Policy & Power in My Backyard: Lessons Learned for U.S. Offshore Wind Energy Development from the State and Local Levels

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POLICY & POWER IN MY BACKYARD:
LESSONS LEARNED FOR U.S. OFFSHORE WIND ENERGY DEVELOPMENT
FROM THE STATE AND LOCAL LEVELS
by
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from the state and local levels
written by Marisa Briscoe McNatt
has been approved by the Department of Environmental Studies

(Maxwell T. Boykoff, chair)

(Suzanne Tegen)

Date__________

The final copy of this thesis has been examined by the signatories, and we
find that both the content and the form meet acceptable presentation standards
of scholarly work in the above mentioned discipline.

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ABSTRACT

McNatt, Marisa (Ph.D., Environmental Studies Department)

Policy & Power in My Backyard: Lessons Learned for U.S. Offshore Wind Energy Development from the State and Local Levels

Thesis directed by Professor Maxwell T. Boykoff

The U.S. has one 30-megawatt (MW), demonstration-scale wind farm installed off the coast of Rhode Island, to date. This is despite widespread efforts for more than ten years, from the local to the federal level, to develop wind farms off the coast of the U.S. In contrast, Europe has more than 15,000 megawatts (MW) of offshore wind capacity from 92 offshore wind farms installed in the North, Irish, and Baltic Seas and Atlantic Ocean, as of the end of 2017 (Wind Europe, 2018). Using the policy-sciences frameworks, I mapped state and municipal contextual conditions, including policy participants, and their beliefs, values, resources, and strategies for affecting offshore wind development. A case-study comparison of contextual conditions relevant to offshore wind development in Rhode Island and New Jersey formed the basis of my work. I selected these case studies because of the initial offshore wind planning timelines and similar design parameters of the offshore wind farms proposed in each state, but contrasting outcomes. The 30-MW Block Island Wind Farm (BIWF), located off the coast of Block Island, Rhode Island, proposed in 2008, went forward; whereas the 24-MW Fishermen’s Energy Atlantic City Wind Farm (FACW), proposed for the coast of Atlantic City, New Jersey in 2008 did not go forward. Obviating time and some technological and siting parameters as the reasons for why one offshore wind farm went forward and the other did not, allows for a focus on how state and municipal policy participants, their beliefs and values, resources and strategies, and other contextual conditions affected outcomes for the BIWF and FACW. Empirically-derived evidence from stakeholder documents, observations, and interviews reveals that decision makers and decision processes that incorporate substantial planning and economic, or market support mechanisms for proposed offshore wind projects.
may advance implementation of proposed offshore wind projects and a state’s goals for offshore wind energy. In contrast, decision makers and a decision process that primarily advocate for developer responsibility and economic self-sufficiency conflict with the high up front capital costs associated with offshore wind development and state objectives for offshore wind energy. This research also found that state institutional structure with the appropriate expertise, resources, and community trust is important for managing offshore wind planning and regulatory efforts, and ensuring that proposed offshore wind projects avoid, or mitigate impacts on human and environmental communities. Based on findings, this dissertation concludes that a state’s institutional structure, and state and municipal decision makers’ values, perspectives, resources, and strategies, including decision processes, are primary drivers of offshore wind development outcomes in the U.S., as opposed to other contextual factors, like public opinion levels, a state’s geography, or market conditions.
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Chapter 1  Introduction

1.1  U.S. offshore wind energy development endeavors and the global offshore wind market: Do we need more research on offshore wind energy planning and policy in the U.S.?

Anyone familiar with the current global offshore wind market and the extensive efforts for offshore wind energy development in the U.S. may wonder, *can more research offer new insights for U.S. offshore wind planning and policy?* More than ten years ago, industry leaders recognized the potential for U.S. offshore wind development, or wind farms built at sea, to advance the economy, energy security, human health, and climate change mitigation. The potential available energy from U.S. offshore wind resources is about as twice as large as the electricity demand for the United States, even after accounting for land use and environmental exclusions, such as shipping lanes and marine protected areas (Musial, Heimiller, Beiter, Scott, & Draxl, 2016). To harness the U.S.’s vast renewable energy resource at sea, leaders in industry, business, and government are developing a portfolio of offshore wind policies at the state and federal levels, and a rich body of knowledge on everything from public opinion, to wind speeds, to economic and environmental impacts.

Moreover, in addition to policy and research efforts, researchers are tracking developments in the global offshore wind market in recent years, with implications for the industry in the U.S. In 2016, offshore wind comprised more than half of the investments in the renewable sector, reaching USD 14.4 billion. Additionally, there are market signals that offshore wind prices are dropping substantially and faster than expected. Experts projected a gradual decline in cost, with prices reaching EUR 100/MW-hour (MWh) by 2020. Instead, several Western European nations saw auction strike prices well below the 2020 cost projection, including an auction low strike price of at EUR 49.90/MWh for the Danish Krieger’s Flak project (Global Wind Energy Council, 2016). \(^1\) The decline in offshore wind prices, in

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\(^1\) Chapter 6 clarifies that “country-specific factors play a major role in individual auction results and must be evaluated with care” (IRENA, 2017). For example, auction strike prices are contingent upon investor confidence and a developer’s access to low-cost capital, interdependently related to strong policy support for offshore wind energy development. Hence, the U.S. cannot necessarily expect the same low prices for offshore wind energy in the near-term, as seen in Europe. Moreover, auctions strike prices do not necessarily account for all project costs, and
combination with signs of increasing U.S. regulatory and policy support and an emerging U.S. offshore wind market, is drawing “well-capitalized and experienced offshore wind developers,” like Statoil and Ørsted (formally DONG Energy), to invest in the U.S. (Musial, Beiter, Schwabe, Tian, Stehly, & Spitsen, 2017).

In late 2016, the U.S.’s first offshore wind farm, the Block Island Wind Farm (BIWF), constructed off the coast of Block Island, Rhode Island, sent energy to the grid. Several months later, the Long Island Power Authority approved a power purchase agreement (PPA) for the 90-megawatt South Fork Wind Farm, or agreed to buy the power produced from the South Fork Wind Farm. This PPA-approved project is expected to be the nation’s second offshore wind farm built off the coast of New York. Given these widespread endeavors for U.S. offshore wind energy development and the recent market advancements in the U.S. and globally, one may question whether and how this research can offer unique insights for offshore wind planning and policy in the U.S. As Musial et al. (2017) state, the “positive market signals” are “potentially setting the stage for large-scale offshore wind development across the country, from Massachusetts to Hawaii.”

In this introduction, I explain how this research contributes to U.S. offshore wind energy planning and policy. I argue that despite the strong U.S. offshore wind market signals, there is a need to look at a more complete picture of offshore wind energy development in the U.S. to produce even more effective planning and policy. In addition to some signs that the U.S. offshore wind market may grow the future, U.S. history is also replete with examples of wind farms proposed for the U.S. coast that have not gone forward, despite efforts from developers, and state and federal decision-makers. For instance, since the early 2000s, the U.S. Department of Energy has awarded more than 70 projects focused on offshore wind certain project characteristics result in lower prices. For example, the strike price for the Krieger’s Flak project does not include transmission costs, which would add another EUR 6-12/MWh, and the project is not very far from shore or in very deep water, reducing capital expenditures (GWEC, 2016). Thus, it is uncertain as to whether future offshore wind auctions will necessarily realize strike prices as low as seen in recent years; moreover, it remains to be seen whether these projects with low auction strike prices will actually be built.
development about $300 million (U.S. DOE, 2015). However, only one project, the Block Island Wind Farm, has emerged. Musial et al. (2017) also explain that the question remains as to whether offshore wind in the U.S. can “replicate the dramatic cost reductions achieved in Europe.” Thus, to optimize U.S. policy and planning efforts, particularly for U.S. states with offshore wind energy development goals, this study emphasizes that it is important to look closely at why proposed offshore wind projects are not developed, in addition to why they have, or may be developed.

To achieve this goals, this study utilizes a comprehensive and contextually-based research approach to examine non-technological factors that affect U.S. offshore wind development outcomes. Specifically, I conduct a comparative-case study that includes the Block Island Wind Farm, completed in December 2016, and the Fishermen’s Atlantic City Wind Farm (FACW), proposed for the coast of Atlantic City, New Jersey that did not go forward. Through this case-study comparison, I explore contextual factors, including the social and decision-making processes at the state and municipal levels, and how those contextual conditions impacted outcomes for the BIWF and FACW. The goal is to generalize case-findings to offer policy and planning recommendations for U.S. states with offshore wind energy development goals.

To clarify how my research provides a unique contribution to policy and planning efforts for states with offshore wind energy goals, Chapter 1 provides an overview of past and current U.S. federal, state, and NGO endeavors to advance offshore wind. I also address how this research is situated among academic engagement on the topic of offshore wind energy. Following this, I explain how this study embraces a holistic approach, by examining a wide scope of interdependent contextual conditions, including social processes and decision processes to determine some relevant ways to improve offshore wind planning and policy efforts for states with offshore wind energy goals. Then, I articulate the ways in which this research speaks to academic and other communities outside of the topic area of offshore wind. For example, the methods used and lessons learned from this project are generally applicable for
addressing complex problems at the human-environment interface. I also assert that the lessons learned for improving offshore wind policy may also be applicable for advancing climate mitigation policies.

1.2 Overview of federal, state, and NGO endeavors for U.S. offshore wind energy

Since the Energy Policy Act of 2005 authorized the Minerals Management Service – renamed the Bureau of Ocean Energy Management (BOEM) in 2010 – to oversee alternative energy development on the Outer Continental Shelf (OCS), the federal government has engaged in offshore wind energy development initiatives (BOEMa). In 2010, Secretary Salazar launched the “Smart from the Start Initiative,” with the goal of expediting the “responsible development of wind energy projects off the Atlantic coast” (BOEMb). In 2015, the U.S. Department of Energy (DOE) issues a deployment scenario for offshore wind energy, including 3 gigawatts (GW) of offshore wind by 2020, 22 GW by 2030, and 86 GW by 2050 (U.S. DOE, 2015). A year later, the U.S. DOE and the U.S. Department of the Interior (DOI) released a national strategy, stating, “There has never been a more exciting time for offshore wind in the United States.” In support of this statement, the strategy notes 11 commercial leases for offshore wind that have the potential to support almost 15 gigawatts (GW) of offshore wind capacity. As of May 2018, there are 14 active offshore wind leases, representing more than 1.3 million acres of the U.S. Outer Continental Shelf (OCS).

In December 2016, BOEM awarded Statoil the federal lease area off the coast of New York for an “unprecedented bid value of $42.5 million” (Statoil 2016, as cited in Musial 2017). The federal offshore wind strategy includes plans for addressing cost and technology challenges associated with offshore wind development, and identifying and mitigating environmental risks (U.S. DOE & U.S. DOI, 2016). Following the Obama administration’s efforts for offshore wind energy, the Trump administration has indicated support offshore wind development as part of its “all-of-the-above” energy policy. Interior Secretary, Ryan Zinke announced in January 2018 that “offshore wind will play a ‘big role’ in energy plans” (House Committee on Natural Resources; Moore, 2018). Under the Trump administration, BOEM drafted guidelines for a “Design Envelope” approach, which if adopted, would provide developers with a
degree of flexibility on making project-design decisions at commercially advantageous times (BOEM, 2018).

In addition to activities on the federal level, there is considerable momentum for renewable energy – including offshore wind energy – at the state level. All coastal states, with the exceptions of Alaska, Georgia and Florida, have a Renewable Portfolio Standard (RPS) that directs utilities to sell a certain percentage of electricity from renewable sources. Of the coastal states with an RPS, only Virginia’s and South Carolina’s RPSs are voluntary. The other coastal states have a mandatory RPS (National Conference of State Legislators, 2017). Many coastal states with an RPS recognize that developing offshore wind farms is critical for meeting their RPS targets. In addition to abundant offshore wind resources, the winds at sea blow strongly and more uniformly than on land. An increased wind speed of just a few miles per hour can produce substantially more electricity. Additionally, coastal states have limited available land space for large-scale onshore wind or solar farms (BOEMc).

Several states are developing specific policy-support mechanisms and goals for offshore wind. Maryland and New Jersey, for example, implemented similar offshore wind policies that establish renewable energy credits (RECs) for offshore wind, and a mandate for utility companies to purchase a certain amount of offshore wind RECs over the long-term from qualified facilities (Polefka, 2017). In August 2016, Massachusetts Governor Charlie Baker signed a bill calling for 1,600 MW of offshore wind to be procured by June 2027; and in January 2017, New York Governor, Andrew Cuomo, committed New York to up to 2,400 MW of offshore wind by 2030 to support the state’s 2030 RPS target of 50% (General Court of the Commonwealth of Massachusetts 2016 and Cuomo 2017, as cited in Musial et al., 2017).

Besides federal- and state-level support for offshore wind, businesses, networking forums, and many nongovernmental organizations are supportive of offshore wind. The Port of New Bedford, in New Bedford, Massachusetts, utilized more than $200 million to deepen channels and berths, and repair and enlarge maritime terminals and wharves to be a full-service port for offshore wind development (New
Bedford Wind Energy Center). The Business Network for Offshore Wind, with more than 100 members, promotes collaboration between developers, global experts, and related businesses to foster education, networking, and business decision-making (Business Network for Offshore Wind). The American Wind Energy Association, the foremost trade association representing the U.S. wind industry, hosts an annual conference to support offshore wind, bringing together developers, academics, and leaders in business and government (American Wind Energy Association, 2017).

1.3 Overview of relevant scholarly literature and research contribution

Globally, scholarly research covers technical, economic, environmental, public perception and other aspects of offshore wind energy. For example, researchers in Taiwan, a country with the goal of installing 800 offshore wind turbines by 2020, used different models to calculate the “noise impact zone” to mitigate offshore wind farm construction impact on the Sousa Chinensis, or Chinese White Dolphin (Wu et al., 2017). Researchers in Denmark found that to reduce the costs of increasing offshore wind capacity, nearshore sites should be selected based on “low resistance” and “low cost” characteristics (Jacobsen, Hevia-Koch, & Wolter, 2016). A study relevant to the potential development of offshore wind farms in the Mediterranean Sea found that “the introduction of a new habitat,” or the offshore wind farm foundations, did not result in perceptible impacts to the marine ecosystem at large. Rather, the study found that impacts were only apparent if fishing restrictions were enforced (Bray, 2017). In the U.K., the nation with the largest offshore wind market, researchers concluded that “state-of-the-art high resolution forecast models” are important for minimizing the impact of a “ramping event” – or a large variation in wind power output from a wind farm within a short period of time – on electrical system operations. Ramping events are increasingly likely in Great Britain, as large offshore wind farms are clustered together in zones (Drew, Cannon, Barlow, Coker, & Frame, 2017). Clearly, there are many facets to the offshore wind planning and policy process that are addressed around the world.

Among the numerous research topics, this study focuses on the contextual factors, including the networks of policy participants and their perspectives, resources, strategies, and decision processes that
impact offshore wind development outcomes. Several characteristics of the literature on offshore wind energy determined this research focus and how to categorize this research. First, this research aligns with social science and policy scholars interested in studying how to improve the planning process for wind energy by looking at factors other than only the technologial, economic, and environmental impact characteristics of offshore wind.

Anecdotally, as noted above, history suggests that research on social and policy processes will benefit U.S. offshore wind planning. Despite ongoing and extensive policy and planning efforts in support of offshore wind in the U.S. for nearly two decades – the first wind farm planned for U.S. coastal waters, Cape Wind applied for a federal permit in 2001 – the U.S. has built one pilot-scale, 30-megawatt offshore wind project, the Block Island Wind Farm. With one 30-MW, pilot-project installed, the U.S. is only 1% of the way towards meeting the U.S. DOE’s deployment scenario of 3 GW of deployed capacity by 2020. In light of this history, U.S. offshore wind planning and policy can benefit from more social and policy science research, even with an advancing global offshore wind market and U.S. federal and state support for offshore wind.

To improve planning and policy for wind energy, social science literature emphasizes the importance of increasing our understanding of public perception, based on the idea that social acceptance for an offshore wind project is as important for a project to advance toward development as other factors like technological know-how. However, although an understanding of what drives public acceptance of, or opposition to a project is important to an extent for improving the offshore wind planning process, this research finds that public perception is best understood relative to other social and policy processes that impact outcomes. For example, decision makers’ resources and strategies affect public opinion and community perception is only one factor among many that impact wind project outcomes.

The case study on the Fishermen’s Energy Atlantic City Wind Farm clarifies this. Despite almost no public opposition during the ten years of deliberations on the FACW proposed for the New Jersey coast, the project did not go forward. Rather, stakeholders in positions of power and decision processes,
among other factors, determined the project’s outcome. In contrast, there was substantial opposition to the Block Island Wind Farm. However, decision processes and policy mitigated public opposition and, subsequently, had a greater impact on project development than public opposition. A literature review reveals that social science and policy scholars are also studying a range of non-technological factors impacting outcomes, like the role of institutional structure and discourse in wind energy development processes. However, as explained in detail in the literature review in Chapter 2, more attention could be paid to how non-technological conditions beyond public perception inform offshore wind development policy and planning strategies.

This research specifically calls for studying a range of social- and policy-science factors beyond public perception via empirical data. “On the ground data” allow for a better understanding as to why proposed offshore wind farm projects are developed, or not developed, and, in turn, for more optimal policy and planning solutions to emerge. The policy sciences framework guided this study’s research and data collection methods, by drawing “attention to all the significant features of the policy process,” rather than depending on “selective observation and knowledge” (Clark, 2002). In this way, the policy sciences offer an approach that allows professionals to become more adept at solving real-world problems.

Conventional approaches to problem-solving often “simplify policy problems, misconstrue some vital part of the context, or overlook the context altogether,” resulting in suboptimal outcomes. Further, standard problem-solving methods are sometimes preoccupied with or entrapped by disciplinary boundaries, bureaucratic procedures, and mental constructs such as positivism\(^2\) (Clark, 2002). These entrapments invoke certain approaches to problem solving that are often without adequate deliberation on whether the approach is appropriate (Clark, 2002). In contrast to approaches such as positivism that include prediction “with precision, scope and accuracy,” the policy sciences embrace pragmatism, or the notion that “knowledge results from inquiry” (Clark, 2002, pp. 121-22). Most real-world issues – like

\(^2\) Positivism is the view that problem solving necessarily entails objective and “scientifically verifiable” solutions, as opposed to uncertainty, complexity, and subjectivity (Clark, 2002).
offshore wind development in the U.S. – entail extreme complexity, like decision makers’ values and perceptions, institutional arrangements, and power, and therefore undermine the notion that one can understand the cause of the problem, or the solution to the problem without inquiry and empirical evidence. The cohesive concepts of the policy sciences provide a framework to guide empirically-based analysis and thought to better understand the problem, and thereby offer a portfolio of more optimal solutions (Clark, 2002).

For this project, I apply the policy sciences framework to comparative case-studies – the BIWF and FACW. Specifically, applying the problem orientation framework of the policy sciences, I mapped, or described the following for each case: (1) the state’s goal(s) for offshore wind energy, (2) trends, or the degree to which the state have moved toward its goal(s) for offshore wind; (3) conditions resulting in the trend of the state moving toward, or away from its offshore wind goals, such as the state’s geography and institutional structure, and policy participants’ beliefs, values, resources, and strategies; and, (4) policy recommendations for states with offshore wind energy development goals.

Given the global market and general momentum and present efforts to advance offshore wind in the U.S., it is likely that at some point the U.S. will make a significant contribution to the global offshore wind industry – projected to reach $55.11 billion by 2022 – with or without this research (Offshore Wind Market, 2017). However, evidence indicates that several U.S. states with offshore wind energy development goals are facing offshore wind planning and policy challenges. For example, as previously noted, New York state has a goal of deploying 2,400 MW of offshore wind energy generation by 2030. In fall 2017, a scallop industry trade group, representing a host of fishing communities, associations, and businesses, filed a lawsuit against the U.S. Bureau of Ocean Energy Management (BOEM). The trade group requested that the federal courts in Washington, D.C. invalidate the wind energy lease area off Long Island, New York that was awarded to Statoil, a Norwegian firm (Fisheries Survival Fund, 2017).

In 2009, Maine’s Ocean Energy Task Force, formed by the then-Maine Governor, John E. Baldacci, recommended the objective of installing 5 gigawatts (GW) of offshore wind energy off the
coast of Maine by 2030 (Ocean Energy Task Force, 2009). In October 2017, fishermen and coastal residents of St. George, Maine voiced their opposition, in the form of a petition, to an offshore wind farm proposed for near Monhegan Island, Maine (Thurlow, 2017). The petition included more than 300 signatures. In January 2018, Gov. Paul LePage of Maine implemented a moratorium on new wind energy projects, including on the coast, and established a “secretive commission to study how wind turbines affect the state’s tourism economy” – an effort that could potentially stall offshore wind energy development projects on the Maine coast (Miller, 2018). Based on these events, this research which explores empirically-based evidence as to why the proposed Block Island Wind Farm went forward, and the Fishermen’s Energy Atlantic City Wind Farm did not can potentially offer insight to improve New York’s and Maine’s planning and policy processes for offshore wind energy development, as well as other U.S. states with offshore wind energy goals.

1.4 Beyond offshore wind: Research methods and lessons learned applied to complex problems and climate mitigation policy

For the past ten years, or more, the federal government has developed offshore wind energy deployment scenarios and strategies, and many coastal states have set goals for offshore wind energy, to address climate mitigation, improve the economy, human and environmental health, among other reasons. Although some proposed offshore wind farms have met with community resistance, many surveys also indicate strong public support for offshore wind energy development. Further, research indicates that when the offshore wind planning endeavors engage affected communities in meaningful ways, communities are more likely to support a proposed project. Yet, states and the federal government have generally missed their goals and/or deployment scenarios for offshore wind. This research asserts that when goals are set with the intention of advancing human and environmental health (see text box at the end of Chapter 1), are supported by impacted communities, and governmental officials dedicate time and resources to meeting those goals, one should hope and expect that goals are met in a timely manner. This policy sciences-based research approach – that asks researchers and professionals to look beyond
conventional and mainstream narratives on the causes of the problem and the solution – in of itself provides insight for improving policy outcomes, no matter the problem. More specifically, this research may especially be of interest to those who are studying non-free-market-based approaches for addressing climate change mitigation, such as scholars researching the new carbon economy. For example, in their article, “The ‘New Carbon Economy:’ What’s New?” Boyd, Boykoff, & Newell (2011) call for scrutiny of the constitution, governance, and effects of the “new carbon economy.” To address climate change mitigation, literature on the new carbon economy asserts that efforts to address climate mitigation are largely grounded in market-based approaches, namely emissions trading schemes and the purchasing of carbon offsets.

Although some positive results can be gleaned from these market tactics, critics maintain that carbon markets have lost us more than ten years “in the battle to keep climate change within tolerable levels” (Boyd et al., 2011, p. 609). Critics further argue that not only have emissions-trading schemes and carbon offsets been unsuccessful in carbon reduction and resulted in a range of perverse consequences for human and environmental communities, but they have also “successfully sidelined” other policy options that could have been more effective (Boyd et al., 2011, p. 609). Based on this dissertation research, I argue that market-based approaches are also deployed, to some degree, at the U.S. state and local levels, in offshore wind policy and planning schemes and that these market-based approaches conflict with the high, up-front capital costs associated with offshore wind energy development and a state’s offshore wind energy development goals.

Based on the FACW case-study and evidence from other state and local level policy and planning efforts for offshore wind energy (described in Chapter 6), some state and local policy prescriptions and decision processes reflect, to some extent, the market-based global policies for addressing climate change. For example, several decision-making processes in New Jersey for offshore wind energy had the tacit goal of advancing offshore wind energy to the extent that proposed offshore wind projects could demonstrate economic self-sufficiency and market competitiveness. This market focus played a critical
role with respect to why the FACW did not go forward. In contrast, decisions processes in Rhode Island promoted and advanced the Block Island Wind Farm despite the fact that the wind farm required substantial state and municipal planning and that the electricity generated from the wind farm would be sold at an above-market price to Rhode Island mainlanders. Of note, the Rhode Island policy and planning process for offshore wind energy created a low-risk, investment environment for large-scale financial actors to address climate change mitigation. As an example, Citi provided tax equity financing for the Block Island Wind Farm, as part of its efforts to “reduce the impacts of climate change” (Wims, Cole, & Julavits, 2016).

Similar to other government interventionists strategies for renewable energy development, like the U.S. federal Production Tax Credit that provides financial support for development of renewable energy projects, Rhode Island’s policy decisions for the Block Island Wind Farm provide insight for a “much broader transformation of capitalism if the worst effects of climate change are to be averted” (Boyd et al., 2011, p. 610). Government policy that offers planning and financial support for emerging renewable and clean energy projects can potentially help to advance proposed projects, in part through instilling confidence in developers, bankers and other financial institutions to provide the necessary capital, spurring new globalized market opportunities to address climate change.

1.5 Research questions and goals

The research questions for this project are formulated to address this study’s primary goals: (1) obtain a better understanding of the contextual factors that impact outcomes for proposed offshore wind farms in the U.S.; (2) based on findings, establish policy recommendations for U.S. states with offshore wind development goals and objectives. In light of this project’s objectives, this study compares the contextual factors that resulted in the development of the BIWF and the contextual factors that resulted in the FACW not going forward. Subsequently, this project’s main research question asks: Why did the Block Island Wind Farm go forward and why did the Fishermen’s Energy Atlantic City Wind Farm not go forward?
Research questions – Rhode Island Offshore Wind Planning & Policy and the BIWF Case Study

1. **Goals:** What are / were Rhode Island’s goals for offshore wind energy development?

2. **Trends:** Over time, has Rhode Island moved toward or away from its goals for offshore wind energy development? How does the BIWF reflect trends?

3. **Conditions:** What are the social processes, or the range of policy participants and their resources and strategies, including decision processes, that shaped trends and outcomes for offshore wind energy development in Rhode Island and the BIWF? To what extent did other contextual conditions, like geographic and economic factors and institutional structure shape outcomes?

4. **Policy recommendations, or alternatives:** What lessons can be learned from the Rhode Island offshore wind planning and policy process and the BIWF for other states with offshore wind development objectives?

Research questions – New Jersey Offshore Wind Planning & Policy and the FACW Case Study

5. **Goals:** What are / were New Jersey’s goals for offshore wind energy development?

6. **Trends:** Over time, has New Jersey moved toward or away from its goals for offshore wind energy development? How does the FACW reflect trends?

7. **Conditions:** What are the social processes, or the range of policy participants and their resources and strategies, including decision processes, that shaped trends and outcomes for offshore wind energy development in New Jersey and the FACW? To what extent did other contextual conditions, like geographic and economic factors and institutional structure shape outcomes?

8. **Policy recommendations, or alternatives:** What lessons can be learned from the New Jersey offshore wind planning and policy process and the FACW for other states with offshore wind development objectives?
1.6 Dissertation structure

This dissertation includes six chapters:

- Chapter 1: Introduction
- Chapter 2: Literature review
- Chapter 3: Policy sciences-oriented research, Complementary Theory, & Methods
- Chapter 4: Problem Orientation & the Rhode Island Offshore Wind/BIWF case-study
- Chapter 5: Problem Orientation & the New Jersey Offshore Wind/FACW case-study
- Chapter 6: Global & national context, Cross-Case Comparison, Conclusion & Findings

Chapter 1 makes the case for this dissertation’s contribution to the field of offshore wind planning and policy from a social sciences and policy perspective. Namely, research findings are empirically-grounded to better understand why some proposed offshore wind projects go forward, and others do not. Chapter 2 is a literature review, to further clarify how my research is situated within existing scholarly and professional work on the topic of wind and offshore wind energy development. Chapter 2 also explains how the existing literature inform this dissertation’s research goals. I provide a detailed overview of policy-sciences research in Chapter 3, including why I chose to apply the policy sciences instead of the Advocacy Coalition Framework. Chapter 3 also explains how other theoretical tools from Science & Technology Studies, political ecology, and the global political economy provide insight on data collection and analysis, and complement a policy-sciences oriented research approach. Additionally, Chapter 3 explains case selection of the Block Island and Fishermen’s Energy Atlantic City Wind Farms and methods used for gathering and analyzing data, including: stakeholder documents, interviews, observations, and qualitative coding.

Chapters 4 and 5 have parallel structures, with Chapter 4 including the application of the problem orientation framework of the policy sciences to offshore wind planning and policy in Rhode Island and
the BIWF, and Chapter 5 applying the same research questions and framework to offshore wind planning and policy in New Jersey and the FACW case study. Chapters 4 and 5 describe the goals set for offshore wind energy development in Rhode Island and New Jersey in the early 2000s, and the social processes, decision processes, and other contextual conditions that resulted in the BIWF going forward, and that resulted in the FACW not going forward. Each chapter also provides policy recommendations for other U.S. states with offshore wind development objectives and goals, based on the case-study findings.

Chapter 6 describes global and U.S. renewable energy and offshore wind market trends, providing context for application of the lessons learned from this research. A cross-case comparison in Chapter 6 establishes this project’s conclusions and findings. Specifically, the cross-case comparison reveals that the resources and strategies, especially the decision processes of state and municipal decision makers, and a state’s institutional structure are strong drivers of offshore wind energy development outcomes. Subsequently, Chapter 6 provides a portfolio of policy options for U.S. states with offshore wind development objectives, followed by examples of policy recommendations applied to offshore wind planning endeavors in other U.S. states. Chapter 6 also articulates how methods and lessons learned extend to complex-problem-solving and climate change mitigation policies, and concludes with a summary of the dissertation chapters and recommendations for future research.
In addition to understanding how contextual conditions impacts outcomes for proposed offshore wind farms in the U.S., this dissertation also promotes the advancement of human dignity and environmental sustainability. In other words, this project promotes the notion that offshore wind energy development projects should only be developed if done responsibly, or in a way that advances the welfare of the environment and the greatest number of people possible.

With respect to human dignity, according to David J. Mattson and Susan G. Clark (2011), “Dignity seems to be something virtually all people want.” Matteson and Clark further note the need for “a shared understanding of human dignity” if the concept is to serve as a “policy diagnostic” (2011). Although each individual is the final arbiter on what constitutes dignity — a judgment formed by culture, social interactions, and physical experiences — in order for more individuals to obtain dignity, as opposed to a few, there must inherently be “greater weight to duties and obligations and less to individual entitlements and freedoms.” Second, dignity can specifically be thought of as one’s ability to obtain certain values, such as physical and psychological well-being, wealth, power, skills, or values that allow one to be content, happy, and satisfied. Matteson and Clark (2011) also point to the need of a “commonwealth of human dignity” — an idea that fundamentally requires policies that lead to experiences of dignity by as many people as possible. In sum, policies that uphold human dignity are ones that recognize the “rights of many” to access the aforementioned values that constitute human dignity, and the opposite of despotism, or the “ongoing concentration of values in the hands of a few.”

Environmental sustainability is a critical policy diagnostic for two primary reasons. First, Clark (2002) recognizes, “all humanity shares an interest in the sustainability of the environment … Human rights — freedom, self-determination, and dignity — are impossible without a secure natural resource base on which to build and maintain them” (p. 14). Second, this research upholds the notion that the environment should be preserved not only for utilitarian reasons, but also for the intrinsic value of the environment.

Offshore wind development has the potential to impact environmental and human communities, but when done responsibly, these impacts can be avoided or mitigated. Thus, this project examines the contextual factors that impact outcomes for proposed offshore wind farms in the U.S., while bearing in mind how offshore wind development decision processes can account for and mitigate impacts on human and environmental communities.
Chapter 2  Literature Review

2.1 Introduction and overview of relevant literature

Many countries, including the U.S., are embracing the goal of transforming from a fossil fuel-based, to a renewable-based economy, represented by 195 signatories of the Paris Agreement and 29 U.S. states with Renewable Portfolio Standards (United Nations; Durkay, 2017). In response, scholars are generating a substantial body of literature on the factors that affect this transition. Generally, scholarly findings on conditions that affect a shift from fossil fuels to any source of renewable power are applicable to offshore wind farm planning schemes, for instance, there are environmental and regulatory concerns for siting a biofuel facility, as there are with siting an offshore wind farm. More broadly, literature on planning and siting processes for any controversial facility provides lessons for improving offshore wind planning and policy, like the importance of a “fair decision process” for siting a waste facility.\(^3\)

To bound this review and research, I focus primarily on lessons learned from social science and policy literature on onshore and offshore wind. Because of some technological similarities, there is a substantial set of common questions and concerns for winds farms located on land or at sea. For instance, the public and decision makers are concerned with how a proposed onshore or offshore wind farm will impact the viewshed, landscape values, and seabirds. Based on their evaluation of scholarly research on public perception of onshore and offshore wind projects, Kempton et al. (2005) state, “the underlying concerns appear to be shared,” even if the controversy around the two different types of wind power focus on slightly different issues like “ownership of the oceans” (cited in Ellis, Barry, & Robinson, 2007).

Prior to the literature review, I include a summary of the framework that guided this study – the policy sciences framework – and how I applied this framework within the context of this dissertation.

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\(^3\) Reading the introductory paragraph to Chapter 2 on the global transition from fossil fuels to renewable energy to meet energy demands, one may ask: why study offshore wind, rather another source of renewable energy power? One may also wonder about the negative impacts of renewable energy and offshore wind power, in this energy transition. The text box at the end of Chapter 2 addresses these questions.
research and the existing literature. The policy sciences theorize that care should be taken in understanding the many important features of an issue to “avoid the tendency to depend on fragments of knowledge, single disciplinary views, or ideological stands” (Clark 2002, Brunner, 1996). To explain the importance of paying attention to all the significant features, Clark (2002) uses the parable of the three blind men who attempt to define an elephant when touching only a part of its body. In the story, based on the trunk alone, the elephant is a snake, based on the leg alone, the elephant is a tree, and based on its side alone, the elephant is a wall. This parable conveys that there is danger in “selective observation and knowledge” (p. 11).

On the one hand, since care should be taken in understanding the many features of a problem and avoiding “single disciplinary views,” this research examines empirical evidence related to the issue of why some proposed offshore wind farms in the U.S. go forward, and others do not. On the other hand, to understand the many features of the problem, it is also important to examine the existing literature. For example, scholars recognize that many residents impacted by a renewable energy project do not identify with a “Not-In-My-Backyard,” or NIMBY attitude, and are more likely to support a project if they are included in the decision-process – a theme that emerged in the Block Island case study. As another example, scholars recognize the importance of power and support from key stakeholders for a wind power project to go forward, concepts important for both the BIWF and FACW cases.

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4 I applied the policy sciences instead of the Advocacy Coalition Framework, as initially proposed. The ACF theorizes that people concerned with a policy issue will form coalitions based on shared core beliefs and values, and similar understanding on how to address a problem. However, preliminary data collection revealed that conceptualizing data in terms of coalition formation and beliefs did not effectively convey how to understand why one proposed U.S. offshore wind projects do or do not go forward, and lost the importance of the varying perspectives and beliefs of institutions and individual policy participants that affected offshore wind outcomes in New Jersey and Rhode Island. In contrast, the policy sciences emphasize individual identity and mapping “who gets to decide,” or people and institutions with power, and who base decisions not only on community goals, but also on individual subjectivities (Clark 2002). For instance, Clark (2002) explains, “When considering new alternatives or different perspectives, some people are open and flexible, whereas others are rigid and predisposed to maintain the status quo” (p. 18). Mapping case study data revealed that people and institutions in positions of power, and their perspectives and values, and resources and strategies impacted outcomes for the Block Island and the Fishermen’s Energy Atlantic City Wind Farms, more so than groups of people acting in concert to affect outcomes.
Chapter 2 proceeds with a literature review on an array of topics relevant to offshore wind planning and policy in the U.S., including: (1) the identities and perspectives, and resources and strategies of residents, planners, and developers (2) the role of power, institutional structure, discourse, investment decisions, and policy recommendations; and (3) an overview of the U.S. offshore wind market policy in the U.S., as compared to countries with advanced and growing offshore wind markets, such as the U.K., Germany, China, Denmark, and the Netherlands. Lastly, Chapter 2 summarizes lessons learned from the literature review and calls for more empirically-based studies relative to U.S. offshore wind planning and policy.

Figure 1 conceptualizes factors that have the potential to impact offshore wind planning and policy in the U.S., based on this research and the scholarly literature. The bidirectional lines between “Beliefs & Values,” “Policy Participants,” and “Resources and Strategies” indicate interdependent relationships. For example, the beliefs and values of policy participants shape policy participants’ resources and strategies, and the resources and strategies that policy participants deploy affect policy participants’ beliefs and values. To bound this research, this dissertation focuses on state- and municipal-level policy participants and conditions, as reflected in Figure 1. This research focus not only bounds the study, but also draws attention to how social and decision processes at the state- and local-levels can result in vastly different outcomes for proposed offshore wind projects, despite sharing a common federal regulatory environment and global market conditions.

This project recognizes the importance of other contextual conditions such as culture and natural resources affecting outcomes. The importance of these other contextual conditions impacting outcomes is highlighted in research on attitudes toward offshore oil development. Gramling and Freudenberg (2006) found that the variations in attitudes toward offshore oil development are widest between Northern California and Southern Louisiana — profoundly reflecting the “historical, social, and physical characteristics” of these regions. However, empirically-derived research data for this project emphasizes stakeholder actions and beliefs and values over other contextual conditions. For example, mainstream narratives tend to emphasize that the Block Island Wind Farm succeeded mainly because of geographic and economic factors: the islanders needed a cable to the mainland to stabilize and reduce electricity prices and therefore supported the wind farm to obtain the cable. However, data show that a wide range of values and leadership realized the Block Island Wind Farm, among other factors.
2.2 Beliefs and values and resources and strategies of policy participants: Residents, planners, and developers

Social science literature on wind energy focuses on public perception of proposed wind farms. The first studies on this topic concentrated on onshore wind farms (Wolsink 2000, 2005; Devine-Wright, 2004, 2005) with the exception of Kempton et al. (2005), whose research on public perception focused on proposed offshore wind farms. Ellis, Barry, & Robinson (2007) state, “it can be argued that the dominant topic of social science research is the nature of public acceptance of wind farms.” Scholarly literature refutes mainstream discourse that refers to the “NIMBY,” or “Not in my backyard” as the primary explanation for wind farm opposition.

According to a NIMBY account, most people support wind energy generally speaking, but oppose wind farms proposed for their “backyard,” or a nearby location. In other words, people want the
benefits of wind energy, but prefer that others bear the burden of having to see or hear wind farms. For example, a 2010 article in *The Atlantic* refers to NIMBY as an underlying challenge to the Obama administration’s energy agenda of incorporating more onshore and offshore wind into the U.S. electricity portfolio. *The Atlantic* 2010 article also quotes the American Wind Energy Association (AWEA) as stating that opposition to wind energy arises most often when “‘some people perceive that the development will spoil the view that they are used to.’” A 2007 episode of *The Daily Show with Jon Stewart* sends reporter Jason Jones to Nantucket to cover the opposition to the Cape Wind Farm, proposed for the Nantucket Sound in 2001. A segment of the episode includes Jones on the beach, screaming for the kids swimming to “get out of the water” as miniature wind turbines float behind them. Jones adds, “They’re ruining the view!”

However, for almost two decades, scholarly research clarifies that focusing on the notion of NIMBY in of itself does little to improve outcomes for wind planning schemes. On the one hand, there is truth in the underlying NIMBY idea that the public supports wind energy in general, but local opposition exists. Surveys dating back to the 1980s indicate general public support for wind energy in the U.S. and many European Countries including the Netherlands, U.K., and Sweden (Ellis et al., 2007). Community, or public opposition emerges when a wind farm is proposed for a nearby location. In other words, “public attitudes towards wind power are fundamentally different from attitudes towards wind farms” (Wolsink, 2005). Scholars from many countries, ranging from the U.K., to Australia, to the U.S., and Denmark seek to understand the discrepancy concerning general support for wind power and local opposition, but stress that NIMBY lacks explanatory validity.

As early as 2000, Wolsink realized whether in terms of siting a nuclear, conventional waste, or wind power facility, the literature increasingly views “simple NIMBY explanations of local resistance as outdated.” Devine-Wright (2004) argues that the NIMBY notion merely describes, but does not explain local opposition and calls for “more theoretically informed empirical research.” In line with Devine-Wright’s (2004) and Wolsink’s (2000) insights, “post-NIMBY” scholarship includes rich and important
findings to improve the wind planning process. Three general and codependent findings include: (1) community perception of a locally-proposed wind farm is nuanced and multifaceted, (2) more “top down” information, or the information deficit model cannot overcome, or dispel wind farm opposition, and (3) a fair and collaborative planning process that includes community benefits and bidirectional learning matters. This review proceeds with specific insights from the literature on each of these general findings and their importance for improving outcomes for proposed wind farms.

Wolsink (2000) explores the NIMBY notion through survey research. First, Wolsink explains that NIMBY represents a social dilemma or game-situation. People are in favor of the public good, “wind energy,” but each individual opposes a local project to maximize their own individual utility. Consequently, as each person hopes to free ride off someone else, no one cooperates and no wind farms are built. However, based on survey data collected concerning three major wind farms in the Netherlands, Wolsink (2000) states, “When we try to locate people that combine a positive attitude and resistance motivated by calculated personal costs and benefits we can hardly find them” (p. 53). In the survey, Wolsink (2000) measured the NIMBY tendency by asking for the support or rejection of five propositions. Based on survey data, only about one-fourth of survey respondents “held preferences that could result in free rider or NIMBY choices” and more than half of survey respondents put more weight on the public interest and the interest of others than personal gains (Wolsink, 2000). Wolsink (2005) further articulates that the NIMBY bias “hampers the vision of planners, investors and policy makers.”

Specifically, a NIMBY notion impedes planners’ visions because it suggests that more information can change selfish attitudes – those who selfishly oppose a wind farm in their backyard can be won over, simply if they have more facts on the benefits of wind farms (Wolsink, 2005). However, Ellis et al. (2007) elucidate – based on their own literature review of findings from a range of scholars such as Woods (2003), Hagget & Smith (2004), and Bell et al. (2005) – “positions of support and objection are not constructed just from a lack of awareness of the benefits of wind power, skepticism of the technology or the location of specific proposals, but also reflect deeper values, wider cultural and
institutional contexts and claims over objectivity and truth … there is no single truth to be discovered, but
a myriad of perspectives to be understood.” In sum, an “information campaign” will not adequately
address public opposition. Rather, earnestly determining what a community does value benefits the
planning process.

For example, Wolsink (2005) explains that planners assumed they could address a “selfish, not in
my backyard attitude” of residents in the Wadden region of Germany and Denmark by communicating
the environmental benefits of wind farms. However, based on a survey of residents in the Wadden
region, “the degree to which the wind turbines would spoil the landscape” was the strongest reason
respondents opposed development. The extent to which the turbines would impact birds remained of
secondary importance. The survey also showed that a majority of respondents accepted wind turbine
development in certain locations of the Wadden region. These survey responses reinforce the importance
for planners to avoid the information deficit model, or the common misconception that the flow of more
expert information to the public will change behavior and attitudes. Instead, planners might focus on
understanding nuanced local, perspectives over top down, information campaigns.

Social science scholars clarify the degree to which public perception of offshore wind farms is
complex and nuanced. Busch et al. (2011) found that offshore wind farms located anywhere in the sea
can impede on perceptions of the sea as a place of wilderness, and therefore, “the personal sense of well
being of residents.” In other words, “out of sight, out of mind” does not necessarily hold true for offshore
wind farm development. Surveying 600 individuals on Block Island, Rhode Island and applying a values-
beliefs-norm framework, Bidwell (2017) found that the likelihood of conflict increases “when one
interpretation of the marine environment is imposed on people holding different beliefs about the ocean.”
Thus, rather than relying on the information deficit model and implementing information campaigns,
Firestone & Kempton (2007) summarize, “Private development decisions, public policy or permitting
approvals should be based on sound data and analysis of public opinion.”
In addition to a nuanced understanding of community values, numerous studies indicate the importance of “procedural justice,” where a community is more likely to support a nearby wind project if the community is involved in project planning (Agterbosch et al., 2009). Firestone, Kempton, Lilley, and Samoteskul (2012) explain that in the 1970s, researchers documented the “fair process effect” or “procedural justice,” or the idea that citizens care “tremendously” about the process used to reach outcomes and believe that “fair procedures produce fair outcomes.” Key attributes of fair procedures include the ability to “express opinions freely, to have a voice and to be heard, to have access to adequate information, and to be treated with respect” (Firestone et al., 2012, p. 1391). Perceiving the process as fair can lead to a higher-level of public acceptance of the project (Firestone et al., 2012). Several studies confirm the importance of “procedural justice.”

Using data from large-scale research on decision making for six cases of waste infrastructure, and applying findings to wind farm planning, Wolsink (2005) explicates that it is not that residents who oppose a nearby waste facility (or wind farm) simply want the infrastructure in someone else’s yard. Rather, they desire a “commitment to equity,” or decision making that is fair and that does not result in any “perceived injustice” (p. 1203). Zollner, Schweizer-Ries, & Wemheur (2008) researching public acceptence of PV ground-installed systems, biomass plants, and wind turbines found that criteria which comprise “procedural justice,” like transparency and possibilities to participate in the planning process, were “relevant aspects for acceptance.”

In terms of offshore wind development specifically, Haggett (2011) notes that planners tend to perceive that there is “lower risk of public opposition,” because they believe that offshore wind have fewer drawbacks than onshore turbines. However, offshore wind farms proposed for the coast of the U.S., England, and Northern Ireland have faced protests that have led to “long delays, public inquiries, and ongoing disputes.” Therefore, Haggett (2011) argues that the public should be included in decision-making about offshore wind farms, and that they have a key role which should not be underestimated. Firestone, Kempton, Lilley, & Samotesku (2012) support Hagget’s (2011) claim. Based on surveys of
residents living near Cape Wind and the Bluewater Wind Farm, proposed for the coast of Delaware, Firestone et al. (2012) found that “a fair planning process during which the public is given sufficient say, may produce outcomes that feel more satisfying even if they do not please all stakeholders.” Firestone et al. elaborate that a fair planning process reduces developer and community tension, providing momentum for the U.S. government to “spur” offshore wind development.

In addition to a fair planning process that embraces transparency and public participation, studies also underscore the importance of “distributive justice,” which Agterbosch et al. (2009) define as “the equitable distribution of outcomes.” Based on survey data and interviews, a 2017 study on onshore wind turbines in Canada found that “fair distribution and the amount of local benefits are important predictors of project support” (Walker & Baxter, 2017). Klain, Satterfield, MacDonald, Battista, and Chan (2017), studying the public engagement process on three New England Islands adjacent to proposed offshore wind farms, contribute nuanced and empirically-established insights on the notion of “distributive justice.” Based on interviews and document analysis, Klain et al. (2017) found that when determining if and where to site a renewable facility, “collaboratively negotiated community benefits … may improve the quality of interactions among communities, government authorities and developers” and that communities, developers, and decision makers should agree on which communities should receive benefits and which benefits are suitable.

The Klain et al. (2017) study also found the importance of “bidirectional deliberative learning,” or mutual learning among developers, government authorities, and local community members for improving planning outcomes. Studying discourses of support and objection to a proposed offshore wind scheme in Northern Ireland, Ellis et al. (2007) also support the notion of bidirectional learning stating, “Public engagement should be viewed as interactive, rather than one-way, process, with the aim of changing the attitude of the developers as much as the objectors” (p. 538). Ellis et al. (2007) emphasize that the public participation process is not simple, but open-ended and involves a range of motivations, power differentials, and social attributes. Thus, a “nuanced” and “context-dependent” concept of
participation should be applied in spatial planning and addressing objection. Moreover, when positions appear to be based on “deep values,” a participative process that aims to “recognize” and “live with” differences of opinion “rather than chasing an unachievable consensus” may be more constructive; paradoxically, room for disagreement can facilitate settlement, and objections seen as a virtue may result in “better conceived schemes” (p. 538).

