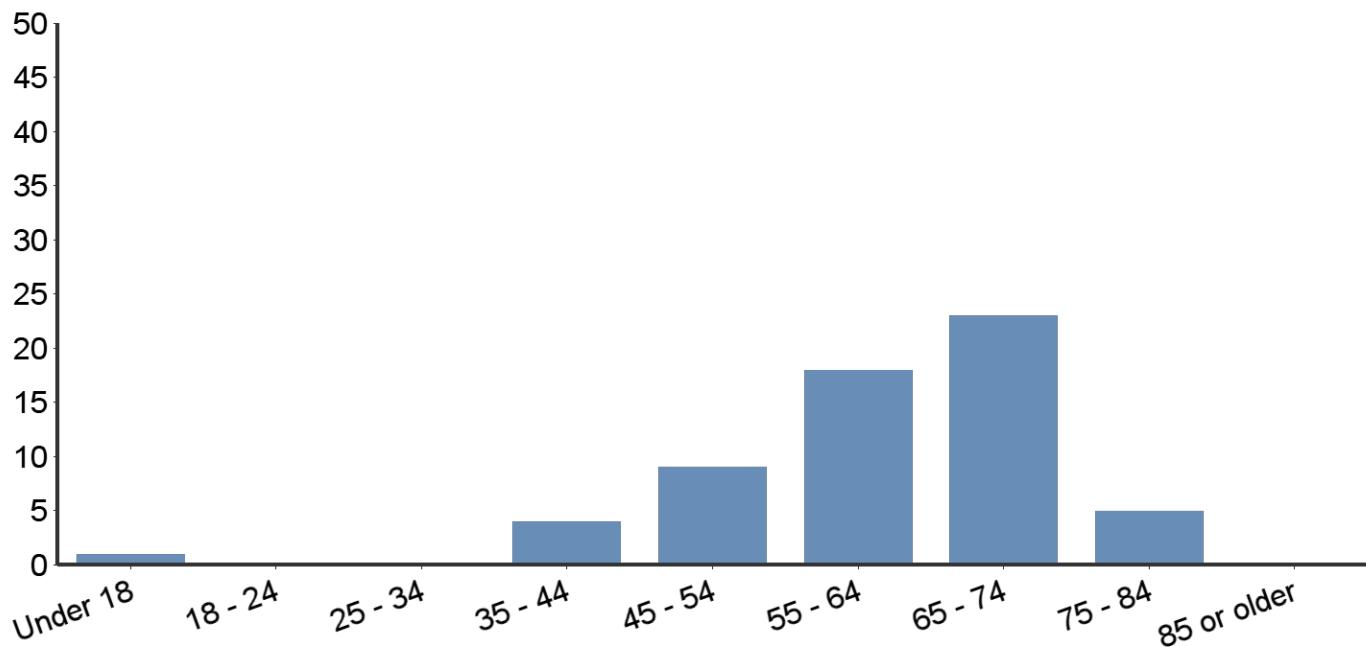
#	Answer	Bar	Response	%
1	Yes		20	37.04%
2	No		34	62.96%
	Total		54	100.00%

Have you participated in any of the following activities concerning offshore wind development?



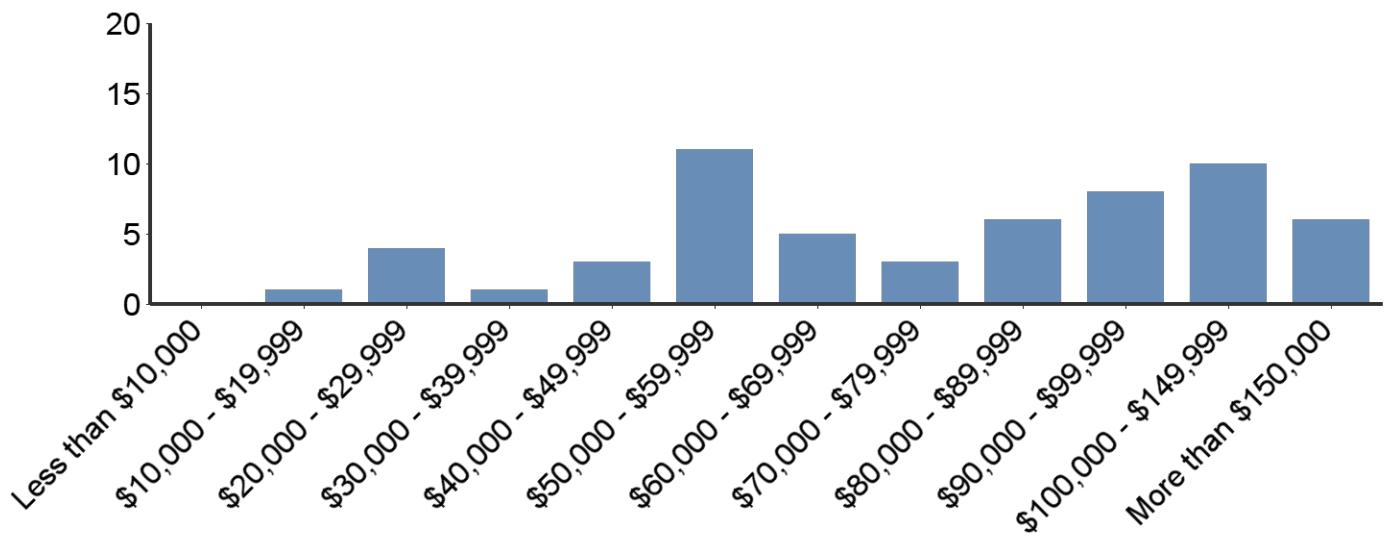
#	Answer	Bar	Response	%
1	Town council meetings		9	32.14%
2	Local elections		16	57.14%
3	Public comments on the federal government's plan		7	25.00%
4	Public information or stakeholder meetings with representatives of the federal government		4	14.29%
	Total		36	100.00%

What is your age?



