

ISSUE BRIEF

December 2021

# Understanding US Public Perceptions of Offshore Wind: Responsible Development and Deployment



## Acknowledgements

This issue brief was prepared by Policy Analyst Intern Fiona Calcagnini and made possible with the help and collaboration of colleagues. Fiona would like to thank the many experts she spoke with whose experience and insights provided a foundation for this report.

## About Virgil Group

Virgil Group is a woman-owned nonpartisan startup dedicated to furthering impactful conservation and sustainable commerce by contributing to the development of new tools, policies, and cross-sector partnerships.

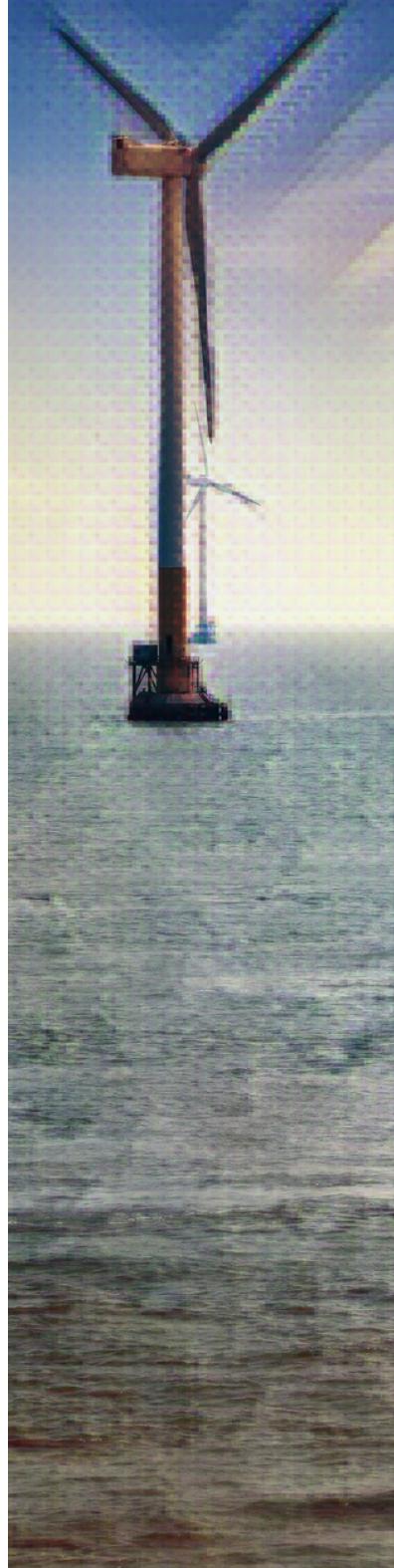
Visit [virgilgroup.com](http://virgilgroup.com) to learn more about our services, mission and opportunities.

# Executive Summary

The offshore wind industry has come to the forefront of the energy policy conversation over the past decade and in recent years in particular. Wind provides a renewable energy source that is not reliant on fossil fuels which emit carbon into the atmosphere and thus contribute to climate change. Siting wind farms offshore is appealing, as compared to onshore, since wind speeds are higher and more consistent offshore. Offshore turbines can harness more energy and provide a more reliable energy source than their onshore counterparts. Offshore wind is poised to expand the global supply of renewable energy. As this industry continues to grow, obstacles to the development of these projects have arisen, particularly from locals in the vicinity of the projects.

Through literature review and numerous interviews with professionals in the offshore wind industry, including scientists, NGOs, and developers, I examined the public and social perceptions of offshore wind in the United States: Why is there so much opposition at the local level? This research is important for understanding what drives public support or opposition to the growing offshore wind industry. Public support is essential for the orderly and timely global transition toward renewable energy use. This is a reality, not only for the offshore wind sector, but for other energy spheres as well. Renewable energy and other technologies that address climate change are often met with hesitation. This brief will shed light on where this contention comes from. I researched specific offshore wind projects—past and present—to compare the public's attitudes and understand what can be done to ensure offshore wind projects come to fruition.