In sum, the literature on public perception of onshore and offshore wind clarifies that the NIMBY concept does not apply to many; rather, people are driven to oppose local wind energy development for a range of nuanced reasons. This insight from the literature calls for a change in tactics to address local opposition. Residents, in fact, do not “oppose development simply due to lack of knowledge or because they are victims of myths about the damaging aspects of the technology, which if separated from facts, would diminish the opposition.” Instead, research indicates that the landscapes on which wind farms may be built are spaces imbued with socially constructed meanings, or deep cultural and symbolic value; they are spaces “filled with” memory and beauty that a one-way information campaign cannot reshape. Planning processes that are transparent and fair, acknowledging the many ways in which communities connect to a landscape, and that include community benefits and bidirectional learning are more likely to receive local approval and avoid opposition.

However, in terms of understanding outcomes for proposed wind farms at large, data from this dissertation research indicate that other factors must be accounted for in addition to public perception. In a very general sense, one should not necessarily assume that local opposition will be the greatest concern for a proposed project. The planning process for the FACW emphasizes this point. Several surveys

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6 This research acknowledges that it is important to study public perception of offshore wind farms not just with the hope of increasing the number of offshore wind projects built. First, there is intrinsic value in overcoming false assumptions such as the NIMBY concept. Also, whether or not public perception plays a critical role in determining outcomes, it can be argued that democratic governance calls for some degree of public participation and that an ethical planning process should involve the public (and the environment) that is most affected by a proposed project, whether an offshore wind farm, or fossil fuel extraction.
indicated general public support for offshore wind energy development off the coast of New Jersey, including the FACW, as described in greater detail in Chapter 5. In other words, public opposition was a mostly a non-issue; the FACW did not go forward for other reasons. On the other hand, many locals opposed the Block Island Wind Farm, including islanders, fishermen, and mainlanders. The developer, Deepwater Wind, and decision makers engaged in fair planning processes and public engagement to an extent, such as incorporating local knowledge and bidirectional learning, which mitigated local opposition. However, decision makers used many resources and strategies, in addition to procedural fairness, that resulted in the development of the Block Island Wind Farm.

Thus, in line with the policy sciences principle of examining the many features of a problem, a more complete understanding as to why some proposed offshore wind projects go forward and others do not, requires knowledge of multiple policy participants and their resources and strategies for affecting outcomes. Section 2.3 provides an overview of some of the literature that looks at factors other than public perception.

2.3 The role of power, institutional structure, discourse, investment decisions, and policy recommendations in offshore wind planning

Scholars also examine a range of factors beyond public perception that impact wind development outcomes, including the role of power, institutional structure, discourse, investment decisions, and policy. Section 2.3 provides an overview of this literature. However, based on this research and a literature review, these topics remain largely understudied and under recognized, despite their impact on offshore wind energy development.

In the 1980s, Carlman researched the discrepancy between general public support for wind energy, but relatively few wind farms in Sweden. Carlman identified a “lack of support among key stakeholders” and decision makers’ reluctance to “dedicate themselves to effective and consistent policies” (cited in Wüstenhagen et al., 2007, p. 2684). Wolsink’s (2000) research on wind energy...
development in the Netherlands and Germany identifies the impact of power and institutional structure on wind planning outcomes and supports Carlman’s finding on “key stakeholder” support.

Specifically, Wolsink (2000) identifies similar levels of public acceptance of wind power in the Netherlands and Germany, but the lack of wind farms in the Netherlands and the “impressive” growth of wind farms in Germany. According to Wolsink’s study, the ‘electricity feed law’ in Germany stimulated electric utilities and other parties to invest in wind turbines. Although the utilities in Germany resisted the law, they could not “muster enough power to change the policy.” In contrast, a law that mandates how much utilities pay for electricity delivered to the grid would be “inconceivable” in the Netherlands, because of the “dominant position of the utilities.” Those in the electricity sector in the Netherlands are inclined to believe that wind farm siting is a “‘market imperfection’” or a “‘bureaucratic obstacle’” (Wolsink, 2000). This study underscores how power, institutional arrangements, and institutional perceptions interdependently impact offshore wind energy development outcomes.

In addition, findings from the Wolsink (2000) study reveal the nonlinearities of the policy process. The Netherlands set strong goals for wind energy development, but clearly the utilities did not follow suit with this “top down” state goal, exemplifying the notion that policy outcomes are not a product of a “cascade model where one level of political authority flows to the next in a downward trend.” Instead of assuming a linear, policy structure, empirical evidence indicates the need to “be sensitive to the different forms that governance takes” (Bulkeley, 205, cited in Newell, 2012, p. 48). The social and decision processes that affected outcomes for the proposed Cape Wind Farm provide another example of non-linear governance.

In the case of the Cape Wind Farm, Cape Cod residents with political power, social and financial capital effectively blocked the project. Using their resources, Cape Cod residents engaged in a variety of

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7 Scholarship on fairness of process and public perception of wind farms inherently incorporates and recognizes the nonlinearity of the policy process.
resistance strategies, including litigation and domination of local, state, and national media narratives that touted (often falsely) the negative impacts of the Cape Wind Farm, especially on the environment. In turn, the resistance movement obtained even more money and power and succeeded in stopping the Cape Wind project after more than ten years of political and courtroom battles (Williams & Whitcomb, 2007). The story of Cape Cod residents and their control of the media also reveals the way in which narratives, or discourses – no matter their relation to the ‘truth’ – are a “form of governance.” Ellis (2007) states, “it is not the ‘truth’ that wins the debate, but those who are able to best assert their narrative into public discourse emerge as dominant parties.” The Szarka’s 2004 study relates to this notion. Studying pro-and anti-wind coalition in Europe, Szarka found that both pro- and anti-wind coalitions in Europe purport that they provide “objective” information in support of their claims for and against wind energy (2004).

In contrast to discourse analysis, scholars also examine investor acceptance of renewable energy – particularly important for offshore wind energy. Offshore wind farms require extensive financing. On average, the capital cost of an offshore wind farm is approximately twice as much as the capital cost for an onshore wind farm of the same size. Utility-scale wind farms, or projects greater than 200 MW, generally require investments of more than $1 billion (Musial et al., 2017). Offshore wind farms necessitate specialized vessels and crew to install the turbines, and miles of undersea cable to connect electricity generated from the wind farm to the grid, contributing to the high capital costs.

Wustenhagen et al. (2007) state in terms of renewable energy, “In a wider understanding of market acceptance, the focus is not just on consumers, but also on investors.” Wustenhagen et al. (2007) also recognize the need for more “academic attention” concerning financial community support for renewable energy. In their study on risks affecting renewable energy financing, Verma and Jagtap (2015) state, “For private financiers every investment requires proper assessment of risk toward calculus.” According to Jankauskas, Rudzvis, and Kanopka (2014), assessing risks is associated with enormous uncertainty. Jankauskas et al. explain that economic analysis methods for renewable energy require a
broad range of data, including financial, technological, and environmental data. However, “A substantial part of this information … relates to the future, which always has a high degree of uncertainty” (2014).

Jankauskas et al. (2014) succinctly point out that policy, or decision-making can reduce (or increase) future uncertainty, stating, “it is almost universally accepted that uncertainty and risk are inseparable from the decision-making process.” Additionally, Jankauskas et al. (2014) found that for investors, risk is especially linked to a delay in project delivery. Thus, based on this research and findings from Wustenhagen et al. (2007), Verma and Jagtap (2015), and Jankauskas et al. (2014), policies which provide certainty – for example, that proposed energy projects will have a market, will not be delayed, and will be built – are important for offshore wind developers to secure investor financing.

Academic literature, as well as gray literature, such as industry reports, also recognize the impact of policy on U.S. offshore wind development. The policy literature covers a range of topics beyond investor financing, such as Marine Spatial Planning and modifying federal and state offshore wind regulations, like streamlining the permitting process. To an extent, aspects of these policy recommendations share similarities with this dissertation’s policy recommendations (described in Chapter 6). For example, this project recommends for states to implement an ocean development management plan, which has commonalities with the literature on Marine Spatial Planning for offshore wind energy development. However, I argue that what makes this study’s policy recommendations distinct from existing policy recommendations is their comprehensiveness, including addressing the many factors that affect offshore wind development through a portfolio of policy recommendations. Second, this project’s policy recommendations are grounded in and enriched from empirical data; to date, there are relatively few studies that base policy recommendations on a close examination of why proposed offshore wind projects for the U.S. coast are, or are not developed.

In terms of Marine Spatial Planning (MSP), scholars recognize the significance of incorporating MSP to mitigate offshore wind siting issues. Marine Spatial Planning is defined as “the process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas ‘to
achieve ecological, economic, and social objectives, usually specified through a political process”” (Portman, 2015, p. 8). Based on the definition alone, one can discern how offshore wind planning could benefit from MSP – spaces of the ocean dedicated to offshore wind farms can be allocated in a way that avoids, or mitigates impacts on the environment, economy, and societal goals. For instance, Zhang, Zhang, Chang, Liu, & Zhang (2014) found that the local government in Taiwan should use MSP as a tool to promote “the coexistence and prosperity of offshore wind farm and fisheries” (p. 69).

Critical to ensuring a successful integration of MSP and offshore wind siting is defining the ecological, economic, and social goals. For instance, if terms like “good” and “sustainable” are used, “good” and “sustainable” must be explained. At the MSP and offshore wind nexus, Suarez de Vivero & Rodriguez Mateos (2012) clarify that there is the need for, “clear and consistent principles covering both the process and the substantive outcomes of marine spatial planning,” which includes definitions and measurements (as cited in Kerr et al., 2014). In their article on recommendations for improving U.S. offshore wind policy, Firestone et al. (2015) describe policies that have resulted in offshore wind development growth in the U.K., including the U.K.’s attention to Marine Spatial Planning. They also note that the U.K. offers offshore wind priority access to the grid, including higher price support compared to other renewables (Firestone et al., 2015).

In addition to describing U.K. offshore wind policy, Firestone et al. recommend improvements for state and federal offshore wind policy and planning processes, specific to a U.S. context. They advise that states collaborate and choose developers, rather than the federal government. On the federal level, Firestone et al. promote a long-term federal tax credit for offshore wind and federal loan guarantees. More generally, they recommend more research to reduce social, economic, and technical barriers to offshore wind (Firestone et al., 2015). Gray literature, defined for this project as documents created by government, NGOs, business, and industry, also includes recommendations for improving U.S. offshore wind policy.
In his article on the regulatory process for offshore wind in the U.S., Bynum (2010) recommends streamlining the permitting process for offshore wind, given the many agencies involved on both the state and federal levels, and the many points in the process at which the public can comment on and protest a project (2010, p. 1585). A 2014 report prepared for the U.S. DOE by Navigant Consulting Inc. also states that the “uncertain and lengthy regulatory processes” is one of the most significant challenges that U.S. offshore wind development faces. To overcome this problem, the report asserts the need for policies that “define the process of obtaining site leases, policies that define the environmental, permitting process; and policies that regulate environmental safety compliance of plants in operation” (Hahn & Gilman, p. xvii).

A February 2013 report titled “Fulfilling the Promise of U.S. Offshore Wind,” from the National Resources Defense Council states, in contrast to Bynum’s recommendation and the U.S. DOE report, “Enormous improvements have been made on siting and permitting, such that they are not the main bottlenecks” (Sims, 2013, p. 3). Rather, the NRDC report claims that the “basic economic and financial conditions for offshore wind” must be met to attract investors (Sims, 2013, p. 3). A 2010 article from North American Windpower argues that to overcome a state commissioner’s tendency to value protecting the ratepayer more than offshore wind installation, legislation must be enacted to expand the scope of the state regulatory commission review to recognize other benefits of offshore wind, such as promoting job growth, independence from the state’s reliance on fossil fuels, and the associated environmental benefits (Christopher & Mullooly, 2010).

Based on empirical data, this research shares many of the policy concerns, or recommendations found in the literature. For example, Rhode Island’s transparent governance of ocean development streamlined the permitting process for the BIWF, saving the project developers, Deepwater Wind, time and money. In contrast, the FACW faced substantial regulatory challenges on the state level. These findings align, to an extent, with Bynum (2010) and Hahn & Gilman (2014)’s recommendations to streamline the permitting and regulatory processes. Similar to Sims (2013) and Christopher & Mullooly (2010), this research also found that policies which attract investors and direct the state regulatory
commission to value the benefits of offshore wind, in addition to protecting the ratepayer, can potentially advance proposed offshore wind projects. A main reason that the FACW did not go forward was due to a state emphasis on the potential impacts on the ratepayer more than the other benefits associated with the development of the project. Nevertheless, this research diverges from these policy recommendations, as this research does not uphold a particular challenge to offshore wind development as the “primary challenge,” but advocates for attending to the many factors that affects proposed offshore wind projects.

Like Firestone et al. (2015), this project favors attention toward a portfolio of policies, and learning from European policies for offshore wind that have allowed for market growth. However, distinct from the Firestone et al. (2015) article and other policy recommendations, this research also provides information on how state and municipal decision makers might implement policy suggestions. For example, this project recommends that states establish a separate institution for ocean development and marine spatial planning efforts that includes sufficient resources and staff with relevant expertise.

Next, Chapter 2 provides an overview of global and U.S. offshore wind market and policy trends, providing further context and rationale for this research. The U.K., Germany, China, Denmark, and the Netherlands have deployed more than 1,000 MW of offshore wind capacity each. The U.S., in comparison, has deployed 30 MW despite more than a decade of policy, research, and other endeavors to grow the industry. Section 2.4 describes the policy in countries with advanced offshore wind markets, in contrast to U.S. policy, helping to explain the current state of the U.S. offshore wind market. Chapter 6 describes global and U.S. offshore wind market and policy trends in greater detail, so that it is better understood how this project’s findings, conclusions, and policy recommendations are applicable to other U.S. states pursing offshore wind development.

2.4 Background on global and U.S. offshore wind market and policy trends

Across the energy sector, there is a broad shift to low-cost renewables for meeting new generation needs, as a result of technology improvements, competitive procurements, and a large base of international experience. Despite its infancy in terms of deployment, recent market trends indicate that
offshore wind power is part of this broader shift toward low-cost renewables. Industry leaders projected that prices would decline gradually for offshore wind and reach about $123/MWh by 2020, or €100/MWh. However, auction results in 2016 and 2017 in Belgium, Denmark, the Netherlands, Germany, and the U.K. suggest costs will fall in the $60 to 100/MWh for projects commissioned in 2020 and beyond (IRENA, 2018).

Although the less expensive offshore wind projects are not in deep water, or far from shore, and do not include transmission costs, the Global Wind Energy Council (2016) states, “We have a remarkable situation where all of a sudden offshore is competitive with onshore wind, and the repercussions have been felt across the world, setting the stage for a round of larger investments not only in Europe, but also in Asia and North America” (p. 21). Below is a graph from the IRENA (2018) report (the International Renewable Energy Agency) on renewable power generation costs in 2017. The graph depicts the substantial decline in the global levelized cost of renewable energy technologies, including offshore wind energy (IRENA, 2018).
Figure 2. 2010-2017 global levelized cost of electricity from utility-scale renewable energy technologies. Source: IRENA Renewable Cost Database, as cited in the IRENA (2018) report, *Renewable Power Generation Costs in 2017: Key Findings and Executive Summary*. According to IRENA (2018), “The diameter of the circle represents the size of the project, with its centre the value for the cost of each project on the Y axis. The thick lines are the global weighted average LCOE value for plants commissioned in each year. Real weighted average cost of capital is 7.5% for OECD countries and China and 10% for the rest of the world. The band represents the fossil fuel-fired power generation cost range.”

The remainder of section 2.4 includes findings from the literature on offshore wind policy developments that spurred offshore wind energy market growth in the U.K., Germany, and other countries. First, this section begins with a critical observation from Schneider and Ingram (1988), as cited in Portman, Duff, Koppel, Reisert, and Higgins (2009). Schneider and Ingram (1988) state that informal policy processes are “characterized by ‘indiscriminately copying policy based on prevailing fashion or limited knowledge and experience.’” However, policy processes should incorporate a formal, comparative, policy-analysis effort that accounts for the appropriateness of a policy in different locales and contexts (as cited in Portman, 2009). Thus, the policies described in this chapter should not be thought of in terms of direct adoption on a U.S. federal or state level, but as providing inspiration and
insight for modifying or re-envisioning existing state and federal offshore wind policies and planning schemes, while accounting for political viability for different U.S. contexts.

Offshore wind policies in nations that dominate the market – namely, the U.K., Germany, and Denmark, and more recently, China and the Netherlands – can generally be characterized as providing strong planning, financial, and regulatory support. These interventionist policies encourage strong industry growth and investment, to the point where procurement prices for offshore wind energy decline, and government intervention is required less and less. For example, in April 2017, Dong Energy (renamed Ørsted) won the right to develop two large wind farms in the German North Sea with no government subsidies, a first for the industry (Reed, 2017). By 2020, support for offshore wind energy in Germany’s Renewables Energy Sources Act 2017 (GWEC, 2016).

Yet, it is important to note that the low-auction and subsidy-free strike prices were achievable due to the advanced offshore wind market in Germany and Europe, including the presence of a supply chain and access to low-cost financing – brought about by E.U. governments providing policy support and certainty for many years – as well as the German government continuing to assume some of the project costs, like grid permitting, and the design of the auction in Germany itself. In other words, it can not necessarily be expected that the U.S. will follow suit with low, offshore wind procurement prices in the near future, as low prices are brought about by “country-specific factors” (IRENA, 2016). It may be especially difficult for the U.S. to achieve low procurement price for offshore wind because as Snyder &

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8 It is important to note that Germany’s auction design created a “real option value,” which contributed to the low auction, subsidy-free bids. Winning bidders’ losses are limited, due to Germany’s penalty structure. Bidders can potentially abandon projects at a relatively low cost (a penalty of about 30% of the developer’s bid bond of €100/kW). This penalty structure incentives aggressive bidding, as developers have the “real option” to abandon contracts, if technology or market conditions do not materialize as expected (Huebler, Radov, & Wieshammer, 2017). In 2018, lawmakers outlawed bidders from requesting zero support, “to prevent bidders simply competing to lodge the lowest bid” (Knight, 2018).
Kaiser (2009) explain, U.S. policy for offshore wind has not offered the same planning, financial, and regulatory support as European offshore wind policy.  

Snyder and Kaiser (2009) note that the established U.S. regulations require developers to pay fees to use the seabed and leases to develop ocean parcels are competitively determined to provide “the highest monetary benefit to the government.” In contrast, European nations charge a minimal or no fee for ocean development, and the right to develop is “almost never competitively determined.” Additionally, whereas European governments assist with environmental and other assessments to explicitly encourage offshore wind, U.S. policy focuses on compliance, for instance, ensuring that offshore activities are conducted safely, abide by environmental law, and offer fair public compensation (Snyder & Kaiser, 2009). Portman et al. (2009) further articulate that the U.S. National Environmental Policy Act is a “broad and open-ended scoping process … Topics are not limited and all issues raised during the scoping process may be considered for inclusion in the EIA [Environmental Impact Statement].” Under Article III of the Constitution, any person demonstrating “injury in fact” can claim a NEPA or other governmental agency “procedural violation,” resulting in substantial resources devoted to defending agency actions (Portman et al., 2009).

Since 2009, the U.S. has improved its regulations and strategies for offshore wind energy, to an extent. At the federal-level, the “Smart from the Start Initiative,” launched in 2010, identifies “priority Wind Energy Areas” for potential offshore wind development and the initiative purportedly improves coordination with “local, state, and federal partners, and accelerates the leasing process” (2010, U.S. Department of the Interior). The U.S. Bureau of Ocean Energy Management has issued 16 leases since

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9 Most of the literature on U.S. offshore wind policy focuses on the federal level. This project’s case studies include offshore wind farms that are proposed for states waters, which in the U.S., includes waters that are 3 nautical miles from the state’s coastlines. Federal territorial waters extend from the 3-mile mark and out to 200 nautical miles. Nevertheless, findings from the literature on U.S. federal policy are applicable to this study, since projects proposed for state waters must comply with most federal regulations, as well as state regulations.
Although eleven of those leases were issued between 2010-2015, none of the leases are under development and two of the 16 leases are no longer active (Bureau of Ocean Energy Management, 2017).

In contrast to proposed offshore wind farms for U.S. waters, many European wind farms “have begun operation within 4 or 5 years of being proposed.” Government planning in EU countries has also focused on building smaller, 10-50 MW test projects, prior to building and planning larger 100-200 or 400-1000 MW wind farms. As of May 2018, the largest offshore wind farm, the London Array, on the outer Thames Estuary in the U.K. is 630 MW and comprised of 175 wind turbines (London Array Limited). Figure 3 includes offshore wind capacity by country, from the Global Wind Energy Council’s 2016 report, titled, *Global Wind Report Annual Market Update 2016*.

Figure 3. Global Cumulative Offshore Wind Capacity in 2016. By the end of 2016, there were 14.4 gigawatts of installed offshore wind capacity globally, with close to 90% of the total implemented in European waters. Source: *Global Wind Report Annual Market Update 2016* (GWEC, 2016).

Although European nations’ offshore wind policies (and China with the third largest market) share commonalities, these policies also diverge to a degree in terms of the specific ways in which they provide regulatory and financial support. Reviewing policy and legal documents, laws, regulations,
academic literature, and interviews, Portman et al. (2009) describe the policy that has figured into the growth of offshore wind energy in Germany. For example, in Germany, applicants for wind power projects “have legally valid expectations that their projects will be approved,” as public rebuttal is limited to qualified groups, such as experts and agency officials. Germany also embraces a “supply-push” policy model, where feed-in-tariffs for offshore wind include “bonus amounts for offshore wind.” Also, the German government does not require leasing fees, given the significant challenges offshore wind faces as it is. Additionally, Germany has taken an active role in financing offshore wind science and technology initiatives and marine spatial planning (Portman, 2009). As of the end of 2017, Germany has the second largest offshore wind market, globally, from this combination of policy support and initiatives (GWEC, 2016).

The U.K., with the largest offshore wind market in the world as of the end of 2017, established “pragmatic” policies that “appear to favour offshore wind power” (Vaughan, 2017 and Toke, 2011). For example, the U.K. government expedites the approval for offshore wind farms by identifying development areas and conducting environmental studies prior to leasing (Snyder & Kaiser, 2009). Toke (2011) explains that British offshore wind policy utilizes a “criteria base” approach. If an offshore wind farm fits the established criteria, or norms for project evaluation, then developers can appeal to the government directly for project approval when local authorities reject applications. Moreover, British policy favors offshore wind by directing energy suppliers to invest in and purchase offshore wind power. If energy suppliers do not meet their renewable energy obligations for offshore wind, they have to pay “buy-out penalties.” In this way, British policy “Shifted, overall, away from ‘market based’ towards more interventionist tools to give more precise support for particular renewable energy technologies, with appropriate support for offshore wind power as a particular priority” (Toke, 2011, p. 528).¹⁰

¹⁰According to Toke (2011), this “shift” in the U.K. from a market-based to an interventionist approach was prompted in part by the creation of the Department of Energy and Climate Change in 2008. The energy ministers emphasized “reversing” market oriented approaches that had been the norm in Britain since the 1980s and creating an “energy revolution” with offshore wind at its heart. In March 2010, the U.K.’s Energy Minister of State, Mike O’Brien, stated in an interview that he and the Secretary of State were “interventionists” and that to make the
Other policies advanced China, Denmark, and the Netherlands toward obtaining the third, fourth, and fifth largest shares of the global offshore wind market, respectively, as of the end of 2017. Recent regulations in China clarify and simplify the offshore wind energy planning and project approval process, resulting in China passing Denmark in 2016 for the third largest offshore wind market (GWEC, 2016). Denmark, with the world’s oldest offshore wind farm market, supports offshore wind energy through electricity consumers financing grid connections, price premiums added to the market price of renewable energy, and offshore wind tenders (IRENA & GWEC, 2012). Strong government planning and financial support in the Netherlands, including issuing offshore wind tenders one right after the other, and setting the goal of reducing the cost of offshore wind power by 40% by 2024, has provided certainty for developers and investors. In 2017, Northland Power Inc. completed the world’s second largest offshore wind farm, the 600-MW Gemini Wind Farm off the coast of the Netherlands, north of the Wadden Islands (GWEC, 2016).

U.S. decision makers are continuing to develop strategies and policies for offshore wind energy. For example, in September 2017, a bipartisan group of senators introduced a bill that “trades a calendar deadline” with a “deployment target.” If the bill passes, the first 3 GW of installed offshore wind capacity in U.S. would receive a 30% Investment Tax Credit (UTC). Under current federal legislation, developers can utilize an ITC or Production Tax Credit (PTC), if construction commences before December 31, 2019 (Gerdes, 2017). The PTC and ITC have proven extremely beneficial for the onshore wind and solar industries, with the ITC contributing to a 6,500 percent growth of solar installations

energy revolution happen, they had to stop the Office of Gas and Electricity Management (the energy regulator) from being “pedantically market driven.” O’Brien’s perspective on offshore wind and interventionist policy was driven by range of contextual factors: interest groups supporting offshore wind and harnessing public support for energy independence and renewable energy, the lack of natural gas as a natural resource in the U.K., and wider U.K. policy goals for renewable energy. In sum, based on this study from Toke (2011), the institutional structure of the U.K., individuals in positions of power supporting interventionist policies, and contextual conditions marched the U.K. toward the position of “world leader” in offshore wind. The history of offshore wind development in the U.K. exhibits the impact of social and decision processes, including the beliefs and values of those in a position of power and the policies they create, on offshore wind outcomes.
between 2006 and 2014, according to Solar Energy Industries Association, and the the PTC generating a more than 300 percent increase in U.S. wind energy since 2008, according to the American Wind Energy Association (Remec, Goh, & Jenks, 2016). The U.S. Department of Energy, the National Renewable Energy Industry, BOEM, and other leaders in the offshore wind industry recently launched a three-year initiative to establish national standards for offshore wind to streamline the regulatory process (Offshorewind.biz, 2017). Additionally, BOEM is proposing a design envelope approach that allows developers to delay certain project decisions, like turbine choice, to a “more commercially advantageous time” (Davidson, 2018).

The combination of recent federal policy initiatives, the global market driving down costs, and state initiatives (described in Chapter 6), will likely impact the U.S. offshore wind industry. However, based on this review, the substantial policy and planning support mechanisms implemented in European nations and China – from providing priority grid access, to a clear regulatory process – stand in contrast, to an extent, to U.S. offshore wind energy planning and policy efforts, as of the end of 2017.

2.5 Summary of lessons learned from the literature and the global offshore wind market

Lessons learned from the extensive social science and policy literature on wind energy planning are critical for achieving a primary goal of this project, or understanding why some proposed offshore wind projects go forward in the U.S., and others do not. Literature on public perception conveys the impact of fairness of process, or procedural justice, community benefits, and bidirectional learning on offshore wind energy outcomes. Beyond research on public perception, studies also indicate how institutional structure, power, discourse, investor confidence, correlated with policy, can also influence outcomes for proposed offshore wind energy projects. Scholars, governmental agencies, NGOs, business and industry offer policy recommendations for U.S. offshore wind energy development, including Marine Spatial Planning, streamlining the permitting and regulatory process, making projects more economically feasible through policies, and by calling for additional research on the social, technical, and economic aspects of offshore wind energy.
Distinct from the current literature, this dissertation does not uphold a particular policy concern, like public opposition or the permitting process, as the main challenge to proposed offshore wind projects; rather, this research advocates for understanding an array of factors that impact outcomes for proposed projects, grounded in empirical evidence. Additionally, this project’s policy recommendations, included in Chapter 6, describe ways in which states with offshore wind energy development goals might implement policies and planning efforts for offshore wind energy. Finally, section 2.4 explains how a suite of policy-support mechanisms, or government interventionists strategies, such as governmental assistance in site planning and financing, implemented in countries with substantial offshore wind market growth, stand in contrast to U.S. offshore wind planning and policy, at present.
Why study offshore wind energy, rather than another source of renewable energy power? What are the tradeoffs associated with offshore wind power?

This dissertation focuses on U.S. policy and planning for offshore wind energy, as opposed to other sources of renewable energy power for two main reasons. First, in the U.S., onshore wind power and solar photovoltaic (PV) have met with success relative to offshore wind. With about 82.18 GW of installed onshore wind capacity and 40.9 GW of installed solar PV in 2016, the U.S. had the second largest onshore wind and fourth largest solar PV markets globally (GWEC, 2017 & REN21, 2017). In contrast to onshore wind and solar PV, offshore wind development in the U.S. presents an interesting social science and policy challenge. Second, offshore wind energy has the potential to generate a significant amount of renewable energy for coastal states and contribute to climate adaptation and mitigation. The winds at sea are stronger and blow more uniformly than wind on land. A site with an average wind speed of 16 miles per hour produces 50% more electricity than a site with the same turbine and average wind speeds of 14 miles per hour (BOEM c). Integrating 20% wind energy into the U.S. electricity sector equates to avoiding 825 million tons of CO$_2$ (U.S. EIA, 2014). Concerning adaptation, the Southwest and Southeast can expect “regional and seasonal water constraints” (Melillo et al., 2014, p. 184). Electricity generation from fossil fuels requires adequate and substantial water supplies. Offshore wind is not water intensive and therefore “may offer communities in water-stressed areas the option of economically meeting growing energy needs without increasing demands on valuable water resources” (Lindenberg et al., 2008, p. 109).

In addition to recognizing the potential benefits of offshore wind energy, this research identifies the tradeoffs. The United Nation’s Report of the World Commission on Environment and Development: Our Common Future states that all energy sources have their own “economic, health, and environmental costs, benefits, and risks.” For instance, offshore wind farms have documented environmental impacts (Bailey, Brookes, & Thompson, 2014). Marine mammals are affected during the construction phase, as pile driving used to secure turbine foundations to the seafloor emits loud sounds. These loud sounds can cause “hearing damage, masking of calls or spatial displacement as animals move out of the area to avoid the noise.” Development is the greatest concern for seabirds, as mortality can be caused by collision with the turbine blades and avoidance may result in energetic costs, or “displacement from key habitat.” On the other hand, offshore wind farms can create environmental benefits, for instance, wind turbine foundations act as artificial reefs, increasing the number of shellfish and marine animals that feed on them (Bailey et al., 2014). Offshore wind farms can also impact people’s values. A study conducted by Busch et al. (2011) found that because offshore wind farms can act as “no-catch zones,” the fishing community perceives “offshore wind farms as a threat” (p. 192). The Busch et al. study also found that the public is not only concerned with the visible aesthetic impacts of offshore wind farms, but also how the farms will affect “the perceived wilderness value of the sea” (2011, p. 192). A U.S. study found that opponents resisted the Cape Wind project because they believed the ocean to be “a special place that should be kept natural and free of human intrusion” (Kempton, Firestone, Lilley, Rouleau, & Whitaker, 2005). Thus, although a goal of this dissertation is to offer recommendations for U.S. offshore wind planning and policy, this dissertation also promotes the responsible deployment of offshore wind. Impact on human and environmental communities should be mitigated to the extent possible. As Portman (2009) states, “In the case of offshore renewable energy development, policy makers must avoid creating new impacts in the rush to solve primary concerns such as climate change and energy independence” (p. 332).
Chapter 3  Research Framework, Complementary Theory, and Methods

This dissertation applies the three frameworks of the policy sciences and relevant theory. Chapter 3 describes the policy sciences as a discovery driven and holistic research approach, with the goal of problem solving. This project also supplements the three frameworks of the policy sciences with additional theory. Chapter 3 provides an overview of theories associated with the Advocacy Coalition Framework, political ecology, the political economy, and science and technology studies that this project uses as a complement to the policy sciences and for a richer understanding of why proposed offshore wind projects in the U.S. do, or do not go forward. Lastly, Chapter 3 describes data collection and analysis methods, including qualitative coding and analysis of documents, interviews, and observations.

3.1 The policy sciences: A holistic research approach leading to discovery

A linear, or positivistic approach to problem solving takes as self-evident that when environmental controversies emerge, science can be called upon to produce objective information to facilitate rational and uncontroversial policy solutions. However, as Sarewitz (2000) points out, “A fundamental observation is that a desired goal of science in environmental policy—to help provide answers that can resolve political controversies—can rarely if ever be achieved” (pp.80-1). In reality, most environmental and policy problems defy conventional, science-based solutions because of the characteristics of science itself—science often cannot produce the “certainty that politicians crave”—and because of the characteristics of the environmental and policy problems themselves.\(^{11}\)

It is often difficult to define environmental policy problems in a precise fashion, as such problems are comprised of “many clients and decision makers with conflicting values, and where the ramifications

\(^{11}\) To clarify, policy situations characterized by high-values consensus and scientific certainty are sometimes conducive to a linear, or positivistic protocol. Pielke (2003) uses the idea of a tornado heading toward a room full of people as an anecdote for a situation of high values-consensus and scientific certainty: it is likely that most people in the room value their lives and there is scientific consensus on the direction of the tornado; thus, the decision to head for shelter can easily be crafted and agreed upon. However, most environmental and policy problems are not characterized by high-values consensus and scientific certainty, and thus require non-linear, dynamic policy prescriptions.
in the whole system are confusing” (Sarewitz, 2007 and Churchman, 1967, p. B-141, as cited in Xiang, 2013, p. 1). Additionally, at large, the values, actions, and interactions of people involved in an environmental problem cannot be reduced to prediction. Brunner (1991) states, “After roughly four decades of behavioral research, we have not yet discovered universal laws that predict human behavior with accuracy and precision, independent of context and the analyst’s viewpoint” (p. 6). Thus, to address most environmental policy issues adequately, policy analysts are better off attending to context, such as the socio-economic, environmental politics, institutional structures, participant values, decision-making processes, unintended consequences, and other dimensions of a problem, as opposed to focusing on positivism and the science alone. Although perhaps daunting, attention to the complex and ever-changing social systems facilitates the policy analyst in crafting creative, innovative, and adaptive strategies for addressing complex environmental policy issues.

To clarify the importance of attention to many aspects of a problem to create more adept policies, Dorner (1996) describes several simplified decision-processes and policy “solutions” gone amiss. For instance, Dorner tells the story of a mayor, citizens, and city council that lowered speeds limits and installed speed bumps downtown to reduce traffic and air pollution. Yet, as drivers traveled at a reduced speed, traffic, noise, and exhaust increased, and citizens avoided shopping in the city center, resulting in bankruptcy for businesses and sunken tax revenue. Through the fate of this town, Dorner explains what can happen “if we do not pay enough attention to possible side effects and, if we apply corrective measures too timidly, or if we ignore premises which should be considered” (1996, p. 2).

In sum, looking at just one part of the problem decreases the likelihood of solving it. Consequently, it is important for policy analysts to embrace a holistic planning vision to shed light on “blind spots, contradictions, and other anomalies” and to allow for inferences to be made beyond current understandings. A holistic planning vision can provide insight with respect to how mainstream, or previous perceptions of the causes of a problem, and potential solutions may no longer be as useful
(Brunner, 1991). The three frameworks of the policy sciences — frameworks developed specifically for addressing complex problems — offer a means for facilitating such a process.\textsuperscript{12}

\subsection*{3.1.1 Policy sciences frameworks for mapping and evaluation}

The policy sciences direct the researcher to map the many “nonscientific variables” that are often at work in an environmental problem. These nonscientific variables range from politics, policies, and values, to stakeholder perspectives, institutional structure, economic conditions, and others. During the case-study data collection and analysis process, I identified an array of relevant issues, stakeholders, and events affecting the Block Island and Fishermen’s Energy Atlantic City Wind Farms that I may have overlooked without the comprehensive, policy-sciences approach.

For instance, the mainstream narrative on the FACW upholds that Chris Christie, former governor of New Jersey, and his decision to veto bills that favored the FACW, is the reason that the Fishermen’s Energy Atlantic City Wind Farm did not go forward. Mainstream narratives often focus on Block Island’s residents desire for stable and reduced electricity prices, enabled through the development of the BIWF that required a cable to the mainland, as the reason why the Block Island Wind Farm went forward. Although Christi, the cable, and Block Islander’s electricity prices indefinitely affected outcomes for each of the proposed wind farms, there are many other factors that played a role in the Block Island Wind Farm going forward, and the Fishermen’s Energy Atlantic City Wind Farm not going forward.

For example, comprehensive data collection revealed that for Rhode Island mainlanders, the Block Island Wind Farm was not cost effective, resulting in lawsuits against the wind farm. Specific legislation written by the Rhode Island General Assembly and other state planning efforts allowed for the

\textsuperscript{12} As research does not always have the goal of problem solving, scholarly research conducted for any variety of reasons is essential for a policy analyst to successfully address a problem. For instance, I could not make useful recommendations for U.S. offshore wind development without a rich body of work from other scholars, such as public opinion surveys on offshore wind and renewable energy, offshore wind market analysis, the impact of offshore wind farms on the environment, among other studies.
Block Island Wind Farm to go forward, despite the lawsuit and public opposition to the wind farm. Data collection also reveal that decision-making processes in New Jersey for offshore wind that focused on more information in of itself, rather than how that information could be incorporated into the planning process, and that subjective policy for offshore wind energy, also did not act to support the FACW – during a time in which Christie publicly supported offshore wind development. Thus, the policy sciences-research approach directed me to look beyond the prevailing Block Island and Fishermen’s Energy’s narratives and ultimately derive richer policy and planning recommendations for states with offshore wind energy development goals.

The three frameworks of the policy sciences organize data collection, helping to ensure that important parts of the problem are not missed. The frameworks include: (1) problem orientation, (2) the social process, and (3) the decision process. The problem orientation framework consists of “five analytical tasks,” which direct the policy analyst to ask certain questions in a particular order (Lasswell, 1971, p. 39 and Clark, 2002, p. 87). The five tasks of problem orientation include discerning: (1) the goals of a community (2) trends, or whether a community is moving toward or away from its goals (3) the social- and decision-making conditions affecting whether the community is moving toward or away from its goals (4) projection of developments, or whether the community will reach its goals, given past and present conditions; and (5) inventing, evaluating, and selecting policy alternatives and recommendations for the community to reach its goals.

The social and decision process frameworks inform the five analytical tasks of the problem orientation framework (Lasswell, 1971). The social process framework tracks the actions and perceptions of policy participants and the decision process tracks how decision makers make decisions and implement policies. Close examination of decision-making events and social processes enable an understanding of where improvements can be made for a community to reach its policy goals (Clark, 2002). I apply the three frameworks of the policy sciences to the case studies to clarify: (1) New Jersey’s and Rhode Island’s goals for offshore wind, (2) whether the states are moving toward or away from their respective
offshore wind goals; and (3) the social and decision process affecting whether the states have, or are progressing toward their offshore wind goals. This projects then conveys findings, or policy recommendations for other U.S. states with offshore wind energy development goals, based on empirical evidence from each of the cases.

Table 1 includes the five analytical tasks of the problem orientation framework, the questions associated with these five analytical tasks, and my research questions derived from the problem orientation framework. The social process and decision process frameworks each consist of seven categories and related questions. The decision process also includes standards for each category. An overview of the categories of the social and decision process frameworks, the questions associated with these categories, my research questions derived from the social and decision process frameworks, and the standards for the seven decision-process categories are outlined in Tables 2, 3, and 4.

Given the many components of the three policy-sciences frameworks, it is important to clarify how I apply them to the case study analyses. First, I apply the analytical tasks of the problem orientation framework to the BIWF and FACW case studies in Chapters 4 and 5, respectively. However, I do not explicitly apply all seven categories of the social process framework and each of the seven categories and associated standards of the decision process framework to the case study analyses. Rather, I utilized the categories of the social and decision process frameworks as a general guide for thinking about social processes and decisions process that affected outcomes for the BIWF and FACW.

Following tables 1 – 4, I describe the bodies of theory that complemented this policy sciences-research approach. Chapter 3 includes a table summarizing the policy sciences frameworks and theory used to guide data collection and analysis and the research questions associated with the frameworks and theory. In addition to the table summarizing the frameworks and theory, Chapter 3 incorporates a figure for a visual representation of how the social and decision process frameworks inform the problem orientation framework, and how theory informs the social and decision process frameworks.
Table 1. The five intellectual tasks of the Problem Orientation Framework & associated research questions. (Lasswell, 1971 and Clark, 2002)

<table>
<thead>
<tr>
<th>Task</th>
<th>Associated Questions</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal Clarification</td>
<td>What are the communities’ goals and values?</td>
<td>What are New Jersey’s &amp; Rhode Island’s goals for offshore wind?</td>
</tr>
<tr>
<td>Trend Description</td>
<td>What are the key trends, based on the history of the situation? Have events moved toward or away from specified goals?</td>
<td>What are some key events indicating whether New Jersey &amp; Rhode Island have moved toward or away from its offshore wind goals?</td>
</tr>
<tr>
<td>Analysis of Conditions</td>
<td>What factors (like, social, &amp; decisions processes) have conditioned the direction and magnitude of the trends described?</td>
<td>What are the conditions affecting the state’s movement toward or away from its goals for offshore wind?</td>
</tr>
<tr>
<td>Projection of Developments</td>
<td>If current policies or trends continue, what is the likelihood that goals will be met, or what is likely to happen in the future?</td>
<td>Are U.S. states likely to meet their goals for offshore wind in the future, based on past and present conditions?</td>
</tr>
<tr>
<td>Policy Prescription</td>
<td>What other objectives, strategies, rules, policies, norms, institutional structures, procedures, etc. will help to realize preferred goals?</td>
<td>What other policies, including “objectives, norms, institutional structures, and procedures” will assist U.S. states with their offshore wind goals?</td>
</tr>
</tbody>
</table>

Table 2. Seven categories of the social process framework & associated research questions. (Clark, 2002)

<table>
<thead>
<tr>
<th>Category</th>
<th>Questions to Ask</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants:</strong> individuals, groups, or organizations</td>
<td>Which individuals, groups, and institutions are participating? Who would you like to see participate? Who is demanding to participate?</td>
<td>Who is participating – including individuals, institutions, groups – in the offshore wind development processes in New Jersey and Rhode Island? Who is demanding to participate and who would I like to see participate?</td>
</tr>
<tr>
<td><strong>Perspectives:</strong> demands, expectations, and identifications</td>
<td>What are participants’ perspectives? What are the perspectives of those you would like to see participate and those who are demanding to participate?</td>
<td>What are the perspectives of those participating in the offshore wind policy processes in New Jersey and Rhode Island? What are the perspectives of those who you would like to see participate? What are the perspectives of those demanding to participate?</td>
</tr>
</tbody>
</table>
**Situations:** ecological or geographic information, temporal, institutionalization

<table>
<thead>
<tr>
<th>Questions</th>
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</thead>
<tbody>
<tr>
<td>In what situations do participants interact? In what situations would you like to see them interact?</td>
</tr>
</tbody>
</table>

**Base Value:** resources like power, enlightenment, wealth, well-being, skill, affection, respect, rectitude

<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What assets or resources (base values) do participants use in their efforts to achieve their goals? What assets or resources would you like to see participants use?</td>
</tr>
</tbody>
</table>

**Strategies:** negotiation, ideological, economic

<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What strategies do participants employ in their efforts to achieve their goals? What strategies would you like to see used by participants?</td>
</tr>
</tbody>
</table>

**Outcomes:** values accumulated or lost, decision choice

<table>
<thead>
<tr>
<th>Questions</th>
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</thead>
<tbody>
<tr>
<td>What outcomes are achieved in the continuous flow of interactions among participants? Who is indulged in terms of what values? How are practices changing? How would you like to see practices changing? What is your preferred distribution of values?</td>
</tr>
</tbody>
</table>

**Effects (i.e., values accumulated or lost, institutional practices, diffusion or restriction of innovations)**

<table>
<thead>
<tr>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are the new value-institutions, if any? Are new practices put into place? Are old practices maintained? What forces promote new practices? What forces restrict new practices?</td>
</tr>
</tbody>
</table>
Table 3. Seven categories of the decision process framework & associated research questions. (Clark, 2002)

<table>
<thead>
<tr>
<th>Categories</th>
<th>Questions to Ask</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intelligence</strong>: obtaining &amp; processing information for decision makers and others</td>
<td>Is intelligence being collected for all relevant components of the problem and its context and from all affected people? To whom is intelligence communicated?</td>
<td>What kind of information are decision makers obtaining to inform offshore wind policy and planning in New Jersey and Rhode Island? Is the information collected comprehensive? To whom is intelligence communicated in New Jersey and Rhode Island?</td>
</tr>
<tr>
<td><strong>Promotion</strong>: recommending &amp; mobilizing support for policy alternatives</td>
<td>Which groups (official or unofficial) urge which courses of action? What values are promoted or dismissed by each alternative and which groups are served by each?</td>
<td>Which offshore wind policy participants in New Jersey &amp; Rhode Island urge which courses of action, or policies / prescriptions? Which courses of actions and policies are dismissed? Who is served by promoted actions and policies?</td>
</tr>
<tr>
<td><strong>Prescription</strong>: establishes rules, norms, goals, or values of the community</td>
<td>What rules, norms, goals, or values does the community set for itself? Do new prescriptions harmonize with prescriptions by which the community already operates, or will they conflict? What prescriptions are binding?</td>
<td>What are New Jersey and Rhode Island’s general rules, norms, goals, or values? Do New Jersey and Rhode Island’s policy prescriptions for offshore wind harmonize with old rules, norms, goals, and values? Which offshore wind prescriptions are binding?</td>
</tr>
<tr>
<td><strong>Invocation</strong>: first action taken to invoke, or appeal to, a prescription</td>
<td>Is implementation consistent with prescription? Who should be held accountable to follow the rules? Who will enforce the rules? What sanctions will be applied in what situations? Are resources available to carry out the rules?</td>
<td>Are policy prescriptions for, or related to offshore wind development in New Jersey and Rhode Island effectively implemented? Who should be held accountable for enforcing offshore wind policy prescriptions? Are the sanctions for offshore wind policies effective, if any exist? Are there resources for effectively carrying out policies?</td>
</tr>
<tr>
<td><strong>Application</strong>: final decisions</td>
<td>Will people with authority and control resolve disputes? How do participants interact and affect one another as they resolve disputes?</td>
<td>As disputes arise concerning offshore wind development in New Jersey and Rhode Island, are there recourses for resolving disputes? How do participants interact, as they resolve disputes?</td>
</tr>
<tr>
<td><strong>Appraisal</strong>: assessment of a decision process as a whole and the success of particular prescriptions in achieving their goals</td>
<td>Who is served by the program and who is not? Is the program evaluated fully and regularly? Who is responsible and accountable</td>
<td>Who benefits from the implemented offshore wind policies in New Jersey and Rhode Island? Are the offshore wind policies evaluated regularly? Who is responsible if offshore wind...</td>
</tr>
</tbody>
</table>
for success or failure? Who appraises the appraisers' activities? programs and policies succeed or fail? Who appraises the appraiser of offshore wind activities in New Jersey and Rhode Island?

**Termination:** repeal or large-scale adjustment of a prescription

Who should stop or change the rules? Who is served and who is harmed by ending a program?