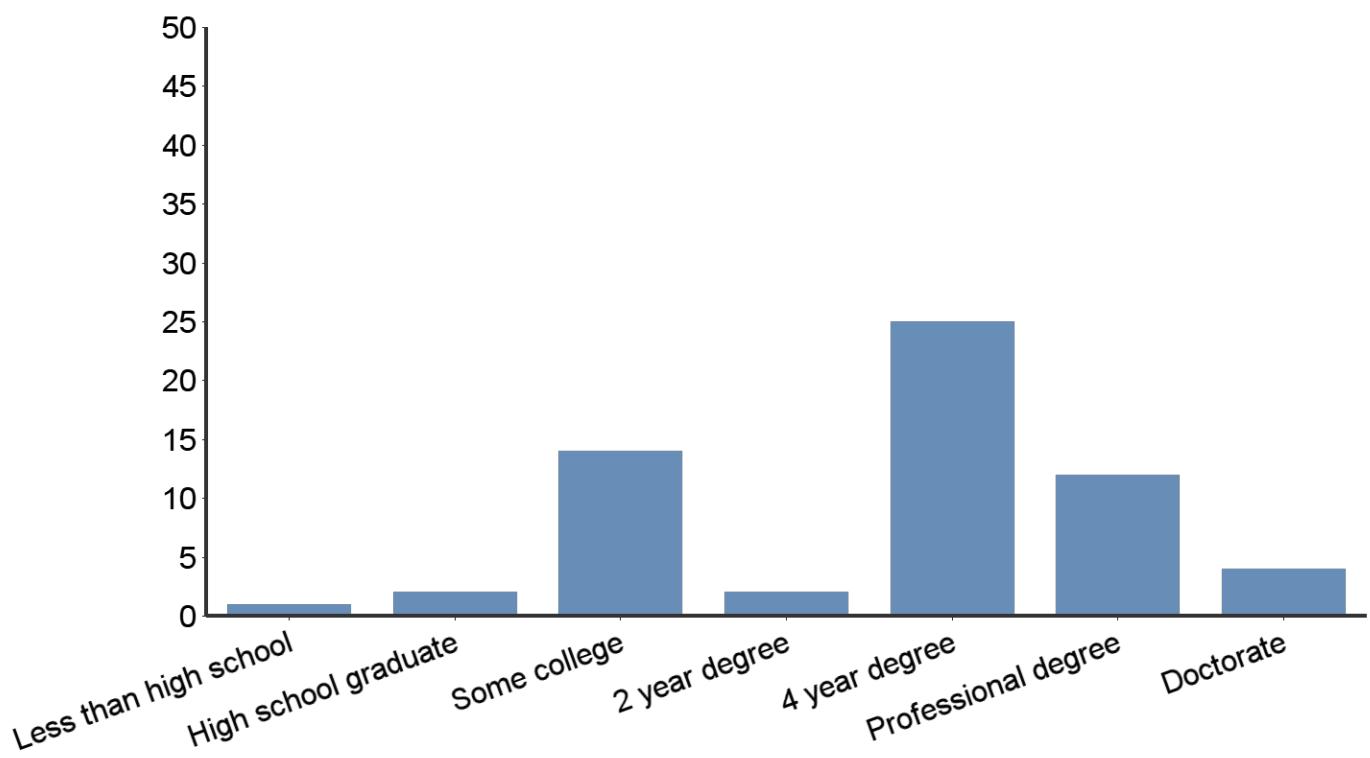
#	Answer	Bar	Response	%
1	Under 18	█	1	1.67%
2	18 - 24		0	0.00%
3	25 - 34		0	0.00%
4	35 - 44	█	4	6.67%
5	45 - 54	█	9	15.00%
6	55 - 64	██████	18	30.00%
7	65 - 74	███████	23	38.33%
8	75 - 84	█	5	8.33%
9	85 or older		0	0.00%
	Total		60	100.00%

What is your family household income before taxes?