This brief concludes with recommendations for developers and policymakers outlining ways to develop offshore wind responsibly and efficiently. These recommendations address how to resolve multiple-use conflicts of the water, consult locals meaningfully, disseminate research and information in an accessible way, and promote collaboration within the industry.





# Contents

- 1 THE CLIMATE CRISIS AND RENEWABLE ENERGY**
- 4 BARRIERS TO OFFSHORE WIND DEVELOPMENT**
- 9 RECOMMENDATIONS**
- 11 CONCLUSION**

# The Climate Crisis and Renewable Energy

The transition to renewable energy is underway. According to the US Environmental Protection Agency, energy production reliant on the burning of fossil fuels is the second leading contributor to greenhouse gas emissions. Increasing emissions are causing global temperatures to rise. As the impacts of climate change become more evident, governments across the world have adopted a common goal: to limit the rise of global temperatures to well below 2 degrees Celsius, as is outlined in The Paris Agreement. Using renewable energy is integral in achieving that goal; by replacing fossil fuels with renewables, countries can drastically reduce their greenhouse gas emissions and prevent further heating of the planet. A few countries have already taken the lead in this effort. Morocco has created the largest solar power farm, China has embraced hydropower energy, and Europe leads the world in the offshore wind industry.

Offshore wind, in particular, is an important part of this transition. This industry has grown rapidly in the past decade, increasing by 30% globally each year from 2010 to 2018. Technological advancements and innovation, such as the development of larger turbine blades that can harness more wind power (see figure 1), have driven down the costs of production. In 2020, the operational costs for offshore wind energy fell by 9%, making it a competitive option in comparison fossil fuels. Europe has embraced this technology and emerged as a leader in the industry. The UK has the capacity to generate nearly 8 GW of energy from their offshore wind, enough to power approximately 7 million homes. Across the world, this technology has the potential to produce 120,000 GW, which far exceeds the anticipated global electricity demand in 2040.

Offshore wind has become a focal point of the United States' plan to increase renewable energy production. The US currently has 2 operating offshore wind farms that collectively produce 0.042 GW, but there is much room for growth. The Biden Administration is spearheading this effort with an Executive Order delivered in January 2021, during which the President announced plans to deploy infrastructure sufficient to generate 30 GW

## Why Wind? Why Offshore?

- The technology is efficient, as compared to other renewable energy sources, such as solar.
- Growth potential is large, as compared to other renewables, such as hydropower, where the US potential capacity is lower.
- Higher and steadier winds offshore means turbines can harness more power and generate more energy.
- Turbines can be built larger.