When prescriptions for offshore wind in New Jersey and Rhode Island are ineffective, is there a recourse for policy termination or modification? Who is harmed when offshore wind policies are terminated in New Jersey and Rhode Island?

Table 4. The seven categories of the decision process and standards to consider. When analyzing decision processes related to a policy issues, it is important to not only ask if decision makers are gathering intelligence and who is promoting which policies, etc., but also to ask whether the intelligence is dependable, comprehensive, and available, whether the policies promoted are rational and effective, and other standards included in Table 4 (Clark, 2002).

<table>
<thead>
<tr>
<th>Decision Process Function</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intelligence</strong></td>
<td>Dependable, Comprehensive, Selective, Creative, Available</td>
</tr>
<tr>
<td><strong>Promotion</strong></td>
<td>Rational, Integrative, Comprehensive, Effective</td>
</tr>
<tr>
<td><strong>Prescription</strong></td>
<td>Effective, Rational, Inclusive, Prospective</td>
</tr>
<tr>
<td><strong>Invocation</strong></td>
<td>Timely, Dependable, Rational, Nonprovocative, Effective</td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td>Rational, Union, Effective, Constructive</td>
</tr>
<tr>
<td><strong>Appraisal</strong></td>
<td>Dependable, Continuing, Independent, Contextual</td>
</tr>
<tr>
<td><strong>Termination</strong></td>
<td>Timely, Comprehensive, Dependable, Ameliorative</td>
</tr>
</tbody>
</table>

### 3.2 Key theories applied to research

To better address a primary goal of this research, or understand why some proposed U.S. offshore wind projects go forward and others do not, this research also applies relevant theoretical concepts. These concepts assisted in discovering and evaluating important case findings. Without supplementary theories, critical reasons for why proposed projects are deployed, or are not deployed may have gone unnoticed or underdefined. Section 3.2 defines theory from the Advocacy Coalition Framework (ACF), and the following fields: political ecology, science & technology studies, and the political economy. Similar to application of the social and decision process frameworks, the case study-analyses of the Block Island
Wind Farm and the Fishermen’s Energy Atlantic City in Chapters 4 and 5 respectively, do not include a systematic application of the theories described below.

3.2.1 The Advocacy Coalition Framework

Although the Advocacy Coalition Framework (ACF) and the policy sciences frameworks have different goals, this research views ACF theory and policy-sciences principles as complementary. Like the policy sciences, the ACF was developed to deal with “intense public policy problems” (Sabatier and Jenkins-Smith 1988, 1993, 1999, as cited in Weible & Sabatier, 2007). However, the ACF is primarily concerned with understanding how stakeholders form coalitions based on differing beliefs concerning a policy issue, and how coalitions and their interactions result in policy change (Hoppe & Peters, 1993, as cited in Weible & Sabatier, 2007). In contrast, the policy sciences are concerned with understanding stakeholders, their perspectives, decisions, and interactions to realize more effective policies for addressing a problem.

However, ACF theories complement and inform the goal of the policy sciences. The policy sciences ask the analyst to account for numerous aspects of a policy problem, potentially making it difficult for the analyst to discern what to focus on initially and how to summarily articulate to a wider audience what the policy sciences asks of the researcher. Thus, this research found that ACF theory provides the vocabulary to organize and summarize initial policy sciences inquiries. For instance, the ACF asks the researcher to determine the policy subsystem, or level at which to explore a policy issue, i.e., at the state or federal level, and is direct in asking the analyst to determine how stakeholders use resources and strategies to affect a policy issue, and the venues in which stakeholders interact to affect policies, and stakeholders’ personal beliefs and values concerning a policy issue. The ACF also theorizes that some policy participants will remain neutral, as policy brokers (Weible & Sabatier, 2007).

Thus, ACF theories applied to my research: (1) assisted with articulating aspects of policy-sciences inquiries, especially references to policy participants’ resources and strategies and beliefs and values (2) helped me to narrow my research focus to the state and municipal levels to explore offshore
wind policy, and (3) drew attention to policy participants who may act as honest brokers in the BIWF and FACW offshore wind farm case studies.

Table 5. Advocacy coalition theory informing research strategies. The table also includes the research questions derived from the Advocacy Coalition Framework (Weible & Sabatier, 2007).

<table>
<thead>
<tr>
<th>Theory</th>
<th>Overview</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stakeholder resources, strategies, beliefs, values, and venues</strong></td>
<td>The ACF theory articulates that stakeholders (or policy participants) use particular resources and strategies, based on their beliefs and values, and interact in particular venues to affect policy outcomes; assists in summarizing important components of the policy sciences, especially the social process framework</td>
<td>How did offshore wind policy participants in New Jersey and Rhode Island use resources and strategies to influence offshore wind development outcomes? What are relevant values and beliefs of policy participants? In what venues did policy participants interact to influence policy?</td>
</tr>
<tr>
<td><strong>Policy subsystem</strong></td>
<td>Given the potentially wide scope of a policy issue, ranging from the local, to the global, it is important to narrow research focus to a “policy subsystem” (which may be nested within broader policy systems)</td>
<td>To study U.S. offshore wind policy in a focused manner, what is the appropriate policy subsystem to focus on? How does focusing on the New Jersey and Rhode Island offshore policy subsystems narrow the research focus, but remain relevant to informing broader discussions and policy for offshore wind?</td>
</tr>
<tr>
<td><strong>Honest brokers</strong></td>
<td>Some policy participants will remain neutral concerning a policy issue, referred to as honest brokers</td>
<td>Which policy participants acted as honest brokers (if any) with respect to the New Jersey and Rhode Island offshore wind case studies? Did honest brokers influence outcomes?</td>
</tr>
</tbody>
</table>

3.2.2 Political Ecology

Like the practitioners of the policy sciences, political ecologists are concerned with addressing environmental problems more adequately through multimethod, and often empirically-based research, instead of positivistic models. Political ecology can generally be thought of as a community of practice that “mobilizes concepts from broader schools of thought to explain otherwise confounding
socioenvironmental outcomes” (Robbins, 2012, p. 84). For example, to adequately address an endangered wildlife population in Kenya near farming communities, one must look beyond Kenya and the apolitical claim of “human encroachment” to more complex causes, like global-level economics, stakeholders, and politics.

With respect to this research, certain political ecology themes share commonalities with policy sciences theory. In this light, aspects of policy ecology offer richer descriptions and understandings of particular policy sciences inquiries. For instance, the policy sciences are concerned with the ways in which policy participants gain values and lose values, as decisions are made and implemented. Political ecologists also track winners and losers of policy decisions, but also with the normative goal of drawing attention to stories of justice and injustice and how injustice (and justice) is not a given, but produced by persistent and repetitive historical, legal, and institutional processes. In this light, we can see how the lack of development of offshore wind farms in the U.S. over the past ten years, including the FACW, was not a given, but a result of institutional and legal decisions over time.

Political ecology also adds texture and insight to policy sciences research in other ways. Political ecology practitioners are skeptical of institutional norms and claims for addressing environmental problems, including “apolitical views” that remove the politics, socio-economics, cultural, and other forces inherent to every environmental issue and stories that begin or end in contradiction (Robbins, 2012). Thus, assuming a political ecology, skeptical attitude informed this project’s case-study analyses. For instance, this research examined the apolitical notion that the Block Island Wind Farm was developed primarily because of attractive Block Island electricity market conditions, and that the FACW was not developed, in part, because the electricity market was not as attractive as the electricity market on Block Island. In actuality, data reveal that individuals, decisions, values, politics, culture, and power-laden relationships shaped outcomes for the Fishermen’s Energy project and the Block Island Wind Farm, more so than electricity market conditions alone.
Political ecologists also articulate how “non-human objects” and the way in which humans perceive non-human objects affect outcomes. This concept applied to the Block Island Wind farm draws attention to project data which reveal that seabird migratory patterns and the marine environment had substantial power over the location of the wind farm, and arguably more power over the location of the wind farm than those with homes in view of the wind farm. In these ways, a political ecology approach assists in unraveling the political, institutional, non-human, and other forces at work in environmental issues. Table 6 includes an overview of political ecology characteristics and themes applied to case-study data collection and analyses, and research questions derived from political ecology.

Table 6. Overview of characteristics and themes of political ecology. The table also includes research questions derived from political ecology (Robbins, 2012).

<table>
<thead>
<tr>
<th>Characteristics &amp; Themes of Political Ecology</th>
<th>Overview of Political Ecology Characteristics &amp; Themes</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Political versus an “apolitical” ecology</strong></td>
<td>Identifying broader systems at work, viewing ecological systems as power laden, and assuming a normative approach</td>
<td>What are the broader economic, institutional, cultural, social, and power laden forces affecting offshore wind development outcomes in New Jersey and Rhode Island?</td>
</tr>
<tr>
<td><strong>Critical attitude / skepticism</strong></td>
<td>Simultaneously constructs and deconstructs, criticizes, defends, listens, and argues</td>
<td>Can narratives about the BIWF and FACW be deconstructed? Are current narratives for why offshore wind energy projects advanced or did not advance in New Jersey or Rhode Island problematic?</td>
</tr>
<tr>
<td><strong>Tracking winners and losers</strong></td>
<td>Stories of justice and injustice, and how outcomes are non-incidental, persistent, and repetitive; tracks the historical, legal, and institutional processes that “produce losers at the expense of winners”</td>
<td>What are the persistent historical, legal, and institutional forces resulting in the non-development of the FACW and the development of the BIWF?</td>
</tr>
<tr>
<td><strong>Tracking contradiction, or narratives that begin or end in contradiction</strong></td>
<td>An apparent inconsistency between things or outcomes stemming from the same process, history, or condition (i.e., banning of pesticides in the U.S. leads to</td>
<td>In what ways do decision-processes for offshore wind in New Jersey and Rhode Island begin or end in contradiction?</td>
</tr>
<tr>
<td>Inclusion of human-non-human dialects</td>
<td>Non-human objects and human beings contain and are constituted by their relation to other things; things explain one another</td>
<td>In what ways does inclusion or recognition of non-humans affect the narratives of human decisions concerning offshore wind development in New Jersey and Rhode Island?</td>
</tr>
</tbody>
</table>

### 3.2.3 Science & Technology Studies

Science & Technology Studies (STS) is an interdisciplinary field that tracks the production and circulation of knowledge. STS recognizes that social, political, and cultural values influence the production, use, and circulation of scientific knowledge and technologies. STS offers a unique perspective for how to think about the ways in which decision makers and other policy participants in New Jersey and Rhode Island gathered and used information to inform offshore wind development processes and policy.

The notion of “boundary conflicts” in STS conceptualizes that people create boundaries around knowledge: what people choose to count as science, or valid knowledge can be “policed” and set aside, or used to “promote communication, negotiation, and translations across worlds” (Goldman et al., 2011, p. 13). The ways in which policy makers formed boundaries around knowledge in New Jersey and Rhode Island to inform offshore wind planning and decision was largely different. For instance, New Jersey decision makers focused primarily on collecting expert and scientific information, whereas Rhode Island decision makers relied on an array of knowledge to inform decisions, such as knowledge from local fishermen and tribes.

In New Jersey, the information gathering process for offshore wind energy was largely removed from the planning process; in other words, decision makers gathered data on local, public opinion of offshore wind energy and potential impacts of offshore wind projects on local economies, but that information was not then used to decide where to develop (or not to develop) projects. In contrast, Rhode
Island decision makers collaborated with information providers to for planning and policy, e.g., information on the marine environment and local aspirations was used to direct the location for the proposed Block Island Wind Farm. Dilling and Lemos (2011) state that a “critical aspect” of the design for the usability of climate science entails organizations and actors purposefully creating “the conditions and mechanisms that enable iterativity, that is, the purposeful and strategic interaction between climate knowledge producers and users so as to increase knowledge usability.” Although Dilling and Lemos reference the usability of climate science, the notion of actors generating the circumstances that enable interactions between “knowledge producers and users” and increasing the usability of knowledge is applicable to Rhode Island. Rhode Island decision makers implemented an “Ocean Special Area Management Plan” – to oversee development projects proposed for state waters, including offshore wind farms – creating a channel for communication between policy makers and knowledge producers.

Pielke (2007) articulates situations for when science is particularly useful for making decisions, stating, “science is well suited to contribute to the resolution of political conflicts only in the most simple of decision contexts.” A simple decision situation is one of high values consensus in terms of the outcome, and where more information can reduce uncertainty and compel action. To exemplify a simple decision situation, Pielke (2007) uses the example of a cargo jet approaching a Russian charter jet carrying students to Spain for vacation. The onboard computerized collision control system told the Russian pilot to climb higher, and the radio ground controller told the pilot to dive. In this circumstance, there is no ambiguity in terms of the desired outcome (or, high values consensus), and it is clear how more relevant information can result in knowing what to do. In contrast, a complex decision situation – how most policy problems can be characterized – is more akin to “abortion politics,” with low values consensus in terms of the desired outcome, and where gathering more information provides little promise for reaching consensus (Pielke, 2007). This research revealed that offshore wind development in New Jersey embodied a complex decision situation, with little consensus – initially – among decision makers during the 2004 through 2006 timeframe, on whether or not to proceed with offshore wind energy and
little promise that more information on offshore wind in of itself would necessarily result in consensus on whether to proceed, or not proceed – or, how to proceed. Rhode Island, on the other hand, exemplified a simple decision situation, where decision makers initially agreed to proceed with offshore wind energy development, and the information gathering process – designed to determine where proposed offshore wind projects would have the least impact (or positive impacts) on environmental communities and marine resources users – promised clarity on how to proceed.

Sarewitz’s notion of an ‘excess of objectivity’” also emerged as relevant to this research. An excess of objectivity captures the idea that scientific inquiry resists conflict resolution because “nature itself resists unitary characterization; the appeal to science to resolve our environmental questions presents us with an ‘excess of objectivity’” (2000). This research extends this concept to expert information in general, and not just science. From the 2010 through 2016 timeframe, the decision process for offshore wind energy development in New Jersey largely relied on a cost-benefit-analysis test to determine whether the Fishermen’s Energy Atlantic City Wind Farm qualified for renewable energy certificates – critical to the success of the project. Applying the test, some decision makers determined that the project qualified, and other determined that the project did not. Yet, both groups purportedly used objective information in their cost-benefit analyses. Thus, the state’s cost-benefit analysis policy for evaluating project proposals fostered an “excess of objectivity” and conflict, obviating timely deployment of offshore wind energy, as decision makers focused on disparities in between different cost benefit analyses instead of how to best proceed with offshore wind energy projects to reach the state’s goal for offshore wind energy. Table 7 includes an overview of STS concepts applied to this study and associated research questions.
Table 7. Overview of Science & Technology Studies theory that informed this research. This table also includes research questions derived from Science & Technology Studies theory (Goldman et al., 2011; Dilling & Lemos, 2011; Pielke, 2007; Sarewitz, 2000).

<table>
<thead>
<tr>
<th>STS Concept</th>
<th>Overview of STS Concept</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boundary Knowledge</td>
<td>Boundaries are created around types of knowledge - some knowledge is valued more than other knowledge, shaping negotiation, communication, and outcomes.</td>
<td>What kind of knowledge did decision makers in New Jersey and Rhode Island value in their decision-making processes and which individuals and institutions were included in decision processes? How did these choices affect offshore wind development outcomes?</td>
</tr>
<tr>
<td>Environment that fosters Knowledge Usability</td>
<td>Organizations and actors purposefully creating an environment (or, the conditions and mechanisms) that foster purposeful and strategic interaction between knowledge producers and users, increasing knowledge usability</td>
<td>Did decision makers and other policy participants create an environment in New Jersey and / or Rhode Island that fostered strategic communication and interactions between policy makers and knowledge producers for usable knowledge?</td>
</tr>
<tr>
<td>Simple versus Complex Decision Situations</td>
<td>Science can contribute to the resolution of political conflicts in simple decision contexts of high values consensus and where more information can reduce uncertainty and compel action, in contrast to complex decision contexts, of low values consensus and where more information cannot reduce uncertainty and compel action</td>
<td>To what extent can decision situations in Rhode Island and New Jersey be characterized as simple versus complex, and how did differing decision contexts affect outcomes for offshore wind energy development in each state?</td>
</tr>
<tr>
<td>“Excess of Objectivity”</td>
<td>An appeal to science (and other expert information) in policy-making and conflict resolution, resulting in an “excess of objectivity” that often obscures decision-making and furthers conflict</td>
<td>How did reliance on expert information affect decision-making processes in Rhode Island and New Jersey, including an excess of objective information?</td>
</tr>
</tbody>
</table>

3.2.4 Political Economy

Political economy concepts complement the political ecology goal of “identifying the broader forces” that are manifest in complex environmental policy issues. The broadly defined political economy is often applied to explain environmental change in third world and rural contexts: global, capitalist
societies exploit powerless and disadvantaged communities and the natural environment for the production of goods, and in the process, fail to restore ecological systems and take the balance of accumulated capital, resulting in and social and ecological crises (Blaikie & Brookfield, as cited in Robbins, 2012; Robbins, 2012). Although the application of political economy theory to understand degradation of human communities and the environment in third world contexts does not apply to the BIWF and FACW case studies, the notion of attending to ways in which “social and cultural relationships are rooted in economic interactions amongst people and between people and non-human objects and systems” (Robbins, 2012, p. 59) is relevant to the case-study analyses.

Evidence indicates that the institution with the greatest authority to oversee offshore wind planning and policy decisions in New Jersey largely promoted offshore wind energy to the extent that proposed projects could demonstrate economic self-sufficiency. However, this implicit goal conflicts with high up-front capital costs associated with offshore wind energy projects, and, subsequently, New Jersey’s goals for offshore wind energy development. In contrast, the Rhode Island decision-process for offshore wind energy development was rooted in more than project economics; decision-makers promoted the Block Island Wind Farm despite knowing that the project would cost Rhode Island mainlanders more than $370 million in above-market electricity costs over two decades (Rhode Island Supreme Court, 2010; National Grid, 2016). Yet, the Block Island Wind Farm also gained political traction because it would reduce and stabilize the electricity prices for Block Islanders, highlighting that societal and political relationships with the Block Island Wind Farm in Rhode Island were not free of economic roots.

Case-study analyses also consider the influence of neoliberalism. Heynen, McCarthy, Prudham, and Robbins (2007) define neoliberalism as an “economic and political philosophy that questions, and

13 Of note, the procurement price for electricity generated from the Block Island Wind Farm, 24.4 cents/kilowatt hour (kWh) is slightly higher than the final procurement price proposed by the developers of the Fishermen’s Energy Atlantic City Wind Farm of about 20 cents/kWh.
sometimes entirely rejects, government interventions in the market” and the freedoms and responsibilities of individuals. Neoliberal discourse often presents neoliberal ideals as having a “truth-like obviousness,” or as the only “common-sense way” to address environmental issues. In this way, neoliberal ideals have a “deep hold” on the “contemporary political imagination,” limiting the ways that people think of, or envision policy prescriptions (Heynen et al., 2007).

These is evidence to suggest that some decision processes for offshore wind energy development in New Jersey exhibited neoliberalism, as decision makers focused on developer responsibility not only for financing projects, but also in navigating the state and federal regulatory and permitting processes, to some extent. In contrast, Rhode Island decision makers explicitly assisted Deepwater Wind with the regulatory and permitting process at the state and federal levels, in addition to supporting the project despite the high procurement price for mainlanders.

Table 8. Overview of political economy theory that informed this research. The table also includes associated research questions (Blaikie & Brookfield, as cited in Robbins, 2012; Robbins, 2012; Heynen et al., 2007).

<table>
<thead>
<tr>
<th>Term</th>
<th>Overview</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadly defined political economy</td>
<td>Social and cultural relationships are rooted in economic interactions amongst people and between people and non-human objects and systems (Robbins, 2012, p. 59).</td>
<td>How did relationships rooted in economic interactions influence decision making, policy, and outcomes for offshore wind development in New Jersey and Rhode Island?</td>
</tr>
<tr>
<td>Tracking neoliberal discourse &amp; ideology</td>
<td>An economic and political philosophy that questions, and sometimes entirely rejects, government interventions in the market; neoliberal discourse that upholds neoliberal ideal as self-evident, has a hold on contemporary political imagination (Heynen et al., 2007)</td>
<td>To what extent did decision makers in Rhode Island and New Jersey assume neoliberal ideology? How did neoliberal ideology influence, or limit, policy prescriptions and strategies for offshore wind energy in Rhode Island and New Jersey?</td>
</tr>
</tbody>
</table>
3.2.5 Summary of questions considered by this study

Table 9 summarizes the research questions raised by the policy sciences frameworks, the Advocacy Coalition Framework, Political Ecology, Science & Technology Studies, and Political Economy literature. Figure 4 is a visual summary of the ways in which the social and decision process frameworks informed the problem orientation framework, and the ways in which theory informed the social and decision process frameworks. With the exception of the tasks associated with the problem orientation framework, the case-study analyses of the Block Island Wind Farm and the Fishermen’s Energy Atlantic City Wind Farm (Chapter 4 & 5, respectively) do not systematically and formulaically review each question raised by the frameworks and theories. Rather, the social and decision process frameworks, and theoretical concepts acted as guideposts of what to look for and be aware of in the data.

Table 9. Key questions considered by this study, derived from the policy sciences frameworks and other bodies of theory.

<table>
<thead>
<tr>
<th>Framework or Theory</th>
<th>Key Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem Orientation</strong></td>
<td>What are NJ’s and RI’s goals for offshore wind? What are the trends, or has NJ and RI headed toward or away from its offshore wind goals? What conditions account for the trends, based on empirical evidence? What is likely to happen in the future for the U.S. offshore wind energy development? What other strategies and policies will assist U.S. states in realizing their goals for offshore wind?</td>
</tr>
<tr>
<td><strong>Social Process</strong></td>
<td>In NJ and RI, who is participating? What are their values? In what situations do they interact? What are their resources and strategies? Who gains which values? Which aspects of the social process can be modified to better achieve outcomes?</td>
</tr>
<tr>
<td><strong>Decision Process</strong></td>
<td>In NJ and RI, what information is obtained to inform policy? Who receives the information? Which policies are promoted and by whom? Who benefits from promoted policies? Will new policies harmonize or conflict with existing, or old values? Will new policies be enforced and by whom? How will disputes be resolved? How successful is the new program or policy? Is the new program or policy evaluated effectively? Should the program or policy change?</td>
</tr>
<tr>
<td><strong>The Advocacy Coalition Framework</strong></td>
<td>How did offshore wind policy participants in NJ and RI use resources &amp; strategies, based on beliefs and values, to influence offshore wind development outcomes? In what venues did they interact to influence policy? How does focusing on the NJ and RI offshore policy subsystems narrow the research focus, but remain relevant to informing broader discussions and policy for offshore wind in the U.S.? Which policy participants acted as honest brokers (if any) with respect to the NJ and RI offshore wind case studies and how did honest brokers influence outcomes?</td>
</tr>
<tr>
<td><strong>Political Ecology</strong></td>
<td>How do the social and decision processes relevant to U.S. offshore wind farm development exhibit themes of political ecology? How are outcomes non-incidental, persistent, and perhaps inconsistent with states’ goals and values? What is the role of non-human dialects?</td>
</tr>
<tr>
<td><strong>Science &amp; Technology Studies</strong></td>
<td>In NJ and RI, which forms of knowledge count, and which forms of knowledge are discounted and how does this impact outcomes? How do decision makers create and not create an environment that fosters communication between knowledge users and producers, and the creation of usable knowledge? To what extent are decision situations simply versus complex and how does this affect outcomes? How do decision processes and policy account for and address an excess of objectivity, if at all?</td>
</tr>
<tr>
<td><strong>Political Economy</strong></td>
<td>How do economic interactions influence relationships between NJ and RI policy participants? To what extent do stakeholders assume neoliberal ideology? How does neoliberal ideology influence, or limit, policy prescriptions and strategies for offshore wind?</td>
</tr>
</tbody>
</table>
3.3 Case study research and case selection

I chose case study research as the optimal method because a primary goal of this study is to understand “complex social phenomena,” or the social- and decision-making processes, and other contextual conditions that impact outcomes of proposed U.S. offshore wind farm projects. Case study research allows the investigator to focus on a case to better understand important complex social phenomena and “retain a realistic and real-world perspective,” so results may be generalized to other similar, cases (Yin, 2014, p. 4). This case study inquiry is guided by the policy sciences and relevant theory, and multiple sources of evidence, including documents, interviews, and observations. This study also uses a multiple-case design that consists of two cases.

I selected the Fishermen’s Energy Atlantic City Wind Farm, proposed for the coast of Atlantic City, New Jersey and Block Island Wind Farm, located off the coast of Block Island, Rhode Island,
because of similar project parameters and timelines, but different outcomes. Developers in New Jersey and Rhode Island proposed 24- to 30-megawatt (MW), in-view wind farms in 2008 for about 3 miles from their respective states’ coastlines. Decision makers in Rhode Island and New Jersey began investing substantial resources into offshore wind development planning in 2004 and 2006, respectively. Despite some similarities in state support and design parameters, the Fishermen’s Energy Atlantic City Wind Farm did not go forward, whereas the Block Island Wind Farm was developed. This selection process allows for a greater focus on how municipal- and state-level social- and decision-processes and other contextual conditions influence outcomes for proposed U.S. offshore wind projects.

Table 10. Overview of similarities and differences between the Block Island & Fishermen's Atlantic City Energy Wind Farms.

<table>
<thead>
<tr>
<th>Offshore wind planning in Rhode Island &amp; the Block Island Wind Farm, constructed off the coast of Block Island, Rhode Island</th>
<th>Offshore wind planning in New Jersey &amp; the Fishermen’s Energy Atlantic City Wind Farm, proposed for the coast of Atlantic City, New Jersey</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start of state offshore wind planning:</strong> 2006</td>
<td><strong>Start of state offshore wind planning:</strong> 2004</td>
</tr>
<tr>
<td><strong>Rationale for offshore wind:</strong> advance the state economy, human and environmental health, energy security, and climate change mitigation paired with ample offshore wind resources and lack of available land space for large-scale onshore wind &amp; solar power</td>
<td><strong>Rationale for offshore wind:</strong> advance the state economy, human and environmental health, energy security, and climate change mitigation paired with ample offshore wind resources and lack of available land space for large-scale onshore wind &amp; solar power</td>
</tr>
<tr>
<td><strong>State goal for offshore wind:</strong> develop a pilot project, established in 2006; 1,000 MW of offshore wind capacity by 2012, and 3,000 MW by 2020, established in 2008</td>
<td><strong>State goal for offshore wind:</strong> Generate 15% of state’s electricity with wind, established in 2006</td>
</tr>
<tr>
<td><strong>Year Block Island Wind Farm proposed:</strong> 2008</td>
<td><strong>Year Fishermen’s Energy Atlantic City Wind Farm proposed:</strong> 2008</td>
</tr>
<tr>
<td><strong>Technical attributes of wind farm:</strong> 5-turbines, 30-megawatt capacity</td>
<td><strong>Technical attributes of wind farm:</strong> 6-turbines, 24-megawatt capacity (initial proposal)</td>
</tr>
<tr>
<td><strong>Distance from shore:</strong> about 3 miles, in view from shore</td>
<td><strong>Distance from shore:</strong> about 3 miles, in view from shore</td>
</tr>
<tr>
<td><strong>Status of wind farm:</strong> Operational since December 2016</td>
<td><strong>Status of wind farm:</strong> Did not go forward</td>
</tr>
<tr>
<td><strong>Examples of State intelligence:</strong> Ocean Special Area Management Plan, authored by state institution, cost about $3.2 million, input from more than 100 unique stakeholders, covers range of topics</td>
<td><strong>Examples of State intelligence:</strong> New Jersey Ocean/Ecological Baseline Study, conducted contractor, cost about $4.5 million, input from a handful of stakeholders, three-topic focus of avifauna, marine mammals, &amp; sea turtles; public opinion survey; cost-benefit analysis study</td>
</tr>
</tbody>
</table>
### Institutional structure

<table>
<thead>
<tr>
<th>Institutional structure: the RI Coastal Resources Management Commission led offshore wind regulatory process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State decision-making culture</strong>: high values-consensus, driven by democratic decision-making &amp; regulatory support, personal connections to the environment and state and potential future impacts of climate change on RI, like sea level rise; also driven by stabilizing &amp; reducing electricity prices on Block Island</td>
</tr>
<tr>
<td><strong>State decision-making culture/situation</strong>: divided initially on whether to proceed with offshore wind energy, driven by ensuring that offshore wind did not cause “irreparable harm” to the economy and environment, but wanted benefits associated with offshore wind, like leadership, climate mitigation, and economic development</td>
</tr>
<tr>
<td><strong>Municipal involvement</strong>: highly involved, including meeting regularly with Block Islanders and the developer, and providing permitting support</td>
</tr>
<tr>
<td><strong>Municipal involvement</strong>: support from Atlantic County, but minimal involvement from the county in decision-making processes</td>
</tr>
<tr>
<td><strong>Offshore wind developer characteristics</strong>: major investors include First Wind, an independent renewable energy company, and D.E. Shaw &amp; Co. Team included Bryan Wilson, a Block Island resident, and CEO Jeffrey Grybowski, former RI Chief of Staff</td>
</tr>
<tr>
<td><strong>Offshore wind developer characteristics</strong>: financed by the principals of leading companies in the East Coast commercial fishing industry, team includes local fishermen with marine expertise, background in wind farm planning, litigation, and connections to European offshore wind expertise</td>
</tr>
<tr>
<td><strong>Characteristics of wind farm deployment site</strong>: visible when approaching the island by the commuter ferry, visible from the historical Southeast Lighthouse on Block Island and from homes located in the Southeast of Block Island overlooking the Atlantic Ocean; Block Island is vibrant tourist community, especially in the summer; wind farm is not visible from mainland Rhode Island; lawsuits filed by the Block Island Historical Society</td>
</tr>
<tr>
<td><strong>Characteristics of wind farm deployment site</strong>: would have been visible from the boardwalk and beaches of Atlantic City, New Jersey; Atlantic City has an onshore wind farm, visible when driving into the city, that attracts tourists (developed by one of the Fishermen’s Energy team members).</td>
</tr>
<tr>
<td><strong>Public Opposition</strong>: opposition from some Block Islanders, for viewshed and other reasons &amp; opposition from some Rhode Island mainlanders, including Narragansett residents, and manufacturing corporations</td>
</tr>
<tr>
<td><strong>Public Opposition</strong>: No apparent public opposition to the wind farm; several surveys indicate majority public support for offshore wind energy development in New Jersey, including the FACW</td>
</tr>
</tbody>
</table>

### 3.4 Data collection and analysis

I gathered data using three methods, including: (1) documents, (2) interviews, and (4) direct observations. The multiple methods for gathering data results in “triangulation,” important for validating concepts by establishing a chain of evidence and “deepening and widening an understanding of the projects’ inquiries” (Yeasmin & Rahman, 2012, p. 161).

#### 3.4.1 Document collection

Yin (2014) states, “Systematic searches for relevant documents are important in any data collection plan.” (p. 107). Document collection for this study proved invaluable, providing critical...
insights into key policy participants’ beliefs, values, resources, and strategies with respect to offshore wind development in Rhode Island and New Jersey. All documents collected, coded, and analyzed for the project are associated with either case study. However, not every document directly relates to the Block Island or Fishermen’s Energy Atlantic City Wind Farms. Rather, some documents provide information on the offshore wind planning processes in Rhode Island and New Jersey, more generally.

Using a systematic document collection plan,\textsuperscript{14} I saved a total of 890 documents for the BIWF case study and a total of about 300 documents for the FACW case study. Tables 11 and 12 include the number of documents collected for each stakeholder group. Table 13 depicts the types of documents collected for each case. The types of documents range from press releases, to speeches, reports, minutes from meetings, and others. According to Krippendorff (2004), to avoid becoming overwhelmed by the volume of document data, it is critical to limit document analysis to a “manageable body of texts.”

\textsuperscript{14} Document collection is bound by the earliest published document found that is deemed relevant to the case. In New Jersey, the earliest such document was published in 2004, a state feasibility study on offshore wind, and in Rhode Island, the earliest such document was published in 2007, a study on wind farm siting in the state. Document collection is also bound by August 2016, as by this point, enough evidence was substantiated from the documents concerning the success of the Block Island Wind Farm and the reasons as to why the Fishermen’s Energy Atlantic City Wind Farm did not go forward. There are a few documents collected outside of this timeframe, primarily to fill in knowledge gaps, such as documents on the state’s establishment of institutions and policy relevant to the state’s offshore wind planning processes. I followed a systematic plan for document collection, mostly collecting primary sources, or documents with a firsthand account of context, events, and policy participants that influenced offshore wind planning outcomes. I also collected media accounts, not exhaustively, but primarily to fill in gaps in knowledge and to gauge public sentiment and portrayal of the proposed wind farms, especially for the Fishermen’s Energy Atlantic City Wind Farm. I collected the majority of documents online, as most are public records and therefore are available on state and municipal web pages. I collected documents from the state government web portal for Rhode Island (www.RI.gov) and then the state government web portal for New Jersey (www.state.nj.us). For Rhode Island, I used the search terms “offshore wind” or “Deepwater Wind” and for New Jersey, I used the search terms “offshore wind” or “Fishermen’s Energy.” Next, I read a sample of documents for each case to ensure that the documents collected from this process provided relevant data. In the process, I also became familiar with critical stakeholders such as governors, state agencies, NGOs, and universities. To collect the documents systematically, I created a separate file for each stakeholder group, for instance, I considered “stage agencies” as a stakeholder group, and saved each document to the appropriate stakeholder file. When I didn’t obtain a sufficient number of documents, or data for a stakeholder group from the governmental web portal search, I collected additional documents from web sites associated with that stakeholder group. For instance, I gathered most of the documents for a stakeholder group that formed in opposition to the Block Island Wind Farm, “Deepwater Resistance,” from the group’s website (their site, deepwaterresistance.org, has been removed since document collection). When the same documents appeared in different searches, I avoided saving the same document twice to obviate redundancy and achieve validity.
However, answering research questions with a limited set of data introduces the possibility of sampling bias. Thus, I used a systematic, sampling plan to minimize bias (Krippendorff, 2004, p. 111).

For the FACW case study, I determined that it was necessary to code and analyze the complete set of saved documents, because a limited number of documents were associated with the case, especially in contrast to the BIWF case, and coding too few documents would inhibit my ability to answer the research questions. To manage document analysis for the BIWF case study, I combined: (1) random sampling, (2) systematic sampling, and (3) stratified sampling. Random sampling ensures that documents are selected by chance and that each document has an equal chance of being included in the sample. To ensure random sampling, I used random number tables, or tables of randomly selected numbers, with no duplicate numbers. Systematic sampling further ensures random sampling. In systematic sampling, every k<sup>th</sup> unit from a list is selected, after determining the starting point at random. Lastly, stratified sampling “recognizes distinct subpopulations (strata) within a population” (Krippendorff, 2004, pp. 114-15). For example, documents associated with state agencies qualified as one stratum, and documents associated with the town council qualified as another stratum.  

In total, I selected just over 300 documents to code and analyze for the BIWF case study, or about the same number of documents collected for the FACW case study. Based on this process, I coded about the same number of documents, or data for each case, and limited data collection to 600 documents, an appropriate size for answering the research questions and timely completion of the dissertation. Further, a preliminary analysis of the BIWF stakeholder documents revealed that there were few “rare documents” that would make a difference in answering the research question, allowing for the selection of one-third of

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15 As an example of combining random, systematic, and stratified sampling, I generated a random number table for the 401 documents associated with the stratum, Rhode Island state agencies. Then, I rolled dice to determine the starting point (k) and every k<sup>th</sup> document selected thereafter. In the case of state agencies, I rolled four, so I started at the fourth number on the random number table, which happened to be 327, and then selected every fourth document. Importantly, I stopped counting after selecting 134 documents, or about one-third of the 401 documents. I chose one-third of the number of documents for each stratum. However, for stratum with few documents, such as Rhode Island state legislature with only three documents, I selected all three documents rather than apply the sampling techniques.
each stratum, except in cases with few documents associated with the stakeholder group (Krippendorff, 2014, p. 122).

Table 11. Number of documents collected by stakeholder group for the Block Island case study

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th># of Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Governors</td>
<td>14</td>
</tr>
<tr>
<td>State Governmental Agencies</td>
<td>401</td>
</tr>
<tr>
<td>The State Legislative Branch</td>
<td>15</td>
</tr>
<tr>
<td>The State Judicial Branch</td>
<td>3</td>
</tr>
<tr>
<td>Nongovernmental Agencies</td>
<td>91</td>
</tr>
<tr>
<td>Town Councils</td>
<td>134</td>
</tr>
<tr>
<td>Municipal Governmental Agencies</td>
<td>32</td>
</tr>
<tr>
<td>Local Offshore Wind Farm Developer</td>
<td>164</td>
</tr>
<tr>
<td>Community Groups</td>
<td>17</td>
</tr>
<tr>
<td>Individual Stakeholders</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>890</td>
</tr>
</tbody>
</table>

Table 12. Number of documents collected by stakeholder group for the Fishermen’s Energy case study

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th># of Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Governors</td>
<td>20</td>
</tr>
<tr>
<td>State Governmental Agencies</td>
<td>160</td>
</tr>
<tr>
<td>The State Legislative Branch</td>
<td>3</td>
</tr>
<tr>
<td>The State Judicial Branch</td>
<td>3</td>
</tr>
<tr>
<td>Nongovernmental Agencies</td>
<td>47</td>
</tr>
<tr>
<td>Town Councils</td>
<td>0</td>
</tr>
<tr>
<td>Municipal Governmental Agencies</td>
<td>1</td>
</tr>
<tr>
<td>Local Offshore Wind Farm Developer</td>
<td>70</td>
</tr>
<tr>
<td>Community Groups</td>
<td>0</td>
</tr>
<tr>
<td>Document Type</td>
<td>Document Title</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Press Releases</td>
<td>“Christie Administration Paves Way for Renewable Energy in New Jersey, Opens Application Period for Offshore Wind Projects”</td>
</tr>
<tr>
<td>Speeches</td>
<td>“The Honorable Donald L. Carcieri Governor, State of Rhode Island State of the State Address - January 26, 2010”</td>
</tr>
<tr>
<td>Letters</td>
<td>Gov. Chafee letter to BOEM</td>
</tr>
<tr>
<td>Minutes from Stakeholder Meetings</td>
<td>Ocean Special Area Management Plan (SAMP) subcommittee meeting</td>
</tr>
</tbody>
</table>
B. Goldman said that he was going to suggest that the policy section read that the Council will work with the entities to the extent practicable. M. Tikoian said he was looking at two different versions of the chapter where the power has been transferred from the Council to the executive director.”

<table>
<thead>
<tr>
<th>Reports</th>
<th>Ocean SAMP, Volume 1: Rhode Island Ocean Special Area Management Plan</th>
<th>“However, the major driver for the development of the Ocean SAMP was the determination by the Rhode Island Office of Energy Resources in 2007 that investment in offshore wind farms would be necessary to achieve Governor Donald Carcieri’s mandate that offshore wind resources provide 15 percent of the state’s electrical power by 2020. In response, the CRMC proposed the creation of a SAMP as a mechanism to develop a comprehensive management and regulatory tool that would proactively engage the public and provide policies and recommendations for appropriate siting of offshore renewable energy.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentations</td>
<td>“Fishermen’s Energy … Power from the Sea: July 2008, Company Introduction.”</td>
<td>“…presenting a constructive program for alternative uses of waters off NJ that these companies have fished for decades can develop, by using: Their enduring local presence and deep ties to people, community and government”</td>
</tr>
</tbody>
</table>
| Hearings | “State of New Jersey New Jersey Division of the Rate Counsel: IN RE PETITION OF FISHERMEN’S ATLANTIC CITY WINDFARM, LLC FOR THE APPROVAL OF THE STATE WATERS WIND PROJECT AND AUTHORIZING OFFSHORE | “As set forth in this brief, Rate Counsel strongly disagrees with the assertions in Staff’s position paper that the Stipulation is inconsistent with OWEDA. To the contrary, the Stipulation provides even greater protections than required by the statute and presents terms as favorable to
<table>
<thead>
<tr>
<th><strong>WIND RENEWABLE ENERGY CERTIFICATES</strong></th>
<th>ratepayers as possible while still allowing the applicant to finance the project through private capital.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Newsletters</strong></td>
<td>“Rhode Island Department of Environmental Management: Environmental Roundtable News”</td>
</tr>
<tr>
<td><strong>Websites</strong></td>
<td>“State of Rhode Island Office of Energy Resources: Offshore Wind Energy”</td>
</tr>
<tr>
<td><strong>Public Comment</strong></td>
<td>“Luly Massaro — Deepwater Wind Offshore Demonstration Project Public Input.” (Aug. 5, 2010)</td>
</tr>
</tbody>
</table>
3.4.2 Interviews and observations

To cover the complexity of the cases and their context and to triangulate the evidence from documents, I relied on IRB approved, observations and in-depth interviews. I developed a list of interview questions and interview participants based on initial findings from document review. For each case, I interviewed decision makers involved in the offshore wind planning process and offshore wind developers – the stakeholder groups with the greatest influence on outcomes. I conducted interviews based on a combination of key stakeholders and/or potential informants willing to participate. In Rhode Island, I conducted eight interviews and in New Jersey, I conducted three interviews. Interviews in Rhode Island were conducted until a point of saturation, or when new interviews failed to produce new information and insights (Auerbach & Silverstein, 2003). It was difficult to secure interviews in New Jersey, compared to Rhode Island, given the nature of discussing a project that was not developed and decision processes that date back ten years, or more. Nevertheless, the combination of the interviews I secured in New Jersey, document analysis, and observations provided adequate evidence for findings and conclusions.

I conducted most interviews in-person and in locations throughout Rhode Island and New Jersey. Traveling to Rhode Island and New Jersey also allowed for direct observations, revealing relevant social, cultural, political, and environmental information to corroborate evidence. Through the

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16 Applying an in-depth approach, interviews resembles a guided conversation rather than a structured query (Yin, 2014, p. 110). Although my line of inquiry covered the necessary topics, the stream of questions was fluid, rather than rigid. To obtain the participants’ experiences and viewpoints of a topic, rather than answers that echoed my preconceived notions of an event or the participants’ beliefs, I asked questions in an unbiased manner. For instance, I avoided emotional responses by asking questions in an open-ended manner. Questions were worded so that respondents could choose their own terms when answering, for instance, I avoided “why” questions and tended toward “how” questions. For instance, instead of asking “Why did the OSAMP affect offshore wind planning?” I asked, “How did the OSAMP affect or not affect offshore wind planning?” To keep the conversation on track and to ensure the necessary topics were covered within the timeframe allotted for the interview, I provided transitions between topics and prepared follow-up questions, or prompts, helpful when participants did not answer the initial wording of a question (Turner, 2010).

17 Observations were casual in nature, such as observing the setting for the proposed Fishermen’s Energy Atlantic City Wind Farm and the Block Island Wind Farm, and the conditions of the work spaces and surrounding
interviews and observations, I gathered necessary information to triangulate on the preliminary findings from the document coding and analysis.

3.5 Qualitative coding and analysis

Qualitative coding entails determining the appropriate word or short phrase that captures the essence of a data point, where a data point is a word, phrase, sentence, paragraph, or entire document. When data are clustered together according to their codes, the coder can determine significant patterns, categories, and themes, and from these, develop a provocative narrative that informs that study’s research questions and concerns (Saldaña, 2013). Although the definition for qualitative coding is relatively simplistic, many questions arise during the qualitative coding process. Data are complex and contextualized, and therefore are difficult to reduce. Bazeley & Jackson (2014) state that in the data, many things are going on at once: something is happening in a particular setting or at a particular time, particular people or groups are involved, perhaps their responses are based on their belief systems or cultural background, and there are consequences to be considered. Perhaps there is a twist to the way this experience, belief or feeling is being reported that makes it just a bit different from the other reports, or ‘difficult to get a handle on’ (p. 80). To address the complexity inherent to qualitative coding, I attempted to apply concepts from Krippendorff (2004). Although Krippendorff’s method is largely straightforward, I found it difficult to execute.\(^\text{18}\)

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\(^\text{18}\) An overview of the Krippendorff (2004) method includes: (1) after procuring the document sample, the researcher determines all of the units of data to code, where a unit of data can be a phrase, sentence, paragraph, a few paragraphs, or an entire document; (2) after determining the units of data, the researcher applies one code per unit of data (3) the researcher’s goal is to test hypotheses through the coding process, and therefore should have a list of codes at the start of the process. However, to unitize 600 documents prior to coding would have been extremely timely, not to mention, there was no clear basis for how to partition a document into units, and applying one code per unit did not capture the complexity of the data contained within the unit. Additionally, I realized that the predetermined list of codes, developed from ACF theories, largely did not appear in the data and/or relevant to this project’s research questions.
Using concepts from Saldaña (2013), I modified the Krippendorff process. Saldaña (2013) allows for descriptive coding, or generating codes as you go, and simultaneous coding, or applying two or more codes to the same unit of data. Using these concepts, I developed the most logical coding system I could develop based on Krippendorff (2004) and Saldaña (2013). For instance, my coding system included a list of provisional, or predetermined codes, a descriptive coding process, and “coding sequences,” where a primary code and a series of subcodes where applied to units of data to convey an array of information conveyed in one unit of data. Due to the large quantity of document data to be coded, I installed “NVivo,” or Computer Assisted Qualitative Data Analysis Software (CAQDAS). CAQDAS allows the researcher to efficiently store, organize, and manage documents and data, easing the coding process and later “human” reflection and analysis of the data (Saldaña, 2013).

Nevertheless, after applying the coding system I developed, assisted by NVivo, it became apparent my coding system required additional improvements – questions continued to arise and my coding system still did not adequately capture complexities within the data. For instance, it was unclear to me how to code for a person referring to the actions of another person or organization in a document. I wondered how should I account for past, present, and future events referenced in a document, not to mention, a stakeholder referring to events that may or may not happen. My coding sequences did not capture where events happened and when they happened, and building a separate timeline of events was too complex and time consuming. Additionally, given that interactions inherently happen between at least two or more individuals or groups, I wondered if events or actions should be coded under every individual and group involved, or just the primary person or group that initiated the action or event. Furthermore, how does one determine the “primary group or person” that initiated the action or event? The coding system I developed did not address these kinds of questions. Moreover, it remained unclear to me how coding, in of itself, could be used to address my research questions.

Thus, I turned to Bazeley and Jackson (2014) and their text, *Qualitative Data Analysis with NVivo*. The text informed me of numerous critical concepts that allowed for moving forward successfully
with qualitative coding. First, Bazeley and Jackson (2014) clarify that because qualitative coding is designed to support analysis and is not an end itself, it is unnecessary to test for intercoder reliability. Rather, “what becomes important, then, is that the coder records the way he or she is thinking about the data, keeps track of decisions made, and builds a case supported by the data for the conclusions reached.” In this light, writing memos, annotations, and journal entries – the evidence of the journey taken to reach and argue conclusions – is often more critical to qualitative coding than a “perfect” coding system (Bazeley & Jackson, 2014). Other critical terms and concepts that I used from Bazeley and Jackson (2014) and defined in Table 14, include: (1) cases, (2) attributes/classifications/values, (3) sets, (4) coding hierarchal trees, (5) data slicing, and (6) a viral coding system. Table 15 shows several of the concepts from Table 14 applied to the Block Island Wind Farm case study.