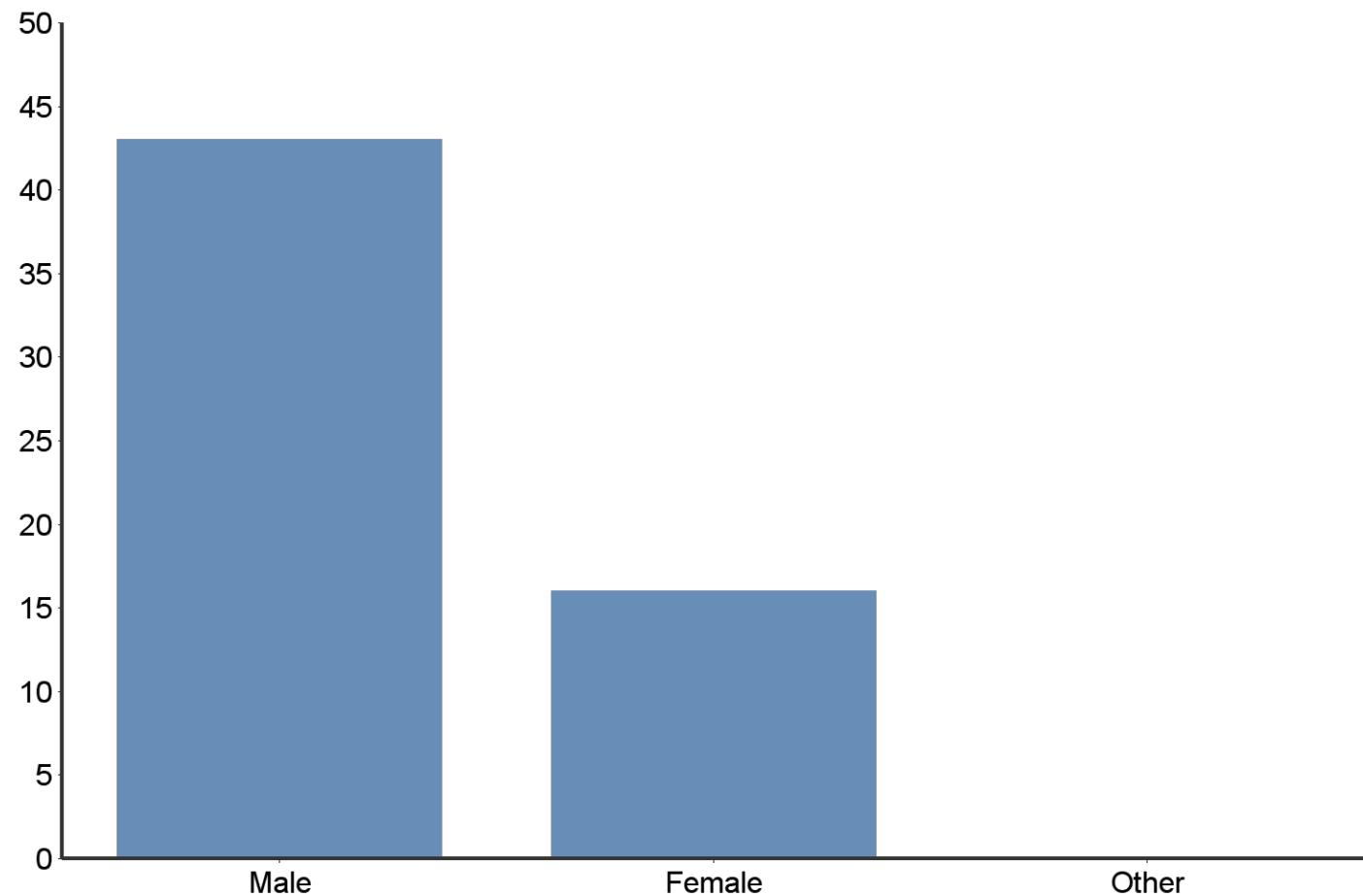
#	Answer	Bar	Response	%
1	Less than \$10,000		0	0.00%
2	\$10,000 - \$19,999	█	1	1.72%
3	\$20,000 - \$29,999	█	4	6.90%
4	\$30,000 - \$39,999	█	1	1.72%
5	\$40,000 - \$49,999	█	3	5.17%
6	\$50,000 - \$59,999	██████	11	18.97%
7	\$60,000 - \$69,999	█	5	8.62%
8	\$70,000 - \$79,999	█	3	5.17%
9	\$80,000 - \$89,999	█	6	10.34%
10	\$90,000 - \$99,999	█	8	13.79%
11	\$100,000 - \$149,999	████	10	17.24%
12	More than \$150,000	█	6	10.34%
	Total		58	100.00%

What is the highest level of education you have completed?



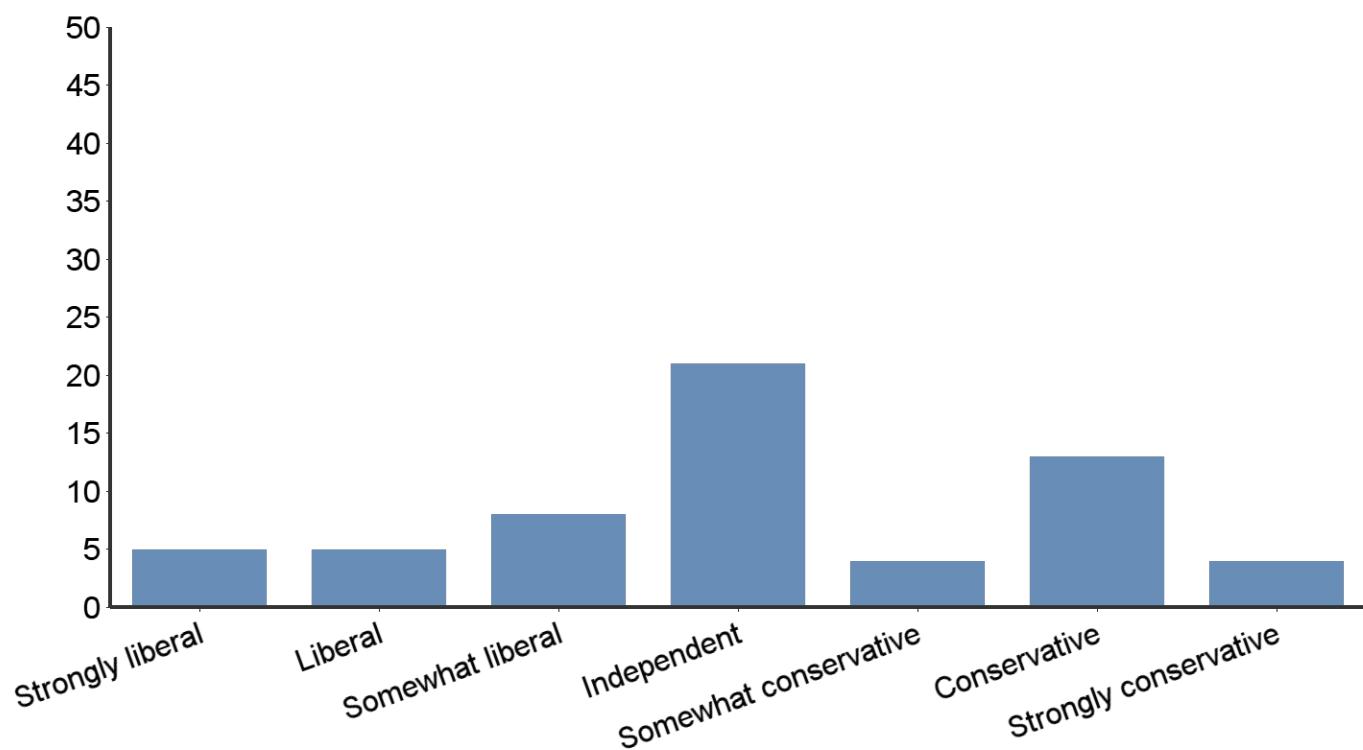
#	Answer	Bar	Response	%
1	Less than high school	1	1	1.67%
2	High school graduate	2	2	3.33%
3	Some college	14	14	23.33%
4	2 year degree	2	2	3.33%
5	4 year degree	25	25	41.67%
6	Professional degree	12	12	20.00%
7	Doctorate	4	4	6.67%
	Total	60		100.00%