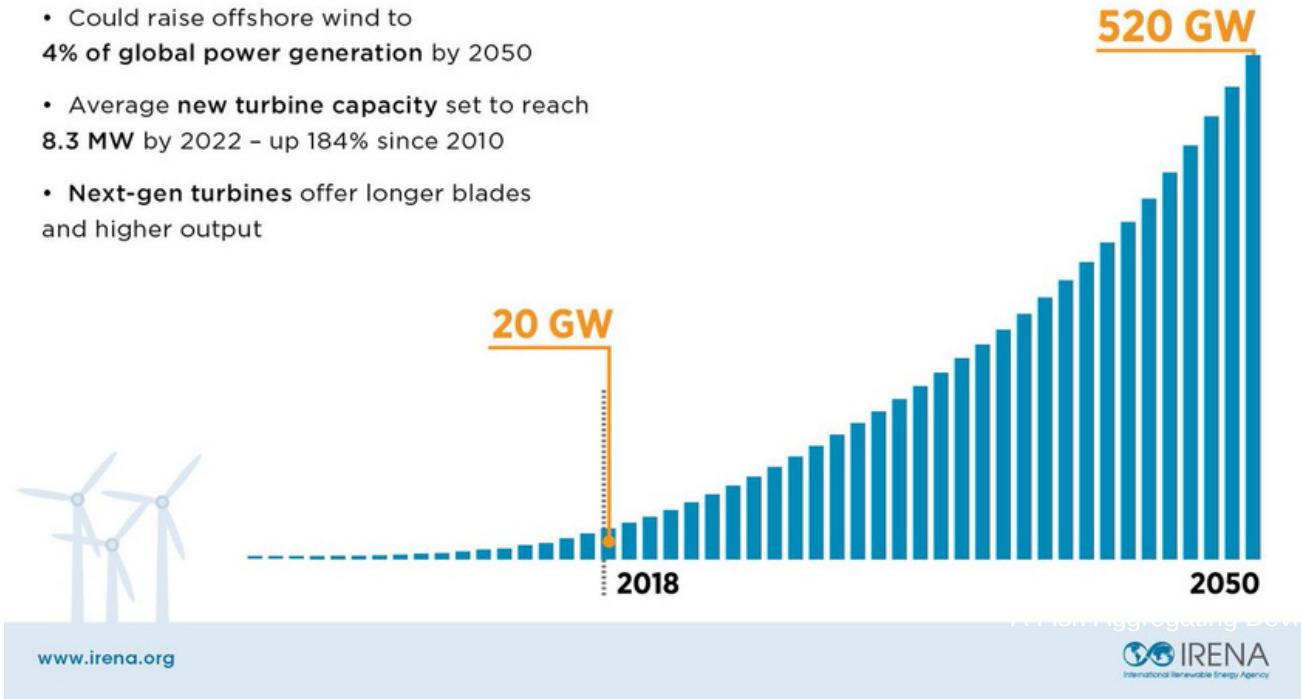
of offshore wind energy by 2030, while also creating tens of thousands of jobs in this sector. This will enable the administration to deliver on its promise to reach net zero emissions by 2050, since offshore wind has the technical resource potential to generate more than 2,000 GW of energy per year, nearly double the nation's current electricity use, according to the DOE. Current targets project that the US will reach 520 GW by 2050 (see figure 2). But there is an issue: although there seems to be approval at the national and global levels for these developments, offshore wind projects are often opposed at the local level.

As developers propose and build offshore wind projects and expand the offshore wind pipeline in the United States (see figure 3), they will be faced with this obstacle, which is why I conducted research on public perceptions of these projects.

Figure 2

## Offshore wind capacity set to reach 520 GW by 2050

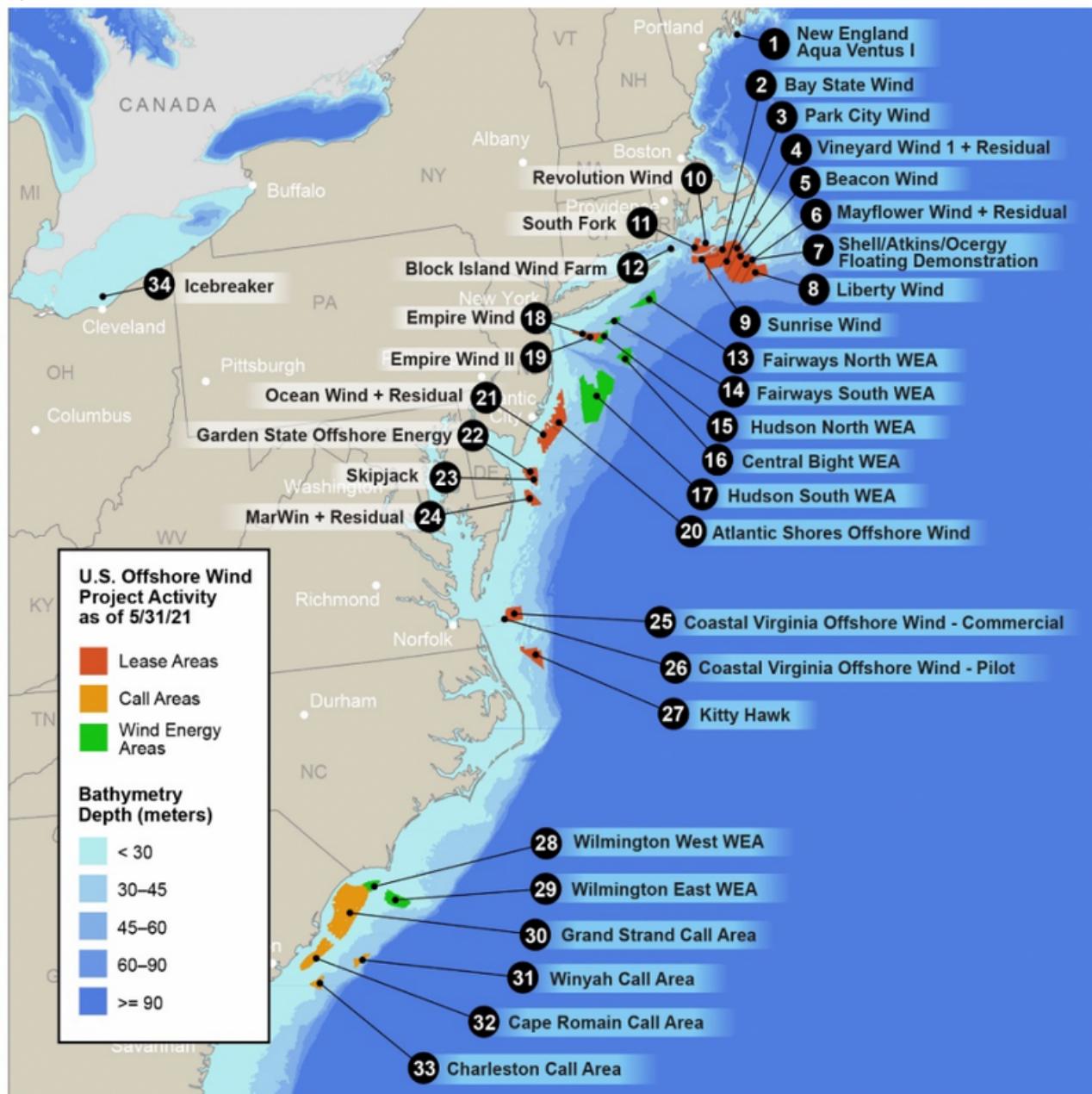
- Could raise offshore wind to 4% of global power generation by 2050
- Average new turbine capacity set to reach 8.3 MW by 2022 – up 184% since 2010
- Next-gen turbines offer longer blades and higher output