Table 14. Qualitative coding concepts (Bazeley & Jackson, 2014)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cases</strong></td>
<td>Cases relates to a boundable, definable unit of analysis — a person, a place, a policy, rather than a concept such as honor, access, and anxiety. Cases also have attributes associated with them, or demographic, categorical and scaled data. Cases serve as a tool for holding together everything you know about a particular case, and the researcher should develop cases based on all of the comparisons the researcher is likely to want to make.</td>
</tr>
<tr>
<td><strong>Attributes / Classifications / Values</strong></td>
<td>Attributes record information known about a case such as gender, nationality, religion, position, education, training, attitudes, behavior, and experiences. Classifications allow researchers to attach unique attributes to different types of cases, i.e., Person (gender, age), Organization (funding source), or Policy (ratification date). Values provide the descriptor for the attribute, such as gender for male or female. Values allow the researcher to group cases for comparison. There should be one value per attribute for each particular case.</td>
</tr>
<tr>
<td><strong>Sets</strong></td>
<td>Sets act as a reminder of the linkages between nodes, because a group of nodes focus around a larger concept, or because a set of nodes have a theoretical association. Nodes can be in more than one set, can be treated as a single item in a matrix coding query, or added to a model.</td>
</tr>
<tr>
<td><strong>Coding Hierarchal Trees</strong></td>
<td>Coding hierarchal trees help clarify what a project is about and point to patterns of association. For instance, “If all events are sorted together and all responses are in another tree, it becomes a simple matter to set up a query to identify the overall pattern of which event gave rise to which responses.” Each tree should not be more than two- to three-layers deep and the researcher generally should not code at both the parent and child tree nodes. The</td>
</tr>
</tbody>
</table>
A researcher should only code at both the parent and child nodes when the text should be coded at both broad and specific levels for the same concept.

**Data Slicing**
Data slicing is the process of applying multiple codes to a single passage of text, to capture what is happening in that single passage. As the researcher codes each component in the data separately, the researcher can later check whether the combination of codes forms a pattern, or was a one-time occurrence. Slicing identifies: (a) who, or what is present; (b) when (c) where (d) and how they are present. [This coding technique directly contradicts Krippendorff (2004), who emphasizes a single code for each unit of data.]

**Annotations / Memos / Journal**
Annotations are brief comments, or reminders about a particular segment of text. Memos include field notes, main points from document, or impression of the document, thoughts on the meaning, or significance of a thing said or written in the particular document, reflections on a word or phrase, issues for further investigation and hunches to check out. A journal is for more extensive thoughts and keeping account of the journey.

**Viral Coding System**
A viral coding system is when the same subtrees repeat themselves throughout the system. A viral coding system inhibits the researcher’s ability to find interrelationships between nodes, or essentially find anything new in the data, as the repeated subtrees predetermine how one will see each component of the data. (The coding system I initially developed was a viral coding system, inhibiting effective analysis.)

**Parent Node**
Top level node, or code

**Child Node**
Sub node, or code

**Table 15. Coding organizational system for document data.** Each document datum is coded at the associated case. Each case is associated with attributes, a classification, and a value. This qualitative coding system enables numerous comparisons, for instance, comparing the actions of all decision makers to policy participants, or comparing the actions of Donald Carcieri to the Rhode Island General Assembly.

<table>
<thead>
<tr>
<th>Case</th>
<th>Attribute</th>
<th>Classification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donald Carcieri</td>
<td>Governor, State Government</td>
<td>Individual</td>
<td>Decision Maker</td>
</tr>
<tr>
<td>Deepwater Wind</td>
<td>Developer</td>
<td>Organization</td>
<td>Policy Participant</td>
</tr>
<tr>
<td>Coastal Resources Management Council</td>
<td>State Agency</td>
<td>Institution</td>
<td>Decision Maker</td>
</tr>
<tr>
<td>Rhode Island General Assembly</td>
<td>State Government</td>
<td>Institution</td>
<td>Decision Maker</td>
</tr>
</tbody>
</table>
In addition to cases, attributes, classifications, and values, this coding system also uses parent nodes (primary nodes) and child nodes (sub nodes). Parent nodes and child nodes create hierarchical trees. For instance, this project applied “outcome” as a parent node, and “advances offshore wind development” and “impedes offshore wind development,” as the associated child nodes. By coding a data point at the case, “Donald Carcieri” and at the child node, “advances offshore wind development,” I can set up a query on NVivo to determine the number of times that Carcieri advanced offshore wind development, based on document data.

The case study analysis of the Block Island Wind Farm (Chapter 4) and the case study analysis of the Fishermen’s Energy Atlantic City Wind Farm (Chapter 5) include data matrixes based on NVivo-queries. For example, a matrix conveys the number of times that decision makers in Rhode Island advanced offshore wind development, based on document data. More importantly, Chapters 4 and 5 narrate how policy participants and decision makers influenced outcomes for offshore wind development and the BIWF and the FACW, in Rhode Island and New Jersey, respectively, based on annotations, memos, and journal entries recorded during the document coding process. The narratives in Chapters 4 and 5 are largely organized by the tasks of the problem orientation framework, enriched by concepts and theories of the social and decision process frameworks, and other bodies of theory.
Chapter 4  

Case Study of Rhode Island Offshore Wind Planning and Policy and the Block Island Wind Farm

Figure 5.3 Block Island Wind Farm turbines visible, approaching the island by ferry from Point Judith, located in the fishing port of Narragansett, RI. (McNatt, June 2017)

This dissertation compares the Block Island Wind Farm (BIWF) to the Fishermen’s Energy Wind Farm (FACW) to understand how factors at the state and local levels impact offshore wind development outcomes in the U.S.\textsuperscript{19} The BIWF became the nation’s first offshore wind farm in December 2016, whereas the FACW did not go forward. This study poses the primary research question: Why did one offshore wind farm go forward and the other did not? Both wind farms had similar timelines and project timelines, but dissimilar outcomes. The BIWF and FACW were both proposed in 2008, so therefore began the development process under the same national and global conditions. Second, both projects have a similar capacity factor (between 24 to 30 megawatts), were proposed for state waters (versus federal waters), and for locations in-view from the coastline. These project similarities assisted with a

\textsuperscript{19} It is important to study factors that impact proposed offshore wind projects, as U.S. coastal wind power is a tremendous resource, but the U.S. has just one offshore wind project at present, in contrast to Europe that generated enough electricity to power about 8 million homes from almost 100 offshore wind farms, by the end of 2017. Through this research, I hope to gain insight on why proposed U.S. projects are developed, or not developed from an examination and comparison of the Block Island and Fishermen’s Energy Atlantic City wind farms.
case study comparison by leveling – to some extent – the technical, viewshed, federal regulatory issues, and global context, thereby reducing uncertainty in project findings concerning the impact of state and municipal conditions.

Chapter 4 addresses this project’s main research question based on qualitatively coding and analyzing 300 documents associated with offshore wind development in Rhode Island and / or the BIWF project, observations, and interviews. Case study data for the BIWF case study were collected from documents published between 2006 through the end of 2016, where 2006 is the earliest document obtained relevant to Rhode Island offshore wind development, and where document data collection ended near the end of 2016 at a point of saturation, or when new data no longer revealed new findings. Chapter 4 incorporates several sections, based on the policy sciences, problem orientation framework (Lasswell, 1971), including: goal clarification, trend description, analysis of conditions, and policy alternatives.20

Chapter 4 begins with a description of contextual conditions that one might expect to advance or impede offshore wind project development, and the extent to which those conditions impacted outcomes for the BIWF. For example, section 4.1 describes Rhode Island’s goals for wind and offshore wind development, and section 4.2 explains the extent to which those goals in of themselves advanced offshore wind energy development in Rhode Island, including the BIWF. Section 4.3 provides an overview of other contextual conditions that one might expect to advance of impede project development, like Rhode Island’s geographic and meteorological conditions, electricity markets, and public opinion of the Block Island Wind Farm. Research findings indicated that in addition to the contextual conditions described in sections 4.1 through 4.3, a range of policy participants in positions of power, or decision makers, also had

20 The problem orientation framework organizes data collection and helps to ensure that important parts of the problem are not missed. Specifically, the problem orientation framework consists of “five analytical tasks,” which direct the policy analyst to ask certain questions in a particular order (Lasswell, 1971, p. 39 and Clark, 2002, p. 87). The five tasks of problem orientation include discerning: (1) the goals of a community (2) trends, or whether a community is moving toward or away from its goals (3) the social- and decision-making processes affecting whether the community is moving toward or away from its goals (4) projection of developments, or whether the community will reach its goals, given past and present conditions (5) inventing, evaluating, and selecting policy alternatives and recommendations for the community to reach its goals. Close examination of decision-making events and social processes enable an understanding of where improvements can be made (Clark, 2002).
a substantial impact on the development of the BIWF. Chapter 4 concludes with a summary of policy recommendations for Rhode Island and other states with offshore wind energy development goals.

4.1 Analysis of conditions: Rhode Island’s goals for wind / offshore wind energy, 2006 – 2011

Donald Carcieri, Republican governor of Rhode Island from 2003 through 2011, established the RIWINDS program in January 2006 to promote wind energy development in the state. The program established the goal of meeting 15% of the state’s annualized average electricity demand with wind energy by 2011. In 2006, this equated to 150 MW of wind power, or 450 MW of installed capacity, due to the intermittency of wind energy (Applied Technology & Management, 2007). For geographic and meteorological conditions explained below, the Carcieri administration pursued offshore wind as the primary means for meeting the goal of generating 15% of the state electricity from wind energy.

Following Carcieri, Lincoln Chafee, governor of Rhode Island from 2011 through 2015, who served as an Independent from 2011 to 2013, and as a Democrat from 2013 to 2015, “rarely mentioned wind and solar energy in his major policy plans” (Faulkner, 2015). However, based on this research, Chafee did not engage in efforts to impede the Block Island Wind Farm. The table below includes a summary of Carcieri’s and Chafee’s primary policy initiatives for wind energy.

Table 16. Summary of former Rhode Island governors’ initiatives for offshore wind

<table>
<thead>
<tr>
<th>Administration</th>
<th>Wind Energy Objective / Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donald Carcieri</td>
<td>Meet 15% of the state’s electricity generation with wind power by 2011, primarily through offshore wind energy (equating to 450 MW of installed capacity, based on annualized average electricity demands, calculated in 2006)</td>
</tr>
<tr>
<td>(Republican, 2003 – 2011)</td>
<td></td>
</tr>
<tr>
<td>Lincoln Chafee</td>
<td>Did not establish procurement goals for wind energy; however, Chafee did not impede efforts to develop the BIWF</td>
</tr>
</tbody>
</table>
4.2 The extent to which Rhode has met its wind/offshore wind energy objectives

The Carcieri administration did not meet its goal of generating 15% of the state’s electricity from wind power by 2011. The 30-MW, BIWF was not operational until December 2016, and as of the end of 2017, Rhode Island had 104 MW of onshore wind installed; thus, in 2011, Rhode Island did not procure 15% of its electricity from wind power. Yet, the Carcieri administration and other decision makers set Rhode Island on a path toward the implementation of the Block Island Wind Farm. An analysis of contextual factors, including geographic and meteorological conditions, electricity markets, decision makers’ use of resources and strategies, and other factors explicate why Rhode Island implemented the first U.S. offshore wind farm, even as the state did not meet its 15% wind energy goal.

4.3 Analysis of other conditions often expected to advance or impede offshore wind development

Section 4.3 includes a description of several contextual factors that are often assumed to advance or impede a proposed wind farm, namely: (1) Rhode Island’s geographic and meteorological conditions, (2) Rhode Island’s goals relevant to wind energy development, like economic growth; (3) municipal geographic, meteorological, & socioeconomic circumstances, relevant to the BIWF; and (4) public opinion of the Block Island Wind Farm. Section 4.3 explains the extent to which these factors affected outcomes for the BIWF, based on empirical evidence.

4.3.1 Geographic and meteorological conditions and Rhode Island’s goals relevant to wind energy development

Rhode Island’s initiative to procure 15% of the state’s electricity from wind energy by 2011 encouraged offshore wind energy development. Following Rhode Island’s implementation of the RIWINDS program to promote wind energy, the Rhode Island Economic Development Corporation selected Applied Technology and Management (ATM) to conduct a siting study for wind development. The study’s scope included all of Rhode Island, including areas offshore, with the goal of identifying the best areas for wind energy development. The study found that “over 95 percent of the wind energy opportunity in Rhode Island is offshore,” resulting in Carcieri and other decision makers turning to the
coast for meeting the 15% wind energy goal. A 2010 state of Rhode Island press release noted that two offshore wind projects underway “are expected to produce 15% of Rhode Island’s electricity needs” (Press Releases, 2010). (In actuality, only of those projects went forward, the Block Island Wind Farm.). In 2010, Rhode Island also had initiative to procure 20% of the state’s electricity from renewable sources by 2020, further encouraging offshore wind energy development (Press Releases, 2010).

In his 2010 State-of-the-State, Carcieri articulated several contextual factors that motivated his support for offshore wind development, including ample offshore wind resources, a desire for economic growth during the economic recession, and entrepreneurialism, stating:

>[O]ur economy once again will rise on the tide of an entrepreneurial revolution … And, just as our mighty rivers powered the Industrial Revolution that brought so many jobs and prosperity in the last century – our mighty ocean will power the Energy Revolution of this century. Rhode Island is leading the nation in the development of offshore wind power. The U.S. Department of the Interior has said the East Coast of the U.S. is the ‘Saudi Arabia of wind.’ Wind farms have been rapidly developing across the Plains states; however, their continued development is hindered by the high transmission costs to send the power to distant population centers. The beauty of having offshore wind farms on the East Coast is that’s where the population is!! Importantly, Deepwater Wind has completed a power purchase agreement with National Grid … Once the entire project is underway, an estimated 800 new jobs will be created at Quonset Point, and equally important, we will have established R.I. as the center of East Coast wind farms. Over time, this project could lead to thousands of additional jobs … (The Honorable Donald L. Carcieri, 2010).

Carcieri’s generous attention to offshore wind development in his 2010 state-of-the-state not only conveys the many reasons why he supported offshore wind development, but also his apparently unequivocal enthusiasm for the industry – a trait that played a role in the development of the BIWF, as explained in section 5.4.
Table 17. Summary of offshore wind & renewable energy goals under the Carcieri administration.

<table>
<thead>
<tr>
<th>Administration</th>
<th>Carcieri Administration’s Goals for Wind / Offshore Wind</th>
<th>Rhode Island’s Renewable Energy Goal</th>
<th>Objectives Perceived as Obtainable through Offshore Wind Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donald Carcieri (Republican, 2003 – 2011)</td>
<td>Meet 15% of the state’s electricity generation with wind power by 2011, primarily through offshore wind power (equating to 450 MW of installed capacity, based on annualized average electricity demands, calculated in 2006)</td>
<td>Procure 20% of the state’s electricity from renewable sources by 2020</td>
<td>Meeting renewable and wind energy goals, due to substantial offshore wind resources, as opposed to onshore resources; economic stimulus in a time of an economic recession, including job creation; establishing Rhode Island as a leader in offshore wind and the “center of East Coast wind farms.”</td>
</tr>
</tbody>
</table>

4.3.2 Municipal geographic, meteorological, and socioeconomic circumstances relevant to the Block Island Wind Farm

Wind speeds are a critical components of site feasibility for a wind farm and “increased wind speeds of only a few miles per hour can produce a significantly larger amount of electricity.” A site with an average wind speed of 16 miles per hour produces 50% more electricity than a site with the same turbine and average wind speeds of 14 miles per hour (BOEMc). The average wind speed at the location for the BIWF is 9.69 meters per second (m/s) (AWS Truepower, 2012). Development of areas with less than 7.0 m/s is not likely to be economically feasible (Schwartz, Heimiller, Haymes, & Musial, 2012). There are relatively few areas on the East Coast with average wind speeds in the 9.5 – 10 m/s range, based on wind resource map from the NREL, making Block Island a prime location in terms of wind speeds and economic returns.
Additionally, Block Islanders had something to gain from a nearby, offshore wind farm. In 2008, when Rhode Island first held public meetings on offshore wind development and potential locations, electricity costs approached 40 cents per kilowatt hour on Block Island, due to isolation from the mainland grid, reliance on diesel fuel, diesel transportation costs, and a small electricity system (Peregrine Energy Group, Inc., 2008; Electric Utility Task Group, 2012).\textsuperscript{21} In contrast, the electricity price for a residential customer in the U.S. in 2008 averaged a little over 11 cents per kilowatt hour (U.S. EIA, 2012). A wind project off the coast of Block Island held the promise of connecting the island to the mainland by cable, reducing electricity prices, reliance on diesel imports, and ending price instability, brought about by wide fluctuations in diesel prices (Peregrine Energy Group, Inc., 2008; McKenna, 2017; Electric Utility Task Group, 2012).

\textsuperscript{21} Average electricity costs for Block Island were 47 cents per kilowatt hour, for the fiscal year ending in May 2011 (Electric Utility Task Group, 2012). The average residential electricity rate of 14.4 cents per kilowatt hour in Rhode Island is 21.21\% greater than the national average residential rate of 11.8 cents per kilowatt hour (Electricity Local, 2018).
Prior to discussion of a wind farm, the Town Council of New Shoreham established the Electric Utilities Task Group (EUTG) to explore energy efficiency and renewable energy options, and the potential for deploying a submarine cable to the mainland to reduce, or eliminate dependence on fossil fuels. When discussions began concerning the Block Island Wind Farm, the EUTG published an analysis of the “costs and benefits” of the Block Island Project. In their report, the EUTG explained that Block Island would be unable to afford a cable on its own, as the cost of the cable – $20 to $40 million – would be greater than the savings realized. As the wind farm appeared to be the only way for the island to secure a cable to the mainland, and held the potential to reduce electricity costs, and also eliminate the negative externalities of transporting and storing 1 million gallons of diesel fuel a year, the EUTG concluded that the project would, “resolve the problem of Block Island’s high cost and environmentally unfriendly electricity supply” (Electric Utility Task Group, 2012).

Not all town council members agreed with the EUTG’s assessment. At a town council meeting on December 12, 2012, one council member expressed concerns that alternatives to the wind farm had not been backed legislatively or financially, and that there was a mismatch between the wind turbines’ peak production times, and peak usage times, and the lack of a risk analysis in the EUTG study. Another council member noted that the makeup of the EUTG did not represent a cross-section of Block Island, that the EUTG supported the project from the beginning, and that the report did not look at any negatives associated with the project (New Shoreham Town Council Meeting, 2012a). This council member called for a motion to not include the EUTG report in its present form, as part of the town council’s comments on the Block Island Wind Farm to the Army Corps of Engineers’ request for public comments. With 3 Nays, and 2 Ayes, this motion was not approved. Rather, two motions were approved, 3 to 2, to include the EUTG report in comments to the Army Corps of Engineers, as well as the Rhode Island’s Coastal

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22 The town of New Shoreham is coextensive with Block Island
Given EUTG’s positive assessment of the wind farm, the outcome of this town council meeting was positive for the proposed Block Island Wind Farm. Further, this town council meeting also clarifies that Block Island’s geographic and meteorological conditions alone did not guarantee support from all on Block Island for the wind farm, and that its development depended, in part, on the decision processes, and the values and perspectives of the New Shoreham Town Council majority. Based on research data, the town council majority supported efforts for the Block Island Wind Farm the majority of the time. Table 18 provides a sense of how often the Town Council of New Shoreham engaged in efforts for the Block Island Wind Farm from 2009 through spring of 2016, based on this project’s document data and document sample size.

Table 18. The New Shoreham Town Council & the Block Island Wind Farm. The town council’s discussions and decisions for the wind farm were often neutral in nature, such as stating the date for a public meeting on the wind farm, or were often supportive in nature, like streamlining the permitting process.

<table>
<thead>
<tr>
<th>Policy Participant</th>
<th>Block Island Wind Farm</th>
<th>Against</th>
<th>Neutral</th>
<th>Supports</th>
<th>Advances BIWF</th>
<th>Impedes BIWF</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Shoreham Town Council</td>
<td>38</td>
<td>2</td>
<td>20</td>
<td>16</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

While the Town Council of New Shoreham supported the BIWF, a coalition that included town of New Shoreham residents, and others opposed the project. Section 4.3.3. discusses some of the values, beliefs, and perspectives of those who opposed the Block Island Wind Farm, and ways in which the opposition engaged in efforts impede project development.

4.3.3 Public opinion of the Block Island Wind Farm

It is important to note that this project did not utilize survey methods to robustly measure and discern public opposition to the BIWF. Rather, this section is based largely on publicly available documents that include actions and comments in opposition to the Block Island Wind Farm, interview
data with those involved in decision processes for the wind farm, and observations. Furthermore, this section is not meant to be an extensive assessment of public opposition to the wind farm, since this project’s goal is to look at a range of social and decision processes that impacted outcomes. Yet, it is also critical to obtain a general understanding of who opposed the wind farm and why, and what this implies in terms of decision processes to overcome opposition, and the distribution of values among policy participants.

Evidence from this project shows that opposition to the Block Island Wind Farm came from residents of the Town of New Shoreham, residents of the town of Narragansett, Rhode Island, Narragansett Town Council members and other mainland residents, the corporations, Toray Plastics, Inc. and Polytop Corporation, and fishermen. In terms of opposition to the wind farm among town of New Shoreham residents, then-Town Manager, Nancy Dodge, states, “this [controversy over the wind farm] was intense, it was continual, there were battle lines drawn early on” (Nancy Dodge, personal communication, June 2017).

Evidence indicates that Block Island residents who opposed the project were concerned with viewshed impacts, including the red lights flickering from the turbines at night, perceived that Deepwater Wind took advantage of the market opportunity on Block Island to enrich their own pockets at the expense of the islanders, and that the state’s and town council’s environmental review and permitting processes were not rigorous enough. Some islanders also opposed the wind farm because it would result in the cable, which implied dependency on and connection to the mainland, as opposed to independence. Also, interview data indicated that the Rhode Island Historic Preservation Office and the Southeast Lighthouse Foundation opposed the project at the “eleventh hour,” as the wind farm was planned for a

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23 This paper used town of New Shoreham residents and Block Island residents interchangeably. Interview data indicate that both descriptions are acceptable.

24 There are likely reasons beyond the ones noted in this paper as to why town of New Shoreham residents and others opposed the BIWF. However, this research is primarily concerned with the fact that people opposed the wind farm, how decision makers addressed opposition to help ensure the development of the BIWF, and how to consider the oppositions’ losses when the wind farm was built, against the gains.
site in view of the historic Southeast Lighthouse. Residents submitted public comments to local and state governmental entities, and attended town council and other public meetings to oppose the project. For example, in their testimony against the wind farm, “a year-round ratepayer,” with a house on Block Island, stated, “First, I would like to thank Mr. Wolberg for pointing out the painting on the wall behind you of the Southeast Lighthouse, the iconic symbol of this island. I believe that it is cruel and punishing to some long-time residents in this audience who must look at that picture, put here as the centerpiece in the official meeting room at Block Island Town Hall, and the prospect that it may need to be altered to include utility scale wind turbines (Testimony of Michael Beauregard, 2010). Figure 7 provides a sense of the view of the wind farm from the Southeast Lighthouse and residential homes.

Figure 7. Block Island Wind Farm. View of 4 of the 5 turbines from the grounds of the island’s historic Southeast Lighthouse (McNatt, June 2017).
Figure 8. The historic Southeast Lighthouse on Block Island. The wind farm is clearly visible from the lighthouse and grounds (McNatt, June 2017).

Figure 9. Residential homes with views of the Block Island Wind Farm. Homes are adjacent to the Southeast Lighthouse (McNatt, 2017).
Figure 10. Block Island Wind Farm at night. Red lights flickering from turbines at night, as warning to aircrafts, are visible from shore (McNatt, June 2017).

To overcome the last-minute opposition from the Rhode Island Historic Preservation Office and the Southeast Lighthouse Foundation, Deepwater Wind paid the foundation a total of $2.5 million (Benson, 2015). As explained in greater detail in section 4.4, Deepwater Water Wind also had a liaison on Block Island, who communicated early and often with town residents, helping to mitigate some of the opposition on the island and secure support from the Town Council of New Shoreham. Hence, Deepwater Wind’s resources and planning processes that lessened resistance were important to the development of the project, in addition to Block Island’s offshore wind speeds and electricity market. The proceeding paragraphs describe other decision processes of Deepwater Wind and decision makers that addressed public opposition.

Narragansett residents and town council members – a town in Rhode Island out of view of the wind farm – opposed the cable landfall for the Block Island Wind Farm on the Narragansett Town Beach. At public hearings, Narragansett residents provided a range of reasons why they opposed the cable landfall, and the wind farm itself, including the cable running through a recreational area, posing a threat to human health, the impact of the wind farm on mainland electricity prices, and the notion that
Deepwater Wind and its investors were receiving benefits, at a loss to Narragansett. The opposition resulted in project delays and increased costs, as Deepwater Wind withdrew its initial cable landfall proposal, engaged in negotiations, and applied for easements to reroute the cable landfall to Scarborough State Beach, in Narragansett (Turaj, 2013).

In 2009, the Rhode Island Public Utilities Commission rejected the power purchase agreement (PPA) between National Grid and Deepwater Wind. For an offshore wind project to go forward, a developer must have a contract with a reliable off-taker – or, a contract with an entity, such as a utility company, that is required to purchase the electricity generated from the offshore wind farm. In the U.S., the contract between the developer and the utility company that is to purchase electricity from the developer is often referred to as a “power purchase agreement” (PPA). Residents from Narragansett, Block Island, and elsewhere in Rhode Island testified, or submitted comments in opposition to the PPA for the 2009 PPA proceedings.

National Grid and Deepwater Wind submitted a revised PPA in 2010. Residents again submitted comments in opposition and testified against the revised PPA. In contrast to 2009, the commission approved the revised PPA. Former Rhode Island Attorney General Patrick Lynch, the Conservation Law Foundation (CLF), Toray Plastics, Inc. and Polytop Corporation filed suits against the approved PPA. However, Attorney General Kilmartin, who proceeded Attorney General Lynch, withdrew the application and the CLF failed to reach requirements for standing. Thus, Toray Plastics, Inc. and Polytop Corporation were left to file a suit, “[M]otivated by dissatisfaction with National Grid’s above-market cost-distribution plan” and the “commission’s assessment that the 2010 PPA met all statutory preconditions for approval” (Supreme Court, 2010). However, the Rhode Island Supreme Court affirmed the commission’s approval of the 2010 PPA, guided by the General Assembly’s legislation (described in section 4.4).

Notably, the revised 2010 PPA did not change the charge to ratepayers and the escalation rate from the 2009 PPA, of 24.4 cents per kilowatt and increasing by 3.5% each year that resulted in “above-
market electricity costs ‘in excess of $370 million’" for the next 20 years. Also, the 2010 PPA price did include the costs for constructing the 22-mile transmission cable from Block Island to the mainland (Rhode Island Supreme Court, 2010; National Grid, 2016). The development of the transmission system was treated separately from the wind farm (National Grid, 2016).

In addition to the groups noted above, local fishermen also opposed offshore wind development and the Block Island Wind Farm. The Rhode Island fishing industry has a substantial presence and history in the state, with origins dating back to the 17th century, and two major commercial fishing ports at Point Judith and Newport, as well as several smaller ports, and an active recreational fishing community (Hell-Arber et al., 2001, as cited in McCann, 2010). Through the state’s Ocean Special Area Management (OSAMP), described in the next section, Rhode Island decision makers engaged in extensive stakeholder collaboration efforts not only with fishermen, but other community groups, substantially mitigating opposition to the Block Island Wind Farm.

4.3.1 Summary and analysis of how contextual conditions – generally expected to advance or impede wind energy development – impacted the BIWF

Rhode Island’s ample offshore wind resources for development, in comparison to onshore opportunities, the state’s renewable energy initiatives, and the opportunity for Rhode Island to emerge as a leader in offshore wind and advance the economy during the economic recession, motivated Carcieri and other decision makers to support offshore wind development. The substantial offshore wind speeds off the coast of Block Island and the promise that an offshore wind farm constructed near the island would reduce and stabilize electricity prices through the construction of a cable from the island to the mainland incentivized some decision makers to support the Block Island Wind Farm. However, these contextual conditions did not guarantee the development of the BIWF.

Other circumstances, such as several groups opposing the Block Island Wind Farm and the considerable above-market electricity costs for Rhode Island mainlanders as a result of the wind farm, clarify that the Block Island electricity market, Rhode Island’s wind, renewable energy, and other state
goals, and the state’s offshore wind resources were not the only reasons as to why the Block Island Wind Farm went forward. There were many points in the planning process for the BIWF, where if Deepwater Wind and individuals with decision-making power had different beliefs and values, strategized differently, or did not have the necessary resources, the Block Island Wind Farm potentially may not have gone forward. For instance, a town council with a differing set of values may have pursued other means to reduce the island’s dependence on diesel fuels, in an effort to maintain the island’s viewshed and independence from a “foreign developer.” Different individuals comprising the General Assembly, Public Utilities Commission, and Rhode Island Supreme Court may have arrived at different conclusions concerning the wind farm and its associated above-market electricity costs exceeding $370 million. Public opposition may have been detrimental to project efforts, in the absence of an OSAMP process. Collectively, these circumstances reveal how institutions, individuals, and decision processes drive outcomes, in addition to electricity markets, goals, and geographic and meteorological conditions.

4.4 Analysis of conditions: Resources and strategies of policy participants in positions of power, or decision makers

Policy participants with decision-making power had a tremendous impact on the development of the Block Island Wind Farm through various resources and strategies, including extensive stakeholder engagement, linking knowledge production with policy production, streamlining the permitting process, and passing legislation in support of the BIWF. This section describes the resources and strategies of the decision makers in Rhode Island that especially impacted outcomes, including: (1) former Rhode Island Governor, Donald Carcieri, (2) the Coastal Resources Management Council, (3) the Ocean Special Area Management (OSAMP) committee, (4) the Town Council of New Shoreham, (5) the Rhode Island General Assembly, (6) the Rhode Island Public Utilities Commission, and (7) the Rhode Island Supreme Court. Although not considered a decision-maker in a position of power, this section also describes the impacts of Deepwater Wind’s decision-making processes on the BIWF.
Notably, decision makers reached consensus in terms of supporting offshore development in Rhode Island early in the decision process. Specifically, former Rhode Island Governor, Donald Carcieri, the General Assembly, the New Shoreham Town Council majority, and the OSAMP committee were consistent in their support for the Block Island Wind Farm and/or the planning process for the wind farm. Further, the Rhode Island Coastal Resources Management Council, the Rhode Island Public Utilities Commission, and the Rhode Island Supreme Court upheld the state’s legislation and support for offshore wind development, rather than acting as a source of opposition. Deepwater Wind’s resources and community engagement, especially with the town of New Shoreham, also contributed to the development of the project.

This project argues that the decision-making environment in Rhode Island for offshore wind can be described as a simple decision situation (Pielke, 2007), distinguished by high values consensus for offshore wind development among policy participants with decision-making power, and low uncertainty in terms of how information could inform the decision process. Rhode Island decision makers focused on gathering information to inform how to best strategize for offshore wind project siting, including reducing impact on marine resource users and the marine environment.

This research argues that the high values consensus among decision makers played an important role with respect to the Block Island Wind Farm going forward. Rather than utilizing time and resources to determine the conditions under which the state would support offshore wind development – i.e., support contingent upon a reduced procurement price, or only if it is proven that an offshore wind farm will not have negative impacts on the economy and the environment – decision makers immediately focused on best strategies to achieve the goal of an offshore wind farm. The following sections describe decision makers’ beliefs, values, resources, and strategies, including decision processes, for offshore wind development in Rhode Island and the Block Island Wind Farm.
4.4.1 Resources and strategies of the Ocean Special Area Management (OSAMP) Management team and the Coastal Resources Management Council

The Rhode Island Coastal Resources Management Council (CRMC) – a Rhode Island state agency – was created by the Rhode Island General Assembly in 1971, with the primary responsibility of preserving, protecting, developing, and where possible, restoring the coastal area of the state through “Special Area Management Plans” (SAMPs) (RI CRMC). Individuals with decision-making power at CRMC ensured that Rhode Island developed a comprehensive management plan to oversee and regulate development in state waters through an Ocean Special Area Management Plan (OSAMP). This plan become well known among policy participants in Rhode Island, and the offshore wind industry, at large, for playing a critical role in the development of the Block Island Wind Farm.

The following paragraphs provide examples of primary characteristics and trends associated with the OSAMP that played a role in the BIWF going forward, including: (1) an expert staff, with background in coastal management, marine sciences, stakeholder engagement, developing other state SAMPs, environmental policy, and other relevant areas of expertise; (2) available funding to implement the program, (3) efficient implementation, staff experience working together, and clear goals; (3) widespread, collaborative efforts between policy makers and knowledge producers, from fishermen, to federal agencies, resulting in the “coproduction of knowledge,” opposition mitigation, and a streamlining of the permitting and regulatory process for the BIWF; (4) development of ocean management policy, based on OSAMP stakeholder engagement and research; and (5) staff holding particular beliefs, values, and perspectives for driving the OSAMP process forward.

Expertise from the Executive Director of the Rhode Island Coastal Resources Management Council with more than 30 years of experience in the regulatory business, Grover Fugate, ensured that offshore wind development in Rhode Island “got off on the right foot.” Around the time that the Carcieri administration implemented the 15% wind energy goal, Fugate explains that Rhode Island’s energy office began discussions with the CRMC about offshore wind energy development. In late 2007, a staff official
discussed with Fugate an Environmental Impact Statement (EIS) for the south end of Block Island, for up to 300 turbines.

Fugate recommended instead to “back off and go from a planning context,” by developing a new SAMP, authorized by the Rhode Island Coastal Resources Management Council, for Rhode Island state waters. Creating a SAMP for Rhode Island’s state waters provided the opportunity to implement a clear and transparent regulatory plan for how offshore wind projects, or other ocean development should proceed up to 3 nautical miles off the coast of Rhode Island, based on “exceptional science, rigorous yet flexible policies, and extensive public participation” (McCann & Schumann, 2013). Fugate also advocated for a smaller sized wind farm to gain stakeholder trust (Fugate, personal communication, June 2017).

Ken Payne – who served as the volunteer moderator for OSAMP Stakeholder Group, with substantial experience in government and policy, from working for Senator Clayborn Pell in the ‘80s, to serving as the Chief Policy Advisor of the Rhode Island State Senate – stated, “Grover brilliantly, brilliantly realized that the SAMP process offered the means to the end ... a darn-close to genius-level instinct of operationalizing it through the SAMP process” (Ken Payne, personal communication, June 2017). In June 2008, CRMC secured $3.2 million for the OSAMP from the Rhode Island Renewable Energy Development Fund, for which “the goal would be to align a SAMP permitting process with a developer of a wind farm” (Renewable Energy Development Fund, 2008). After Carcieri issued a Request for Proposals (RFP) for an offshore wind developer in 2008, Fugate explains, “we were off to the races at that point. They gave us two years to develop it [the OSAMP], and we immediately started to put the stakeholder group together.” Volumes I and II of the Ocean SAMP documents were published in October 2010 (McCann, 2010; Rhode Island Ocean SAMP, 2010).

In terms of staff expertise and experience working together, Fugate notes that he brought Ken Payne on board, whom Fugate described as “an honest broker.” Fugate also stated that Payne joining the OSAMP staff “was a tremendous win for us, because he took meetings that were extremely contentious at
times and managed them in a way that nobody felt like he was being condescending, or any other approach other than being open and honest about issues” (Fugate, personal communication, June, 2017). Ken Payne noted, “Grover and I have worked together for years and years and years. So, I know his process intimately, I have enormous admiration for him and it simply hadn’t occurred to me to stretch a SAMP idea.” Rather, Payne explains that he conveyed the notion of using “the scientific capacity at URI [University of Rhode Island] in a manner that would reflect the requirements of an EIS” [Kenneth Payne, personal communication, June 2017]. In this way, the OSAMP addressed issues associated with an EIS, among other issues relevant to ocean development, helping to streamline the state and federal review processes for the BIWF. Jen McCann, who co-led the OSAMP with Fugate, as the director of the U.S. Coastal Programs at the University of Rhode Island Coastal Resources Center, explains that she, “personally worked with Fugate on other SAMPs and had a good, strong relationship.” McCann explained that CRMC usually takes four to five years to develop SAMPs, but, “we [the OSAMP staff] had to do it in two years.” Moreover, McCann notes that more than 200 people were involved in the process – also verified in the OSAMP documents themselves (Jennifer McCann, personal communication, June 2017; McCann, 2010).

Evidence indicates that the OSAMP process also assisted with the siting for the BIWF and mitigated public opposition. McCann noted, “Deepwater Wind, they felt the turbines should go in another location because of the wind. Then, we talked to the fishermen and moved the energy zone [the areas suitable for development].” Other evidence indicates that the OSAMP stakeholder process was a true collaborative process, as opposed to mere top-down, “information campaign.” McCann states, “we forced the scientists to meet with the stakeholders and communicate in way that is more interesting. That process tweaked the research and made them [the scientists] realize this was their livelihood” (Jennifer McCann, personal communication, June 2017). Payne explains that the scientist conducting the research on identifying areas suitable for offshore wind development were preparing to share the information with Deepwater Wind, prior to communicating the information to the stakeholders. Concerning the situation,
Payne stated that it was “unacceptable” for the researchers to tell the developer the science before the stakeholders, and further noted that if the developer heard the research first that he would resign from the OSAMP committee (Kenneth Payne, personal communication, June 2017).

As fishermen inherently do not want to reveal their fishing grounds, working with and establishing trust with the fishing community was especially key. Payne’s reputation as an honest broker and collaboration with the fishing community helped establish that trust. The CRMC also hired David Beutel, a former University of Rhode Island Fisheries Extension Specialist and Fisheries Operations Supervisor, who served as a liaison with the fishing community. Through these collaborative efforts, fishermen had a direct impact on OSAMP policies, ensuring that offshore wind farms would not be proposed for, or constructed within prime fishing grounds. The fishing community was also guaranteed that as fishing grounds changed, the OSAMP would adapt the areas deemed acceptable to development (Grover Fugate, personal communication, June 2010; Kenneth Payne, personal communication, June 2010; McCann, 2010).

OSAMP staff collaborated with a range of other stakeholder groups, including local tribes, recreational boaters, commercial mariners, environmental organizations, NGOs, and Block Island residents. Additionally, researchers, such as historians, archeologists, and scientists, mapped the marine environment, accounting for historical and cultural resources, physical oceanography, geology, benthic communities, waves, marine mammals, sea turtles, avian populations, fisheries ecology, and ecosystem services (McCann, 2010). This collective knowledge for the OSAMP contributed to CRCM’s commitment to:

preserve, protect, develop, and where possible, restore the coastal resources of the state for this and succeeding generations, and to ensure that the preservation and restoration of ecological systems shall be the primary guiding principle upon which environmental alteration of coastal resources will be measured, judged and regulated (McCann, 2010).
Since proposed offshore wind farms for Rhode Island state waters are subject to permitting under the Coastal Resources Management Council, the information obtained from researchers and stakeholder groups contributed to policies on where offshore wind farms could and could not be built.

Aileen Kenney, Vice President of Permitting & Environmental Affairs for Deepwater Wind, stated, “It [the OSAMP] created a renewable energy zone. And, then we were required to put the wind farm within the renewable energy zone … So, we didn’t get to choose the spot for the wind turbines. The spot was provided to us and then we had to make it work within that spot” (Aileen Kenney, personal communication, June 2017). In addition to facilitating the siting process for the wind farm, the OSAMP streamlined the permitting process for the BIWF to an extent and potentially saved the developers time and money. Kenney notes, “They [OSAMP policies] are very thorough. If there had been a challenge, I think it would have been denied because the review was so thorough.” Kenney also noted, “The SAMP also did a lot science, which we were able to take advantage of. And, you know, I think overall, it did save us time and money” (Aileen Kenney, personal communication, June 2017).

The collaborative efforts for the OSAMP also assisted with establishing trust, reducing opposition to the wind farm, and facilitating widespread momentum for offshore wind development in Rhode Island. In terms of trust, Ken Payne explains, “I think that one of the things that the stakeholder process did was give everyone the sense that people were being fairly heard and fairly treated that it wasn’t going to be done behind the screen, with a public hearing at the end, catch everybody by surprise and have all hell break lose. So, they knew there was a fair process” (Kenneth Payne, personal communication, June 2017).

Jenn McCann provided an anecdote to explain how the stakeholder process changed people’s perceptions, 25

To clarify, the collaborative efforts for the OSAMP were not only for the BIWF, but for managing any future ocean development proposals. Thus, the process resulted in adaptive management policies, like continuing to “learn about Rhode Island’s offshore natural resources and human activities,” capture lessons learned from existing ocean development, and continue to work with stakeholder groups, including fishermen, to modify “renewable energy zones,” as necessary (McCann, 2010). Implemented as an adaptive management plan, the OSAMP provides the framework for future proposed offshore wind projects in state waters.
stating, “I remember one fisherman looking at me like, you know, I had just killed his first born or I took his house away. It was really awful. And there was tension like you wouldn’t believe in the room. It was, you know, really hard. And I remember the stakeholder meeting when things started, you know, they were jam packed people in the room because they were all concerned this was going to take away their livelihood or this was going to affect their view” (Jennifer McCann, personal communication, June 2017). Referring to the dramatic change in tone at the stakeholder meetings over time – in part because of the earnest stakeholder outreach efforts – McCann stated:

People came [to the OSAMP meetings], because we served really good food, too. You know, hot soup and lasagna, so we made that before the meeting – I mean the meeting started an hour before the presentation because that was when I did my job and I talked to everybody. I asked them how their dog was, or whatever because it is all about relationships and it is all about them trusting the process. And, so I wasn’t faking it. We became a real group of people, a nice group of people. So, every month, we came together and we had dinner together and we, you know, we just talked about things. So, people felt comfortable calling me up, or stopping me in the supermarket, and Grover, too. I’m not just talking about me, here. But, you know, people felt like they had access, we weren’t just people standing up in front of the room.

Then-Governor Carcieri also referred to the OSAMP often with enthusiasm. At his 2010 State-of-the-State, Carcieri stated, “a team of scientists from URI is working with the Coastal Resources Management Council to complete a Special Area Management Plan – an ocean “zoning” map – the first in the country. This plan will be the guidepost for siting offshore wind farms (The Honorable Donald L. Carcieri, 2010).

Table 19 indicates the number of times that OSAMP staff collaborated with various stakeholder groups such as municipal and state agencies, the federal government, and fishermen, to develop the SAMP, based on document data and this project’s document sample size. To clarify, OSAMP staff likely collaborated with the stakeholder groups included in Table 19 more times than shown, since the numbers are based on publicly available documents and this project’s document sample size; however, the table
provides a general idea of the OSAMP staff’s broad collaboration efforts with a range of stakeholder groups.

Table 19. OSAMP staff collaboration with stakeholder groups. Figures based on data within document sample size.

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Ocean SAMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic and Environmental Organizations</td>
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</tr>
<tr>
<td>Deepwater Wind</td>
<td>12</td>
</tr>
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<td>Municipal Government</td>
<td>2</td>
</tr>
<tr>
<td>State Government</td>
<td>18</td>
</tr>
<tr>
<td>Federal Government</td>
<td>17</td>
</tr>
<tr>
<td>Fishermen</td>
<td>14</td>
</tr>
<tr>
<td>Recreational Users</td>
<td>3</td>
</tr>
<tr>
<td>Citizens, Public, or Local Community</td>
<td>17</td>
</tr>
<tr>
<td>Researchers and Scientists</td>
<td>12</td>
</tr>
<tr>
<td>University of Rhode Island</td>
<td>12</td>
</tr>
<tr>
<td>Private Sector/NGOs</td>
<td>3</td>
</tr>
</tbody>
</table>

That the OSAMP staff were driven to complete the process in a period of two years can be attributed in part to personal beliefs and values. Fugate was motivated to develop the OSAMP to manage conflict among ocean-resource users and the state’s goals to develop offshore wind projects, stating, “as soon as you point to a place on a map and say I want to do a project there, all hell breaks loose.” Fugate also supported the OSAMP because of his concern for the impacts of climate change on the environment and the state of Rhode Island, including expert projections for sea level rise, stating, “that (sea level rise) will be just devastating for the state, it will be devastating for the entire country, it will be devastating for most areas of the world” (Grover Fugate, personal communication, June 2016). Jenn McCann suggested a similar concern, saying, “I have two kids and I really care about Rhode Island, and I want this place to be a good place for them and this is an opportunity to do it. When you have kids, you’re like, wow, this is their future” (Jennifer McCann, personal communication, June 2017). Promoting democratic processes motivated Payne. Payne noted, “I believe that the kinds of assertions that are made with regard to the
importance of democratic process are a fundamental political good … So, if you have just expert opinion and rulemaking, you really have government by expert opinions. I find that that would eviscerate the meaning of democracy.”

4.4.2 Resources and strategies of former Rhode Island Governor, Donald Carcieri

Carcieri implemented policy that incentivized offshore wind development in the state, and actively engaged in efforts to advance offshore wind development, from expressing his support for offshore wind development at state agency meetings and at his 2010 state-of-the-state address, to channeling available funds to offshore wind endeavors. For example, in October 2009 and in July 2010, Carcieri wrote a letter to the PUC, urging them to support the Power Purchase Agreement between National Grid and Deepwater Wind (Carcieri, 2009; Carcieri, Fox, & Paiva-Weed, 2010). In April 2009, Carcieri created an “Energy Review Team” to develop a plan for investing funds from the American Recovery and Reinvestment Act of 2009 and clarified that part of the grant funding would focus on “offshore wind” (Press Releases, 2009). In 2010, Carcieri provided testimony in favor of the amended PPA between Deepwater and National Grid, after corporations filed a lawsuit in opposition to the PPA.

Under the Carcieri administration, Rhode Island issued a Request for Proposals (RFP) to select an offshore wind developer (Joint Development Agreement, 2009). The state signed a Joint Development Agreement (JDA) with Deepwater Wind (DWW), which gave Deepwater Wind the right to negotiate a PPA with the local utility, National Grid. The JDA states:

The State through its OER [Office of Energy Resources] and EDC [Economic Development Commission] shall make all reasonable efforts to assist DWW to complete a Fully Developed Project for Phase I and II … [and] to the extent that is lawful … assist among other matters relating to the development of the Project

26 The Speaker of the Rhode Island House of Representatives and the President of the Rhode Island Senate wrote the letter to the PUC in conjunction with Carcieri in 2010
and Economic Development Activities, in (i) expediting permitting and approvals during all phases of the Project; and (ii) assisting DWW in securing one or more PPAs (Joint Development Agreement, 2009).

Thus, the legislation for the JDA not only provided a pathway for Deepwater to secure a reliable buyer of the electricity generated from the Block Island Wind Farm, but also offered state support in the permitting process and other development matters.

Based on this research, Carcieri supported offshore wind development for a range of reasons, including the state’s ample offshore wind resources, economic growth, and the opportunity to lead the nation in offshore wind development (The Honorable Donald L. Carcieri, 2010). Payne and Fugate also explained that Carcieri’s support for offshore wind may have been due, in part, to the general momentum for renewable energy at the time and the success of the OSAMP process. Payne stated, “It was an era when lots of people are talking about renewable energy in Rhode Island and Rhode Island’s premier renewable energy resource is offshore wind” (Kenneth Payne, personal communication, June 2017). Fugate noted, “There were a lot of governors who supported wind at that point. As we started to get into the process [OSAMP] and people could see what we were doing, he started to get a lot of compliments from all the other federal agencies. The governors said, ‘you’re really doing this right,’ and he felt more comfortable, I think prouder of the effort” (Grover Fugate, personal communication, June 2017).