What is your gender?



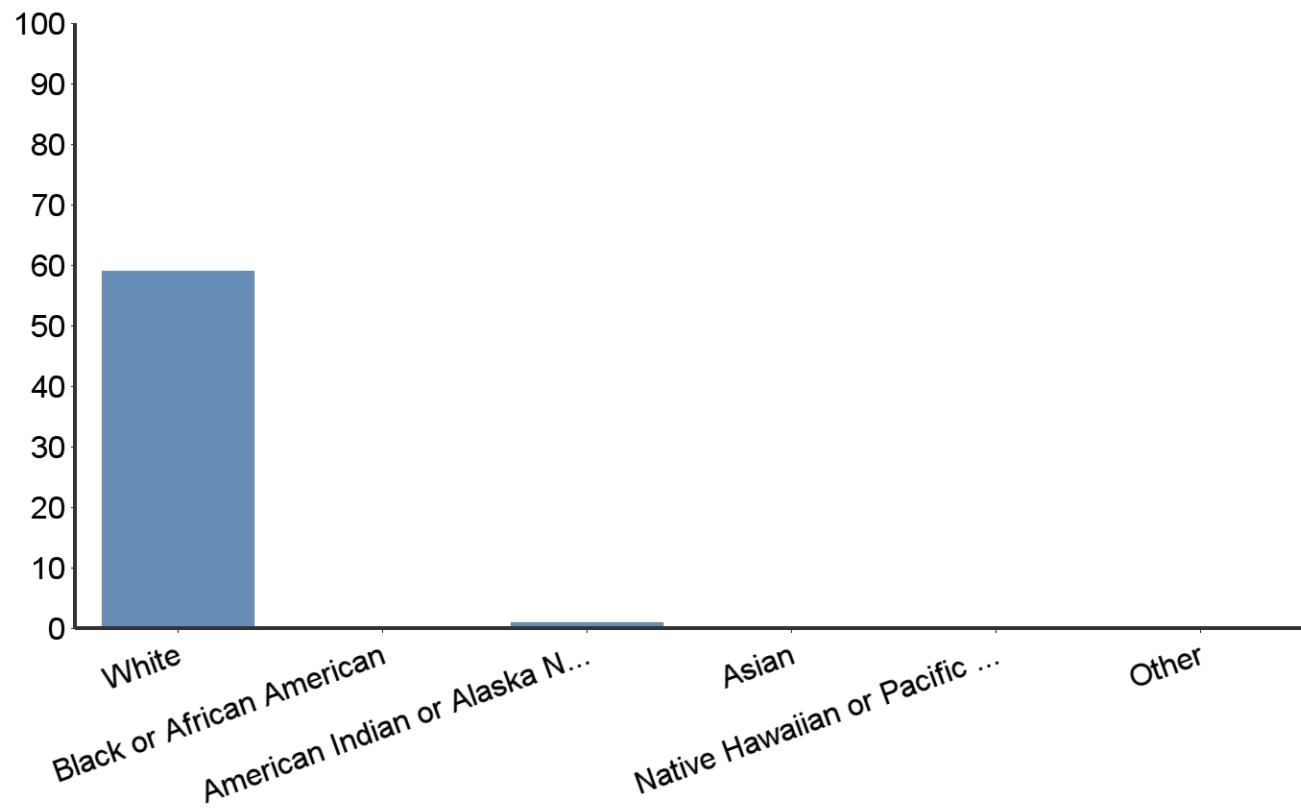
#	Answer	Bar	Response	%
1	Male		43	72.88%
2	Female		16	27.12%
3	Other		0	0.00%
	Total		59	100.00%

What is your political orientation?