Wind technology and cost reductions

# Locations of U.S. Offshore Wind Pipeline and Call Areas as of May 2021

Figure 3



Offshore Wind Market Report: 2021 Edition

U.S. Department of Energy

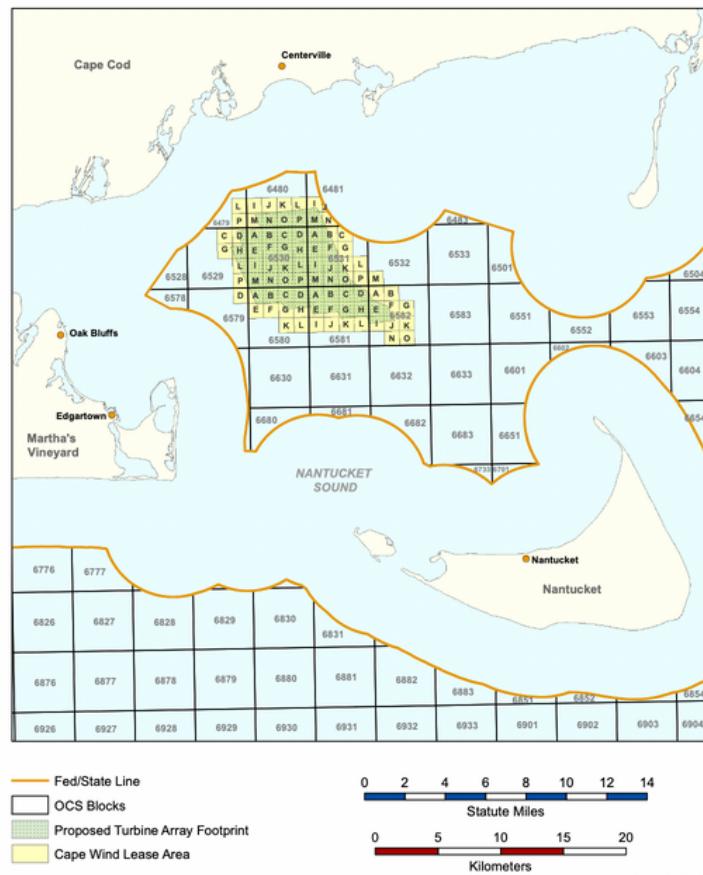
# Barriers to Offshore Wind Development

Understanding the barriers to development is vital to develop offshore wind responsibly and quickly. Barriers to development result from changes in policy, public perception, and science. Policy specifically plays an important role in offshore wind development in the United States. President Biden's recent executive order sends a message to developers and investors that the United States is actively expanding offshore wind development.