Table 20. Donald Carcieri and offshore wind development. Carcieri often expressed his support for offshore wind energy development and/or the BIWF, and engaged in efforts to advance the BIWF several times, based on this project’s document data and the document sample size.

<table>
<thead>
<tr>
<th>Decision-maker</th>
<th>OSW Development / BIWF</th>
<th>Against</th>
<th>Neutral</th>
<th>Supports</th>
<th>Advances Development / BIWF</th>
<th>Impedes Development / BIWF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donald Carcieri</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>13</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

4.4.3 Resources and strategies of the New Shoreham Town Council

The municipality of New Shoreham covers the entire geographic area of Block Island. Research indicates that the Town of New Shoreham decision makers, including the then-town council and the then-
town manager, played an important role with respect to outcomes for the Block Island Wind Farm. Aileen Kenney noted, “Nancy [then-town manager] and Kim [then-First Warden] were huge leaders in helping to make this project succeed” (Aileen Kenney, personal communication, June 2017). Document data indicate that the New Shoreham Town Council’s discussions and the majority of their decisions for the Block Island Wind Farm were neutral or supportive in nature, and advanced, rather than impeded the BIWF, as shown in Table 21. A minority town council opinion expressed opposition to the project and/or the town council’s decision processes for the project about 5% of the time, based on document data.

Kimberley Gaffett summarized the efforts of the town council for the Block Island Wind Farm, stating, “there’s a lot of political processes that needed to happen for this thing [the BIWF] to happen on this stage, this place in the state of Rhode Island. And, we could either oppose those things at every stop, or we could be supportive and opportunistic and that’s what we were” (Kimberley Gaffett, personal communication, June 2017). This section describes the then-Town Manager’s and then then-New Shoreham Town Council’s strategies for supporting the BIWF, and some of the beliefs and values that motivated their support.

Table 21. Town Council of New Shoreham and the BIWF. Town council members strong support for the BIWF and minimal opposition helped to advance the locally proposed wind farm.

<table>
<thead>
<tr>
<th>Decision-maker</th>
<th>BIWF</th>
<th>Against</th>
<th>Neutral</th>
<th>Supports</th>
<th>Advances BIWF</th>
<th>Impedes BIWF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Council of New Shoreham</td>
<td>38</td>
<td>2</td>
<td>20</td>
<td>16</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

The New Shoreham Town Council assisted in an efficient, municipal permitting process for the BIWF, and communicated to state- and federal-level decision makers in support of project development. In January 2009, Deepwater Wind requested a Special Temporary Permit at the Southeast Lighthouse for the installation of an avian radar unit. Over the course of one meeting, the town council granted the permit for the avian radar unit (New Shoreham Town Council Meeting, 2009a). The Town Council also
approved a Special Temporary Permit for Deepwater Wind to install a met tower in March 2009, and voted to renew the permit for the met tower in January 2010 and in July 2011, with decisions for permit approval and renewal made over the course of one meeting (New Shoreham Town Council Meeting, 2009b; New Shoreham Town Council Meeting, 2010; New Shoreham Town Council Meeting, 2011). In October 2012, after one session, the town council approved Deepwater Wind’s request for an extension of the temporary easement for onshore construction (New Shoreham Town Council Meeting, 2012b).

The Town Council of New Shoreham hired an expert consultant to confirm and validate Deepwater Wind’s assertions on project development, and communicated expert insights to other decision makers and Block Island residents. In September 2009, the town council voted to hire energy expert Richard La Capra to provide “consulting assistance with issues arising from the development of an offshore wind farm and a related electric cable project” (New Shoreham Town Council Meeting, 2009c). In January 2010, LaCapra testified before the Rhode Island Public Utilities Commission on the position of the Town of New Shoreham regarding the power purchase agreement between Deepwater Wind and National Grid. In the testimony, LaCapra states that the “Town does not object to Commission approval of the PPA, and that Rhode Island law “has created unique circumstances that must be taken into account by the Commission in evaluating the commercial reasonableness of the PPA” (State of Rhode Island, 2010a). In December 2012, the New Shoreham Town Council voted to submit a study from the municipality’s Electric Utility Task Group that indicated the environmental and economic benefits for the BIWF for the island, to the U.S. Army Corps of Engineers’ and the Rhode Island Coastal Resources Management Council’s requests for public comments (New Shoreham Town Council Meeting, 2012a).

An interview with Kimberley Gaffett provided additional information on the town council’s efforts for the Block Island Wind Farm and why Gaffett, herself, supported the wind farm. Contrary to the mainstream narrative that Block Islanders and others supported the wind farm because of the cable to the mainland, Gaffett stated:
Personally, I didn’t want a cable because I liked that we were independent and we had a stand-alone generator system. When the power goes out on the mainland, we still have power. There’s something symbolic about tying us to the mainland by our energy … 1,000 customers aren’t going to treated as quickly as, you know, 500,000 customers [when the power goes out]. So, I never really was a fan of the cable, because I saw it as a loss of independence. The philosophical part of me that loves renewable energy and the fact that we’re leading the nation and that we’re almost 100% renewably-supplied – that philosophical belief overrides the fact that we have an umbilical cord that connects us (Kimberely Gaffett, personal communication, June 2017).

Gaffett also added, “so the extent that you could see the benefits for Block Island and for the region and for the country and I was behind it philosophically, then I was willing to work for the political things” (Kimberly Gaffett, personal communication, June 2017).

Gaffett explained that after the PUC rejected the initial PPA between Deepwater Wind and National Grid in 2009, a fellow town council member in support of the project called Gaffett “upset” because the wind farm no longer appeared to be a possibility. In response, Gaffett notes that she stated, “It is not over, it is not over, we’ll figure out another way” – emphasizing the importance of political will regarding outcomes for the proposed Block Island Wind Farm. Based on interview and document data, Gaffett attended numerous meetings to learn about the Block Island Wind Farm and to relay information on the wind farm to the Block Island community, as well as other state- and municipal- decision makers. Gaffett adds, “I usually went [to the meetings] ready to listen and had to think in terms of my community … I spent a lot of time reading reports and asking questions and hearing the person answer them. And then, being able to take that information throughout the island in my daily life and say, wow, they’re not going to do this, they’re actually going to do this.”

Gaffett also explained that the then town manager,

27 Gaffett also explained in the interview how the information that the Town of New Shoreham gathered advanced other state decision-processes. For instance, the information that the town council’s expert, LaCapra, gathered on the decommissioning process for the BIWF, assisted with the Coastal Resources Management Council’s evaluation of the decommissioning permit for the wind farm. Additionally, LaCapra worked with the state legislature on the cost structure for the cable from Block Island to the mainland (Kimberely Gaffett, personal communication, June 2017).
Nancy Dodge, was at almost every municipal-agency meeting pertaining to the Block Island Wind Farm (Kimberley Gaffett, personal communication, June 2017).

In contrast to Gaffett, Nancy Dodge, explained in an interview that she was driven to support the BIWF because of the benefits of securing a cable to the mainland, stating,

We obviously had to do something about our electricity. We had a privately-owned power company, five diesel engines, we had no real say in the running of the power company. It didn’t bode well for the long-term future of the island. And that [the cable] makes our whole discussion kind of unique because it was such an important element we were going to get. But, almost as strong as that argument was simply that, I think, you know, the overall cultural concern for environmental issues and the idea that we had five diesel engines spewing out all sorts of carbon emissions, smack in the middle of town, and you look at this beautiful spot, it was just something that really needed to be stopped. (Nancy Dodge, personal communication, June 2017).

As the then-town manager, Dodge’s job was “to carry out the policies of the town council.” Dodge adds that as soon the town council “weighed in favor” of planning processes for the Block Island Wind Farm, she did “whatever it took to make sure that that happened.” Dodge also attended meetings with Deepwater Wind, and when there were easements that they needed, Dodge communicated with the town attorney and town council (Nancy Dodge, personal communication, June 2017). A quote from Dodge summarized the beliefs and values, and resources and strategies of the town council for the Block Island Wind Farm, stating, “The council, as a whole, was in favor of it. And, we all kind of propped each other up going forward. It was a lot of meetings, it was a lot of work behind the scenes, it was a lot of coordination with Deepwater” (Nancy Dodge, personal communication, June 2017).

4.4.4 Resources and strategies of Deepwater Wind

Deepwater Wind, the developer of the Block Island Wind Farm, began the development process with the advantage of having Jeffrey Grybowski as the CEO, who was the Chief of Staff under the
Carcieri administration; however, there is no indication that that is the reason why Deepwater Wind won the competitive process for Rhode Island’s RFP, based on this project’s data collection and analysis processes. Evidence indicates that Deepwater Wind’s financial resources assisted project development, such as having the funds to pay the Rhode Island Historic Preservation Office and the Southeast Lighthouse Foundation $2.5 million in a last-minute lawsuit against the wind farm, and to reimburse the New Shoreham Town Council’s consultants. The D.E. Shaw Group—a global investment and technology development firm—is the principle owner of Deepwater Wind. In October 2016, GE Energy Financial Services and Citi closed on tax equity financing for the Block Island Wind Farm (Deepwater Wind, 2016).

On the other hand, Keeney notes the potential relationship between state policy-support mechanisms for the Block Island Wind Farm and project financing and support, stating, “We went out and got bank financing. You know, I think the SAMP did help. I think it made folks comfortable. We had already got our permits, by the time we got our financing. But, it made folks more comfortable that, you know, that the political will was there, that the process was robust and that the opportunity for folks to appeal was low” (Aileen Keeney, personal communication, June 2017).

Research also indicates the importance of Deepwater Wind’s communication with the Town of New Shoreham. Deepwater Wind team member, Bryan Wilson—who spent summers on Block Island as a child, and who later became a full-time resident—served as the company’s “island liaison.” Gaffett and Dodge emphasized the importance of Wilson’s communication with the town council and islanders. Gaffett stated of Deepwater Wind’s decision to have Wilson as the island liaison, “it seemed like an effort for real communication and real dialogue, not, we’re trying to sell you something and we’re going to tell you what you want to hear” (Kimberly Gaffett, personal communication, June 2017). Referring to Wilson and Deepwater Wind hiring Wilson as the island liaison, Dodge states:
We said, you know, when he went to work for Deepwater Wind, which was probably the smartest thing that Deepwater did, because it was more someone we were familiar with” (Nancy Dodge, personal communication, June 2017).

Referring more generally to Deepwater Wind’s efforts to communicate with Block Islanders, Dodge stated:

they [Deepwater Wind] instigated a PR campaign that extended for a year-and-a-half that was focused particularly in the summertime. They would host cocktail hours, to let people come and talk. They had drawings of what it might look … they had those in the town hall, any information that they were providing to the planning board, the zoning board, SAMP they would have that available at town halls, if people were interested” (Nancy Dodge, personal communication, June 2017).

In sum, Deepwater Wind’s strategy of communicating with islanders and the town council, including hiring Bryan Wilson as the island liaison, played a role in the Block Island Wind Farm going forward.

4.4.5 Resources and strategies of the Rhode Island General Assembly, Public Utilities Commission, and the Rhode Island Supreme Court

The Rhode Island General Assembly played a critical role with respect to the BIWF going forward, by passing legislation that directed the Rhode Island Public Utilities Commission and the Rhode Island Supreme Court to uphold the amended PPA between Deepwater Wind and National Grid. In its review of the 2009 PPA between National Grid and Deepwater Wind, the PUC compared the PPA’s terms and pricing for the Block Island Wind Farm (referred to as The Town of New Shoreham Project in the proceedings) to any renewable energy project “‘regardless of sizing restrictions, technology, location, or novelty.’” The commission also compared the internal rate of return (IRR) achieved at the 2009 PPA price to what “an experienced power-market analyst would expect to see from other renewable energy projects.” The commission found that the 2009 PPA could not satisfy either prong (Supreme Court, 2011).
Two months after the Commission’s rejection of the 2009 PPA, the General Assembly amended the section of the Rhode Island law on the state’s Long-Term Contracting Standard for Renewable Energy (LTC statute) that pertained to the “Town of New Shoreham Project.” The revised LTC statute passed both the House and the Senate, and was signed into law by then-Governor Carcieri. Notably, the LTC statute permitted National Grid to make alterations in an amended PPA, and now articulated that the PUC “shall approve” the amended PPA if its “terms and conditions” are “commercially reasonable” – and redefined commercially reasonable as “mean terms and pricing that are reasonably consistent with what an experienced power market analyst would expect to see for a project of similar size, technology and location,” effectively narrowing “the commission’s commercial reasonableness comparison to projects that were much more similar to the Town of New Shoreham Project than allowed by the previous definition” (Supreme Court, 2011). The legislation also articulated state goals to be realized through the Town of New Shoreham Project, including: (1) putting Rhode Island at the economic development forefront “of the emerging offshore wind industry,” (2) promoting renewable energy and reducing reliance on “foreign sources of fossil fuel” (3) decreasing environmental and health detriments caused by “traditional fossil fuel energy sources”; and (4) “providing the Town of New Shoreham with an electrical connection to the mainland” (Supreme Court, 2011). The General Assembly also included in the legislation deadlines and procedures for intervening on the new docket, conducting hearings, and issuing decisions to accept or reject the PPA (Supreme Court, 2011).

In the 2009 deliberations over the PPA, witnesses disagreed on the correct model for calculating the IRR for the project. The commission decided upon the Rhode Island Division of Public Utilities and Carriers’ calculation, since their consultant “was the only witness not representing a party with a ‘financial stake in the outcome.’” Thus, the General Assembly also included in its revised statute for Deepwater Wind to provide funding for the Rhode Island Economic Development Corporation (EDC) to hire an expert consultant in power contracts and markets, and renewable energy project financing. Further, the revised statute directed the commission to approve the PPA if the project is “likely to provide
economic development benefits” and “environmental benefits.” The legislation directed the EDC expert to provide an opinion on “economic benefits” and for the commission to give the EDC opinion deference. Similarly, the revised legislation instructed the Rhode Island Department of Environmental Management (DEM) to provide an opinion on the “environmental benefits,” and for the commission to give deference to the DEM opinion. Finally, the revised legislation called for a decrease in the PPA pricing, if savings could be achieved in the actual costs of the project, and that the procurement price could be lower, or the same, but not be higher than the price included in the 2009 PPA (Supreme Court, 2011).

In August 2010, the majority of the commission approved the amended PPA finding that the amended PPA “met the intent and requirements” of the General Assembly’s amendments to the LTC statute. The commission’s 2010 finding states:

The effect of these statutory changes dramatically reduced the plenary discretion afforded to the Commission under the earlier version of the law, most particularly with respect to the exercise of judgment concerning whether or not the project, and its associated PPA pricing, meets the test of commercial reasonableness. Despite the statutory revisions, it is not for the Commission to determine the State’s energy policy, but rather to implement the policy articulated by the General Assembly through its statutes (State of Rhode Island, 2010b).

Further, in their opinions, both Chairman Germani and Commissioner Roberti state that they gave deference to “EDC’s Advisory Opinion” regarding the economic development benefits of $129 million over the course of the project and that the economic benefits are meant to be considered, and not the market costs associated with the project, expected “to be in excess of $370 million” (State of Rhode Island, 2010b). The majority PUC opinion suggests the importance of the exacting language of the General Assembly’s revised legislation in order for the revised PPA to obtain approval. In contrast, Commissioner Bray dissented from the majority opinion, noting that the commission can account for economic harms and costs associated with the project (State of Rhode Island, 2010b). This dissenting
opinion further suggests the power of the beliefs and values of the commission; a different makeup of the Rhode Island PUC in 2010 may have resulted in a different outcome for the 2010 PPA.

The Rhode Island Supreme Court also upheld the amended PPA. Toray Plastics, Inc. and Polytop Corporation’s filed a lawsuit with the Supreme Court against the approved PPA, “[M]otivated by dissatisfaction with National Grid’s above-market cost-distribution plan” and the “commission’s assessment that the 2010 PPA met all statutory preconditions for approval” (Supreme Court, 2010). The Supreme Court affirmed the commission’s decision, also drawing on the revised LTC statute. For example, the Supreme Court states, “We start with the statute [LTC] in question … which is completely silent with respect to the application of a net-benefit test. The statute directs the commission to examine whether the 2010 PPA is likely to provide ‘economic development benefits;’” thus, the Supreme Court affirms the PUC’s decision to limit its review to “the positive side of the economic ledger” (Supreme Court, 2010). The Supreme Court further notes its deference for the General Assembly’s statute, stating, “To do otherwise … would be to substitute our will for that of a body democratically elected by the citizens of this state and to overplay our proper role in the theater of Rhode Island government” (Supreme Court, 2010). Thus, the Rhode Island Supreme Court’s opinion also underscores the importance of transparent and exacting legislation to support proposed offshore wind energy projects and a state’s offshore wind energy development goals.

4.4.6 Summary of how contextual conditions, including policy participants in positions of power, affected outcomes for the BIWF

Beginning in 2006, Rhode Island set the goal of meeting 15% of the state’s average electricity demand with wind power by 2011. Although Rhode Island did not meet its goal for wind energy by 2011, Rhode Island became the first state in the U.S. to develop an offshore wind farm. A range of contextual conditions contributed to Rhode Island becoming the first state to build a wind farm at sea. A study which found that more than 95% of Rhode’s Island wind energy development opportunity is offshore led decision makers to explore offshore wind energy to meet that state’s wind energy
development goals. Additionally, Rhode Island’s economic development, leadership, and renewable energy objectives motivated then-Governor of Rhode Island, Donald Carcieri, and other state leaders to pursue offshore wind energy development.

Moreover, the specific geographic, meteorological, and electricity market conditions on Block Island led some state and municipal decision-makers to pursue development of the Block Island Wind Farm. The wind farm promised to eliminate Block Islanders’ dependence on diesel, through the construction of an undersea cable connecting the island to the mainland, thereby reducing and stabilizing electricity prices on the island. Nonetheless, among some Block Islanders and Rhode Island mainlanders, there was substantial opposition to the Block Island Wind Farm due to potential impacts on the viewshed, Block Island’s historic, rural landscape, prime fishing grounds, mainlanders’ utility bills, and other reasons. Although the Block Island Wind Farm would reduce rates for islanders, the wind farm would result in “above-market electricity costs ‘in excess of $370 million” over the course of 20 years. Those in opposition engaged various in strategies to stop project development, from submitting opinions and testimony to state officials, to filing lawsuits. Due in part to the above-market costs associated with the project, the Rhode Island Public Utilities Commission rejected the first power purchase agreement (PPA) between Deepwater Wind and National Grid, an agreement necessary for the development of the Block Island Wind Farm.

In this light, Rhode Island’s and Block Island’ geographic, meteorological, economic, and other goals did not guarantee the development of the Block Island Wind Farm. Rather, a wide range of policy participants in positions of power, or decision makers, as well as the developer, Deepwater Wind, strategically engaged various resources and strategies that aligned to develop the Block Island Wind Farm. Empirical evidence indicates that many decision makers in Rhode Island invested substantial time and energy into processes that advanced the Block Island Wind Farm, and Rhode Island’s goal for wind energy. Table 22 provides insight on the extent of decision makers’ collective support, or lack of opposition to offshore wind development and/or the BIWF, and that decision makers mostly advanced
instead of impeded development, based on document data. Viewing the data in another way, Rhode Island decision makers’ discussions and decisions related to offshore wind and/or the Block Island Wind Farm indicated support about 61% the time, were neutral in nature about 37% of the time, and indicated opposition around 2% of the time.

Table 22. Decision makers and offshore wind development engagement in Rhode Island.

<table>
<thead>
<tr>
<th>Policy Participant</th>
<th>OSW / BIWF Development</th>
<th>Against</th>
<th>Neutral</th>
<th>Supports</th>
<th>Advances Development</th>
<th>Impedes Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Makers</td>
<td>142</td>
<td>3</td>
<td>52</td>
<td>87</td>
<td>18</td>
<td>1</td>
</tr>
</tbody>
</table>

As an example of a decision maker engaging in strategic efforts for the wind farm, Carcieri not only passed legislation for offshore wind energy and the Block Island Wind Farm, but Carcieri also wrote letters and submitted testimony to the Rhode Island Public Utilities Commission (PUC) to help ensure the implementation of the legislation. The Rhode Island General Assembly also acted strategically, as well as quickly, writing and passing legislation in a two-month time period – legislation that helped to ensure that the PUC would approve the revised PPA between Deepwater Wind and National Grid.

Members of the New Shoreham Town Council not only issued permits for the BIWF in a timely manner, but they also engaged in extensive knowledge-gathering and knowledge-sharing efforts with those in the Block Island community and with other state and municipal leaders. In a two-year timeframe, staff of the Ocean Special Area Management Plan (OSAMP) drafted and published a thorough and transparent regulatory plan for development in Rhode Island state waters, collaborating with a range of stakeholder groups, from the local to the federal level. Based on evidence, the OSAMP process and documents were critical to the development of the Block Island Wind Farm, by not only streamlining the

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28 This project conservatively coded for “advances” or “impedes” developed, where data were only coded as such, if they clearly conveyed an advancement or impediment in development, such as the commission upholding the PPA between National Grid and Deepwater Wind in 2010 in terms of the former, and the commission rejecting the PPA in 2009, in terms of the latter.
state and federal regulatory and permitting process, but also by helping to ensure that the siting of the offshore wind farm did not have a negative impact on marine resource users or the marine environment.

To an extent, this research understands – more-or-less – why some decision-makers were motivated to engage in timely and significant efforts to advance the development of the Block Island Wind Farm. As noted above, based on public-facing documents, Carcieri and other state leaders, including the Rhode Island Legislature, were motivated not just by the construction of a cable connecting Block Island to the mainland, but also by wider state economic and renewable energy development goals. Although there was some public opposition to the Block Island Wind Farm, data also indicate that other islanders and mainlanders expressed support for the wind farm because of the cable, or otherwise. In this sense, as well as in the sense that the OSAMP process integrated local knowledge of the marine environment, the decision-making process for the BIWF aligned with and was motivated by the will of the people to some degree. However, this project also acknowledges a lack of understanding of the non-public-facing reasons with respect to why many decision makers in Rhode Island were willing to extensively support the BIWF development process, e.g., was Carcieri actually motivated by his connections / network on Block Island and the desire for a cable, or was Carcieri more motivated by broader economic goals for the state of Rhode Island? Or, would the Rhode Island Legislature have been as concerned with legislation for the wind farm, had it not been for the cable?

Nonetheless, even without an intimate understanding as to why particular decision makers engaged in extensive efforts to develop the Block Island Wind Farm, the general takeaway is that a wide range of substantial, strategic, and timely efforts were important to the development of the Block Island Wind Farm, from the municipal, to the state level. On the other hand, this project does have some insight as to why certain decision makers did dedicate considerable time and energy to advance the development of the BIWF, namely municipal officials of the Town of New Shoreham and OSAMP staff. Although this more in-depth understanding of what motivated a few municipal leaders and OSAMP staff is not
critical to answering this project’s research question, or why the BIWF went forward, it does provide information for bolstering policy recommendations for offshore wind energy development.

This research found that although one municipal official was particularly motivated by the obtainment of the cable connecting the island to the mainland and the associated benefits for the island community, another municipal official did not necessarily want the cable, but strongly supported the wind farm nonetheless, to bolster efforts to address environmental issues. This project also found that several of the OSAMP staff members were strongly motivated to engage in the OSAMP process to advance efforts to address climate mitigation and to protect Rhode Island’s future, especially as Rhode Island is expected to be impacted by sea level rise associated with climate change. Another OSAMP staff member was motivated to participate in the OSAMP process itself because the process promoted democratic principles, by engaging a range of stakeholders in the decision process for ocean development. That several key decision-makers supported efforts to develop the BIWF not necessarily because of, or only because of the cable connection indicates the possibility for decision makers to support the development of proposed offshore wind projects in other states, even when there is not a Block Island.

Also of importance in terms of lessons learned and policy recommendations, municipal leaders, OSAMP staff, and other state officials recognized the tradeoffs inherent in the development of the Block Island Wind – e.g., even as the wind farm helps Block Islanders and Rhode Island achieve certain state goals, the wind farm will impact the view on the island and will increase mainlanders’ utility rates. Based on empirical data, Rhode Island decision makers recognized these tradeoffs, but explicitly chose to support the development of the wind farm despite the tradeoffs and because of the perceived benefits. For example, a staff member of OSAMP stated, “There are those who oppose what they think are increasing their cost of energy. That’s fair, it is to be expected. But, sometimes they have to lose, you know, if we’re going to have renewable energy.” Importantly, the General Assembly wrote legislation that directed the decision process to value the benefits of the wind farm, more than the potential losses. This brings to light that decision makers’ acknowledgment of tradeoffs associated with the Block Island Wind
Farm and offshore wind energy development and accounting for these tradeoffs in the decision process, also contributed to the development of the Block Island Wind Farm.

4.5 Policy recommendations, or alternatives for states with offshore wind development goals, based on the Block Island Wind Farm Case Study

The following policy recommendations are based on the Block Island Wind Farm case study, and are relevant to states with offshore wind energy development objectives. Although Rhode Island did not meet its goal of procuring 15% of the state’s electricity from wind energy by 2011, Rhode Island became the first state to develop an offshore wind farm. Thus, this section focuses on policy recommendations for other states with offshore wind development objectives, as opposed to policy recommendations for Rhode Island per se. The policy recommendations include three main topical areas, including planning, policy prescription, and policy implementation. The recommendations are also meant to help ensure that offshore wind development has no, or minimal impact on a state’s marine environment and economy, and advances state and municipal environmental and economic objectives when possible.

In terms of planning, the BIWF case study clarifies the importance of developing a clear strategy to develop offshore wind projects, in addition to creating goals and objectives for offshore wind energy; based on project data, Rhode Island decision makers focused more on how develop the Block Island Wind Farm, than on setting offshore wind energy goals. For instance, decision makers decided early on in the planning process the general size and location for the wind farm, and conveyed this information to the chosen developer, streamlining the planning process. Further, strategizing how to implement an offshore wind project early in the decision process does not preclude avoiding, or mitigating impacts on the marine environment. Rather, planning efforts can incorporate adaptive management, i.e., as data becomes available on sensitive marine habitats, or fishing grounds, the wind farm can be relocated (or not developed), as necessary.

The Block Island Wind Farm case study also conveys the importance of institutional support with staff expertise in coastal management planning, policy, marine sciences, regulatory issues, and other
relevant fields to support a state’s offshore wind development efforts and goals. An institution with appropriate expertise that is also trusted by the community and that has the available resources, such as funding and time, to engage in broad, collaborative efforts with a range of stakeholders from the local, to the federal level can potentially streamline the offshore wind development process, and support information collection efforts for reducing impacts of proposed projects. For example, Rhode Island’s Coastal Resources Management Council oversaw an Ocean Special Area Management (OSAMP) plan, to oversee and manage plans for ocean development, including the Block Island Wind Farm. OSAMP staff collected information on the marine environment – from the benthic community, to historic shipwrecks, to prime fishing ground, and a range of other data – and used that information to avoid and mitigate impacts of the BIWF on human and environmental communities.

Additionally, an institution that oversees and manages a state’s offshore wind development plans might also discern ways in which a proposed offshore wind farm can advance municipal aspirations and objectives. For example, the Block Island Wind eliminated diesel imports to Block Island, and reduced and stabilized electricity rates for residents. Although not every state has a Block Island, state planners might collect information and collaborate with local communities and officials to discern where an offshore wind project can be built to help a community meet particular objectives.

In terms of policy prescription, the Block Island Wind Farm case-study indicates the importance of legislation that recognizes the challenges and tradeoffs associated with offshore wind development, or a particular proposed project, but that explicitly directs the decision process to support offshore wind energy development, or a certain project because of the associated benefits, and in spite of the potential losses. To clarify, this does not mean the decision process has to accept proposed offshore wind projects that will impact marine mammals, seabirds, fishing grounds, or other potential impacts; however, based on the BIWF case study and general knowledge of offshore wind energy development, it appears that every proposed wind farm is likely associated with loss for some.
This is especially likely to be the case given the high, up-front capital costs associated with offshore wind projects. At present in the U.S., for an offshore wind farm to go forward, most likely a project must receive substantial subsidies and / or the decision process must allow for offshore wind developers to secure power purchase agreements (or another pathway to a buyer of the generated electricity), in spite of a procurement price that is potentially higher than the market average. Thus, for a state to meet its objective for offshore wind energy development objectives, decision makers and legislation should recognize the tradeoffs associated with offshore wind energy projects and determine creative ways to support offshore wind energy projects – that have minimal, to no impact on the marine environment and resource users – because of a project’s benefits, and despite the potential losses.

Finally, with respect to policy implementation, the BIWF case brings to light the importance of decision makers engaging in efforts in a timely manner to ensure that prescribed policies for offshore wind energy development are effectively implemented, or modified, as necessary. For instance, had the Rhode Island General Assembly not acted quickly to modify Rhode Island legislation associated with renewable energy development and the Block Island Wind Farm, it most likely would have been difficult for Deepwater Wind to secure a power purchase agreement in 2010, with affects that may have reverberated throughout the decision process and efforts for the Block Island Wind Farm, from the local, to the state level.
Chapter 5  Case Study of New Jersey Offshore Wind Planning and Policy and the Fishermen’s Energy Atlantic City Wind Farm

Figure 11. View of the Atlantic City, New Jersey beach on a summer evening. (McNatt, June 2017)

This dissertation compares the Fishermen’s Energy Atlantic City Wind Farm (FACW) to the Block Island Wind Farm (BIWF) to understand how factors at the state and local levels impact offshore wind development outcomes in the U.S.\textsuperscript{29} The BIWF became the nation’s first offshore wind farm in December 2016, whereas the FACW did not go forward. This study poses the primary research question: Why did one offshore wind farm go forward and the other did not? Both wind farms had similar timelines and project timelines, but dissimilar outcomes. The BIWF and FACW were both proposed in 2008, so therefore began the development process under the same national and global conditions. Second, both projects have a similar capacity factor (between 24 to 30 megawatts), were proposed for state waters (versus federal waters), and for locations in-view from the coastline. These project similarities assisted with a case study comparison by leveling – to some extent – the technical, viewshed,

\textsuperscript{29} It is important to study factors that impact proposed offshore wind projects, as U.S. coastal wind power is a tremendous resource, but the U.S. has just one offshore wind project at present, in contrast to Europe that generated enough electricity to power about 8 million homes from almost 100 offshore wind farms, by the end of 2017. Through this research, I hope to gain insight on why proposed U.S. projects are developed, or not developed from an examination and comparison of the Block Island and Fishermen’s Energy Atlantic City wind farms.
federal regulatory issues, and global context, thereby reducing uncertainty in project findings concerning the impact of state and municipal conditions.

Chapter 5 addresses this project’s main research question based on qualitatively coding and analyzing about 300 documents associated with offshore wind development in New Jersey and/or the FACW, observations, and interviews. Case study data were collected from documents published between 2004 through the end of 2016, where 2004 is the earliest document obtained relevant to New Jersey offshore wind development, and where document data collection ended near the end of 2016 at a point of saturation, or when new data no longer revealed new findings. Chapter 5 incorporates several sections, based on the policy sciences, problem orientation framework (Lasswell, 1971), including: goal clarification, trend description, analysis of conditions, and policy alternatives.

Chapter 5 begins with a description of contextual conditions that one might expect to advance or impede offshore wind project development, and the extent to which those conditions impacted outcomes for the FACW. For example, section 5.1 describes New Jersey’s substantial goals for offshore wind development, and section 5.2 explains that these goals in of themselves did not advance offshore wind energy development in New Jersey, including the FACW. Section 5.3 provides an overview of other

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30 Based on responses to interview requests and participant responses to interview questions, there appeared to be some resistance to discuss the topic of this research. Evidence indicates that this hesitancy may be attributed to the political environment in New Jersey at the time of the interviews. Then-Governor Chris Christie had opposed legislation for the FACW, and decision makers appointed by Christie may have been hesitant to discuss the topic. Further, I sensed that participants, or potential participants may have wanted to discuss the state’s current and future endeavors for offshore wind energy, as opposed to policy and planning efforts from several years ago, to more than 10 years ago. Thus, I found it difficult to secure interviews with decision makers involved in New Jersey’s offshore wind development processes and/or to obtain permission to use data from the interviews. Nonetheless, due to a rich collection of documents, as well as field observations, and data from an interview with the developers of the FACW, this research corroborated findings using available data.

31 The problem orientation framework organizes data collection and helps to ensure that important parts of the problem are not missed. Specifically, the problem orientation framework consists of “five analytical tasks,” which direct the policy analyst to ask certain questions in a particular order (Lasswell, 1971, p. 39 and Clark, 2002, p. 87). The five tasks of problem orientation include discerning: (1) the goals of a community (2) trends, or whether a community is moving toward or away from its goals (3) the social- and decision-making processes affecting whether the community is moving toward or away from its goals (4) projection of developments, or whether the community will reach its goals, given past and present conditions (5) inventing, evaluating, and selecting policy alternatives and recommendations for the community to reach its goals. Close examination of decision-making events and social processes enable an understanding of where improvements can be made (Clark, 2002).
contextual conditions that one might expect to advance or impede project development, including state
goals relevant to offshore wind development, like climate mitigation, New Jersey’s geographic and
meteorological conditions, public opinion levels of offshore wind energy in New Jersey, and the
permitting process for the FACW. Yet, research findings indicated that other contextual conditions had a
greater impact on the FACW than the factors described in sections 5.1 - 5.3. Section 5.4 explains how
policy participants in positions of power, or decision makers, had the greatest impact on outcomes
concerning the proposed FACW, based on research findings. Chapter 5 concludes with a summary of
policy recommendations, or alternatives for offshore wind energy development in New Jersey and other
states with offshore wind development goals.

5.1 Analysis of conditions: New Jersey’s goals for offshore wind development, 2004 – 2021

Interest in offshore wind development in New Jersey – represented largely through New Jersey
governors setting goals and objectives for offshore wind – spans four administrations, from 2004 to
present (May 2018). However, section 5.1 provides an overview of the offshore wind goals of the past
three administrations – the administrations within the bounds of this project’s data collection – including:
Richard Codey (Democrat, 2004 – 2006), Jon Corzine (Democrat, 2006 – 2010), and Chris Christie

Former New Jersey Governor, Richard Codey’s primary policy for offshore wind consisted of
Executive Order #12 that created the Blue Ribbon Panel to “identify and weigh the costs and benefits” of
offshore wind projects prior to construction and to develop state policies for governing the development
of offshore wind facilities (State of New Jersey, 2004). In response to the order, in 2006, the Blue Ribbon
Panel recommended that “New Jersey proceed with a limited test project only, not to exceed 350
megawatts, to obtain practical knowledge of benefits and impacts resulting from offshore wind turbine
facilities” (Blue Ribbon Panel, 2006).

In 2008, former New Jersey Governor, Jon Corzine, set the goals of developing at least 1,000
MW of offshore wind by 2012 and installing at least 3,000 MW of offshore wind by 2020 (New Jersey
Energy Master Plan, 2008). In 2008, the Corzine administration also supported beginning efforts “immediately” with the development of an offshore wind pilot project (New Jersey Energy Master Plan Implementation Strategies, 2008). In 2010, former New Jersey Governor, Chris Christie, asserted that the goal of deploying 1,000 MW of offshore wind by the end of 2012 “was no longer feasible.” The Christie Administration’s 2011 Energy Master Plan set the objective of installing 1,100 MW of offshore wind, in part to meet the state’s renewable energy goal for 2021 (New Jersey Energy Master Plan, 2011). The 2011 Energy Master Plan does not explicitly state a deployment target year for 1,100 MW of offshore wind. However, since the 2011 New Jersey Energy Master Plan states that the 1,100 MW is specifically meant to contribute to New Jersey’s goal of sourcing 22.5% of the state’s electricity from renewables by 2021, this project assumes that the Christie Administration meant for 1,100 MW of offshore wind capacity deployed by 2021 (New Jersey Energy Master Plan, 2011).

Table 23. Summary of former New Jersey governors’ goals for offshore wind development.

<table>
<thead>
<tr>
<th>Administration</th>
<th>Offshore Wind Objective(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Codey (Democrat, 2004 – 2006)</td>
<td>Identify and weigh the costs and benefits of offshore wind projects prior to construction to develop state policies for governing the development of offshore wind facilities; support an offshore wind test project</td>
</tr>
<tr>
<td>Jon Corzine (Democrat, 2006 – 2010)</td>
<td>Develop at least 1,000 MW of offshore wind by 2012 and install at least 3,000 MW of offshore wind by 2020; begin efforts on an offshore wind pilot project “immediately”</td>
</tr>
<tr>
<td>Chris Christie (Republican, 2010 – Jan. 2018)</td>
<td>Meet the Class 1 renewable energy carve-out for offshore wind of 1,100 MW (by 2021)</td>
</tr>
</tbody>
</table>

5.2 The extent to which New Jersey has met its offshore wind objectives

In 2018, there are no wind turbines installed, or under construction on the New Jersey coast. Thus, the 2006 goal established under the Codey administration of identifying and weighing the costs and benefits of offshore wind through the construction of a pilot project was not obtained. The Corzine
administration’s goals, established in 2008, of constructing 1,000 MW of offshore wind by 2012 and the deployment of a pilot project “immediately” were not met either. Evidence also indicates that Corzine’s goal of deploying 3,000 MW of offshore wind by 2020 may not be realized, and Christie’s goal of implementing 1,100 MW of offshore wind by 2021 may not be realized, either. From site planning, to grid connection, to obtaining the necessary permits, and procuring materials, to other tasks, completing an offshore wind project takes substantial time. For example, even in Germany, a country with advanced policy and regulatory processes for offshore wind development, it can take three to four years to complete a project. In France, a country with less advanced offshore wind policy and regulatory processes, it can take seven to nine years to develop an offshore wind farm (Felix, 2018).

5.3 Analysis of other conditions often expected to advance or impede offshore wind development

Section 5.3 includes a description of several contextual factors that are often assumed to advance or impede a proposed wind farm, namely: (1) a state’s geographic and meteorological conditions, (2) state goals relevant to wind energy development, like climate mitigation objectives; (3) public opinion levels of offshore wind energy and proposed projects, and (4) the permitting process for proposed projects. Sections 5.3 explains the extent to which these factors affected outcomes for the FACW, based on empirical evidence.

5.3.1 Geographic and meteorological conditions and New Jersey’s goals relevant to offshore wind energy development

Studies on New Jersey’s geographic and meteorological conditions, as well as New Jersey’s goals relevant to offshore wind energy development, like increasing in-state electricity and reducing the negative impacts associated with fossil fuels, incentivized New Jersey decision makers to maintain interest in, or pursue offshore wind development. A 2004 study sponsored by the New Jersey Board of Public Utilities (NJBPU) found that the “The only real opportunity for significant utility-scale wind development in New Jersey exists in its offshore waters where the wind resources are much stronger and where certain land use conflicts can be avoided” (p. 1). The 2008 New Jersey Energy Master Plan states,
“At present time, off-shore energy offers tremendous potential, while on-shore wind energy resources appear to be limited given the current available technologies” (p. 70). The 2011 New Jersey Energy Master Plan explains, “The development of onshore wind technology in New Jersey has been limited due to existing laws, regulations, and concerns regarding the impact on wildlife … New Jersey’s wind resource map shows low average onshore wind speeds, unsuitable for wind generation, but attractive wind speeds on the coast and offshore” (New Jersey Energy Master Plan, 2008, p. 100).

In addition to the state’s geographic and meteorological characteristics, New Jersey’s renewable energy and environmental goals also provided decision makers with rationale for supporting offshore wind development. In 1999, New Jersey adopted an RPS of generating 6.5% of electricity with renewable sources by 2008 (Institute for Energy Research, 2012). Former New Jersey Governor Codey explicitly supported investigating offshore wind development because of the state’s commitment to renewable energy and reducing negative externalities associated with fossil fuels (State of New Jersey, 2004). In 2006, the Blue Ribbon Panel supported the development of an offshore wind pilot project to address New Jersey’s “serious and growing energy crisis” and for New Jersey to be a leader in developing “clean, renewable sources of energy” (Blue Ribbon Panel, 2006).

The Corzine Administration set the target of generating 30% of New Jersey’s electricity from renewable sources by 2020 – increasing the state’s renewable portfolio standard from 22.5% by 2020 – with the intention of creating an energy infrastructure that was even less carbon intensive and less subject to volatile electricity markets. The 2008 New Jersey Energy Master Plan states that the 30% renewables by 2020 target can be achieved by installing at least 1,000 MW of offshore wind by 2012 and at least 3,000 MW by 2020 (New Jersey Energy Master Plan, 2008). In contrast, the Christie administration supported the goal of generating 22.5% of the state’s electricity from renewables by 2021 and abandoned the target of 1,000 MW of offshore wind by 2012, finding that this goal “was no longer feasible” (New Jersey Energy Master Plan, 2011).
Instead, the Christie Administration included offshore wind in its “carve-out” system for
renewable energy. The 2011 Energy Master Plan states that “Class 1 renewables” such as solar, onshore
and offshore wind, and biomass energy should comprise 20% of the 22.5% sources of renewable energy
by 2021. Among the Class 1 renewables, the administration created a carve-out of “1,100 MW” for
not specify a date for deploying 1,100 MW of offshore wind. However, given that the 1,100 MW of
offshore wind capacity is meant to contribute to the goal of generating 22.5% of the state’s electricity
from renewable power by 2021, this project assumes that the plan meant for 1,100 MW of offshore wind
implementation by 2021. For the Christie Administration, developing offshore wind was perceived as
one means among many to diversify the state’s energy portfolio, so as to reduce dependence on imported
oil, protect the state’s environment, grow the state’s economy, and lower energy prices (New Jersey

<table>
<thead>
<tr>
<th>Administration</th>
<th>Offshore Wind Objective(s)</th>
<th>Renewable Energy Development Objectives</th>
<th>Complementary Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Codey (Democrat, 2004–2006)</td>
<td>Identify and weigh the costs and benefits of offshore wind projects prior to construction and develop state policies for governing the development of offshore wind facilities; support an offshore wind test project</td>
<td>Generate 6.5% of electricity with renewable sources by 2008</td>
<td>Address New Jersey’s “serious and growing energy crisis,” be a leader in clean, renewable sources of energy, learn the unknowns of offshore wind development / have more complete information through “practical application of the technology,” and advance the state’s environmental and economic objectives</td>
</tr>
<tr>
<td>Jon Corzine (Democrat, 2006–2010)</td>
<td>Develop at least 1,000 MW of offshore wind by 2012 and install at least 3,000 MW of</td>
<td>Exceed the state’s renewable portfolio standard of 22.5% by 2020, by meeting 30%</td>
<td>Develop energy infrastructure that was less carbon intensive</td>
</tr>
</tbody>
</table>

Table 24. Summary of former New Jersey administrations’ goals for offshore wind and renewable energy development, and complementary objectives.
offshore wind by 2020; begin efforts “immediately” to deploy a pilot project of the state’s electricity needs from renewable sources by 2020. and less subject to volatile energy markets

| Chris Christie (Republican, 2010 – Jan. 2018) | Meet the Class 1 renewable energy carve-out for offshore wind of 1,100 MW (by 2021) | Meet 22.5% of the state’s electricity requirements from renewable sources by 2021; “Class 1 renewables” such as solar, wind, and biomass should comprise 20% of the 22.5% sources of renewable energy by 2021. | Promote a diverse energy portfolio, or one that would reduce dependence on imported oil, protect the state’s environment, grow the state’s economy, and lower energy prices |

5.3.2 Public support for New Jersey offshore wind development and the FACW

This section discusses three separate studies conducted by the state of New Jersey, the developers of the FACW, and the University of Delaware on public opinion of offshore wind, or the FACW between 2004 and 2013. These studies indicate majority public support for offshore wind energy in New Jersey. Interview data and observations, also described below, substantiate the survey data. In addition to public opinion surveys, section 5.3.2 includes an overview of media, county-, and city-level support for the FACW, and support for New Jersey offshore wind development from the oldest utility in New Jersey, the Public Service Electric & Gas Company (PSEG) – further conveying the widespread support for offshore wind development in New Jersey.

In 2006, New Jersey decision makers commissioned a study on public opinion of offshore wind development in New Jersey because of the economic importance of tourism on the New Jersey shore, and the state’s interest in offshore wind development. In July and August 2006, the Lieberman Research Group conducted about 4,000 interviews of residents and visitors of shore locations of New Jersey to assess public opinion of potential offshore wind turbine projects. The 2006 study found that both residents and visitors are “more in favor of the New Jersey Off Shore Wind Turbine project than opposed
to it,” where 47% are in favor, 21% are opposed, and 32% neither favor or oppose offshore wind turbines (Mills & Rosen, 2006).

In 2009, in preparation for their FACW project, Fishermen’s Energy requested the William J. Hughes Center for Public Policy at The Richard Stockton College of New Jersey to conduct “statistically significant polling” to measure the impact their project on the area’s tourism and residents’ quality of life, and to compare findings to the Lieberman Research Group 2006 study (Shulman & Rivera, 2009). The survey found that “Support for a wind turbine project three miles off the Atlantic City shore is strong among all subgroups and almost 30 percentage points higher than a similar question asked in 2006” (p. 2). Additionally, 66% of respondents believed the project would have a positive impact and more than three-quarters of visitors reported that it would have no effect on whether they would visit the Atlantic City area, and 19% of respondents said they would be a little or a lot more likely to visit the area (Shulman & Rivera, 2009).

Researchers from the University of Delaware conducted a survey titled “Local Community Acceptance of an In-View Offshore Wind Power Demonstration Project,” where the in-view, demonstration project was the Fishermen’s Energy Atlantic City Wind Farm (Bates & Firestone, 2014). Conducting semi-structured interviews in 2012 and a mail survey in 2013 to examine public opinion in and around Atlantic City of the FACW, Bates and Firestone (2014) found that “59% of greater Atlantic City residents support the project, and only 16% are opposed, with a quarter of respondents not having made up their mind” (p. 4). Also, among those who had not formed an opinion, “more than four times as many lean toward support than opposition, so that when those leaning toward support/opposition are combined with those firmly supportive/opposed, we find the Fishermen’s Energy project is supported by 77% of local residents, compared to only 20% opposed, and with 3% remaining undecided” (p. 4).

Interview data confirm the survey data. Tim Axelsson, Project Manager of the FACW stated, “In this case, I would tell a person, who do you work for? Fishermen’s Energy. What do they do? Oh, they’re building those turbines out on the ocean. Oh, that’s cool, when are they going to build those? I think it is
great. There’s not one person I ever spoke to, who said, oh, they got to stop that stuff. Nobody” (Tim Axelsson, personal communication, June 2017). Paul Gallagher, the attorney and Chief Operating Officer for the FACW, stated, “It is a big ocean, we’ll build them where people want them. Atlantic City is a unique place, it always has been. It embraces the unusual, it likes the unique. So, there’s less NIMBYs around to be NIMBYs and there really hasn’t been that kind of opposition” (Paul Gallagher, personal communication, June 2017).

Paul Gallagher brought development experience to the Fishermen’s Energy team, as the Project Manager of the Jersey-Atlantic Wind Farm, used to operate the wastewater treatment plant (Atlantic County Utilities Authority). Gallagher explains, “Atlantic City for over 12 years now has had a wind farm pretty much downtown and it is part of the skyline, it is part of the city, they’ve embraced it, the love it, they’re kind of proud of it” (Paul Gallagher, personal communication, June 2017). Traveling to Atlantic City, New Jersey for observational data, the Jersey-Atlantic Wind Farm was visible from a top-floor of the hotel where I stayed. It appeared to add character to a view that would otherwise by a typical city scene. I observed too, that the industrial landscape of Atlantic City extended to the city’s boardwalk and beaches, including high-rise buildings lining the boardwalk and billboards on the beach itself.