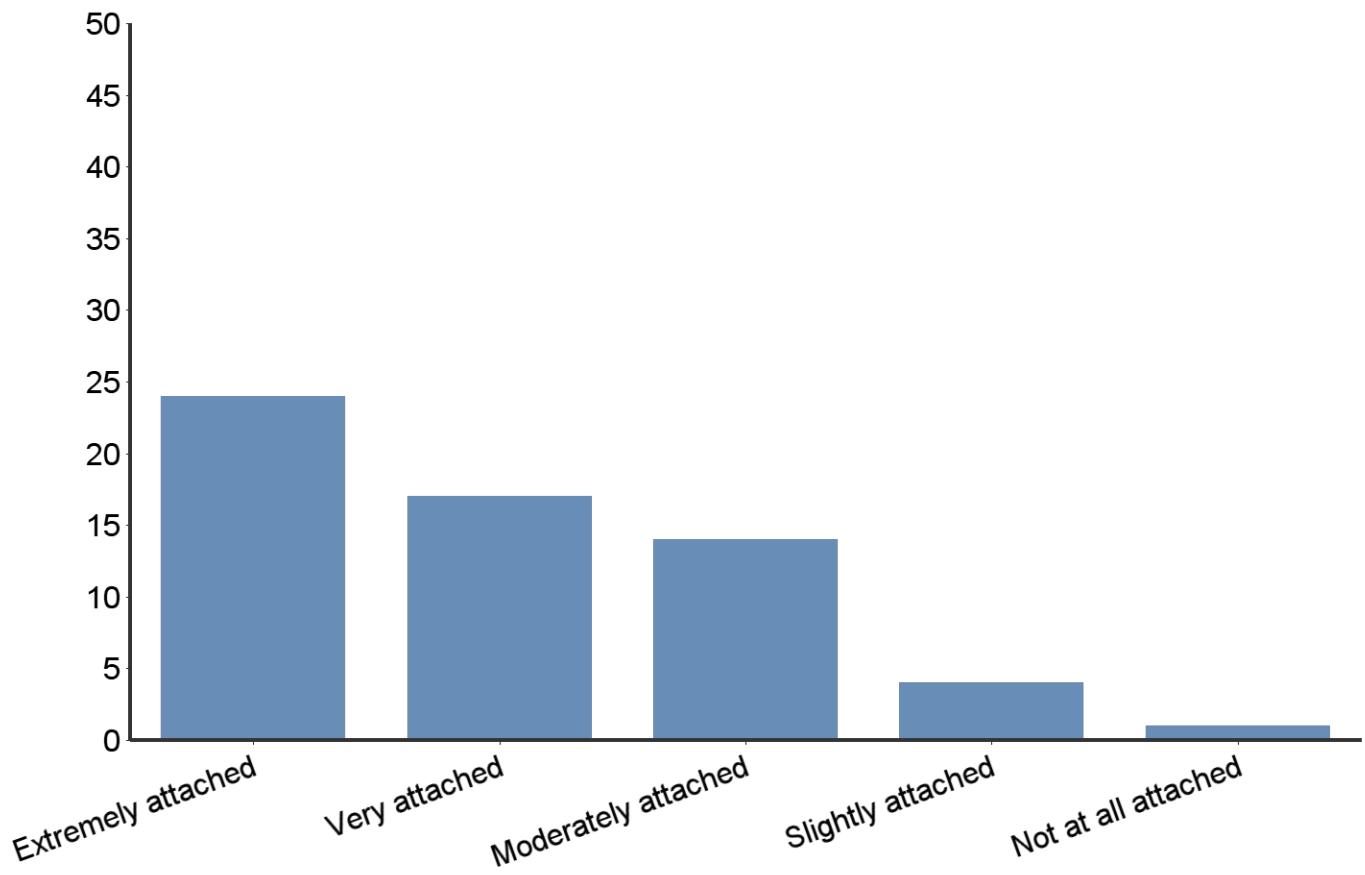
#	Answer	Bar	Response	%
1	Strongly liberal	■	5	8.33%
2	Liberal	■	5	8.33%
3	Somewhat liberal	■	8	13.33%
4	Independent	■	21	35.00%
5	Somewhat conservative	■	4	6.67%
6	Conservative	■	13	21.67%
7	Strongly conservative	■	4	6.67%
	Total		60	100.00%

What is your race?



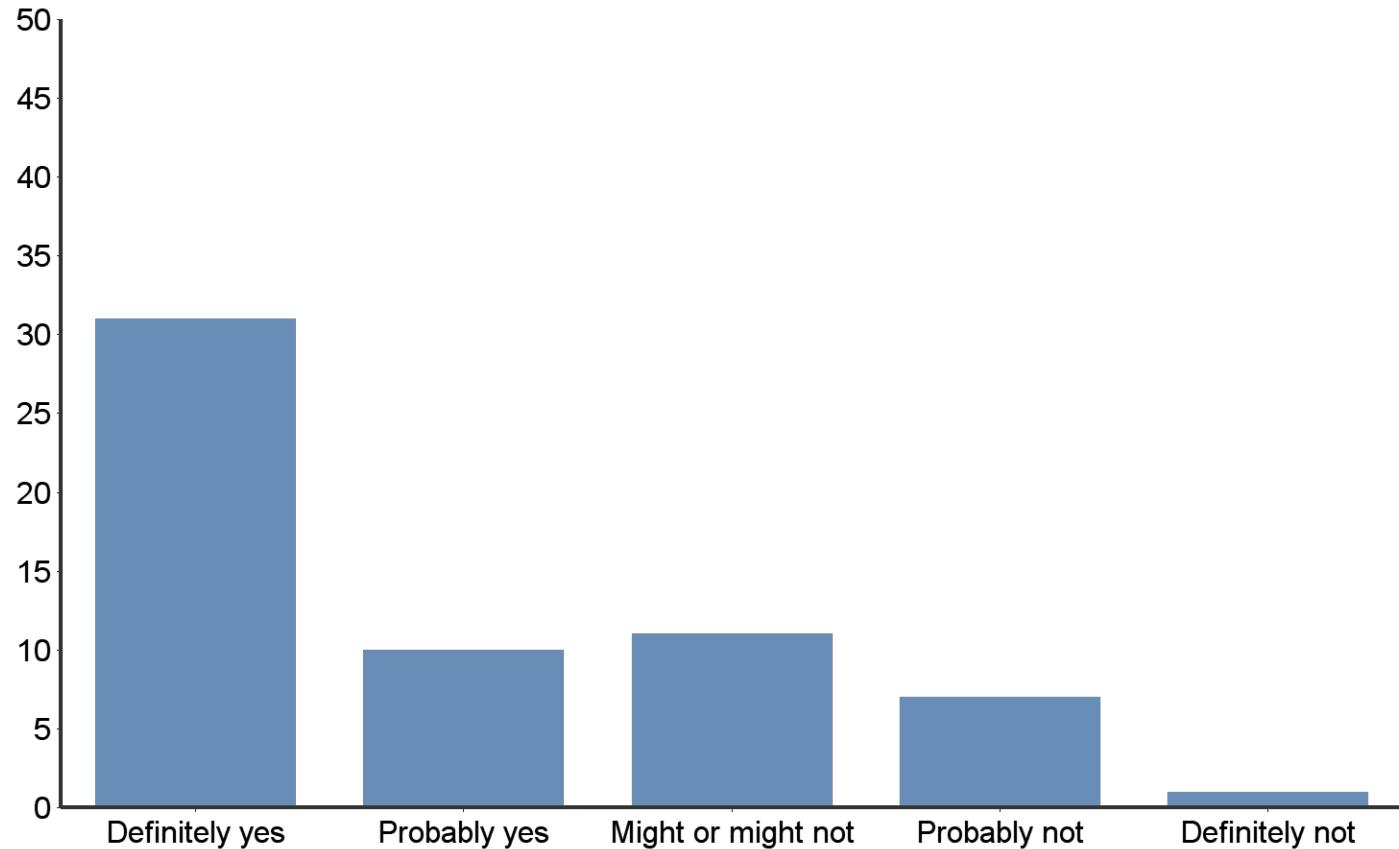
#	Answer	Bar	Response	%
1	White	59	59	98.33%
2	Black or African American	0	0	0.00%
3	American Indian or Alaska Native	1	1	1.67%
4	Asian	0	0	0.00%
5	Native Hawaiian or Pacific Islander	0	0	0.00%
6	Other	0	0	0.00%
	Total	60	60	100.00%