Negative public perception is a serious barrier that developers face. There exists a social gap in offshore wind development: while there is unwavering national/global support for these projects, they are often met with fierce opposition at the local level. Understanding this phenomenon is important for developers and policymakers alike, as this local opposition is an obstacle that can delay or halt project progress. That is what happened to Cape Wind just a few years ago. Cape Wind, a project that proposed the development of a wind farm in the Nantucket Sound (see figure 4), was approved by the Massachusetts Energy Facilities Siting in 2005 and then faced fierce opposition over the next 12 years. The siting of the project was the main point of contention, as the turbines would have obstructed the viewshed of wealthy waterfront home owners. In 2017, the project was officially cancelled due to lawsuits by Massachusetts residents. The power of public opinion and local opposition is undeniable, so we must learn to garner the support of the public. To do so, we must understand the reasonings of the opposition.

Local opposition and hesitation stems from many concerns. Some locals are concerned about the impact on the viewshed, others share general concerns about "industrializing" the oceans, some dislike the idea of large corporations (the developers) taking over the water, fishermen are concerned about the impact of offshore wind on their industry and livelihood, and others worry about the impacts on recreation. Furthermore, there is a perceived lack of data and understanding of the impacts of offshore wind on ocean ecosystems. This is a non-exhaustive list, but it illustrates the varying reasons for opposition to these projects. The barrier of local opposition is particularly unique to the United States context. While local opposition for these same reasons are prevalent in the European Union, the opinions of locals are not considered as much in the European Union during the development phase as they are in the United States. Now, as many developers take on projects in the United States, they must recalibrate their approach to account for the fact that local stakeholders will be much more involved in the process.

Figure 4



U.S. Bureau of Ocean Energy Management

## NIMBYism



NIMBY—an acronym for “not in my backyard”—is ubiquitous in discussions of offshore wind opposition. This term describes the sentiment of those who support offshore wind projects, so long as it is not negatively impacting their community or local environment in any way. NIMBYism is often cited as the main reason for project opposition, delays, and cancellations. It is prevalent in other sectors as well: in the development of prisons, landfills, and incinerators, for example. It would be easy to attribute the social gap to NIMBYist attitudes, but research suggests that blaming NIMBYism entirely is neither accurate nor good practice. To shrink the social gap, we must explore other reasons for concern and opposition, rather than continue to pigeonhole opposition into this one category.

## Viewshed Concerns



Viewshed concerns are prominent in the debate of offshore wind impacts. Viewshed concerns are not entirely different from NIMBYism, but there is an important distinction between the two: existence value. NIMBYs (individuals who exhibit these NIMBY characteristics) are thought to be “selfish”; they may only be concerned about the impacts of turbines on their own viewshed and local environment. However, for example, if an offshore wind farm were to be built in someone else’s backyard, they may not be opposed. Some locals, though, dislike the viewshed obstructions regardless of whether the wind turbines will impact their own environment. Existence value is an economic term that describes the valuation of an environment that an individual does not use. Those who experience general viewshed concerns, extending past their own environment, place an existence value on viewsheds that they do not encounter. Those who experience NIMBYism may not.

## Control and Ownership



Control and ownership is another point of contention for some of the opposition. Control and ownership deals with the question of “Who owns the seascape and who has the right to it?” This is a topic that requires consideration for multiple stakeholders: the locals, developers, and government. Local fishermen, for example, travel the waters for their livelihoods and provide a renewable food source to the world. Developers need the water in order to provide renewable energy to the grid. Local, state, and federal governments exert authority over their waters. For example, the federal government leasing program identifies optimal sites for offshore wind projects and leases those areas to developers interested in deploying offshore wind. Furthermore, some locals oppose “industrialization” of the ocean; they feel that the water should be left untouched by human development. Locals exert their authority over the waters through protests and, in some instances, lawsuits against developers.