Figure 12. Jersey-Atlantic Wind Farm, visible from the Sheraton hotel. (McNatt, June 2017)
Figure 13. High-rise buildings, visible from the Atlantic City beach. (McNatt, June 2017)

Figure 14. Billboards lining the Atlantic City, New Jersey beach. (McNatt, June 2017)

In addition to the public opinion surveys, interview, and observational data corroborating general public favorability for offshore wind development and the FACW, research also indicates county- and city-level support for the FAWC, a general positive, or neutral framing of the FACW in press articles, and substantial support for offshore wind development from the Public Service Electric and Gas Company (PSEG), New Jersey’s oldest and largest publicly owned utility and one of the largest combined electric and gas companies in the U.S. (PSEG, 2018). In February 2014, Atlantic County, New Jersey submitted
a resolution, entitled, “Resolution Urging the New Jersey Board of Public Utilities to Approve the
Fishermen’s Energy Atlantic City Windfarm Project.” (Subsequent sections explain the New Jersey’s
Board of Public Utilities opposition to the FACW.) The resolution incorporates a list of reasons for
Atlantic County’s support of the project, including, “the creation of new, well-paying jobs,” as “vital to
the economic success of Atlantic County,” that Fishermen’s Energy is a New Jersey developer, and has
secured state and federal permits for construction (County of Atlantic, 2014).

Additionally, Jim Whelan, who served as a state senator for Atlantic County, stated in a Senate
Legislative Oversight Committee meeting in October 2013, “You frequently hear communities or states
say they don’t want it [offshore wind energy]. In Atlantic County, we are more than ready, willing, and
able to accept this … Normally you would think people would want the ocean view, but people are
saying, ‘We want the view of the windmills’” (Committee Meeting, 2013). To substantiate public support
for offshore wind development in the region, Whelan also noted the extensive public interest in the
Jersey-Atlantic Wind Farm, stating, “The Atlantic County Utility Authority actually had so many requests
that they had to set up tours for people who wanted to see it and school classes that wanted to take trips
there” (Committee Meeting, 2013).

Numerous press articles presented a positive, or neutral framing of the FACW and/or New Jersey
offshore wind development, based on headlines, descriptions, and quotes from press articles. A 2008
PressofAtlanticCity.com article, titled, “Coastal wind farm project means jobs, investor tells fishermen,”
includes a range of positive information on offshore wind and the FACW, like the idea that offshore wind
“represents work,” that the FACW will bring jobs to fishermen who are “underemployed,” and lists
investors in the FACW, including the Truexes, who “supply most of the world’s clams for soups and
chowders,” Warren Alexander of Atlantic Shellfish, and others (Degener, 2008). A 2008 article in the
Wall Street Journal titled, “Fish Juice: N.J. Fisherman angling to develop offshore wind,” highlights the
efforts of the Fishermen’s Energy developers, stating, “in spring 2007, the group decided it was time to
stop fighting offshore energy development and get in on the action … if energy production was going to
put some of their trawling grounds off limits, they decided to harvest the winds as well as the seafood” (Ball, 2008). A 2012 article in the *Star-Ledger*, titled, “N.J. could be leader in offshore wind power,” states, “Perhaps the most unusual company pursuing New Jersey’s offshore wind power is Fishermen’s Energy in Cape May. Several of the East Coast’s largest commercial fishing companies have partnered to create the company. No one knows the ocean better than fishermen …” (Asmus, 2012).

Driven by a deep concern to address climate change based on public-facing documents, as well as a new investment opportunity, PSEG – or, a “family of companies” that “distributes electricity and natural gas to more than two million utility customers in New Jersey – strongly supported offshore wind development in New Jersey (Izzo, 2009a). Of the 32 documents coded for PSEG, 100% were coded as “supports” New Jersey offshore wind development. To support offshore wind development, PSEG established a joint venture with Deepwater Wind, for the 350-MW Garden State Offshore Energy (GSOE) project, proposed for about 17 miles off the coast of South New Jersey. In addition to backing the GSOE project, PSEG supported offshore wind development by testifying before federal congressional committees, urging the federal government to support a nationwide RPS, which GSOE believed could minimize costs for renewable energy and offshore wind, by promoting economies of scale (Izzo, 2009a; Izzo, 2009b). PSEG also submitted public comments to the state of New Jersey on its RPS carve-out for offshore wind, stating:

> Offshore wind farms require a large upfront investment and involve considerable commercial and regulatory risk … If the State can help minimize these inherent risks by creating a timely and predictable revenue stream in the form of renewable energy certificates from offshore wind (“ORECs”), it will facilitate construction of enough offshore wind generation to meet the State’s Energy Master Plan (Garden State Offshore Energy, 2010a).

Despite substantial support for offshore wind development from PSEG and others, the decision processes for offshore wind energy development in New Jersey, described in section 5.4, did not realize an offshore wind farm.
5.3.3 State and federal permits obtained for the FACW

In addition to locating FACW in an area of general public support for the project, the developers obtained the necessary federal and state permits to begin construction. In 2015, the U.S. Department of Energy issued a “Finding of No Significant Impact” (FONSI) for the FACW, after conducting an assessment that found that the proposed project “will not significantly affect the quality of the human and natural environment” (U.S. DOE, 2015). Also in December 2015, FAWC received permits from the U.S. Army Corps of Engineers for section 404 of the Clean Water Act on discharge of dredged materials into navigable waters, and for section 408 of the Rivers and Harbors Appropriation Act of 1899 for alteration of a public work if not injurious to the public interest (U.S. EPA, 2017; Leonard & Lee, 2016; Fishermen’s Energy). In May 2011, FACW received the remaining necessary state permits. State permits included a Tidelands License for an electric line easement, a waterfront development license, a water quality certificate, and a Coastal Area Facility Review Act (CAFRA) permit. State permits were reissued in 2016 (Cape May County Herald, 2011; Fishermen’s Energy).

5.3.4 Summary and analysis of how contextual conditions – generally expected to advance or impede wind energy development – impacted the FACW

New Jersey’s goals for offshore wind energy and complementary goals, like the state’s renewable energy and energy security objectives, as well as favorable geographic and meteorological conditions, incentivized New Jersey decision makers to pursue offshore wind energy. Additionally, general support for offshore wind energy development and the FACW – among coastal residents and tourists, public officials from Atlantic County, and PSEG – contributed to a favorable environment in New Jersey for offshore wind energy development and the FACW. Further, evidence indicates that the permitting process itself did not impede development of the FACW.

However, in consideration of the trend that New Jersey did not meet several goals set for offshore wind energy development, including the deployment of a pilot project, it is evident that state goals, wind conditions, public support, and the permitting process did not drive offshore wind energy development
forward in the state. Rather, empirical evidence indicates that decision processes for offshore wind energy development in New Jersey, as described in section 5.4, had a substantial impact on outcomes for offshore wind energy development in New Jersey and the FACW.

5.4 Analysis of conditions: Resources and strategies of policy participants in positions of power

This research found that policy participants with decision-making power had a significant impact on outcomes for the FACW, and offshore wind energy development in New Jersey. This section describes the planning and policy making of the decision makers in New Jersey that especially impacted outcomes, including: (1) former New Jersey Governor, Richard Codey, (2) the Blue Ribbon Panel, (3) former New Jersey Governor, Jon Corzine, (4) the New Jersey Board of Public Utilities, (5) the New Jersey Division of Rate Counsel, (6) the New Jersey Legislature (7) the New Jersey courts, and (8) former New Jersey Governor, Chris Christie.

The policy- and decision-making processes for offshore wind development and the FACW in New Jersey overall, did not align to develop the FACW and achieve the state’s goals for offshore wind energy development, like 1,000 MW by 2012 and 3,000 MW by 2020. To understand why the planning and policy decisions for offshore wind energy in New Jersey did not realize the state’s various objectives for offshore wind energy, it is important to first provide background information on the economics of offshore wind energy development. Offshore wind farms require substantial investment. For example, utility-scale wind farms, or projects greater than 200 MW, generally require investments of more than $1 billion (Musial et al., 2017). For an offshore wind project to go forward, a developer must have a contract with a reliable off-taker – or, a contract with entity, such as a utility company, that is required to purchase the electricity generated from the offshore wind farm. In the U.S., the contract between the developer and the utility company that is required to purchase the electricity from the developer is often referred to as a “power purchase agreement” (PPA).

The high capital cost associated with offshore wind projects is correlated with a higher procurement price for the electricity sold to market, suggesting that offshore wind projects most likely
cannot secure a PPA, or be market competitive with fossil fuels, or other sources of renewable energy, like onshore wind or solar power, without substantial government subsidies. Alternatively, (or, in combination with subsidies) decision makers can implement policies that provide a pathway for a developer to secure a PPA for a proposed project, despite a procurement price that is higher than the market average. European nations with the top offshore wind markets provide evidence of the importance of implementing policies that account for the high costs and procurement prices linked to offshore wind energy development. For example, in Germany, the country with the second largest offshore wind market in 2018, embraced a “supply-push” policy model, where feed-in-tariffs for offshore wind included “bonus amounts for offshore wind” (Portman, 2009). Offshore wind policy in U.K., the country with the largest offshore wind market in 2018, directed energy suppliers to invest in and purchase offshore wind power by issuing “buy-out penalties” when developers did not meet their renewable energy obligations for offshore wind.

Several of New Jersey’s decisions and policies concerning offshore wind energy development – like the notion that offshore wind developers should be economically self sufficient – stood in direct conflict with the economic realities of offshore wind and New Jersey’s goals for offshore wind energy development. Collectively, New Jersey’s planning processes associated with offshore energy development although not “wrong” per se, did not effectively result in the FACW going forward, or New Jersey meeting its offshore wind development objectives. In sum, research findings indicate that the explicit and tacit goals of New Jersey decision makers’ various offshore wind development strategies and policies did not directly support New Jersey’s offshore wind energy development objectives, or development of the FACW.

5.4.1 Resources and strategies of former New Jersey Governor, Richard Codey

In December 2004, Codey issued Executive Order #12 that created a “Blue Ribbon Panel” to “identify and weigh the costs and benefits” of offshore wind development in New Jersey and to “determine if building such facilities is appropriate” (Codey, 2004). Listing concerns and aspirations for
the state of New Jersey, including the potential impact of offshore wind farms on New Jersey’s highly valued marine and coastal environment, but the desire to reduce air pollution and other negative consequences associated with fossil and nuclear fuels, Codey’s Executive Order #12 exhibited tenuous support for offshore wind energy development (Codey, 2004). This tenuous support for offshore wind energy development in New Jersey and the goal of information gathering prior to proceeding – although not an inappropriate policy objective in of itself – set an initial foundation in New Jersey that did not offer strong support for offshore wind energy development; for several years after Codey’s Executive Order #12, decision makers continued to focus on information gathering alone, as opposed to how to best strategize to achieve the state’s offshore wind development goals.

To clarify, it is reasonable for decision makers to seek to understand the tradeoffs associated with offshore wind energy development, prior to pursuing development of the technology. For instance, it is important to know if New Jersey has enough offshore wind resources to make investment in offshore wind projects worthwhile, and how offshore wind development might affect the state and local economies. However, by December 2004, when Codey issued his Executive Order #12, New Jersey decision makers had access to a study that identified many of the costs and benefits of offshore wind energy development. The New Jersey Board of Public Utilities (BPU) had sponsored a study “to investigate the feasibility of utility-scale wind energy development in the waters offshore of New Jersey” that was published in November 2004 (Atlantic Renewable Energy Corporation, 2004).

The 2004 study found that “The only real opportunity for significant utility-scale wind development in New Jersey exists in its offshore waters where the wind resources are much stronger and where certain land use conflicts can be avoided.” The report characterizes offshore wind energy as a “clean and inexhaustible source of energy” that “promotes local economic development” and “energy price stability,” among other benefits. The report also identifies challenges, such as the need for “extensive on- and offshore infrastructure,” and the need to understand site specific and aesthetic impacts. The report also provides abundant information specific to New Jersey, including commercial and
recreational vessel traffic and fishing areas and statistics, and a siting analysis for the Northern, Central, and Southern New Jersey coasts. The NJBPU-sponsored study also covers tasks associated with the offshore wind planning process, like mapping oyster grounds, wrecks and obstructions, fish trap areas, and seafloor geomorphology for project siting, and addressing compliance requirements, such as the Municipal Land Use Act and the Coastal Zone Management Act (Atlantic Renewable Energy Corporation, 2004).

In terms of the economics of offshore wind, the 2004 report explains that the cost of offshore wind energy would be “at the high end or above what the market will bear,” therefore incentives may play a key role for offshore wind development in the short term, until capital costs decrease over time with experience, design, and financing advancements. Further, the 2004 study recommends ongoing collaborative efforts for offshore wind development, including with fishing communities, coastal and public stakeholders, and the appropriate state and federal regulatory agencies to discern how the “co-utilization” of New Jersey’s coastal resources may be “attainable to the benefit of everyone” (Atlantic Renewable Energy Corporation, 2004).

Based on this research, the information in the 2004 NJBPU-sponsored study went largely unutilized for deciding whether (and how) to pursue offshore wind in New Jersey. Former Governor Codey does not mention the study in his Executive Order #12, and the study is cited just once, briefly, in one of the two reports produced by the Blue Ribbon Panel (Blue Ribbon Panel, 2005). Instead, from 2005 through April 2006, the Panel largely focused on information gathering in of itself and covered some of the same topics from the 2004, NJBPU-sponsored study. Further, the Blue Ribbon Panel ultimately did not reach absolute consensus that New Jersey should proceed, or not proceed with offshore wind development and instead emphasized more information gathering, instead of underscoring how to best proceed with offshore wind energy development plans, to reach the state’s offshore wind goals.
5.4.2 Resources and strategies of the Blue Ribbon Panel

In April 2006, the Blue Ribbon Panel produced a final report and policy goal for offshore wind energy development. In their final report, the Blue Ribbon Panel states that New Jersey should move forward with “a limited test [offshore wind] project only, not to exceed 350 megawatts” (Blue Ribbon Panel, 2006). In their 2006 report, the Panel explains that a pilot project would allow the state to gather empirical information on the impacts of an offshore wind farm on New Jersey’s marine environment and economy, helping decision makers decide whether more offshore wind projects were appropriate. However, the Panel’s stated strategies for how to proceed with offshore wind development in New Jersey, at large, appear to conflict with the goal of moving forward with the pilot project.

The Blue Ribbon Panel emphasized gathering more information prior to proceeding with the pilot project, to ensure that the pilot project itself would “not create unacceptable and irreversible harm to the state’s economic interests or wildlife and natural resources.” The Panel clarified that the efforts for the pilot project “must be preceded by scientific baseline studies that collect basic data about the existence, location and nature of New Jersey’s offshore natural resources, in addition to information regarding potential economic impacts of offshore wind” (Blue Ribbon Panel, 2006). To be clear, this research does not argue that the state should not be concerned with mitigating, or avoiding harm to the state’s natural resources and economic interests. Rather, this research reasons that the Panel’s focus on collecting more information prior to proceeding with the pilot project did not bolster, and even appears to conflict with the state’s objective of moving forward with a “limited test project.”

Following the 2006 final Blue Ribbon report and the Panel’s recommendation to understand potential impacts of offshore wind development on the marine environment and economy, the state dedicated time and funding to three baseline data collection studies, including: (1) New Jersey Shore Opinions About Off-Shore Wind Turbines, published in 2006 (2) An Assessment of the Potential Costs and Benefits of Offshore Wind Turbines, published in 2008, and (3) Ocean/Wind Power Ecological Baseline Studies, published in 2010 (Lieberman Research Group, 2006; Global Insight, 2008; and Geo-
Marine, Inc., 2010). This project asserts that the information collected from these three studies was not used or underused, to meet the state’s offshore wind development goals, where “used” is defined as assisting the state with its goals for offshore wind energy, including the pilot project.

This research acknowledges that information gathering in of itself does not compel action – e.g., it is well documented that knowledge of anthropogenic climate change does guarantee that an individual or institution will change behavior to advance climate mitigation. Thus, even though the three studies noted above produced information that suggested favorable conditions for offshore wind development in New Jersey, like public support, this information in of itself cannot compel the state of New Jersey to pursue offshore wind energy. This research also upholds that studies associated with offshore wind energy are useful whether they produce positive or negative information on offshore wind energy development; a study that suggests offshore wind energy, or that a particular proposed project should not be developed is just as valuable as a study that suggests that development of offshore wind energy should proceed.

Nevertheless, New Jersey did set the goal of moving forward with a pilot project and the objective of developing that pilot project in such a way as to mitigate impacts on the environment and the economy. New Jersey’s three baseline studies not only indicated favorable conditions for offshore wind energy development in the state, but also produced information that the state could have potentially used to guide efforts for proceeding with a pilot project, to not only mitigate the pilot project’s impact on the environment and economy, but also in ways that potentially bolstered positive impacts. As a parallel example, although information on anthropogenic climate change cannot compel action, information that suggests ways to address human-caused climate change can potentially be used to advance climate mitigation, or adaptation goals.

For example, the New Jersey study on opinions of offshore wind turbines found that “At 3 miles out, the difference between those in favor of the project (38%) versus opposed to the project (28%) is narrow, but favorability toward the project grows at 6 miles (42% in favor versus 25% opposed), 12 miles
(51% in favor versus 16% opposed)” (Liberman Research Group, 2006). Decision makers could have potentially used this information to create a framework to guide planning efforts for the pilot project. For instance, decision makers could have established that the pilot project should be built at least 6 miles from shore, or that a project 3 miles from shore is acceptable because only 28% are opposed, or other similar policy.

In a similar vein, the 2008 report that assessed the costs and benefits of offshore wind energy for New Jersey states “the results contained in this report show a minimal impact of a wind farm on the economy, compared to not building a wind farm. In cases where the impact of the wind farm is negative, the impacts are small in comparison to the economic output of the area studied. And, in certain cases, the wind farm impact can be positive, creating jobs and adding value to New Jersey.” Further, the report notes that a wind farm located three miles offshore Atlantic County “could have net possible sales impact that run from $474 million … to $155 million in Ocean and Cape May Counties” (Global Insight, 2008). Decision makers could have potentially used this information to build consensus around the development of a pilot project off the coast of Atlantic, Ocean, or Cape May Counties to bolster economic impacts.

It is clear that New Jersey’s three baseline studies were not used, or underutilized to advance and strategize for the pilot project, based on the state’s subsequent offshore wind decision-making processes and policy. In 2010 – and as described in greater detail below – New Jersey passed what became the state’s main policy for offshore wind: the Offshore Wind Economic Development Act (OWEDA). According to the Act, if a proposed offshore wind project demonstrated net economic and environmental benefits for the state, then the proposed offshore wind project qualified to receive renewable energy credits – or, had access to a reliable off-taker. Yet, based on this project’s data analysis, information from the three baseline studies was not referred to, as decision-makers determined whether or not the proposed FACW demonstrated net benefits for the state’s environment, or economy, or qualified to receive renewable energy credits.

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This research acknowledges that one could argue that the information produced from the three baseline studies was not particularly useful for decision makers in terms of meeting, or strategizing for New Jersey’s goal of implementing a pilot project, or for assessing the net economic and environmental benefits of a proposed offshore wind farm. Nevertheless, this research asserts that for a state to meet its offshore energy wind goals, it may be in the state’s interest to conduct studies, or collect information that is highly valuable, or usable for helping to meet offshore wind objectives. As another example, New Jersey dedicated substantial resources (about $4.5 million) to produce a four-volume ecological baseline study. Although the study found that offshore wind projects proposed for the New Jersey coast would not create “unacceptable and irreversible harm” to the state’s wildlife and natural resources, there is no evidence among this project’s research data to suggest that the state’s extensive ecological baseline study was effectively used (or usable) to advance New Jersey’s offshore wind development goals. Even though information and studies cannot compel action, information and studies can potentially be produced to not only look at tradeoffs, or costs and benefits of offshore wind energy development, but also be maximized to understand how to best strategize, or streamline the planning process to meet a state’s offshore wind energy development goals (if it is determined that a state should, in fact, pursue its goals for offshore wind energy).

5.4.3 Resources and strategies of the New Jersey Board of Public Utilities and former New Jersey Governor, Jon Corzine

Following the Blue Ribbon Panel’s efforts, the state granted the New Jersey Board of Public Utilities (BPU) with substantial decision-making power to oversee offshore wind development planning and policy in New Jersey. State law requires the BPU “to ensure safe, adequate, and proper utility services at reasonable rates for customers in New Jersey” (State of New Jersey, 2018). Thus, the Board’s mission, as articulated by state law, conflicts, to an extent with the high capital costs and procurement prices associated with offshore wind projects. Overall, this research found that the Board apparently supported offshore wind energy development, but did not deploy policy mechanisms that sufficiently
aligned to achieve New Jersey’s offshore wind development goals. Collectively, the Board’s policy decisions for offshore wind energy had the implicit goal of promoting “economic self sufficiency” for proposed offshore wind projects, clashing with the costly aspect of offshore wind project development. Further, the Board’s policy decisions for offshore wind energy did not work to reduce uncertainty for project developers or streamline the offshore wind planning process, and in this way, did not advance New Jersey’s goals for offshore wind energy. Research also indicates that although former New Jersey Governor, Jon Corzine, passed substantial policy goals for offshore wind energy development, Corzine did not intervene on the BPU’s decision processes to achieve the offshore wind policy goals set for New Jersey.

Following the Blue Ribbon Panel’s recommendation for a pilot project, the BPU created selection criteria for the developer of the pilot project. Based on this project’s analysis, these criteria created an uncertain, or “un-streamlined” environment for project developers and these criteria did not fully consider the high costs of offshore wind project development. For example, among the criteria provided to potential developers of the pilot project, the BPU states that developers should site their projects within the study area for the Ocean / Wind Power Ecological Baseline Study. However, the study area represents 72 miles of the state’s coastline, and up to 20 nautical miles offshore, and therefore provides minimal siting guidance as to where, exactly, the developer should site a project, given the extensive size of the study area. The Board also notes that the developer must obtain all “State and/or federal permits and/or approvals” through their own efforts, and that failure to do so will result in “the grant award being rescinded without any further obligation, financial or otherwise, on the part of the State.”

The Board also articulates that as the developer engages in efforts for the pilot project, “The State, in its sole discretion, has the right to cancel/rescind the grant award if data collection or analyses conducted through the studies of this award indicate that the construction and/or operation of the offshore wind project would have unacceptable adverse impacts on wildlife, ocean uses, ocean resources, or the environment, economy, or tourism” (New Jersey Board of Public Utilities, 2007a). Although it is
reasonable and important for decision makers to consider an offshore wind project’s economic and environmental impacts and ability to obtain permits, and to cancel projects when appropriate, it does not necessarily follow that state policy should create extensive uncertainty for project developers; for example, instead of completely canceling the pilot project if it is found to impact the economy, or the environment, the state might offer support to relocate the project to minimize impact, or even provide up front information on where a developer might construct a project to reduce impact – especially if a state intends to reach its goals for offshore wind energy. In addition to Board policies instilling an uncertain/un-streamlined offshore wind planning environment, the following paragraphs describe how Board policies did not fully account for the economic parameters of offshore wind project development.

A six-member committee, comprised of two members of the BPU, one member of the New Jersey Department of Environmental Protection, one member of the National Renewable Energy Laboratory (NREL), one member of the New Jersey Commerce Department, and one member of the Governor’s Office evaluated proposals for the developer of the pilot project, and submitted a recommendation to the Board (New Jersey Board of Public Utilities, 2008a). The Committee received five proposals, including proposals from Environmental Technologies, LLC, Fishermen’s Energy of New Jersey, LLC, Garden State Offshore Energy, Occidental Development & Equities, LLC, and Bluewater Wind (New Jersey Board of Public Utilities, 2008b). Although comprised of diverse members, the evaluation committee was charged with using “Board-approved selection criteria” (Evaluation Committee, 2008).

The committee selected Garden State Offshore Energy (GSOE) to develop the state’s pilot project, because of the developer’s purported ability to secure investor funding and sell electricity at the wholesale price. The committee noted that the “GSOE proposal to market electricity as a merchant plant showed the clearest consistency of any proposal with New Jersey’s competitive structure for the generation of electricity” (Evaluation Committee, 2008). In contrast, in their evaluation of Bluewater Wind’s project proposal, the committee notes that the greatest deficiency in Bluewater Wind’s application
was the developers’ recommendation that the New Jersey “have a policy to encourage investor owned utilities to sign long term PPAs [Power Purchase Agreements] to purchase offshore wind power” (Evaluation Committee, 2008).

The evaluation committee’s selection process, following the Board’ criteria, held the implicit goal of supporting offshore energy projects that are economically self-sufficient, an implicit goal that is at odds with the high costs of offshore wind energy. As noted above, the country’s with the top offshore wind markets in 2018, like the U.K. and Germany, advanced their offshore wind objectives by implementing policies that subsidized offshore wind energy, or directed utilities to purchase power from offshore wind farms, despite the higher cost. Although rational for the Board to consider how developers propose to fund projects, how to limit subsidies, and impact on ratepayer rates, evidence suggest that these considerations must be contemplated in tandem to the high costs of offshore wind development, if a pilot project, or offshore wind energy projects are to be realized. The Board did offer a $19 million grant to support the GSOE, pilot project. However, based on this research, this grant did not prove enough to incentive the development of the offshore wind farm – the GSOE project that promised to operate as a merchant plant, or a plant that is funded by investors and sells electricity at the wholesale price, was never constructed. Of note, GSOE proposed to build a 345.6 MW offshore wind “pilot project” that would have likely cost more than $1 billion, given that projects greater than 200 MW generally require investments of more than $1 billion (Evaluation Committee, 2008; Musial et al., 2017).³²

³² Other evidence suggests that during the 2007 to 2008 timeframe, the Board did not support substantial subsidies for offshore wind energy development, or a streamlined process to achieve the goal of a pilot project. For example, concerning the parameters of the pilot project, a developer asked, "Given the challenging economics of offshore wind and the fact that current energy, capacity and REC [Renewable Energy Credit] markets are unlikely to support a project, would the Board consider any additional support, including possible modifications in the RPS scheme, beyond the $19 million subsidy already identified?" In response, the BPU stated, "The solicitation provides for a production incentive grant up to $19 million of which 10% may be used for upfront design and permitting. It is the responsibility of the applicant to estimate and document all other sources of project revenue." Other questions from developers evoked responses with a similar tone. For instance, a developer asked if the State of New Jersey would be partnering with federal permitting agencies to put the pilot project “at the head of the ‘queue’ for action.” The Board responded, “The State does not intend to take a position with respect to the priority of projects pending before MMS” (New Jersey Board of Public Utilities, 2007c).
In 2008, Corzine substantially bolstered New Jersey’s goals for offshore wind energy, setting the goals of 1,000 MW of offshore wind energy by 2012 and 3,000 MW by 2020 (New Jersey Energy Master Plan, 2008). Of note, Corzine set New Jersey on a path for offshore wind energy development different from what the Blue Ribbon Panel had intended. Rather than begin development efforts for one pilot project to obtain a better understanding of the impacts of offshore wind development on the state’s marine environment and economy prior to building out other projects, Corzine supported developing multiple projects at once to meet the goal of 1,000 MW of installed offshore wind capacity by 2012. Specifically, Corzine requested that the Board work with the other companies that submitted responses to the offshore wind, pilot project solicitation, like Bluewater Wind and Fishermen’s Energy (NJEMP Strategies, 2008). Nevertheless, based on this project’s research data, Corzine did not intervene on the Board’s decision processes or establish additional institutional support or policy mechanisms, to ensure that the Board/state effectively advanced the development of multiple projects at once to meet New Jersey’s goal of 1,000 MW of offshore wind energy by 2012.

Prior to describing the Board’s initiatives to support New Jersey’s sizable offshore wind energy goals initiated by Corzine, it is important to explain the tremendous planning efforts that countries with the top offshore wind markets, like Germany and the UK, have undergone to advance offshore wind development. In July 2012, the RenewableUK’s Chief Executive, Maria McCaffery, stated, “It took the UK ten years to go from two wind turbines off the port of Blyth to grow into a sector being admired worldwide” (RenewableUK Press Release, 2012, as cited in Barclay, 2012). Over a period of ten years, the UK utilized specific planning commissions to investigate offshore wind project applications and to identify areas where projects have a strong chance of being granted consent, issued a series of leases for areas of the seabed made available for the development of offshore wind farms, conducted environmental assessments for these sites, and created a regulatory framework for offshore wind development. The UK also introduced a new marine spatial planning system, that included the Marine Management Organisation, to accelerate development and adapt the planning process, as needed, to prevent and
mitigate impacts of offshore wind development on the marine environment. In 2008, the UK Carbon Trust relaxed constraints on where offshore wind farms could be built, to allow offshore wind farms to be built closer to shore to reduce costs (Barclay, 2012). By the end of 2012, from more than ten years of extensive efforts, the UK had about 850 MW of offshore wind capacity connected to the grid (The European Wind Energy Association, 2013).

As noted above, the Board of Public Utilities retained the large majority of authority and oversight to oversee New Jersey’s offshore wind planning and policy efforts for the objective of deploying 1,000 MW of offshore wind capacity by 2012. In contrast to the widespread efforts that the UK initiated to advance its offshore wind energy development objectives, the Board initially focused on one main program to support offshore wind development. In 2008, the Board opened an application for a rebate program to support developers in the construction of a meteorological tower. With the support of the rebate, developers could construct a meteorological tower off the coast of New Jersey – in the area where the developers intended to deploy their proposed projects – to collect wind data for project design and ecological data to be used in the permit application process. The Board further stipulated that the Department of Environmental Protection (DEP) shall have access to the towers, and that the developers should coordinate with DEP and the Minerals Management Service (MMS) to ensure that they would be conducting the appropriate studies to meet the needs of DEP and MMS for wind farm permitting and leasing, and to “expedite and standardize the data collection process” (State of New Jersey, 2008).

While a well-intentioned policy and planning effort, the Board’s rebate program for meteorological towers did not, in effect, advance New Jersey toward its goal of 1,000 MW of offshore wind energy by 2012. The Board approved three applications for a rebate up to $4 million for a meteorological tower, including the applicants: Bluewater Wind, GSOE, and Fishermen’s Energy (State of New Jersey, 2010b). The rebate was reduced to $3 million, as developers proposed a less expensive buoy system, approved by the Board (State of New Jersey, 2011b).
and more environmentally-friendly meteorological buoy system, favored over the tower. The Board staff anticipated the completion of the towers/buoys by 2009 (State of New Jersey, 2008). Yet, Bluewater Wind never deployed a meteorological buoy and GSOE did not deploy its buoy system until November 2012. Fishermen’s Energy deployed its buoy in 2010, about 2.8 miles offshore Atlantic City, New Jersey (State of New Jersey, 2011b).

It is unclear why the Board’s policy for developers to deploy a meteorological buoy to streamline the permitting process was generally unsuccessful. There is some evidence to suggest that GSOE – also known as Deepwater Wind, or developer of the Block Island Wind Farm off the coast of Rhode Island – was more interested in pursuing development efforts in Rhode Island, a state that offered substantial policy support for the Block Island Wind Farm (see Chapter 4). GSOE initially deployed its New Jersey-subsidized buoy system off the coast of Block Island, Rhode Island (State of New Jersey, 2011a). Yet, even without an understanding of the specific the reasons why GSOE / Deepwater Wind delayed deployment of its buoy system off the coast of New Jersey, and why Bluewater Wind never deployed its buoy system, it is clear that, while well intentioned, the Board’s policy for meteorological buoys was not enough to spur offshore wind energy development, suggesting that more extensive and widespread efforts, similar to the UK, are necessary for a state to realize its offshore wind energy goals.

Also of note, the Board’s policy initiatives for offshore wind energy development that followed the rebate program for the meteorological buoys apparently did not take into consideration developers’ efforts to deploy a buoy, including Fishermen’s Energy – the only developer to install a buoy system closer to the timeframe expected by the Board. In other words, the BPU’s ensuing policy and planning decisions for offshore wind energy did not explicitly offer a streamlined evaluation process, or a selection process that preferred the developers that participated in the meteorological buoy rebate program.

In February 2011, the BPU unanimously approved the rules for the New Jersey Offshore Renewable Energy Certificate (OREC) program – a primary component of New Jersey’s Offshore Wind Economic Development Act. The rules established the process for developers to obtain approval from the
Board to qualify for ORECs. For example, developers had to submit applications with a “detailed description of the project, construction plans, financing methods and analysis; proposed OREC pricing methods; a cost-benefit analysis; and operations, maintenance and safety plans.” The rules required that the cost-benefit analysis “demonstrate positive economic and environmental net benefits to the State,” and that applicants demonstrate “sufficient access to capital” and “financial integrity” (New Jersey Board of Public Utilities, 2011).

The OREC program guarantees that qualified applicants will have access to a reliable off-taker, or that electricity providers will be required to buy (and sell to customers) a certain percentage of electricity produced from the offshore wind farm each year (New Jersey Board of Public Utilities, 2011). In May 2011, the Board opened an OWEDA application window (State of New Jersey, 2011c). Fishermen’s Energy was the only developer to apply. Based on document data, the BPU discussed or made decisions concerning the OREC program more than any other topic related to offshore wind between 2004 and 2016. An analysis of the OREC rules provides insight as to why only one developer applied, and why the FACW never qualified for ORECs, despite three applications and substantial efforts.

Table 25. NJ BPU discussions or decisions related to OREC. Based on document data, the BPU discussed or made decisions concerning the OREC program – part of the 2010 Offshore Wind Economic Development Act – more than 50% of the time.

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5.4.4 Resources and strategies of the New Jersey Board of Public Utilities, the New Jersey Division of Rate Counsel, and the New Jersey Courts

This section proceeds with background information on the New Jersey Division of Rate Counsel, including their role in the review of Fishermen’s Energy OWEDA applications. This section also describes offshore wind developers’ comments and inquiries concerning what qualifies as a net positive
economic or environmental benefit, providing insight as to why the cost-benefit analysis test for OREC-qualification did not effectively advance New Jersey’s goals for offshore wind energy development. Following this is an account of how policy participants utilized different parameters and evidence in their cost-benefit analyses, resulting in different opinions for FACW’s OREC-qualification.

As an independent state agency, the Division of Rate Counsel’s mission is to serve as an independent advocate to ensure that utility consumers “receive safe, adequate and proper utility service at affordable rates that are just and nondiscriminatory” (State of New Jersey, Division of the Rate Counsel, 2009). The Counsel submitted testimony on proceedings for Fishermen’s Energy’s OREC applications and commented on the Board’s OREC-policy. In October 2010, the Counsel submitted comments on the proposed rules for the State’s Offshore Wind Economic Development Act. In their comments, the Counsel made clear that the Board should consider the procurement price for offshore wind farms and protect the ratepayer, stating, “Rate Counsel recommends that the Board give particular attention to the rate impacts for any OSW proposal and ensure that in these difficult [economic] times, the negative rate impacts that may be created by these new installations are contained” (State of New Jersey, Division of Rate Counsel, 2010).

More generally, the Counsel recommended stringent qualifications for projects to qualify for ORECs. For instance, the Counsel contends that no project should be approved that has an “estimated rate impact that is likely to be greater than 2.5 percent per year” and that each project be required to “provide an economic impact analysis that provides the total project investment and investment profile for major project capital expenditure categories,” and that the Board “should require strict evaluation of the financial integrity of the parties submitting an OSW proposal” (State of New Jersey, Division of Rate Counsel, 2010). Of note, the Counsel’s recommendations for the OWEDA rules can be considered standard, or to be expected given the nationwide (and global) economic depression at the time and the Rate Counsel’s mission. These comments from the Rate Counsel are included here to provide
background on the Counsel’s values – important contextual information in consideration of the Counsel’s decisions concerning the OREC-application for Fishermen’s Energy.

Additionally, the Counsel noted challenges associated with the qualifying standards for ORECs, like determining the “methods by which OREC values will be established,” given that offshore wind is an emerging industry and “is likely to be comprised of only a handful of players” and the need to adopt rules that clearly defined a “‘qualified project’” (State of New Jersey, Division of Rate Counsel, 2010). Offshore Wind developers, including Fishermen’s Energy, GSOE, Bluewater Wind, and OffshoreMW, LLC commenting on the proposed OWEDA rules mentioned similar concerns. For example, Bluewater Wind stated, “The cost-benefit analyses themselves, if conducted differently by applicants or the Board, will likely end up creating confusion and expending considerable amounts of Board Staff’s time reconciling the analyses with one another. To the maximum extent possible, the regulations should mandate common assumptions of input … to simplify comparisons of projects’ net benefits” (NRG Bluewater Wind, 2010). Similar to Bluewater Wind’s concerns, OffshoreMW, LLC stated, “A comprehensive and uniform approach [to the cost-benefit test and price setting] also better addresses the fact that no single cost-benefit analysis or price proposal is necessarily more accurate than another” (OffshoreMW, LLC, 2010).

Fishermen’s Energy’s and GSOE’s recommendations also drew attention to the many ways in which the cost-benefit analysis qualification could be interpreted and the need for additional transparency. Fishermen’s Energy called for additional factors to be considered in the cost-benefit analysis, like offshore wind energy as a “zero fuel cost” that protects New Jersey from increases in fossil fuel prices and the need to recognize and quantify the environmental benefit of reducing NOx, CO2, SO2, and mercury emissions (Fishermen’s Energy, 2010). In their comments to the Board, GSOE stated, “It is important for developers to be aware of what their proposals will be measured against so they can ascertain whether their projects are viable and/or if they have different market views from those of the Board’s consultant” (Garden State Offshore Energy, 2010b). Collectively, these comments and
recommendations bring to bear issues associated with a cost-benefit-analysis – an analysis process open to interpretation that has the potential to result in conflict instead of consensus, inhibiting development progress. In the end, only one applicant – Fishermen’s Energy – was willing to apply to receive ORECs, perhaps due to the unclear guidelines and uncertain outcomes associated with the extensive OREC-application process.

To clarify, the following paragraphs refer to “FACW” instead of Fishermen’s Energy, for brevity and as is done in Board proceedings. Secondly, “Staff” refers to the “BPU Staff,” as BPU Staff worked on the proceedings for FACW’s OREC application and made recommendations to the Board. Proceedings for FACW’s OREC applications lasted from May 2011 through November 2014. This section reveals how different interpretations of the cost-benefit analysis test for OREC qualification resulted in opposing opinions between Staff and Rate Counsel, and how Staff’s focus on the financial parameters of FACW, as opposed to potential benefits associated with proposed offshore wind farm, kept the project from qualifying for ORECs.

In February 2012, Rate Counsel’s expert recommended that the FACW project be rejected – a recommendation that is to be expected, given FACW’s proposed procurement price at the time. In 2011, FACW projected a procurement price of about 45 cents per kilowatt hour with a 3.5% annual increase (Superior Court of New Jersey, 2015). Based in part on this high procurement price, Counsel found that FACW “did not produce a net economic benefit to New Jersey ratepayers,” and calculated that the project could lead to a loss of 30,000 jobs and $1 billion in net economic output (State of New Jersey, Division of Rate Counsel, 2012). Since Rate Counsel’s approval was required for FACW to qualify for ORECs, FACW submitted a revised OREC application. Due to a series of delays, from FACW reassessing and resubmitting its application several times, to deliberations between the Board and FACW on the turbine manufacturer, to Super Storm Sandy, the Board did not make a determination on the revised application until June 30, 2013. Notably, prior to the Board’s determination on the revised application, in March
2013, FACW submitted new documents to the Board and proposed a substantial decrease in its OREC price.

The Department of Energy (DOE) had granted FACW a $4 million “Phase 1” grant, qualifying FACW as a potential candidate for the U.S. DOE “Phase 2” grant of $47 million. FACW also had the potential to receive the federal Investment Tax Credit (ITC). Collectively, these grants reduced FACW’s project capital costs by about $100 million (State of New Jersey, Board of Public Utilities, 2013).

FACW’s updated application in March 2013 included a projection of about 20 cents per kilowatt hour for the cost of the electricity produced from the wind farm, with a 3.5 annual escalator, based on the reductions in capital costs from the federal subsidies (Superior Court of New Jersey, 2015).

Applying this new information, Rate Counsel found that FACW satisfied the statute’s “net benefits” test. Counsel found that FACW’s OREC price to be at “the low end of other offshore wind proposals” and to be substantially lower than the price originally proposed. Rate Counsel also found that FACW provided ample ratepayer protection from construction costs, decommissioning, and non-performance. Further, Counsel found that FACW’s revised application “provides even greater protections than required by the statute and presents terms as favorable to ratepayers as possible while still allowing the applicant to finance the project through private capital.” Counsel also added that although the project would “cost a substantial amount over time,” FACW’s development stipulations offer a “reasonable, practical and legal way” for the Board to “incentive offshore wind as set forth in OWEDA” (State of New Jersey, New Jersey Division of Rate Counsel, 2013). Thus, from the perspective of the New Jersey Division of Rate Counsel – the state agency that made clear their objective to protect the ratepayer from high and arbitrary electricity prices – FACW’s revised application was OWEDA qualified.

Staff also conducted their own cost-benefit analysis for FACW’s revised OWEDA application – using different standards and parameters than Rate Counsel. Generally, Staff used exceptionally conservative standards to to weigh FACW’s OWEDA application. For example, Staff determined that FACW’s escrow amount of $61 million was insufficient to cover the project’s estimated development and
construction costs, that the escrow amount of $4 million was inadequate to cover decommissioning costs, and that $50,000 was not enough to cover the scope of duties of the Independent Engineering Monitor. Staff also opposed FACW’s stipulation for the possibility to replace its XEMC turbine foundations with Siemens turbines, projecting that the change in turbines would impact project costs (State of New Jersey, Board of Public Utilities, 2013). Using these conservative standards for its cost benefit analysis and others, Staff determined, in contrast to Rate Counsel, that FACW’s revised application was not OWEDA-qualified.

In a rebuttal to Staff’s denial of FACW’s OWEDA application, Rate Counsel states, “Staff’s argument seems to be that the only means of demonstrating financial integrity under the statute would be for an applicant to establish an escrow or other instrument totaling the entire project cost prior to the commencement of construction. This would render project financing virtually impossible for most applicants and is not mandated by the statutory language. It is a tortured reading of the statute that would effectively preclude the development of offshore wind.” In terms of the turbine replacement option, Counsel notes that Siemens alternative is offered “to increase the chances of obtaining U.S. DOE funding” and reflects recommendations from Staff’s consultants, and that FACW has agreed to accept any additional costs if for the Siemens turbines, if necessary (State of New Jersey, New Jersey Division of Rate Counsel, 2013). Further, Counsel states that Boston Pacific – Staff’s expert consultant – found that FACW’s application “demonstrates positive net benefits.” Nevertheless, the Board maintained its initial conclusion that the amended application “does not meet the standards for a qualified offshore wind facility” (State of New Jersey, Board of Public Utilities, 2013). In sum, Rate Counsel’s statements of rebuttal, in addition to more general knowledge of the high, up-front capital costs associated with offshore wind energy development, brings to bear that the Staff’s conservative, fiscal standards used for their cost-benefit analysis does not align to support proposed offshore wind projects, or a state’s offshore wind energy development goals.
The Board denied FACW’s amended application a second time in March 2014, stating that the receipt of federal subsidies, including the U.S. DOE Phase II Grant and ITC were not “credible assumptions to include in the OREC price” – providing additional evidence of the BPU’s conservative measures that conflicted with New Jersey’s goal to advance offshore wind energy development. In April 2014, the Board denied FACW’s motion to reopen the proceedings. In May 2014, FACW filed an appeal with the Appellate Division of the Superior Court of New Jersey. Then, in June 2014, FACW filed a motion to supplement the administrative record and expedite Board findings to reflect FACW’s award of the U.S. DOE Phase II Grant. The Appellate Division of the Superior Court of New Jersey ordered the Board to reopen the proceedings with the supplemental record. FACW also added the unequivocal proposal of $199.17/MWh (or about 20 cents per kWh) and that FACW would assume the risk if Congress did not re-approve the ITC.34 In September 2014, Rate Counsel stated that it would not file a response brief, but would rely upon all previous filings on record.

Upholding conservative, fiscal standards, the Board denied FACW’s application once again in November 2014 on the basis that the OREC price of $199.17/MWh “is only viable if FACW’s project received the complete amount of federal subsidies of $100 million, represented in its March 8, 2013 filing, which included the entire USDOE grant and the ITC.” The Board further asserted that the record does not guarantee that the FACW will actually receive some or all of the federal monies, so “does not address the financial integrity of the project” (State of New Jersey, Board of Public Utilities, 2014). Following the rejection, FACW filed an appeal of the Board’s decision with the Superior Court of New Jersey.

In May 2015, the New Jersey Superior Court upheld the Board’s decision. An analysis of the court’s decision indicates that the court gave deference to the Board’s “expert reports and filed testimony” over FACW’s and Rate Counsel’s expert information and cost-benefit analyses. In their decision, the

34 In December 2015, then-President Barack Obama signed into law the Consolidated Appropriations Act, 2016, extending the investment and production tax credit for wind facilities (Skadden, 2015).
court states, “It is not our role to judge the wisdom of the Board’s decision or second-guess the Board’s findings unless there is no evidence to support them. Having read the entire record, we find there is ample evidence to support the Board’s decision” (Superior Court of New Jersey, 2015). The Superior Court also reviewed Rate Counsel’s arguments in favor of FACW’s application and FACW’s appeal. In their appeal, FACW made the case that the Board’s decision to deny their OWEDA-application “is plainly unreasonable, is arbitrary and capricious.” For instance, FACW points out that the BPU states in its analysis that FACW’s proposed OREC price of 199.17 is contingent upon receipt of both the ITC and the U.S. DOE Phase II grant. However, in an updated application FACW made clear that its OREC Price was 199.17 regardless of its receipt of the federal subsidies (Superior Court of New Jersey, 2015; Pashmen Stein, 2015).

It is beyond the scope of this research to analyze why the New Jersey Superior Court favored the Board’s decision-making process and cost-benefit analysis for FACW’s OWEDA application, over the decision-making process and cost-benefit analysis of the Division of Rate Counsel and FACW. Furthermore, in June 2015, FACW filed an appeal with the Supreme Court of New Jersey, to overturn the Superior Court’s decision, stating in their appeal, “this Court is the last hope to permit New Jersey to be a ‘national leader in the wind power movement’” (Pahsmen Stein & Pearlman & Miranda, 2015). In October 2015, the New Jersey Supreme Court declined FACW’s appeal (Miller, 2015). It is also outside the bounds of this research to investigate why the Supreme Court of New Jersey denied FACW’s appeal. What is of importance is to draw attention to how New Jersey’s institutional structure did not work to support the state’s offshore wind energy development goals.

It is clear that in New Jersey, the Board of Public Utilities was given substantial power and authority to manage planning and policy for offshore wind development. Although the New Jersey Courts also have some decision-making power, the state courts are designed to weigh evidence and not advance a particular state agenda; thus, a state’s judiciary body generally cannot be considered part of a state’s institutional structure deliberately put in place to advance a state’s goals for offshore wind energy.
Thus, this research focuses on the fact that the Board of Public Utilities had substantial power in New Jersey to manage offshore wind development processes and outcomes, based on available evidence. Although the Division of Rate Counsel “is a party to every proceeding before the BPU,” the Board was granted final say in terms of whether or not a developer’s application qualifies for receiving renewable energy certificates, or is provide a pathway to market, necessary for moving forward with project development.