How would you rank your attachment to the coastal area from which turbines would be visible (if erected)?



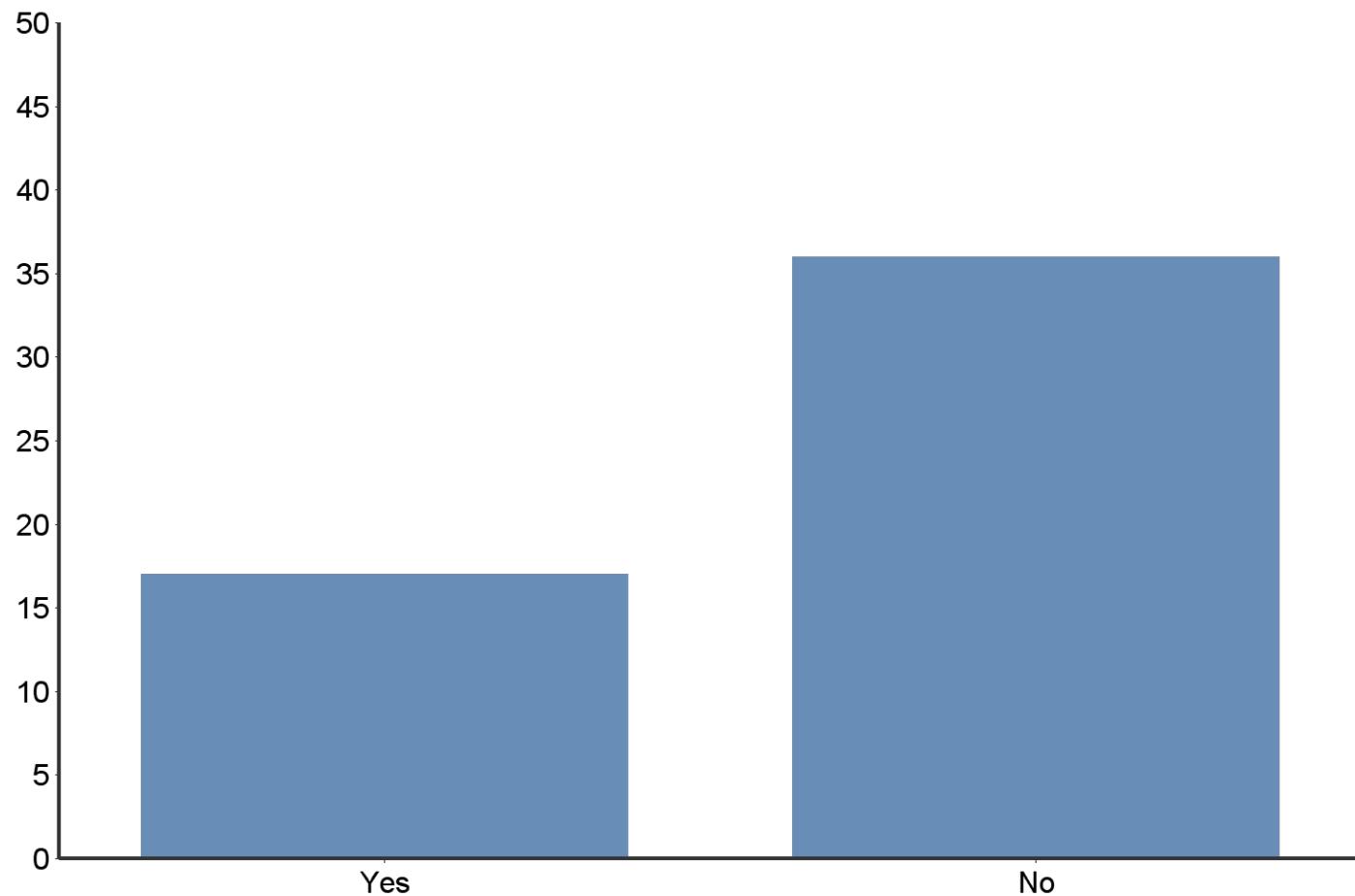
#	Answer	Bar	Response	%
1	Extremely attached	██████████	24	40.00%
2	Very attached	██████	17	28.33%
3	Moderately attached	████	14	23.33%
4	Slightly attached	█	4	6.67%
5	Not at all attached	█	1	1.67%
	Total		60	100.00%

Would you consider the ocean, and especially the area where wind farm development is being suggested, as part of your identity?