## Impact to Birds and Marine Life



Impact to birds and marine life is another concern for many stakeholders. Local opponents of the Cape Wind project cited concerns that the turbine blades would threaten seabird populations. The Nantucket Residents Against Turbines (ACK RAT), a grassroots group of Nantucket locals, worries that the Vineyard Wind project located in Cape Cod waters (see figure 5) will threaten the endangered North Atlantic Right Whale.

population in an area of critical habitat. They've also stated that the project's Environmental Impact Statement (EIS) lacked technical scientific studies and data. The American Bird Conservancy, a non-profit membership organization, issued a letter to the Bureau of Ocean Energy Management to share their concerns that the EIS of the Vineyard Wind project lacked a monitoring program for birds. Some of the public's concerns about the impacts to marine life stem from misconceptions. A 2006 study by Jeremy Firestone found that many concerns about the impact to marine life were inconsistent with findings from the EIS conducted in Cape Cod for the Cape Wind project. Undoubtedly, though, there are gaps in knowledge. Fully understanding the impacts of this technology on marine life requires years of research and robust scientific studies. As a new industry, there has not been the opportunity to conduct such research yet. And compared to other countries where offshore wind has been an established industry for longer, the United States is less knowledgeable. These two issues can be addressed by disseminating science that is more accessible and digestible to the public and by conducting ongoing research on wind farms as they are built in American waters. Furthermore, conferences should be organized for developers and scientists to facilitate data sharing among themselves. This will signal to the public that developers are collaborative and receptive to their concerns. Building trust in this way will be invaluable. As outlined by the Block Island ocean planning document titled Ocean Special Area Management Plan (SAMP), trust is integral to the success of offshore wind development.