One may determine that it is of importance to understand why the Board used exceptionally conservative standards and measures when weighing FACW’s OWEDA application and why the Board did not defer to, or incorporate Rate Counsel’s findings for FACW’s OWEDA application. However, this research did not reveal why, exactly, the Board continually used conservative standards to weigh FACW’s OWEDA application. Given that the commission is appointed by the governor and approved by the state senate, perhaps the Board’s denial of the FACW application had political underpinnings. Or, perhaps the Board had personal, or other reasons to deny the FACW application, like not preferring the location or believing that the developers could not successfully build out the project. On the other hand, this research asserts that an in-depth understanding as to why the Board denied FACW’s application is unnecessary for addressing this project’s main research question and goal: why did the FACW not go forward and what are the lessons learned, or policy recommendations for states with offshore wind development goals?

On a general level, the Fishermen’s Energy Atlantic City Wind Farm and other proposed wind farms for the New Jersey coast were not developed, in part, because in New Jersey, the Board had extensive authority over offshore wind project development and did not engage in planning efforts that effectively aligned to bolster offshore wind development, from the meteorological rebate program, to promoting policy for offshore wind energy that was grounded in a largely, subjective cost-benefit analysis, and denying FACW’s OWEDA applications. This information in of itself reveals that for a state to meet its goals for offshore wind energy, it may be important for a state to recognize the value of
dispersing decision-making power for planning and policy of offshore wind energy among several institutions, given the extensive planning processes associated with offshore wind energy development. This information also brings to bear the significance of deliberate administrative strategies to encourage offshore wind energy development, including perhaps relaxation of the primacy of conservative fiscal standards, given the high costs correlated with offshore wind energy projects.

5.4.5 Resources and strategies of former New Jersey Governor Chris Christie and the New Jersey Legislature

This section provides an overview of Chris Christie’s and the New Jersey Legislature’s resources and strategies, including their decision processes, to affect offshore wind development outcomes in New Jersey, including the FACW. Although research indicates the significant impact of the BPU on outcomes, the resources and strategies of Christie and the Legislature influenced outcomes for offshore wind energy development and the FACW, with implications and lessons learned for U.S. states with offshore wind energy development goals.

Chris Christie – the New Jersey Governor during the proceedings for FACW’s OWEDA-application – publicly supported offshore wind development for several years. Document analysis indicates that Christie expressed support for offshore wind from 2010 through 2012 publicly at least 17 times, primarily in press releases and in the State’s Energy Master Plan. In August 2010, Christie passed the Offshore Wind Economic Development Act, establishing the offshore wind renewable energy certificate program (OREC) and making financial assistance and tax credits available for businesses that “construct manufacturing, assemblage and water access facilities to support the development of qualified offshore wind projects,” with the goal of advancing the state’s economy, environment, and to “support at least 1,100 megawatts of generation” from qualified offshore wind projects (Press Release, 2010b). In June 2010, Christie signed a Memorandum of Understanding (MOU) with the federal government and other East Coast governors to facilitate federal-state cooperation for commercial wind development on the Outer Continental Shelf (Press Release, 2010a).
However, research indicates that Christie focused on describing and praising the merits of the OWEDA, noting, for instance, that OWEDA provided “a framework for setting offshore wind renewable certificate pricing and for approving applications to facilitate the financing of offshore wind projects.” In June 2011, Christie stated, “I really do believe that New Jersey is going to be the first in the water with an offshore wind project … and I know that President Solomon (of the BPU) and Commissioner Martin (of the BPU) are working hard together to get us to that point” (Press Release, 2011). Document data indicate that two-thirds of Christie’s discussions or decisions for offshore wind were related to public communication of OWEDA. As noted above, OWEDA did not prove successful in spurring offshore wind development in New Jersey, suggesting that it is important for a state governor to not only pass legislation for offshore wind, but also evaluate whether the legislation is proving effective and to take measures to help ensure that the legislation is working as intended. Jeff Tittel of the Sierra Club stated in a 2013 state Senate Legislative Oversight Committee Meeting discussing OWEDA’s progress – in response to a senator noting Christie’s support for OWEDA – “Yes, but there is a difference between, I think, what you say publicly and your beliefs, and making sure that the agencies work … I think even though he may publicly support wind, either the people below him or he himself are too busy with other issues not to push it” (Committee Meeting, 2013).

Table 26. Christie's communication to the public on the Offshore Wind Economic Development Act. As Christie focused on promoting the legislation, OWEDA did not advance the offshore wind industry in New Jersey.

<table>
<thead>
<tr>
<th>Decision-maker</th>
<th>OSW Development</th>
<th>Offshore Wind Economic Development Act</th>
<th>Public Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governor Christie</td>
<td>20</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

The New Jersey Legislature strongly supported offshore wind development, including the FACW. The Legislature signed OWEDA into law in 2010. Further, the Legislature included in the 2010 legislation: “The board may approve … a qualified wind energy project located in territorial waters offshore of a municipality in which casino gaming is authorized, and authorize offshore wind renewable
energy certificates for the project. Any such project shall be a nominal 20 megawatts and no more than 25 megawatts in nameplate capacity …” (New Jersey Legislature, 2010). Based on this legislative language, the Legislature was directing the Board to approve FACW’s OWEDA application, given that it was the only offshore wind project proposed for the state’s territorial waters, offshore a New Jersey municipality – Atlantic City – that authorizes “casino gaming,” with a nameplate capacity between 20 and 25 megawatts.

At a state Senate Legislative Oversight Committee Meeting in January 2013, committee members and invited guests discussed measures to move OWEDA forward. Senator Robert Gordon stated at the opening of the meeting, “Our objective today is to understand what is standing in the way.” However, much of the discussions focused on other topics, from emphasizing the benefits of offshore wind, to New Jersey’s progress in offshore wind compared to other states, public support for wind power in New Jersey, and praising the OWEDA legislation. On the other hand, Senator Gordon drew attention to the many ways in which one could interpret the cost-benefit analysis, stating, “It just strikes me that putting a zero down for environmental impacts and the economic impacts – I just don’t understand the logic of it … And it occurs to me that maybe one of the things that we need to do legislatively is to provide better definition of what our impression of what a benefit is, so that there isn’t quite so much discretion in the analysis.” Tittel of the Sierra Club suggested a dispersal of power, asking, “Does it take the Legislature to set up an independent trust to oversee the offshore wind program, and develop regulations, and take it out of BPU?” (Committee Meeting, 2013).

Several years later, in January 2016, the New Jersey Legislature passed a bill amending the 2010 OWEDA legislation. The legislation required the Board to reopen the OWEDA application window and added that the wind energy project proposed for the waters offshore of a municipality “in which casino gaming is authorized” “shall not be required to prepare and submit a cost-benefit analysis for the project” (Senate, 2015; Offshorewind.biz, 2016). This 2016 legislation effectively acknowledged that the premise for OWEDA – the cost-benefit analysis – was flawed. However, Christie vetoed the legislation the same
month the legislation was passed (Lillian, 2016). In March 2016, the Legislature passed a bill with similar amendments to the 2010 legislation as the January 2016 bill, which Christie also vetoed in May 2016 (Offshorewind.biz, 2016). Reports speculate that Christie shifted positions on a range of issues in 2015, as he contemplated running for the 2016 Republican presidential nomination (Jordan, 2015). Although Christie likely prevented FACW from development in 2016, the decision-processes of those in positions of power impeded offshore wind development and the FACW for ten years prior, a time in which New Jersey governors generally supported, or strongly supported offshore wind development.

5.4.6 Summary of how contextual conditions, including policy participants in positions of power, affected outcomes for the FACW

Beginning in 2004, New Jersey set goals for offshore wind development. Codey established the objective of studying the costs and benefits of offshore wind energy development for the state, the Blue Ribbon Panel determined that New Jersey should move forward with an offshore wind pilot project (and study the impacts of offshore wind development on the economy and marine environment), Corzine established the goals of deploying 1,000 MW of offshore wind capacity by 2012, and 3,000 MW by 2020, and Christie determined a goal of 1,100 MW of offshore wind by 2021. Based on this research, public opinion levels of coastal residents, tourists, municipal officials, and the New Jersey Legislature, as well as the permitting process, New Jersey’s geographic and meteorological conditions, and the state’s other goals relevant to offshore wind development, like advancing energy security and reducing fossil fuel use, were favorable to offshore wind development in New Jersey and/or the Fishermen’s Energy Atlantic City Wind Farm.

However, this research also found that these conditions favorable to offshore wind energy development and the FACW did not result in New Jersey meeting the majority of its offshore wind energy development goals. Although state decision-makers did move forward with studying the costs and benefits of offshore wind energy development on the marine environment and economy, and determined that proposed offshore wind projects would have minimal impact, New Jersey did not deploy a pilot
Looking beyond the contextual conditions that one might expect to advance or impede offshore wind energy development, this research found that a range of policy participants in positions of power, or decision makers, and their resources and strategies affected outcomes for offshore wind development in New Jersey, and the FACW. To clarify, data revealed that decision makers did not oppose offshore wind development per se, but that, collectively, their strategies and policy mechanisms did not align to achieve the state’s goals for offshore wind energy. Based on document data and analysis, decision makers in New Jersey indicated support for offshore wind development and/or the FACW about 55% of the time, were outspokenly against offshore wind development and/or the FACW only about 1.3% of the time, and decision makers’ actions or discussions for offshore wind were neither clearly for or against offshore wind development and/or the FACW about 43% of the time.

Thus, this research found that decision makers’ support and opposition levels with respect to offshore wind development does not in of itself determine outcomes for offshore wind development; rather, decision makers’ resources and strategies, including decision processes, have implications for outcomes. As an example, despite the higher levels of support for offshore wind energy in New Jersey, in contrast to opposition, decision makers’ relevant decisions and strategies impeded progress toward New Jersey’s offshore wind development goals and/or the FACW more times than they advanced progress toward New Jersey’s goals for offshore wind energy, or the development of the FACW.\footnote{This project conservatively coded for “advances” or “impedes” development, where data were only coded as such, if they clearly indicated that a decision served to advance or impede development, such as when the New Jersey Legislature passed a bill for the Board of Public Utilities to reopen the application window for the FACW in 2016 in terms of the former, and when Christie vetoed the bill, in terms of the latter.}
Table 27. Summary of document data on New Jersey decision makers. Decision makers’ discussions and decisions related to offshore wind and/or the FACW indicated support about 55% the time, and were neutral in nature about 43% of the time, and indicated opposition around 1.3% of the time, based on document data.

<table>
<thead>
<tr>
<th>Policy participant</th>
<th>OSW Development/ FACW</th>
<th>Against</th>
<th>Neutral</th>
<th>Supports</th>
<th>Advances Development</th>
<th>Impedes Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision-Maker</td>
<td>148</td>
<td>2</td>
<td>64</td>
<td>82</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>

In terms of decision makers’ resources and strategies relevant to offshore wind development outcomes, from 2004 through 2010, state studies largely focused on understanding the costs and benefits of offshore wind development, or the potential impacts of offshore wind energy development on the state’s marine environment and economy. Although the normative goal of these studies was not wrong per se, focusing efforts on understanding costs and benefits of themselves funnels resources, including time and money, away from determining how to best proceed with, or strategize for the development of offshore wind projects to meet a state’s goals for offshore wind energy. Additionally, evidence from countries with the top offshore wind markets, such as the U.K., indicates that the resources and time needed to plan for and effectively reach offshore wind energy development goals – beyond just knowing potential development impacts – cannot be underestimated.

To be clear, this project does not argue that studies associated with offshore wind development planning are only important if they advance the deployment of a proposed project; studies which indicate that a particular proposed project should not be developed due to potential impacts are just as critical. The point, rather, is to suggest that for a state to meet their offshore wind energy goals, studies for offshore wind energy should be structured to not only understand the costs and benefits of offshore wind energy development, but also structured to advance an understanding of how to achieve a state’s goals for offshore wind energy, including how to mitigate or avoid impacts on the environment and economy.

Beyond New Jersey’s studies on the costs and benefits of offshore wind energy development, decision makers also engaged other strategies to reach New Jersey’s offshore wind development goals. In
New Jersey, the Board of Public Utilities had substantial power and oversight over offshore wind planning and policy. Although the Board publicly supported offshore wind development, the Board’s policies and strategies for offshore wind energy – from offering a relatively small grant for a pilot-scale, offshore wind project, to focusing on the deployment of meteorological buoys, to relying on a cost-benefit analysis to determine the feasibility of proposed offshore wind projects – did not align to advance New Jersey’s goals for offshore wind energy, or the FACW. Additionally, the Board appeared to have the tacit goal of promoting offshore wind energy development to the extent that developers could demonstrate economic self-sufficiency, an objective that conflicts with the high capital costs associated with offshore wind development projects and meeting New Jersey’s goals for offshore wind deployment. The Board, in particular, prevented the proposed Fishermen’s Energy Atlantic City Wind Farm from going forward, by denying the developer’s OREC applications, largely on the basis that the developer, from the Board’s perspective, could not demonstrate financial integrity, in contrast to the Division of Rate Counsel’s analysis.

Additionally, former New Jersey governors that supported offshore wind development and set substantial offshore wind goals, did not strategize to ensure that the Board, or state implemented strategies to effectively reach those goals. For example, instead of enacting legislation that may have given other state institution’s decision-making power and authority over offshore wind planning and policy decisions, or establishing a new institutional structure – similar to the U.K. that created specific planning authorities with a primary mission of overseeing and meeting the nation’s offshore wind development goals – New Jersey governors and decision makers continued to rely on the Board of Public Utilities to oversee development efforts. This further indicates that the state of New Jersey’s institutional structure impacted outcomes for offshore wind development outcomes and the FACW.

To clarify, the New Jersey Legislature, an institution that strongly supported New Jersey’s goals for offshore wind and the FACW, eventually passed legislation in 2016 to limit the decision-making power of the Board over the FACW project. However, by this point, the then Governor of New Jersey,
Chris Christie, no longer publicly supported offshore wind energy development and vetoed the legislation. This suggests that it is also important for decision makers to implement legislation and strategies in a timely manner for a state to meet its goals for offshore wind energy development. In sum, this research found that the FACW project and offshore wind energy development, in general, did not go forward in New Jersey primarily due to: (1) the resources and strategies of policy participants in positions of power, or decision makers, (2) the timing of policy implementation, and (3) New Jersey’s institutional structure for overseeing offshore wind development planning and policy.

5.5 Policy recommendations, or alternatives for New Jersey and other states with offshore wind development goals

The following policy recommendations are primarily based on the Fishermen’s Energy Atlantic City Wind Farm case study, and are relevant to New Jersey and other states with offshore wind energy development objectives. The policy recommendations cover three main topical areas, including planning, policy prescription, and policy implementation. The recommendations are also meant to help ensure that offshore wind development has no, or minimal impact on a state’s marine environment and economy, and advances state and municipal environmental and economic objectives when possible.

In terms of planning, it is recommended that decision makers focus not only on implementing goals for offshore wind energy, but how to strategize to achieve their offshore wind energy development objectives, whether the objective is to deploy a small-scale, 25-MW pilot project, or 3,000 MW of offshore wind capacity. Although understanding potential tradeoffs associated with offshore wind energy development is important, efforts to understand how a project might impact the marine environment or economy should clearly align with efforts to achieve a state’s offshore wind development objectives. For example, those producing the knowledge on how an offshore wind project may impact a local economy, or where an offshore wind farm might be built to mitigate or have no impact on sea birds and marine mammals, might communicate with those implementing offshore wind policy and plans.
Knowledge production in of itself does not equate with advancement toward offshore wind energy goals; however, knowledge production can inform where an offshore wind project should and should not go, helping to streamline the planning process. Further, knowledge production might also seek to understand where offshore wind projects might bolster environmental and economic objectives, from creating underground reefs to increase marine life, to jobs in areas experiencing an economic depression. Given the rigor of offshore wind development planning, based on the evidence from European nations with the top offshore wind markets, it is also recommended that New Jersey and other states with offshore wind development goals establish a specific institution, or several institutions with relevant expertise, time, and resources to oversee knowledge production and its use for policy and planning for offshore wind energy development. Decision makers may also communicate expectations for projects, like the size, or potential location, to project developers, to streamline the planning process.

This project also recommends that decision makers, or institutions with the authority and power to oversee and implement a state’s offshore wind development planning efforts account for the extensive capital costs associated with offshore wind projects, correlated with a high procurement price, in their strategies and policy efforts. For example, decision makers might implement policies that draw on the state’s available resources to offer substantial subsidies for initial offshore wind projects, to help developers cover capital costs and bring down the procurement price. Also, a developer’s other available funding sources, like federal grants and subsidies, should be taken into account, or not dismissed, in a developer’s project proposal.

As an alternative, a state’s offshore wind policy might acknowledge a procurement price for electricity from offshore wind farms that is higher than the market average, but allow developers to secure contracts for renewable energy certificates, or other means to sell electricity from the wind farm, as long as the procurement price is within reason, i.e., 20 cents per kilowatt hour versus 45 cents per kilowatt hour. Additionally, evidence from European nations with top offshore wind markets suggest that policy incentives for offshore wind development, and acceptance of higher procurement prices initially can
allow for the offshore wind market to grow, with increased supply-chain access, investor confidence, and access to low-cost capital, eventually resulting in offshore wind procurement prices that are more-and-more market competitive and require fewer government subsidies, and other government interventions.

Evidence from this case study suggests the importance of timely offshore wind development strategies and policy – e.g., passing legislation that establishes a strong institutional structure to oversee offshore wind development early on in the decision process. This project also recommends that decision makers not only engage in public relations regarding implemented offshore wind development goals and policies, but also engage in efforts to ensure the effective implementation of policies and objectives, and modify, or expire/replace ineffective policies as necessary. Finally, New Jersey’s and other states’ decision processes for offshore wind energy development should also consider balancing the goal of modifying or terminating proposed offshore wind development projects, based on a project’s potential impacts on the economy and the environment, with the goal of providing developers with a reasonable amount of confidence and certainty that the state will support their proposed projects.
Chapter 6  Global and U.S. Context, Cross-Case Comparison, and Policy and Planning Recommendations

As the culminating chapter of this dissertation, Chapter 6 ties together material from previous chapters, and also provides additional contextual information, important for understanding application of case findings. Section 6.1. describes global renewable energy and offshore wind market trends, including declining renewable energy and offshore wind prices. Subsequently, section 6.1 explains reasons for the decline in renewable energy and offshore wind prices, addressing the important question as to whether the U.S. can expect to follow suit. Next, section 6.1 describes U.S. offshore wind policy and planning endeavors. Section 6.2 then explains why it may be important for states with offshore wind energy development goals to create a low-risk financial environment for developers, given the high, up-front capital costs associated with offshore wind projects. In sum, sections 6.1 and 6.2 provides the necessary context for understanding the ways in which this project’s findings and conclusion are relevant to U.S. offshore wind planning and policy efforts, to date.

Section 6.3 describes this study’s primary conclusion – or how a state’s institutional structure and state and municipal decisions-makers’ values, resources, strategies, and decision-making processes are primary drivers of offshore wind development – supported by this project’s research findings and cross-case comparison. Section 6.3 then describes policy and planning recommendations for states with offshore wind development goals, as well as recommendations for offshore wind developers, based primarily on the comparative case studies, but further developed from review and assessment of findings from the scholarly literature and expert reports. Section 6.3 concludes with an overview of how this project’s policy and planning recommendations may apply to current U.S. state and municipal offshore wind development endeavors. Then, section 6.4 explains how this study’s methods and findings are potentially useful for addressing complex problems, namely, climate change mitigation, followed by section 6.5 – the conclusion of the dissertation that summarizes Chapters 1 - 6.
Advancing human dignity and environmental sustainability from the local, to the global through responsible U.S. offshore wind development

The text box at the end of Chapter 1 clarifies that this project considers how decision processes for offshore wind energy development can mitigate or avoid impacts on human dignity and environmental sustainability. Briefly defined here, human dignity can be thought of as one’s ability to obtain certain values, such as physical and psychological well-being, wealth, power, skills, or values that, in turn, allow one to be content, happy, and satisfied. More specifically, this dissertation upholds the notion of a “commonwealth of human dignity” — or, the “rights of many” to access the values that constitute human dignity, and the opposite of despotism, or the “ongoing concentration of values in the hands of a few” (Matteson and Clark, 2011). In terms of environmental sustainability, Clark (2002) states that humans share an interest in the sustainability of the environment, because a “secure natural resource base” is required to obtain human dignity. This research also upholds the environment’s intrinsic value as a reason for preserving the environment.

Renewable energy development, including development of offshore wind projects, restructures spaces of the human and natural environment materially and socially (Huber & McCarthy, 2017). These socio-material shifts in the landscape must be accounted for, in order for offshore wind development projects to advance (or avoid impact on) human dignity and environmental sustainability, from the local, to the global level. Based on this project’s findings and supported by the scholarly literature, a management plan for offshore wind development that upholds collaboration among community groups, developers, decision makers, and researchers, and that considers community and state aspirations, and values local and scientific knowledge, may allow offshore wind planning processes to reduce or avoid impacts on policy participants’ values and the environment. Further, a comprehensive and inclusive process can potentially determine best spaces for ocean development that reduce negative consequences, or even advance positive outcomes for human and environmental communities.

In sum, communities should have a chance to negotiate in the transformation of their landscapes and potentially their livelihoods during the offshore wind development decision-process, as dignity can be lost if wind farms are built arbitrarily, potentially wreaking havoc on a human and environmental communities. Lastly, to preserve the commonwealth of human dignity, this research finds that it is important for decision makers and developers to balance local knowledge, “top-down” science, state and community goals with stakeholder groups’ more personal aspirations, in the process of making offshore wind planning and development decisions.
6.1 Global renewable energy and offshore wind market trends and implications for the U.S.

Broadly, section 6.1 provides relevant contextual information for several purposes. This section begins by describing markets trends for renewable energy on a global scale, including offshore wind, to provide a backdrop for U.S. offshore wind development trends and case study findings. A description of global renewable energy market trends indicates increases in renewable energy and offshore wind deployment worldwide, and a substantial decline in renewable energy and offshore wind prices. The increase in offshore wind deployment in other countries and price reductions clarifies that the U.S. offshore wind market is not a reflection of global conditions. This global backdrop also raises the question as to whether the U.S. will soon follow suit, e.g., see a drop in the procurement price for offshore wind energy and an increase in offshore wind energy deployment. By describing the primary conditions that have fostered reduced offshore wind energy prices in European nations, section 6.1 clarifies that it is not necessarily the case that the U.S. will achieve low offshore wind procurement prices, or growth in the offshore wind market in the near term, simply because other nations have.

6.1.1 Global renewable energy and offshore wind market trends

For a range of reasons – including, policies, investment decisions, technology improvements, competitive procurement, an international base of experienced and active developers, and other factors – market trends show a dramatic decline in energy costs from renewable power sources on a global scale (IRENA, 2018). For example, worldwide, solar photovoltaics (PV) module prices decreased by 80% between 2009 and 2015, and the total installed capacity of solar PV rose from 2-gigawatts (GW) in 2012 to 222 GW by the end of 2015 (IRENA, 2017). More generally, onshore wind, solar PV, geothermal and other renewable energy projects commissioned in 2017 mostly fell within the generation cost range of energy produced from fossil fuels in G20 countries, estimated to be between $0.05 and $0.17/kilowatt-hour (kWh). In 2017, onshore wind was $0.06/kWh, based on the global weighted average cost of
electricity and utility-scale solar PV projects commissioned in 2017 cost $0.10/kWh, based on the global weighted average levelized cost of electricity (LCOE) (IRENA, 2018).\textsuperscript{36}

As a range of factors contribute to renewable energy markets with decreased procurement prices, many countries are adopting auction-based approaches as a primary policy to advance renewable energy deployment. In fact, the number of countries using a renewable energy auction scheme jumped from six in 2005, to at least 67 countries by mid-2016 (IRENA, 2017). Due in part to the potential of renewable energy auctions to contribute to cost-efficient deployment of renewables through a competitive and transparent process – development contracts are allocated to the lowest bidder – auctions are increasing in popularity. Collecting data on auction results and other competitive procurement prices for around 7,000 renewable energy projects, IRENA (2017) found that the auction mechanism is helping to lower renewable energy procurement prices.\textsuperscript{37} For instance, in 2016 and 2017, auction prices for solar PV in several countries including Mexico, Peru, and Saudi Arabia signify a potential LCOE of $0.03/kWh for 2018 and beyond.

\textsuperscript{36} The global weighted average levelized cost of electricity (LCOE) is the ratio of a project’s lifetime costs, such as capital costs, fuel costs, and operation and maintenance costs, to the capital earned from the project’s electricity generation over its lifetime. The project’s lifetime costs and capital from the electricity generation are “discounted back to a common year using a discount rate that reflects the average cost of capital” (p. 4, IRENA, 2018). The global weighted average levelized cost of electricity included in this dissertation are from the IRENA (2018) report on Renewable Power Generation Costs in 2017, which calculates LCOE “using a fixed assumption of a real cost of capital of 7.5%” in China and Organization for Economic Cooperation and Development (OECD) countries, such as Australia, Germany, Canada, and the United States (OECD, 2018), and “10% in the rest of the world, unless explicitly mentioned” (p. 4). All IRENA (2018) LCOE calculations exclude the impact of any financial support.

\textsuperscript{37} Although auctions indicate falling procurement prices, there are substantial concerns with the auction mechanism. For instance, the winning auction bids may be based on “overly favorable assumptions” about future project costs and debt financing – the developer may be taking on risk that turn out to be unmanageable. Additionally, small- to medium-sized companies may exit the market, unable to compete with the bids of larger companies, resulting in less competition for the long term (Fowlie, 2017). Moreover, as also described in section 6.1, IRENA (2017) emphasizes that for countries to realize significant cost reductions, in addition to the auction mechanisms, the right conditions must exist, such as low-cost financing, regulatory and institutional frameworks and tax regimes that are favorable to renewables, and a strong, local civil engineering base.
Relative to other sources of renewable energy, offshore wind energy is in early stages of deployment. Nevertheless, the offshore wind industry is attracting investors, and, like other sources of renewable power, the LCOE and price procurement for offshore wind energy is declining faster than expected. As of 2016, 14,484 MW of offshore wind were deployed across 14 markets, with the five largest markets in the U.K., Germany, China, Denmark, and the Netherlands, respectively (GWEC, 2016). Globally, investments in offshore wind increased by 39% from 2015 to 2016. In Europe, the region with the largest offshore wind market, offshore wind projects alone were responsible for more than half of the investment activity in the renewable energy sector in 2016, reaching USD 14.4 billion (GWEC, 2016).

In terms of the cost of offshore wind energy, the global weighted average LCOE of offshore wind projects commissioned in 2017 was $0.14/kWh (IRENA, 2018). Notably, Musial et al. (2017) state that between 2010 and 2016, estimates indicate that the LCOE dropped by about 32% in the U.K. for offshore wind projects that reached a “final investment decision” (FID).” For clarity, it is important to explicate the differences and relationship between “costs” and “prices.” Costs, as explained by Musial et al. (2017), are the offshore wind developer’s total expenses acquired for planning, installing, operating, and decommissioning (or, taking down) an offshore wind farm – commonly reported as the LCOE. Prices, on the other hand, are the amount at which the developer sells the electricity generated from the offshore wind farm to a purchaser, such as a utility. There is the potential to infer some cost trends from price trends and vice versa (Musial et al., 2017). For instance, an offshore wind project that can sell electricity at a lower price point may have a reduced capital cost, operation and maintenance costs (O&M) and/or expect a higher capacity factor, or an increased rate of electricity generation. The following paragraph describes recent price trends for the offshore wind industry in European nations, brought about by policy

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38 In 1941, the world’s first megawatt onshore wind turbine was built and connected to the power grid in Castleton, Vermont. The U.S. “Solar Heating and Cooling Demonstration Act of 1974” called for the installation of solar heating and cooling units in federal buildings by 1977. In contrast, the first offshore wind farm was constructed off the coast of Denmark in 1991 (Nixon, 2008; Sabas, 2016; 4C Offshore, 2017).

39 About 12.6 MW, or 88% of all offshore wind installations are located off the coast of ten European nations (GWEC, 2017).
decisions, the presence of a supply chain, siting characteristics, the competitive auction mechanism, and other conditions.

As a basis for comparison, the average price for offshore wind projects with a commercial operation date (COD) between 2017 and 2019 is about $200/megawatt-hour (MWh). In contrast, auction strike prices for offshore wind farms with a COD between 2024 – 2025 indicate a price of around $65/MWh. According to Musial et al. (2017), numerous studies and press articles assessing the auction strike prices signify industry confidence that “cost reductions can exceed” the Crown Estate’s and the U.K.’s pronounced LCOE goals of £100/MWh or about $130/MWh by 2020 (Catapult, 2017, as cited in Musial et al., 2017). The Global Wind Energy Council (GWEC, 2016) states that the sudden and dramatic drop in offshore wind electricity prices creates a “remarkable situation” where offshore wind is “suddenly” competitive with onshore wind, with global repercussions – “the stage is now set for a round of larger investments not only in Europe, but also in Asia and North America” (p. 21).

Below is a table summarizing total installed offshore wind capacity by country in 2016, and the offshore wind capacity under construction as of the end of 2016, from the U.S. DOE 2016 Offshore Wind Technologies Report (Musial et al., 2017). Although the figures are from 2016, the table indicates the primary offshore wind markets in Europe, the trend of a growing Asian offshore wind market, and the presence of a market in the U.S.

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40 As a basis for comparison throughout Chapter 6, there are 1,000 kilowatts in 1 megawatt, and 1,000 megawatts in 1 gigawatt.
Table 28. Overview of operating offshore wind capacity and offshore wind capacity under construction. This table indicates a strong European offshore wind market, a growing Asian market, and the presence of an offshore wind market in the U.S. As noted by Musial et al., 2017, totals may not sum because of rounding. Source: 2016 Offshore Wind Technologies Report (Musial et al., 2017).

<table>
<thead>
<tr>
<th></th>
<th>Commissioned (as of end of 2016 [MW])</th>
<th>Under Construction (as of end of 2016)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>5,097</td>
<td>1,966</td>
<td>7,062</td>
</tr>
<tr>
<td>Germany</td>
<td>3,877</td>
<td>1,483</td>
<td>5,360</td>
</tr>
<tr>
<td>China</td>
<td>1,092</td>
<td>1,994</td>
<td>3,086</td>
</tr>
<tr>
<td>Denmark</td>
<td>1,271</td>
<td>0</td>
<td>1,271</td>
</tr>
<tr>
<td>Netherlands</td>
<td>520</td>
<td>600</td>
<td>1,120</td>
</tr>
<tr>
<td>Belgium</td>
<td>712</td>
<td>165</td>
<td>877</td>
</tr>
<tr>
<td>Sweden</td>
<td>202</td>
<td>0</td>
<td>202</td>
</tr>
<tr>
<td>Japan</td>
<td>38</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>United States</td>
<td>30</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Other</td>
<td>75</td>
<td>80</td>
<td>155</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,913</strong></td>
<td><strong>6,300</strong></td>
<td><strong>19,213</strong></td>
</tr>
</tbody>
</table>

Several examples support GWEC’s (2016) projection that “the stage is now set” for larger investments in North America. Near the end of 2016, the U.S. Bureau of Ocean Energy Management (BOEM) awarded the 79,350-acre offshore wind lease area, off the coast of New York, to Statoil, a Norwegian multinational oil and gas company with some offshore wind experience. For the New York lease area, Statoil placed an unprecedented bid of $42.5 million. In May 2016, RES Americas Inc. acquiesced its 160,480-acre offshore wind lease area off the New Jersey coast to the Danish firm, DONG Energy (now, Ørsted). US Wind Inc., an Italian-backed company, acquired the other New Jersey, 183,353-acre offshore wind lease area in March 2016 (BOEM, 2017a & Musial et al., 2017).

In tandem with the increasing presence of well-financed and reputable European offshore wind developers in the U.S., declining offshore wind prices worldwide, and the completion of the U.S.’s first offshore wind farm in 2016, “confidence in the nascent U.S. offshore wind market is increasing” (Musial et al., 2017). Additionally, several U.S. states, namely, Massachusetts, New York, and Maryland, have bolstered existing policies, or created new ones to spur a homegrown offshore wind industry. The February 2018 article in Forbes with the headline, “America’s Offshore Wind Boom is Finally Here:
Which State Will Win the Race to the Top?” captures the positive outlook for the growth of offshore wind in the U.S. (O’Boyle, 2018).

However, as explained below in section 6.1.2, there are reasons to temper expectations for the U.S. to imitate European nations’ low offshore wind procurement prices in the near future. Secondly, it is questionable as to whether future European offshore wind auctions will necessarily replicate the low auction strike prices realized in recent years. For example, the offshore wind projects with low auction strike prices in Denmark, the Borssele 1&2 at $78.5/MWh and the Krieger’s Flak at $53.9/MWh, are not very far from shore, or in very deep water, reducing the projects’ capital expenditures (GWEC 2016). In Germany, three winning bidders did not request any “output subsidy,” promising to deliver offshore wind farms at a zero-market premium. However, because the auction design created a “real option value,” there is no guarantee that these subsidy-free projects will be built. For example, winning bidders’ losses for breaching contract terms are limited, due to Germany’s penalty structure. Bidders can potentially abandon projects at a relatively low cost (a penalty of about 30% of the developer’s bid bond of €100/kW). This penalty structure incentives aggressive bidding, as developers have the “real option” to abandon contracts, if technology or market conditions do not materialize as expected (Huebler, Radov, & Wieshammer, 2017).

In 2018, German lawmakers outlawed bidders from requesting zero support, “to prevent bidders simply competing to lodge the lowest bid” (Knight, 2018). Additionally, the 2017 winning bids in Germany were significantly lower than necessary, and 2018 offshore wind auctions in Germany will be held for areas in the Baltic, instead of the North Sea, so developers will not benefit from the same “scale effect” as in the North Sea (i.e. sharing grid connection with existing offshore wind farms, since there are fewer wind farms in the Baltic Sea wind), and since projects must be completed by 2021 (instead of 2025 for the 2017 bids), developers will not benefit from the same expected technological progress (Huebler, Radov, & Wieshammer, 2017). Thus, depending on project location and changing policies, it is uncertain
as to whether future offshore wind auctions in European nations will necessarily realize strike prices as low as seen in recent years, or even realize the projects proposed at the low auction strike prices.

6.1.2 Expert insights on conditions fostering a decline in renewable energy and offshore wind prices – can the U.S. follow suit?

Based on section 6.1.1, it is clear that the still-nascent state of the U.S. offshore wind industry is not a product of worldwide renewable energy and offshore wind trends; globally, price procurement for renewable energy and offshore wind projects dropped dramatically, and investment in offshore wind energy especially increased from 2015-2016. As offshore wind investor and developer confidence increase on a global scale, evidence indicates that the industry is willing to take on a riskier U.S. market, shown through the presence of Norwegian, Italian, and Danish-backed firms with offshore wind experience investing in the U.S. Additionally, U.S. states are modifying and implementing new policies to spur a homegrown offshore wind industry.

However, even with the “remarkably low,” offshore wind strike prices in Northern European countries, the presence of reputable European developers in the U.S., and increased state support, questions remain concerning the extent to which the U.S. can follow suit, or replicate the European situation which has given rise to a rapidly maturing offshore wind industry in the E.U. As described in detail below, Dunn & Theobalds (2018), Musial et al. (2017), and IRENA (2017) clarify that to achieve low offshore procurement prices in the U.S., a conducive environment for offshore wind development must exist – an environment with strong policy support, financial backing, access to low-cost capital, a supply chain, a clear regulatory environment, and technology to withstand specific geographic conditions.

In other words, there is evidence to indicate that there are numerous reasons to temper expectations for the growth of offshore wind in the U.S. for the near term. In a press article in Wind Power Offshore, renewable energy consultants Dunn and Theobalds (2018), explain:
So wouldn’t the US do well to copy the successes from 15 years of development in Europe? After all, technology such as large-scale wind turbines, subsea cabling, offshore foundations and installation vessels, as well as commercial and finance systems, are all well established in Europe. Unfortunately, it is not that simple. The challenges facing the US market are different.

Dunn and Theobalds specifically note that it is important to consider how the U.S. offshore market at present is vastly different from the European offshore wind market. As of May 2018, the U.S. has less than 0.5 percent of the installed offshore wind capacity of Europe. Since Europe has developed a clear regulatory system and an offshore wind supply chain over time, contracts for offshore wind farms generally include terms for engineering, procurement, construction, and installation (EPCI) – placing much of the financial risk on the contractor and supply chain. Conversely, in the U.S., with no supply chain in place and state-by-state regulations, “there are significant unknowns for each project,” and, in turn, the developer in the U.S. assumes the majority of the project development risk. Dunn & Theobalds also note that for the majority of projects, European developers can use a relatively cost-effective and simple to install monopile foundation, a foundation that may not be suitable for much of the U.S. eastern seaboard (Dunn & Theobalds, 2018).

Musial et al. (2017) express a similar concern to Dunn & Theobalds (2018). They ask, “Can the U.S. offshore wind market replicate the dramatic cost reductions achieved in Europe?” and mention several challenges for the U.S. offshore wind industry. Like Dunn & Theobalds (2018), Musial et al. (2017) refer to the lack of supply chain in the U.S. and the less favorable geographic conditions for turbine installation. Additionally, Musial et al. (2017) note that the cheaper, domestic supply of fossil fuels in the U.S. contribute to less favorable market conditions. Musial et al. (2017) also explain the Jones Act, which requires U.S. flagged vessels to transport merchandise or personnel between two points in U.S. waters, and they also explicate the need to commercialize technologies for U.S. conditions, like systems that can survive hurricanes in the South Atlantic and Gulf of Mexico, but that can still produce
electricity at lower wind speeds, as well as deep-water floating platforms for the Pacific and some areas in the Northeast (Musial et al., 2017).

Based on Dunn & Theobalds (2018) and Musial et al. (2017) it appears that the U.S environment may not be conducive to rapid or widespread deployment of offshore wind projects in 2018, despite European investments in the U.S., global declines in offshore wind price procurement, and U.S. state policy developments. Without an offshore wind supply chain, a clear regulatory environment, technology advancements, and other favorable conditions it appears that low offshore wind procurement prices may remain out of reach in the U.S. A 2017 report from the International Renewable Energy Agency also clarifies the extent which a favorable policy and planning environment is necessary for advancing offshore wind development and reducing procurement prices.

The IRENA (2017) report highlights the notion that the environment influences price procurement stating, “country-specific factors play a major role in individual auction results and must be evaluated with care” (p. 18). Although the market-based auction mechanism, described above, may assist in achieving low prices for offshore wind energy through market competition and “real price discovery,” other factors also play a critical role. IRENA (2017) notes that auction results are also contingent upon: (1) access to finance and country-specific conditions (2) investor’s confidence and the presence of a conducive environment (3) and other policies aimed at supporting renewable energy development. A description of the specific reasons that brought about the remarkably low strike prices for offshore wind power projects in the Netherlands, Denmark, and Germany attest to the notions presented in IRENA (2017), particularly the role of “country specific conditions” and “policies aimed at supporting renewable energy development.”

For example, in 2016, Vattenfall won the right to develop the Kriegers Flak project on the Denmark coast with a bid of about $0.05/kWh ($53.9/MWh) and Dong Energy won the right to develop the Borssele Wind Farm sites off the Netherlands’ cost for about $0.09/kWh (90.5/MWh) (IRENA, 2017; Netherlands Enterprise Agency, 2016). Radov et al. (2016) explain that the auction strike prices in
Denmark and the Netherlands were significantly low, in part because the Dutch and Danish governments or the Transmission System Operators paying for grid connection and transmission costs, and project and site development costs. In April 2017, offshore wind auctions in Germany resulted in three low and unsubsidized winning bids. Subsidized offshore wind projects receive “top-up” payments in months when the wholesale price of electricity is lower than the winning bid (Radov, Carmel, & Koenig, 2016; Huebler et al, 2017).41

Several factors contributed to the low and unsubsidized bids in Germany, including proximity to other projects, which decreases transmission and operation and maintenance costs, the expectation of an 8-MW turbine that will substantially increase electricity generation, and expected high wind speeds (Huebler et al., 2017; Musial et al., 2017). Additionally, similar to Denmark and the Netherlands, the German government assumes much of the up-front financial risk and carries out grid permitting, surveying, and consenting (Musial et al., 2017). Finally, the auction design itself likely fostered unsubsidized bids in Germany. For instance, as noted above, there are relatively low penalties if the offshore wind plant is not built, and the developer has several years before the offshore wind plant is expected to commence operation (p. 1, Huebler et al., 2017).42 In sum, as IRENA (2017) succinctly states, “While increased price competitiveness is a major driver of deployment, understanding the reasons behind the recent low prices is important to better inform policy makers” (p. 24).

To summarize, although the low auction strike prices for wind farms to be developed off the coast of Germany, Denmark, and the Netherlands potentially has positive implications for U.S. states with offshore wind energy development goals – there is some evidence that European developers are willing to take on riskier U.S. offshore wind market – understanding the nuances behind the low auction strike

41 The U.K., Germany, Denmark, and the Netherlands use the “top up” method for subsidizing offshore wind projects that secure the winning bid (Radov, Carmel, & Koenig, 2016; Huebler, Radov, & Wieshammer, 2017).
42 It’s clear that government intervention assists in achieving the low auction strike prices realized in Germany, Denmark, and the Netherlands. However, Musial et. al (2017) explain that even when strike prices are adjusted to account for country-specific conditions/policies, adjusted prices still indicate a “steep decline in price” for European projects with a commercial operation date of 2025 (p. 58).
prices, from policy support, to government intervention, the existence of a European supply chain, access to low-cost capital, and more informs U.S. decision makers and states with offshore wind energy policy goals that additional efforts are likely needed to achieve low offshore wind procurement prices and project deployment in the U.S.

6.1.3 Overview of the U.S. offshore wind policy and planning efforts

Section 6.1.3 provides an overview of some of the U.S. federal and state offshore wind planning and policy developments, to date. The purpose of this section is to provide the necessary background information to conceptualize application of this dissertations’ conclusions, findings, and policy recommendations.

Federal policy overview

In 2009, the Obama Administration finalized regulations for renewable energy development on the outer continental shelf, and in 2010, launched the “Smart from the Start Initiative” for expediting the U.S. offshore wind development process (NewsRoom, 2009; U.S. DOI, 2010). The federal process for offshore wind development entails issuing lease areas in federal waters to offshore wind developers and conducting a preliminary site assessment and stakeholder engagement, to streamline the regulatory and permitting process.\(^{43}\) Additionally, in 2012, the Department of Energy (DOE) launched an offshore program with a goal of catalyzing “regionally diverse public-private partnerships that can rapidly and responsibly deploy demonstration projects in U.S. waters.” DOE selected seven projects to receive funding for the first phase, including the Fishermen’s Energy Atlantic City Wind Farm. Only one demonstration project remained eligible in May 2016 to receive additional DOE funding, as the other projects did not meet required benchmarks (Musial et al., 2017).

\(^{43}\) Federal waters are located 3-200 nautical miles from the U.S. coastline, whereas state waters lie within 1-3 nautical miles from the coast, with some exceptions, namely Texas, with state waters within 0-9 nautical miles from the coast (Musial et al., 2017).
The Obama Administration also set deployment scenarios for offshore wind in 2015 of 3 gigawatts (GW) of offshore wind capacity by 2020, 22 GW by 2030, and 86 GW by 2050 (U.S. DOE, 2015; Musial et al., 2017). The Obama Administration released a *National Offshore Wind Strategy* in 2016, which includes the federal government’s three primary approaches for achieving the nation’s offshore wind goals. One approach calls for “reducing costs and technical risks” through a better understanding of offshore wind speeds and the marine environment, and by advancing technology and supply chain solutions. A second approach emphasizes increasing regulatory certainty through efficiency of environmental reviews and a better understanding of the impact of offshore wind development on human communities that use the marine environment. The third federal strategy for offshore wind calls for researching the costs and benefits of offshore wind, like impacts on the electricity grid, as well as “quantifying and communicating the benefits and costs of offshore wind” (Gilman et al., 2016).

Between 2010 and October 2017, the U.S. Bureau of Ocean Management (BOEM) – the federal agency charged with oversight of renewable energy development on the U.S. Outer Continental Shelf under the Obama Administration – issued 12 commercial leases and one research lease for offshore wind development in federal waters. Leases are issued to the highest bidder and developers are given exclusive site control. BOEM has raised more than $67 million in revenue from the offshore wind lease areas, which have the potential to support nearly 7,000 MW of offshore wind capacity (BOEM, 2017a; Musial et al, 2017). Federal offshore wind lease areas are located off the coast of Massachusetts, Rhode Island/Massachusetts, New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina (BOEM, 2017a). However, in December 2017, the Cape Wind project gave up its federal lease, leaving 11 commercial leases (Cape Cod Times, 2017).

In May 2017, Senators Edward J. Markey (D-Mass) and Sheldon Whitehouse (D-R.I.) introduced the Offshore Wind Act. Under current legislation, offshore wind farms are eligible for either the investment tax credit (ITC) or the production tax credit (PTC), but to be eligible for 100% of the ITC or PTC, construction must begin before January 1, 2017. Due to high capital costs, it is expected that
offshore wind farms would elect to claim the ITC in lieu of the PTC; hence, the Offshore Wind Act would extend the ITC for offshore wind through 2025 (Davis & Maron, 2017).

Under the Trump administration, Interior Secretary, Ryan Zinke announced in January 2018 that “offshore wind will play a big role” in energy plans” (Moore, 2018). Also under the Trump administration, BOEM has drafted guidelines for a “Design Envelope” approach, which if adopted, would provide developers with a degree of flexibility on making project-design decisions at commercially advantageous times (BOEM, 2018). Simultaneous to stated supported for offshore wind development, the Trump Administration is opening a much larger portion of the Outer Continental Shelf to oil and gas exploration, as part of its ‘America First Energy Plan’ (Moore, 2018). Nevertheless, states along the Atlantic and Pacific seaboard have stated their opposition to an increased exploration of oil and gas leases, including vocal opposition from governors from every East Coast state from New Jersey to South Carolina, as well as California and Oregon. Florida is exempted from the oil and gas expansion. Nathan Deal, the current governor of Georgia, is the only Republican of a coastal state yet to oppose or embrace the Trump administration’s plans for oil and gas development (Lempriere, 2017; Bluestein, 2018).

In contrast, many governors and lawmakers in states along the coast or Great Lakes have either vocally supported offshore wind or have not stated opposition to offshore wind energy development. The following paragraphs include a description of the offshore wind resources, as well as some of the offshore wind energy planning and policy endeavors in U.S. coastal and Great Lakes states.