#	Answer	Bar	Response	%
1	Definitely yes		31	51.67%
2	Probably yes		10	16.67%
4	Might or might not		11	18.33%
5	Probably not		7	11.67%
6	Definitely not		1	1.67%
	Total		60	100.00%

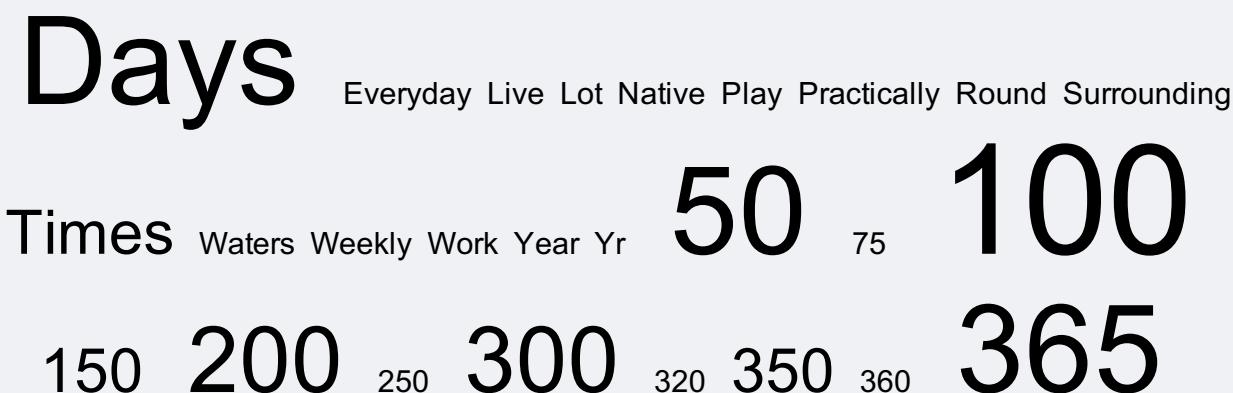
Do you consider yourself to be politically active on the topic of offshore wind in your local government?



#	Answer	Bar	Response	%
1	Yes		17	32.08%
2	No		36	67.92%
	Total		53	100.00%

How often do you visit the beach in a calendar year (number of visits)?

0 6 8 10 12 15 20 25 26 30 36 50+ >20 Beach Beau Coups Daily



Text Entry

100

200

off and on year round (native)