Figure 5

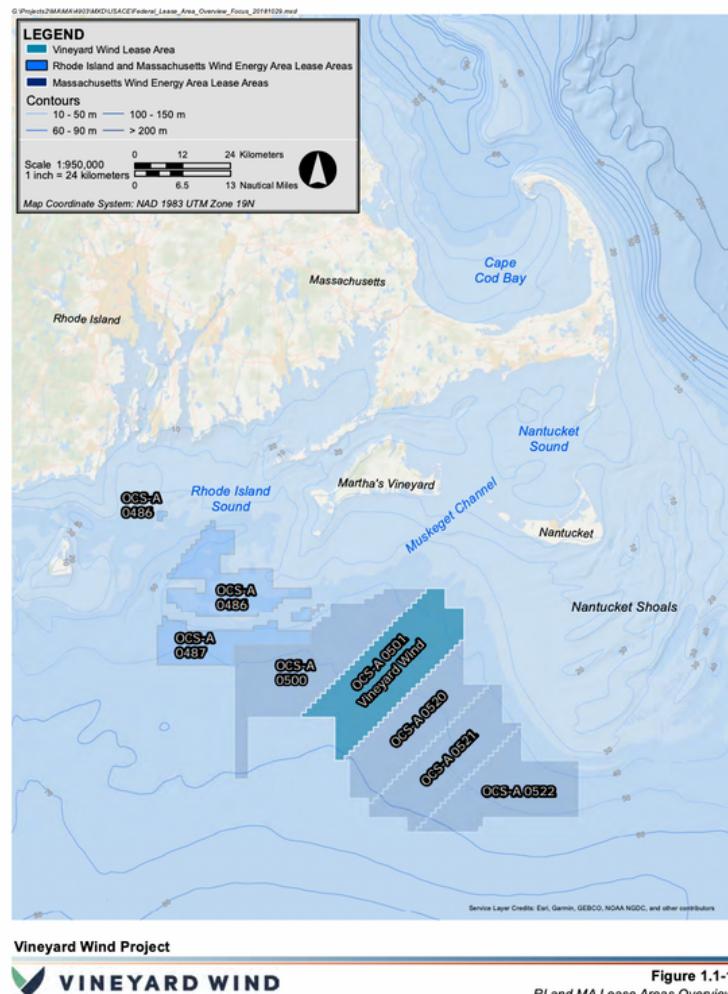


Figure 1.1-1  
RI and MA Lease Areas Overview  
Vineyard Wind Lease Area

## The Fishing Industry



The fishing industry is concerned about the perceived impacts of offshore wind projects on their livelihood. The Responsible Offshore Development Alliance (RODA), a membership-based coalition of fishing industry stakeholders in Martha's Vineyard, is concerned that environmental analysis of the impacts of turbines on ocean ecosystems has been insufficient. RODA believes that the government assessments were conducted hastily and that local fishermen were not properly consulted in the development of this project to express their concerns about the navigational hurdles and impact to fish.

populations that these turbines pose. The importance of consulting fishermen in a manner that respects their livelihood and a detailed catalog of their potential interests based on previous public meetings has been outlined in regional ocean planning bodies created by the Bureau of Ocean Energy Management. Transparency on the part of developers is integral in creating trust and gaining local support. In fact, project applications are assessed for their public engagement. The Mid-Atlantic and Northeast Regional Planning Bodies provide suggestions for how best to do so. These planning bodies were years-long efforts to detail the best practices for offshore wind development in the United States. The Northeast Regional Ocean Planning document was influential in the development of the Rhode Island Ocean SAMP, to which experts ascribe the success of the Block Island wind farm. The information and data collected in the Northeast planning body helped ensure the data in the Ocean SAMP remained accurate and relevant to stakeholders. The Ocean SAMP document also declared Rhode Island's commitment to share data with the regional team. As the United States rolls out its new industry, we must return to these ocean planning documents for guidance and look at Block Island as a case study of success (see below).

## Lessons learned from Block Island

### Ocean Special Area Management Plan

Ocean planning was an integral step in the development of Block Island, as it addressed multiple-use conflict of the waters, such as already-existing human uses. The plan also facilitated the coordination of efforts among the federal and state governing bodies. Block Island serves as an example of the success of ocean planning.

### Renewable Energy Siting Partnership

To address the concerns that the wind farms would negatively impact locals, Rhode Island developed a partnership with stakeholders to ensure that the residents of the state could meaningfully consult on the project. The partnership also conducted analysis of the turbines' impact to animals, as well as analysis of wind speeds and resources to determine energy production.

### Wind Energy Siting Tool

This is a tool that stakeholders can access online to determine power production and siting impacts of wind developments. It is an extension of the Renewable Energy Siting Partnership's efforts.

Locals fear that there are more drawbacks than benefits to the development of nearby offshore wind farms. Highlighting tangible benefits is one way to garner public support for projects and assuage the concerns of locals who fear that they will not reap benefits from offshore wind projects. For example, an assurance that the energy generated by the turbines is given to locals could attract more support. Ørsted's web page about Ocean Wind 1 (an offshore wind farm project in New Jersey) translates the energy production from this project into how many New Jersey homes can be powered by it: "the 1,100 MW Ocean Wind 1 project...will deliver enough offshore wind capacity to power half a million New Jersey homes." Job creation is another tangible benefit to locals, particularly labor unions. Ørsted's Memorandum of Understanding, their agreement with North America's Building Trader's Union (NABTU) to use US union labor in the development of their projects, has garnered the support of American workers. Committing to developing a domestic US supply chain for this industry would generate jobs for US workers. The United States must develop its supply chain for this industry, as is being done in New Jersey, where the governor invested \$250 million to establish a monopile manufacturing facility, which has generated hundreds of good-paying union jobs. Monopiles are the support structures for turbines. This is just one example of the United States' development of the supply chain; much more is needed before the United States will be equipped to deploy offshore wind on its own. In the meantime, though, as the country continues to develop its supply chain, the United States will have to enlist the help of Europe and its resources. Iberdrola, a renewable energy developer, has stated their worries that the United States is too protectionist, meaning that the United States will try to develop its own supply chain first and not use the resources of Europe's already-established industry. The United States must strike a balance: the country must deploy offshore wind swiftly in order to reduce greenhouse gas emissions, while simultaneously building up the supply chain.



U.S. Department of Energy

Wind turbine blade undergoes stress testing at the National Wind Technology Center in CO. Image from NREL

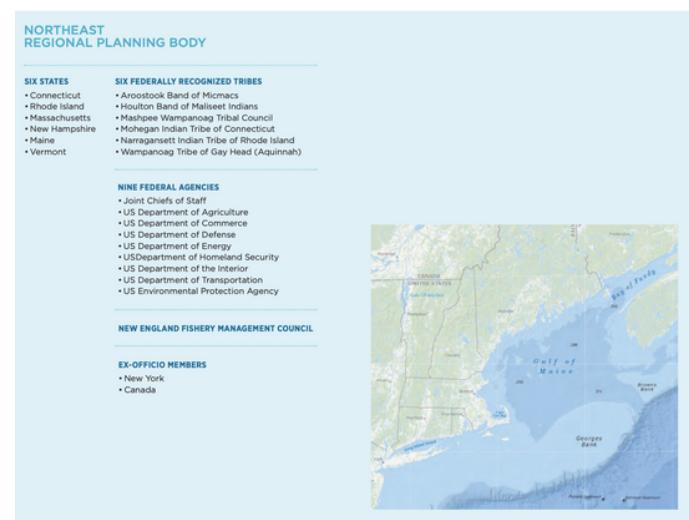
# Recommendations

## Address multiple-use conflict of the waters with ocean planning.

The Mid-Atlantic and Northeast Regional Planning Bodies were years-long efforts that explored the responsible development of offshore wind. Developers should use these resources, which address particular obstacles for those two regions, to avoid making past projects' mistakes. As discussed in the plans produced by these two bodies, engaging with fishermen (and other stakeholders) early in the development process and hosting open forums where individuals can voice their concerns helps establish trust between locals and the developers.

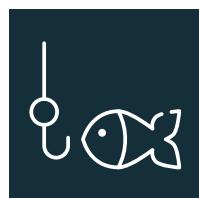


Mid-Atlantic Regional Ocean Action Plan



Northeast Regional Ocean Action Plan

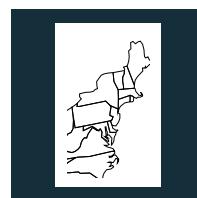
### Stakeholders consulted:



Fisheries



Locals



States



Federal Agencies



Tribes

Disseminate findings of environmental assessments on the impacts of development in a way that is more accessible to laymen to dismantle the barrier to information and research.

This is particularly helpful to address concerns of marine life. The [Pacific Northwest National Library](#), a center for scientific discovery and technological innovation in sustainable energy, and the National

Renewable Energy Laboratory, a national laboratory of the US Department of Energy innovating creative solutions to today's problems, have jointly worked on the Synthesis of Environmental Effects Research (SEER) project. SEER's goal is to assess the current state of research and information on offshore wind. Experts are compiling education research briefs on the key issues with transparent information about the current gaps in knowledge and where future research is needed. The SEER team is also creating webinars accessible to the public for free where this information will be shared.



Research briefs



Research Recommendations



Webinar Series

Consult locals throughout the project the conception, design and development process.

This level of ongoing engagement may be unfamiliar to international developers. One tactic an international energy developer Ørsted has used in the US is to create a separate company (Ørsted North America) that handles the US-based projects.

Organize conferences and coalitions for developers and other stakeholders to support one another with guidance and data sharing.

Data sharing will be beneficial as developers face obstacles in siting and building. Additionally, participating in these conferences and collaborating with others will demonstrate to the public that developers are not entirely self-interested. These sorts of forums have been suggested in ocean planning documents and have been successful in other industries. The International Oil Spill Conference (IOSC) is such an example, which brings together the international spill response community, private sector, government, and non-governmental organizations to handle challenges the industry faces.

# Conclusion

---

In order for the United States to realize its goals to reduce its carbon emissions, government and renewable energy developers must understand and overcome long-standing barriers to development, including public perceptions and reactions to offshore wind deployment. By understanding these obstacles, they will be well equipped to develop and implement a US-specific suite of best practices to ensure that renewable energy is deployed in a timely manner.