>20

365 days

10

20

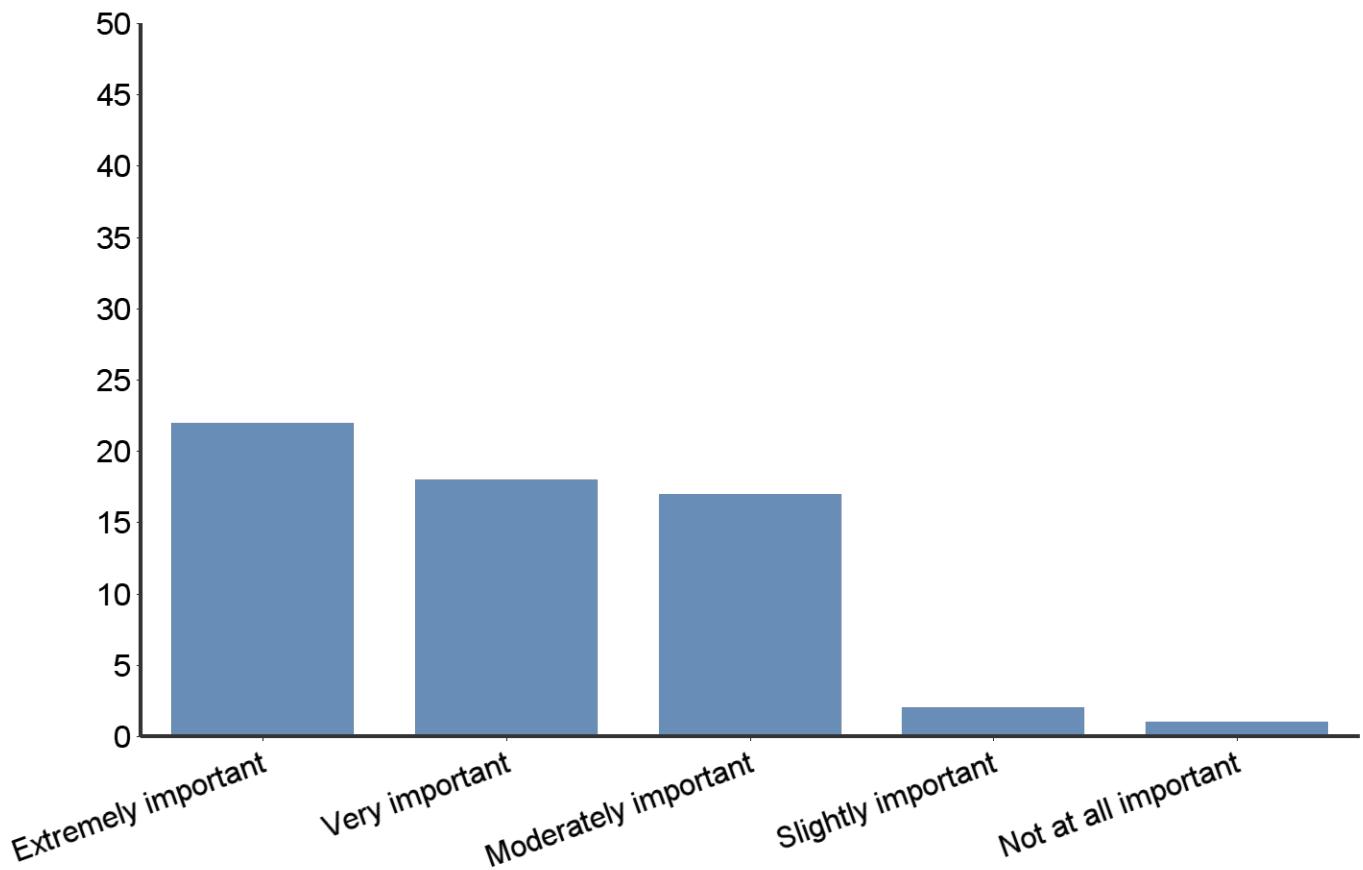
Daily

300

365

View More

How important is it for you to live by the ocean



#	Answer	Bar	Response	%
1	Extremely important	Bar for Extremely important	22	36.67%
2	Very important	Bar for Very important	18	30.00%
3	Moderately important	Bar for Moderately important	17	28.33%
4	Slightly important	Bar for Slightly important	2	3.33%
5	Not at all important	Bar for Not at all important	1	1.67%
	Total		60	100.00%

How often do you participate in sea-related activities in an average year (Boating/ Fishing/ Surfing/ paddle board/ kayak/ boogie board/ etc.) (number of times engaged in such activity in an average year)?



Text Entry

5

200

3....4 times or more

>20

150

0

5

0

250

700

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X. APPENDIX III- Preliminary Regression

The primary focus of this preliminary analysis is to quantify the relationship between acceptance and distance, as a function of ownership model. This comparison disregards the varying turbine size component, as distance is the main factor influencing cost of the project. Figure 1 displays the relationship between number of responses as a function as distance from shore. A linear regression was fit to each of the ownership models, the details of the regression can be found in Table 1. The R squared values are promising, and show a mostly linear relationship between acceptance and distance.

Looking at how the slope of the regression changes based on ownership model, we can see that there is a higher acceptance of the wind farm with the cooperative model than with the traditional model. A cross comparison between the traditional model and the cooperative model shows a 20% increase in acceptance.

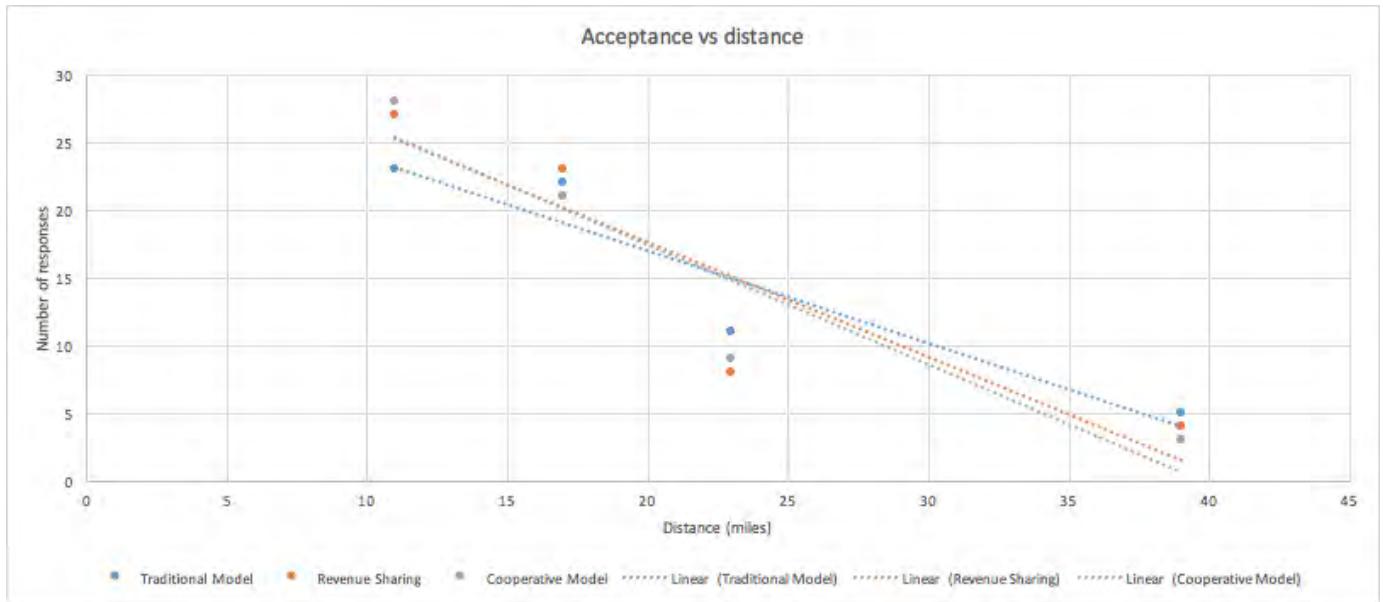


Figure 1

	11 miles	17 miles	23 miles	39 miles	R squared	slope
Traditional Model	23	22	11	5	0.88945	-0.6839
Revenue Sharing	27	23	8	4	0.8213	-0.8437
Cooperative Model	28	21	9	3	0.87874	-0.8816

Table 1

Cross comparisons of regressions

	Change in slope of regression
Traditional to revenue sharing	0.1598
Traditional to coop	0.1977
Revenue sharing to coop	0.0379