State policy overview

There are viable offshore wind resources in the North Atlantic, South Atlantic, Pacific, Great Lakes, and Gulf of Mexico regions. According to Musial et al. (2017), “Commercial interest in offshore wind leases and the size of the U.S. offshore wind pipeline is still primarily driven by state-level policies that support accelerated project development.” In fact, trends indicate that developers offer higher or lower bids for federal lease areas depending on recent positive or negative state-level offshore wind
development activities. For instance, after Maryland passed the *Maryland Offshore Wind Energy Act of 2013*, the lease areas off the coast of Maryland were auctioned at prices seven times higher than the lease areas off the coast of Rhode Island and Virginia (Musial et al., 2017).44

**States with offshore wind goals and procurement pathways: Massachusetts, New York, New Jersey, and Maryland**

In August 2016, Massachusetts Governor Charlie Baker signed *An Act to Promote Energy Diversity*, which requires state electricity providers to procure 1,600 MW of offshore wind capacity by 2027. The Act also includes a competitive solicitation process that promotes the likelihood of offshore wind developers establishing long-term (15-20 year) offtake agreements. As part of the solicitation process, in June 2017, the Massachusetts Department of Energy Resources coordinated with three states utilities, Eversource, National Grid, and Unitil, to issue a request for proposals (RFP) for 400-800 MW of offshore wind procurement (Mass.gov, 2016; Musial et al., 2017). In contrast to the strong political commitment to offshore wind development at the state level, the Massachusetts High Technology Council urged the Massachusetts Department of Energy Resources to “give the highest priority considerations” to the cost and economic impacts of renewable energy projects on electricity ratepayers, noting the “high cost of doing business in Massachusetts” because of the state’s higher than average electricity costs (High Technology Council, 2017).

44 Based on this project’s comparative case-study analysis, this study asserts that assessing whether a state’s offshore wind policy and planning efforts align for meeting a state’s offshore wind energy development goals, or for supporting proposed offshore wind development projects, requires an understanding of more than apparent conditions relevant to offshore wind energy development. For example, as described in Chapter 5, New Jersey’s policy for the offshore wind energy – the Offshore Wind Economic Development Act – and the state’s goals for offshore wind energy – i.e., 1,000 MW of offshore wind energy by 2012 – did not, in fact, support the state’s offshore wind energy development objectives. Thus, although several states in the Northeast, including Massachusetts, New York, New Jersey, and Maryland emerge as promising for the U.S. offshore wind industry in 2018, because of their substantial goals for offshore wind energy, governor support, and other reasons, as described in section 6.1.3, this project asserts that these circumstances alone do not guarantee the development of proposed projects, or that these states will meet their offshore wind energy development goals.
New York’s *Clean Energy Standard* requires utilities to supply 50% of their electricity from sources with zero carbon emissions by 2030. In 2009, the Long-Island-New York City Offshore Wind Collaborative, consisting of the Long Island Power Authority (LIPA), the City of New York, the New York State Energy Research and Development Authority (NYSERDA), and others, issued a Request for Information (RFI) for creating an offshore wind project about 13 miles off the Rockaway Peninsula, south of Long Island (Con Edison, 2009). New York Governor Andrew Cuomo publicly committed the state to procuring 2,400 MW of offshore wind capacity by 2030 at his state-of-the-state in January 2017. Three weeks later, LIPA and Deepwater Wind – the offshore wind developer that won a federal lease area off the coast of Rhode Island/Massachusetts – reached a 20-year power purchase agreement (PPA) for the 90-MW South Fork project, with plans for commercial operation by 2022. LIPA selected the South Fork Wind Farm as the least cost choice for providing energy to Long Island and because of land restrictions on Long Island. Statoil won the rights to develop the one existing federal offshore wind lease area off the coast of New York in April 2017, with an unprecedented bid of $42.5 million (BOEM, 2017a; Musial et al., 2017). Additionally, NYSERDA recently released a 60-page report, or roadmap to help New York procure 2.4 GW of offshore wind capacity by 2030 and identifies two additional sites off the coast of New York for offshore wind development. The NYSERDA report also includes offshore procurement options for the state to consider, such as fixed Renewable Energy Credits and price adjustments (Richard, 2018). In terms of resistance to offshore wind development in New York, a group of fishing organizations, led by the Fisheries Survival Fund (FSF), filed a suit against BOEM, requesting the court to invalidate the Statoil lease area, on the basis that the lease area violates the National Environmental Policy Act and because BOEM did not consider impacts on fisheries, navigation, and other natural resources prior to issuing the lease. Numerous businesses and organizations have joined the FSF, including the City of New Bedford, Massachusetts, the Garden State Seafood Association, the Long Island Commercial Fishing Association in New York, and others (Lillian, 2017).
Maryland’s Renewable Portfolio Standard (RPS) requires utilities to procure at least 25% of their annual load from renewable technologies by 2020 (House Bill 1106, as cited in Musial et al., 2017). The *Maryland Offshore Wind Act of 2013* includes a RPS carve out of 2.5% for electricity generated from offshore wind beginning in 2017. The Act establishes the Maryland Offshore Wind Business Development Fund and Advisory Committee, and importantly, an Offshore Wind Renewable Energy Credit, or OREC system, which mandates utilities to purchase a certain number of ORECs over the long-term, guaranteeing developers a credible off-taker (Polefka, 2017; Musial et al., 2017). In May 2017, the Maryland Public Service Commission awarded ORECs at $131.93/MWh for 20 years, beginning in 2021 to two offshore wind projects – U.S. Wind, off the coast of Ocean City, Maryland and Skipjack Offshore Energy (developed by Deepwater Wind), located northeast of Ocean City (Delony, 2017; BOEM, 2017a). As a precondition for receiving ORECs, US Wind and Deepwater Wind are required to meet a set of nearly 30 conditions, including creating a minimum of 4,977 direct jobs during the development, construction, and operating phases of the projects, contributing $6 million each to the Maryland Offshore Wind Business Development Fund, using port facilities in the greater Baltimore region and Ocean City for operation and maintenance activities, investing a total of at least $76 million collectively into a steel fabrication plant in Maryland, and investing $39.6 million into Maryland port upgrades (Musial et al., 2017). Regarding resistance to Maryland offshore wind development, in February 2018, the Ocean City Council took a unanimous vote, passing a nonbinding resolution for U.S. Wind and Deepwater Wind to not construct turbines any closer than 26 miles away to avoid turbine visibility from shore, and here have been reports that the city council has no interest in speaking with the developers about the projects (Dwyer, 2018).

The New Jersey RPS requires developers to supply 24.39% of their electricity from renewable sources by 2028. In August 2010, the New Jersey legislature passed the Offshore Wind Economic Development Act, developing the OREC system that Maryland then replicated in 2013. The Act calls for the New Jersey Board of Public Utilities (BPU) to “create a ratepayer-funded OREC that can accelerate
project development” and mandates the development of 1,100 MW of offshore wind capacity that includes a net benefit for the state. The NJBPU is charged with determining whether a project qualifies for receiving ORECs, and rejected the Fishermen’s Energy Atlantic City Wind Farm OREC application several times, a major factor that resulted in the project not going forward. There are two federal lease areas off the coast of New Jersey, owned by the Italian-backed firm, U.S. Wind Inc., and the Danish firm, Ørsted (formally Dong Energy) (Musial et al., 2017). In January 2018, New Jersey Governor Phil Murphy signed an executive order that includes the goal of generating 3,500 MW of offshore wind energy by 2030 and that directs his acting environmental protection commissioner and utilities president to establish a “strategic offshore wind plan” (Raciopoppi & Fallon, 2018).

Rhode Island’s experience with offshore wind energy development

In March 2017, the current Governor of Rhode Island, Gina Raimondo, increased Rhode Island’s goal for renewable energy by ten, for a total of 1,000 MW of clean energy, including offshore wind power (RI Office of Energy Resources, 2017). The state has experience from the installing the Block Island Wind Farm, and has demonstrated substantial state support for offshore wind development. To support the state’s goals for offshore wind energy, Rhode Island leaders developed a management plan not for offshore wind development per se, but for ocean development, at large. The creation of Rhode Island’s ocean management plan included comprehensive, collaborative efforts from the local, to the federal level, which reduced opposition to offshore wind development, among other things, and for these reasons, played a critical role in the development of the Block Island Wind Farm. Further, although Rhode Island’s ocean management plan focused on state waters, the development of the plan allowed Rhode

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45 The extent to which Massachusetts, New York, New Jersey, and Maryland meet their offshore wind energy goals may depend on furthering developing and modifying present offshore wind planning and policy, based on this project’s comparative case-study research. Although state leadership, offshore wind energy goals, and other offshore wind energy policy is important for reaching a state to implement its offshore wind energy objectives, other economic, cultural, and political conditions – like the Massachusetts High Technology Council maintaining a low ratepayer rate, members of the Fisheries Survival Fund preserving their livelihood, Maryland’s statewide economic objectives, and Ocean City’s municipal, cultural ties to the landscape – suggests the need for perhaps even more robust policy and planning efforts.
Island leaders to develop strong relationships with fishermen, the federal government, and their neighboring state, Massachusetts. Based on these relationships, state leaders—instead of the federal government—determined the best areas in federal waters for offshore wind development off the coast of Rhode Island and Massachusetts. In this light, offshore wind projects proposed for federal waters off the coast of Rhode Island (and Massachusetts) are less likely to face a stalled state and federal regulatory process, or opposition from stakeholder groups, such as fishermen, because Rhode Island states leaders worked with fishermen to determine the federal lease areas. In 2017, BOEM approved the developer’s site assessment plans for one of the RI/MA lease areas, allowing the developer (Deepwater Wind) to move forward with site testing and drafting construction and operation plans (BOEM, 2017b; Musial et al., 2017). In sum, Rhode Island’s offshore wind policies and plans for offshore wind energy not entail strong leadership, but they also address many of the political-economic and cultural-political issues of offshore wind development through extensive collaborative efforts.

Other Northeast states

For geographic and political reasons, Maine does not have an environment as conducive to offshore wind development as other Northeast states, at present. Maine has significant offshore wind resources; however, widespread deployment requires floating offshore wind turbines, a technology not yet commercially available (Musial et al., 2017). The Maine state legislature created an offshore wind test site in 2009 for testing floating offshore wind platform designs, located about 5 kilometers south of Monhegan Island and passed a law requiring the state’s Public Utilities Commission to solicit a long-term PPA with an offshore wind pilot project, and for the state to procure at least 5,000 MW of offshore wind capacity by 2030 (Musial et al., 2017). Despite this legislation, in January 2018, Governor Paul LePage of Maine implemented a moratorium on new wind energy projects, including on the coast “while establishing a secretive commission to study how wind turbines affect the state’s tourism economy” (Miller, 2018). Furthermore, in October 2017, coastal residents of St. George, Maine, including
fishermen, voiced their opposition in the form of a petition with more than 300 signatures, to an offshore wind farm proposed for near Monhegan Island (Thurlow, 2017).

New Hampshire has an RPS of producing 24.8% of electricity from renewable energy by 2025 and significant offshore wind resources, but faces similar geographic hurdles as Maine, requiring floating offshore wind platforms for deployment. Political forces for offshore wind are gaining momentum in New Hampshire, as three communities, including Portsmouth, Durham, and Dover signed resolutions in December 2017, asking the current Governor of New Hampshire, Chris Sununu, to request BOEM to form a task force to study the feasibility of offshore wind power in the Gulf of Maine (Houghton, 2017).

Delaware has an RPS that requires utilities to supply 25% of their electricity from renewable sources by 2025. The federal lease area off the coast of Delaware is owned by Deepwater Wind, with plans to construct the Skipjack Offshore Energy Wind Farm, and sell the electricity to Maryland utilities, under Maryland’s OREC system (Musial et al., 2017). Delaware also has some political leadership for offshore wind. In August 2017, Governor John Carey signed an executive order, creating an Offshore Wind Power Working Group to study how the state can participate in offshore wind development, benefit economically and environmentally from offshore wind power, and to offer specific recommendations for how Delaware should move forward with wind power (Delaware.gov). The Working Group delivered a memorandum to the governor in December 2017, and plans to deliver a final report in mid-2018. The December memorandum states that it will not immediately procure (or purchase) energy from the Skipjack Offshore wind project and includes considerations and questions such as “incremental commitments to future projects, instead of large-scale purchases … until the market drives costs lower” and “How should an offshore wind subsidy be paid for?” and “What are the advantages and disadvantages of waiting to act on offshore wind?” (Offshore Wind Working Group, 2017).
**South Atlantic**

In the South Atlantic, Virginia has a voluntary RPS for electricity suppliers to procure 15% of their electricity from renewable power by 2025, with incentives for meeting the 15% goal – including an increased rate of return for meeting the goal with offshore wind energy. The Virginia utility, Dominion Energy, owns the federal commercial lease off the coast of Virginia Beach. The Commonwealth of Virginia, Department of Mines, Minerals, & Energy owns the federal research lease area, also off the coast of Virginia Beach. Dominion Energy received funds from the U.S. DOE to develop and test a turbine configuration that could withstand hurricanes; however, since the developer could not guarantee project completion by 2020, DOE stopped funding for the project. However, Dominion then initiated a contract with Ørsted to continue work on the project (Musial et al., 2017). Politically, 2010 legislation created the Virginia Offshore Wind Development Authority, with the mission of facilitating, coordinating, and supporting development of the offshore wind industry (James Madison University, 2018). Yet, efforts to develop offshore wind energy in Virginia date back to 2007, when the Virginia General Assembly granted $1.5 million to the Virginia Coastal Energy Research Consortium, with almost half going to offshore wind research (Principle Advantage, 2012).

North Carolina potentially has the best offshore wind resources in the South Atlantic region, with an RPS for investor-owned utilities of procuring 12.5% of electricity from renewables by 2021. BOEM identified three federal lease areas off the coast of North Carolina, and auctioned one lease area to Avangrid Renewables, LLC. Avangrid has indicated that its offshore wind project is long-term, and may not be operational until well after 2020 (Musial et al., 2017). In August 2017, 50 elected officials, small businesses, community groups, and environmental organizations sent a letter to the North Carolina Governor, Roy Cooper, urging him to incorporate offshore wind as a significant part of state’s energy plan and to support wind power through “tangible investments and specific targets.” (Environment North Carolina, 2017). In June 2017, Gov. Cooper signed into law an 18-month moratorium on permitting of wind projects (NC Sustainable Energy Association, 2017). A month later, Gov. Cooper issued an
Executive Order #11 for the state to continue exploring options for wind power, despite the permitting moratorium. Opponents of the wind moratorium are concerned that Executive Order No. 11 is meant to ban wind energy projects permanently, through maps that determine areas where wind projects cannot be built (State of North Carolina, 2017; Environment North Carolina, 2017; NC Sustainable Energy Association, 2017).

South Carolina has significant offshore wind resources, but does not have any state level policies to support renewable energy procurement, at present. In November 2015, BOEM issued a Call for Information to gauge interest in commercial leases off the South Carolina coast (Musial et al, 2017). South Carolina established a task force to examine regulatory and permitting “roadblocks” for siting renewable energy projects in state or federal waters and the South Carolina General Assembly appointed a committee to examine offshore wind feasibility, which released a report with 18 recommendations in 2009, including establishing targets for offshore wind, and developing a “marine spatial plan,” among others (South Carolina Sea Grant Consortium, 2010). In 2013, the Mayor of Charleston and the Charleston City Council passed a resolution in support of offshore wind energy, which invites developers and manufacturers “to meet with City public officials to hasten South Carolina’s development of offshore wind energy resources” (City of Charleston, 2013).

With respect to Georgia, a 2010 U.S. DOE study found that offshore wind could supply 6% of the state’s total energy generation (US DOE, NREL, 2010). Companies have shown interest in offshore wind development on the Georgia coast, but have not maintained interest. For instance, the Southern Company found favorable conditions for offshore wind development off the coast of Georgia, based on a two-year study with the Georgia Institute of Technology; however, the company concluded that “costs and the regulatory environment were preclusive” (U.S. DOES, NREL, 2010). In April 2011, Georgia Power submitted an application to BOEM for an Interim Policy Lease for a meteorological tower and/or buoy about 3 to 11 nautical miles off the coast of Tybee Island, Georgia. In April 2014, BOEM published an Environmental Assessment of the lease area for review and comment, but in August 2016, Georgia Power
withdrew its application for the Interim Policy Lease (BOEMd). Additionally, Georgia’s Governor, Nathan Deal is one of a few governors on the Atlantic Coast that have not signed the Memorandum of Understanding, or “Smart from the Start” federal offshore wind initiative to streamline offshore wind development in the state (Sierra Club, 2017).

**Pacific**

The offshore wind resources off the coast of Oregon, California, and Hawaii are substantial. Since the West Coast continental shelf drops sharply, offshore wind development on the Pacific requires floating technology, which is not yet commercially available. Nevertheless, several firms have expressed interest in developing off the California and Hawaii coast, including Trident Winds and Magellan Wind off the coast of California, and Alpha Wind, Progression Wind, and Statoil off the coast of Hawaii. Additionally, BOEM issued a request for developer interest for a site off the coast of Morro Bay, California and has created a task force for exploring offshore development off the coast of Oahu, Hawaii (Musial et al., 2017; Hurley, 2018). The developer, Principle Power, received U.S. DOE funding to implement a small-scale floating wind project off the coast of Coos Bay, Oregon, but the project was cancelled in 2016 (Musial et al., 2016).

There is evidence of political support for renewable energy and offshore wind in the Pacific, especially in California and Hawaii, to date. Governor Jerry Brown of California signed legislation for achieving 50% of the state’s electricity from renewables by 2030, and in 2016, sent a letter to the U.S. Department of the Interior requesting a task force to explore renewable project potential on the California Outer Continental Shelf. Hawaii signed a bill for electricity suppliers to supply 100% of their electricity sales from renewable energy sources by 2045 (Musial et al., 2016). The current Governor of Hawaii, David Ige, stated that Hawaii is open to offshore wind, but will continue to address concerns by working with BOEM (Hurley, 2018).
In 2015, Oregon Governor, Kate Brown created the WindFloat Pacific Offshore Wind Advisory Committee for identifying viable pathways for developing the Principle Power, floating offshore wind test project, while boosting the state’s economy and jobs. However, the advisory committee wrote as part of its summary recommendations “that the Northwest’s historically low-cost electricity would make it difficult for any utility to engage in a (power purchase agreement) with an offshore wind resource.” Additionally, the fishing industry raised concerns that the Principle Power project was proposed for prime fishing territory (Oregon.gov, 2015; Borrud, 2016).

Washington state’s renewable portfolio standard requires all Washington utilities to acquire 15% of electricity from renewable sources by 2020 and offshore wind is eligible for meeting this requirement. There are strong offshore wind resources off the Washington coast and political support (Baker, Huang, Januzzi, & Mansoor, 2014). In December 2014, the current Governor of Washington, Jay Inslee, implemented a goal of producing eight times more electricity from wind power by 2030 (Pailthorp, 2014). However, no offshore wind projects have been proposed and the relatively small population on the Washington coast and the need for infrastructure investments to carry the electricity inland to high population centers remains a key barrier to development (Baker et al., 2014).

Great Lakes

The Great Lakes region has significant offshore wind resource potential and includes Wisconsin, Minnesota, Michigan, Illinois, Indiana, Ohio, Pennsylvania, and New York. Lawmakers in Michigan, Illinois, and New York have drafted legislation for offshore wind development siting and permitting, formed councils for studying offshore wind, and/or issued requests for proposals. However, policy momentum for offshore wind development on the Great Lakes has slowed among these states. In Michigan, state government officials focused on onshore wind instead in 2010, due to declining costs. Moreover, a change in the state’s administrations in 2010, and tensions around a proposal for large-scale $3 to $4 billion project that called for 100 to 200 turbines relatively close to shore that incited strong public opposition is reported to have stymied the Michigan’s offshore wind efforts (Balaskovitz, 2017).
Due to high costs and a weak economy in 2011, the New York Power Authority terminated support for the proposed 150-MW, Great Lakes Offshore Wind Project (DiSavino, 2011).

The Illinois legislature created the Lake Michigan Offshore Wind Energy Advisory Council, which released a report on June 2012 that recommended for “steps be taken” immediately to “reap the benefits” of offshore wind, advised for additional research on offshore wind impacts, and for developers to adequately compensate the state for lakebed leases, among other recommendations (Southeast Evanston Association, 2012). Former Illinois Governor, Pat Quinn signed the Lake Michigan Energy Act, which directed research for areas suitable for development and created an “Offshore Wind Energy Economic Development Task Force” for evaluating economic and policy models for offshore wind (Fortino, 2013). However, this project did not find evidence to indicate that Illinois generally has taken additional steps to pursue offshore wind energy.

At present, the six-turbine, 20.7-MW, Icebreaker Wind project, developed by the Lake Erie Energy Development Corporation and Norway-based investor, Fred. Olsen Renewables, is proposed for about 8 miles north of Cleveland, Ohio. U.S. DOE’s Advanced Demonstration Program provided some funding for the project. Developers anticipate that construction will begin in 2020, pending federal and state approval (Balaskovitz, 2017). The project has received broad support from citizens, organizations, including unions, companies, and legislative representatives, with eight to one in favor of the project, based on about around nine hundred comments. However, absent from the comments are letters of support from well-known environmental groups such as Greenpace and Friends of the Earth, as well as negative comments from some environmental organizations, including the American Bird Conservancy, the World Council for Nature, Save the Eagles International, and others. The Audubon Society has requested more studies and the Sierra Club has requested intervention (Taylor, 2018).
**Gulf of Mexico**

The Gulf of Mexico region includes five states – Texas, Louisiana, Mississippi, Alabama, and the Gulf Coast of Florida – and has a sizeable offshore wind resource potential. In fact, Texas, Louisiana, and Florida comprise three of the four “offshore wind states” with the highest resource potential. At present, there is no development activity in the Gulf of Mexico region (Musial et al., 2017; Musial, Heimiller, Beiter, Scott, & Draxl, 2016). The Gulf offers the advantages of shallow and warm waters, higher accessibility, and close proximity to the oil and gas industry. However, turbines must be manufactured to perform in lower wind speeds and survive hurricanes. An NREL survey that began in July 2017 is assessing the levelized cost of offshore wind energy on the Gulf Coast, analyzing site-specific locations to determine areas promising for development from an economic perspective, and is conducting a job impact analysis (Weibe, 2017).

To date, there has been a general lack of political activity for offshore wind among the Gulf of Mexico states. However, these states have exhibited interest in renewable energy development, especially Texas. Texas leads the nation on onshore wind, with more than 21 GW of installed capacity, producing more electricity from wind than the state’s two nuclear power plants. Several factors contributed to the success of wind energy in Texas, including a deregulated market that allows customers to choose energy sources and strong support from Rick Perry, a former Texas Governor, who in 2005 signed into law a bill for building transmission lines from rural areas to population centers, subsidized via ratepayers’ energy bills (Shapiro, 2017). Recently, Texas started developing more wind farms along the Gulf Coast because of well-timed and steady sea breezes (Handy, 2017). This trend may bode well for future offshore wind development.

Louisiana has a Renewable Energy Pilot Program for investigating the feasibility of a renewable portfolio standard and encourages utilities to acquire or produce energy from renewable sources, like providing a tax credit for installing wind or solar projects (U.S. DOE, 2013). Florida is one of four states with utility-scale electricity generation from solar thermal technologies and renewable energy accounted
for about 2.2% of the state’s utility-scale electricity generation in 2016, largely generated from biomass (U.S. EIA, 2018a). On the other hand, Texas is the leading oil-producing state, Louisiana’s 18 oil refineries are capable of processing one-fifth of the nation’s refining capacity and Louisiana has the only U.S. deep-water port for the largest crude tankers, receiving 2 million barrels per day (U.S. EIA, 2018b; U.S. EIA, 2018c). Thus, Florida and Texas may not be as incentivized to pursue offshore wind, with a strong oil- and gas-based economy and culture. Although a federal law banned oil and gas development off Florida’s west coast, within a 100- to 125- mile buffer zone, Florida is one of the only states on the Atlantic seaboard that has not signed the federal Memorandum of Understanding for streamlining the offshore wind development process (Dlouhy, J., 2018; Casey, 2016).

On the other hand, Texas and Louisiana’s extensive experience in building structures for oil and gas development and the states’ substantial port infrastructure could help jumpstart a local offshore wind industry. For the steel foundations for the Block Island Wind Farm, Deepwater Wind contracted with a company in Louisiana, Gulf Island Fabrication, that has built some of the largest offshore wind platforms globally (Kuffner, 2015).

Summary of state-level planning and policy efforts for offshore wind energy

Many states along the Atlantic and Pacific seaboards, the Great Lakes, and the Gulf of Mexico have offshore wind energy objectives and/or the potential for offshore wind development, with varying levels of offshore wind resources, political and public support, and technical challenges. Several Northeast states, including Massachusetts, New York, New Jersey, and Maryland have set substantial offshore wind objectives, created pathways for developers to secure an off-taker, and have ample offshore wind resources that can be developed with current technology. However, these states are also experiencing some level of opposition, including among fishermen, municipalities, and/or groups interested in lower procurement prices. Rhode Island’s established relationships with a range of stakeholder groups, its ocean management plan, and development experience may assist with meeting the state’s renewable energy development goals. At present, Maine’s governor does not clearly support
offshore wind energy development, and there is some public resistance, as well, to offshore wind energy development; however, there is evidence that the Maine legislature and research institutions support offshore wind energy development. In New Hampshire, there is some community interest in offshore wind development, and Delaware’s creation of an offshore wind working group provide evidence of offshore wind energy planning efforts. Additionally, states on the South Atlantic, Great Lakes, Pacific, and Gulf of Mexico have exhibited varying levels of political and community support for offshore wind energy.

6.2 Why it is important for states with offshore wind energy development goals to create a low-risk financial environment for offshore wind developers

Section 6.2 includes background information on why it is likely important for states with offshore wind development objectives to create a low-risk financial environment for offshore wind energy developers. A low-risk, financial environment for offshore wind development can be thought of as providing a pathway for developers to access “low-cost financing” – important because of the high, up-front capital costs associated with offshore wind projects.

Capital expenditure, or, CapEx, include all costs associated with a proposed offshore wind farm project to its commercial operation date. In part because offshore wind has zero fuel costs, but requires tremendous planning, infrastructure, industry, and labor, CapEx is the largest contributor to the cost of an offshore wind plant over its lifetime (Musial et al., 2017). In 2016, capital expenditures for offshore wind farms ranged from $2,900/kW to $7,500/kW (with the Block Island Wind Farm having a capital expenditure of $7,500/kW). Utility-scale wind farms, or projects greater than 200 MW, generally require investments of more than $1 billion (Musial et al., 2017).

Since planning and constructing an offshore wind farm is expensive and requires access to up-front capital, access to low cost capital can potentially reduce the procurement price for electricity sold from an offshore wind project. A low-risk, financial environment for offshore wind development – e.g., one with effective offshore wind policies and clear support from people in positions of power, among
other things – can potentially prompt access to low cost capital because such policy tends to instill greater confidence in investors, bankers, and other financial institutions to offer attractive loan terms for offshore wind projects, like shielding developers from high interest rates and inflation risks.

In this light, it is important not to “put the cart before the horse,” or plan for low offshore wind procurement prices ahead of effective policy and planning support, especially in consideration of the nascent U.S. offshore wind market. Thus, this dissertation’s conclusions and policy and planning recommendations can be thought of, to an extent, as providing a means for states with offshore wind development goals to create a low-risk, financial environment for offshore wind energy development, so developers might be more likely to access low-cost capital and reduce the procurement price for offshore wind energy sold to market. To be clear, this project also advocates for responsible offshore wind development, where proposed offshore wind projects avoid, or have minimal impact on human and environmental communities.

6.3 Research findings, conclusions, and policy recommendations

Section 6.3 describes this study’s main conclusions, supported by a cross-case comparison and research findings. This section then includes this project’s policy recommendations for states with offshore wind energy development goals, based on conclusions and research findings. Subsequently, this section includes a brief overview of how this project’s policy recommendations may potentially apply to U.S. state and federal offshore wind energy policy and planning endeavors, to date.

6.3.1 This study’s primary conclusions, supported by a cross-case comparison and research findings

This section provides a brief overview of data collection and analysis methods, followed by this study’s primary conclusions, and how the comparative case-study selection, a cross-case comparison, and research findings support the main conclusions. Findings are based on a qualitative assessment of 600 documents associated with the Fishermen’s Energy Atlantic City Wind Farm (FACW) and the Block Island Wind Farm (BIWF), and documents related to the offshore wind planning and policy processes in
New Jersey and Rhode Island. Findings are also derived from relevant stakeholder interviews and observations in Rhode Island and New Jersey.

This project concludes that the following factors are strong and under assessed drivers of U.S. offshore wind project deployment: (1) the values and perspectives of state and municipal decision makers,\(^{46}\) (2) state and municipal decision makers’ resources and strategies, including decision makers’ processes for creating and implementing policies; and (3) state institutional structure. Additionally, the extent to which the offshore wind developer communicates early and often with the state, municipalities, and impacted community groups—and compensates communities and modifies decisions based on those interactions—plays an important role in project deployment; however, developer involvement and communication alone does not guarantee project development. This dissertation’s conclusions are important for states with offshore wind development goals, especially state and municipal decision makers, as it draws attention to the extent of their impact on development outcomes, as well as offshore wind energy developers in the U.S.

To clarify, this research acknowledges that other conditions and circumstances assist or impede offshore wind project deployment. For instance, the cost and technical parameters of a proposed project, the developer’s access to capital, public support or opposition levels, federal regulations and strategies, state electricity markets, available funding, global offshore wind market conditions, culture, and other factors impact offshore wind development outcomes. Nevertheless, this research indicates that the values, perspectives, resources, strategies, and policy-making processes of state and municipal decision-makers, the state’s institutional structure, and developer collaboration with the state and community are among the strongest drivers of outcomes for proposed U.S. offshore wind power projects. This project arrived at this conclusion because research data and findings indicate that certain factors were either largely irrelevant to

\(^{46}\) This project recognizes that even if many state decision makers support offshore wind energy development, if the governor opposes offshore wind energy, then it may be very difficult, if not impossible to successfully implement a proposed offshore wind project. However, research findings also suggest that governor support does not guarantee project success, drawing attention to a state’s offshore wind planning processes at large.
development outcomes for the FACW and BIWF, i.e., there was no substantial public opposition to the FACW, yet the project did not go forward, or because data and findings indicate that state institutional structure, state and municipal decision makers’ views, strategies, resources, and policy-making processes affect other conditions and circumstances. For instance, a state’s policy-making process can assist with a developer’s access to investor financing, reduce a project’s capital expenditures, and mitigate opposition, or decision-making processes can reduce investor confidence, increase capital expenditures, and allow for opposition to impede a project.

Case-study structure supports this study’s conclusions. This dissertation’s main research inquiry asks why some proposed offshore wind projects go forward in the U.S., and others do not, with a focus on how state and municipal factors influence outcomes for proposed offshore wind projects. Comparing the Block Island Wind Farm to the Fishermen’s Energy Atlantic City Wind Farm – wind farms with similar timelines and technical parameters, but dissimilar outcomes – assisted with investigating this project’s main research inquiry. The BIWF became the nation’s first offshore wind farm in December 2016, whereas the FACW did not go forward.

The BIWF and FACW were both proposed in 2008, so therefore began the development process under the same federal regulations for offshore wind, national and global economic conditions, and other factors external to the state- and local-environments. This characteristic of the case studies assisted with focusing on the impact of state and local conditions on offshore wind development outcomes. Second, both projects have a similar capacity factor (between 24 to 30 megawatts), were proposed for state waters (versus federal waters), and for locations in-view from the coastline. These project similarities assisted with a case study comparison by leveling technical, viewshed, and regulatory issues to some extent, therefore reducing uncertainty in project findings. For instance, because both the BIWF and FACW could be seen from the coastline, it reduces the uncertainty that the BIWF went forward mostly because it was out of sight and the FACW was in site. This reasoning also applies to project size and regulations – i.e., the case study parameters reduce the uncertainty that the BIWF was developed because it was larger
and achieved economies of scale, or the FACW did not go forward because it was proposed for federal waters.

This project recognizes that the technical and siting conditions for the FACW and BIWF are not exact. The developers had different project costs and contracted with different turbine manufacturers, the capacity factor is not the same due to varying wind speeds and a 24 versus a 30 MW project. One project was proposed for the coast of an island and the other project was proposed for the mainland, with differing market conditions, among other distinctions. Nevertheless, even after accounting for project differences, this research maintains that state institutional structure and the values, perspectives, resources, strategies, and policy-making processes of state and municipal decision makers were the primary drivers of development outcomes for the FACW and BIWF.

This project’s conclusions are supported by an assessment of the extent to which other contextual factors impacted outcomes – including geographic and meteorological conditions, public opinion levels, state electricity markets, and the technical and environmental siting differences between the FACW and BIWF. Concerning geographic and meteorological conditions, both New Jersey and Rhode Island have substantial offshore wind resources, but a lack of available land space for large-scale onshore wind energy development. In other words, it was not that the FACW did not go forward, because New Jersey did not have substantial offshore wind resources, or because New Jersey could realize its renewable energy goals from onshore wind power. Further, the biophysical and other environmental siting conditions for the FACW did not deter the project, as the project received all environmental and siting permits to begin construction.

With regard to public opinion, research indicates that public opposition did not deter the FACW. Rather, evidence indicates majority public support for New Jersey offshore wind development, including the FACW. In contrast, the BIWF faced substantial public opposition, yet, the project was deployed. For instance, islanders opposed the BIWF because of its effects on the island view, the perception of Deepwater Wind as an outsider that was taking advantage of the islanders, and the perception that Block
Island could increase renewable energy generation through other means. Residents and the town council of Narragansett, a municipality on the Rhode Island mainland out of sight of the wind farm, opposed the BIWF because of the cable landfall on local beaches.

In terms of market conditions, the BIWF was attractive to some because of its potential to stabilize and reduce electricity prices on Block Island. However, a group of Rhode Island mainlanders and several corporations opposed the BIWF because it would result in above-market electricity rates of more than $370 million over a period of 20 years. Two corporations filed a lawsuit against the Rhode Island Public Utilities Commission’s approval of a power purchase agreement between Deepwater Wind and the local utility, National Grid, in part because of the increase on electricity rates. In sum, the BIWF was not a “shoe in” because of its positive impacts on Block Islanders’ utility bills. Rather, a deliberative state and municipal decision-making process, and the values, perspectives, resources, and strategies of decision makers propelled the BIWF forward, as opposed to Block Island electricity market conditions alone.

The FACW faced different market conditions than the Block Island Wind Farm – the developers didn’t have a “Block Island.” Instead, the developers of the FACW focused on means to reduce the wind farm’s procurement price, which they did in part by becoming eligible to receive funding from the U.S. Department of Energy. After the developers of the FACW achieved price reduction, the New Jersey Division of Rate Counsel, a state agency charged with protecting the New Jersey ratepayer, approved FACW’s procurement price and the project’s eligibility to receive offshore wind renewable energy certificates (ORECs) that would provide the project with market access.

Yet, the New Board of Public Utilities (BPU) – the state agency with substantial decision-making power in New Jersey for offshore wind – rejected the FACW’s application for ORECs three times, on the basis that the developers could not prove financial integrity and guarantee their stated procurement price without government subsidies, and other financially-conservative arguments. The scenario of the differing Division of Rate Counsel and BPU perspectives clarifies the role of decision makers’ values,
institutional-structure, and decision-making processes on outcomes for the FACW, as opposed to market conditions alone.

In terms of the technical and siting parameters of the FACW and the BIWF, evidence indicates that state decision makers’ offshore wind planning processes played a greater role in project outcomes than the technical and siting parameters in of themselves. First, in 2006, the state of New Jersey supported the development of a pilot, offshore wind project, and the 24-MW, Fishermen’s Energy wind project, proposed in 2008 for the coast of New Jersey could have potentially assisted New Jersey in achieving its goal of deploying a pilot project. Further, the BPU accepted the Fishermen Energy’s’ application for a buoy device to measure wind speeds and environment conditional at the FACW project site. However, the state’s primary policy for offshore wind development in 2010, the Offshore Wind Economic Act, directed the BPU to use a “cost-benefit analysis” to determine whether proposed projects demonstrate “net benefits” for the state, in order for proposed projects to qualify for ORECs. Although the rules also called for the BPU to determine if projects have a net-environmental benefit for the state, the BPU focused on the economic parameters of the FACW instead of the environment benefits – and did not account for other characteristics of the project, like the fact that the developers were local and dedicated, and had used state funding to deploy a meteorological buoy.

In sum, that New Jersey’s offshore wind planning and policy processes does not suggest the presence of a supportive institutional structure for New Jersey to meet its offshore wind energy development goals. In contrast, Rhode Island decision makers offered clear support for the BIWF and engaged in planning efforts early on, jumpstarting the development process, so that there was not the opportunity for the BIWF to be rejected because of its size, location, or procurement price.

Research findings also call for investigating not only the ostensible policy conditions, like whether or not a state has a goal for offshore wind, but also more latent offshore wind conditions. This recommendation is based on the notion that if one were to have conducted a surface level examination of the extent to which Rhode and New Jersey had environments conducive to meeting their offshore wind
development goals between 2008 and 2012, prior to the outcomes for BIWF and the FACW and before former New Jersey Governor, Chris Christie, withdrew his support for offshore wind, one may have concluded that both New Jersey and Rhode Island offered similar support for offshore wind development. In fact, a 2009 report from BOEM states, “Two States—New Jersey and Rhode Island—are well along in their planning efforts that will help to determine appropriate areas of the Outer Continental Shelf for development …” (MMS 2009, 19643, as cited in McCann et al., 2010). A surface-level investigation would support BOEM’s statement. Figure 15 that includes a timeline of events for offshore wind development in New Jersey and Rhode Island emphasizes this point. Based on the timeline, both New Jersey and Rhode Island were apparently engaging in a range of similar efforts for offshore wind energy development from 2004, or 2006, respectively, through 2013, with both states setting goals for wind energy, funding studies, and supporting pilot projects.

Figure 15. Timeline of key events and decisions affecting offshore wind development outcomes in New Jersey and Rhode Island.
In the early 2000s, New Jersey and Rhode Island set strong state goals for offshore wind development, in the hopes of advancing economic, environmental, and energy objectives. Both states dedicated several million toward studies on offshore wind development and tasked state agencies with supporting and overseeing offshore wind development. From 2004 to 2012, New Jersey state agencies and governors supported offshore wind development. Based on research findings derived from a cross-case comparison, why Rhode Island built the nation’s first offshore wind farm, and New Jersey has yet to deploy an offshore wind project, lies not with declared state support for offshore wind development, or lack thereof – but with specific differences in institutional structure, and state- and municipal- decision makers’ values, perspectives, resources, strategies, and decision processes.

These differences are articulated in Chapters 4 and 5, with a summary here. After a New Jersey study determined that “The only viable opportunities for significant large-scale wind development in New Jersey are considered to be offshore,” then Governor Codey created a “Blue Ribbon Panel” for studying the cost and benefits of offshore wind deployment. The panel determined that offshore development appeared positive for the state, but that “more information” was required prior to full-scale deployment. The state backed a pilot-scale, offshore wind project as a means for “obtaining more information.” However, the Blue Ribbon Panel mandated that the pilot project could not go forward before the completion of baseline studies. In sum, New Jersey focused on information gathering for several years, which did not result in specific measures for driving an offshore wind project forward; although an ecological baseline study assisted the FACW in obtaining environmental permits, this study and others were largely removed for shaping policy and planning for offshore wind development in New Jersey.

Further, the BPU, a state institution that does not necessarily have the necessary background knowledge, time, or resources to thoroughly oversee and support a state’s offshore wind development goals, was granted substantial authority to govern offshore wind planning and policy in New Jersey. The NJBPU selected one developer to receive a state grant of $19 million, a relatively small grant in consideration of the up-front capital costs of offshore wind energy development (in the order of $1
billion, or more for projects that are 200 MW, or larger). The selected developer, Garden State Offshore Wind, did not continue efforts on its proposed pilot project, or more than 200 MW. The BPU granted three developers with $3 million each to deploy a metrological buoy to collect wind and environmental data at project sites, with the intention that the buoys would be deployed by 2009. Bluewater Wind never deployed a buoy, Garden State Energy deployed a buoy in 2012, but has not continued efforts on its offshore wind project, based on available data at this time, and Fishermen’s Energy deployed a buoy in 2010, but never qualified for ORECs.

As previously noted, New Jersey conducted several studies to support offshore wind development, including a public opinion survey, and a study on New Jersey’s marine environment, and the economic impacts of offshore wind on the state’s economy. However, decision makers did not link these studies with decision processes, or policy for offshore wind, rendering them largely as unused in terms of New Jersey’s planning and policy processes to meet the state’s offshore wind energy development goals. In 2010, New Jersey implemented the Offshore Wind Economic Development Act (OWEDA). As described above, an OWEDA/OREC-qualified project can participate in the state’s renewable energy certificate trading program, guaranteeing a credible off-taker.

However, with a cost-benefit analysis as its premise and a lack of clarity and transparency as to what the parameters of the cost-benefit analysis should entail, the Act left project approval largely at the Board’s discretion. Thus, the Board was able to reject FACW’s OREC application three times, despite support from the Division of Rate Counsel, and many others in New Jersey, from Atlantic County, to residents and tourists of Atlantic City, to the New Jersey Legislature. Additionally, the Act does not include additional measures to support offshore wind developers, like assistance with the permitting process, grid connection, and stakeholder engagement, potentially making it difficult for developers to secure low project costs, or a low procurement price and become OREC-qualified.

In contrast, after setting the goal of procuring 15% of its electricity from wind power – with the realization that most of wind power would need to be generated offshore – Rhode Island set out on a
contrasting path from New Jersey. Among a pool of applicants, the state selected a preferred developer early in the process, Deepwater Wind (DWW). Rhode Island decision makers agreed to pursue offshore wind development early in the process, and dedicated resources and time to strategizing for effectively reaching the state’s offshore wind development objectives, or deploying an offshore wind project. Rhode Island also offered legislative support for Deepwater Wind to negotiate a PPA with the local utility, National Grid, and offered clear support throughout the regulatory and permitting process for the project.

In terms of regulatory and permitting support, the Executive Director of Rhode Island’s Coastal Resources Management Council, Grover Fugate, called for the creation of an Ocean Special Area Management Plan (OSAMP), or a detailed management scheme to assist with ocean development planning, including offshore wind development. The plan indicated specific locations (and locations off limits) for offshore wind development, based on an assessment of wind speeds, the marine environment, shipping channels, marine users, fishing grounds, cultural and historic sites, and other parameters. Those who led OSAMP efforts worked with the federal government (as projects in state waters require federal permits), state agencies, researchers (from geologists, to anthropologists, to historians), NGOs, and community groups, including local tribes, fishermen, and residents. Working with these groups allowed decision makers to navigate regulatory processes and opposition to offshore wind development, and secure scientific and local knowledge and widespread input into the ocean management plan, and assess state and local values and aspirations. Based on the collected data, the OSAMP developed a set of policies for ocean and offshore wind development such as an “adaptive management,” so that as prime fishing grounds, shipping routes, species habitats and other circumstances change over time, OSAMP can modify areas for development, and areas off limit to development.

The collaborative and transparent OSAMP processes – guided by substantial leadership – mitigated siting, permitting, and opposition hurdles for Deepwater Wind, increased levels of support for the BIWF, and reduced the project’s capital expenditures, to some extent. For instance, then-Governor of Rhode Island, Donald Carcieri, is reported to have gained confidence in supporting offshore wind
development, in part because of the success of the OSAMP. The OSAMP process brought trusted leaders on board to engage with the fishing community, who initially “vehemently” opposed offshore wind development and the BIWF. Further, state decision makers with substantial policy experience and expertise developed policy for the OSAMP document that helped to streamline the federal and state review process of the BIWF. OSAMP staff also held regular meetings, including community dinners, to address concerns of fishermen, members of tribes, and other stakeholder groups and incorporated their recommendations and knowledge into the OSAMP, effectively establishing meaningful relationships and mitigating opposition among many community groups.

In addition to the OSAMP process, developer communication and municipal decision-making processes were critical to the development of the BIWF. For example, Deepwater Wind (DWW) team member, Bryan Wilson, acted as a local liaison to Block Island at the start of the project, established a relationship with the Town of New Shoreham town council, and communicated regularly with residents. This town council and community-level engagement, as well as modifying the size and location of the BIWF based on decision makers’ recommendations and the OSAMP study, supports the notion that developer communication with the state, municipalities, and communities, and modifying project decisions based on these interactions may assist with proposed offshore wind projects going forward.

Regarding municipal decision makers, research findings indicate that the majority of Block Island Town Council members supported the BIWF. Then First Warden, Kimberley Gaffett, supported the wind farm not because of the cable, but also because the BIWF represented a means for addressing environmental concerns. The town council upheld an efficient, municipal permitting process for the wind farm, and Kim Gaffett attended numerous informational meetings to become informed on the project, and to address community concerns. The town council also hired contractors to conduct “third party studies” to verify the developers’ claims, and shared this information with the community and other decision makers. Additionally, represented by an expert contractor, the Town of New Shoreham provided testimony in support of the PPA between Deepwater Wind and National Grid in 2009 and 2010. These
findings support the notion that the values, perspectives, resources, strategies, and decision processes of municipal decision makers matter to offshore wind development outcomes, where municipal-support in a myriad of ways may be important for proposed projects to go forward.

In addition to municipal support, the OSAMP process, and other state support – two months following the Rhode Island Public Utilities Commission’s rejection of the 2009 PPA between Deepwater Wind and National Grid – the Rhode Island General Assembly thoroughly revised legislation, directing the Rhode Island Public Utilities Commission to approve an amended PPA between Deepwater Wind and National Grid. When corporations filed a lawsuit against the commission’s approval of the PPA in 2010, the Rhode Island Supreme Court also relied on the legislation to deny the corporations’ suit, upholding the commission’s decision.

Like the Rhode Island General Assembly, the New Jersey Legislature strongly supported offshore wind development and the FACW. However, the New Jersey Legislature did not produce or pass legislation that directed the Board to approve FACW’s OREC qualification until 2016. By this point, the Board has rejected FACW’s application three times, and then-Governor, Chris Christie, no longer supported offshore wind development, purportedly due to his aspirations for the 2016 Republican presidential nomination. Thus, Christie vetoed both bills that the New Jersey Legislature passed that directed the Board to approve FACW’s OREC application.

Evidence also indicates that not only is governor support critical, but so too are a governor’s specific strategies. For instance, former Rhode Island Governor, Donald Carcieri, wrote several detailed letters, urgently requesting that the Rhode Island Public Utilities to support the PPA between National Grid and Deepwater Wind. In contrast, after passing OWEDA in 2010, Christie did not engage in efforts to ensure that the OWEDA policy was achieving its intended objective of spurring offshore wind development in New Jersey. Rather, Christie focused on praising the legislation in press releases, and other public relations efforts.
Section 6.3 continues with policy and planning recommendations for U.S. offshore wind development, based on this project’s primary conclusions and research findings. However, the following paragraphs first clarify how this research’s recommendations are applicable to offshore wind farms proposed for federal waters, given that this project’s recommendations are derived from case findings for wind projects proposed for state waters.

**How this project’s policy recommendations may be applicable for offshore wind projects proposed for federal waters**

In terms of differences between state and federal projects, BOEM selects general areas in federal waters for development, as well as the offshore wind developer. In contrast, the state selects the offshore wind developer for state waters and can determine and/or approve development locations. Yet, projects in state or federal waters are subject to state and federal regulations, and must obtain a suite of federal, state, and municipal permits. Although state and municipal decision makers may not be able to select the developer for federal waters, they can communicate their values and perspectives to the developer of a site in federal waters, and collaborate with the developer on offshore wind planning schemes, with goal of meeting not only offshore wind development objectives, but other values-based goals. State and municipal decision makers could also potentially implement policy, plans, resources, and strategies to assist developers in federal waters with the regulatory and permitting processes, stakeholder engagement, baseline studies, and more. Further, although the federal government selects a general area for development, the federal government does not necessarily determine the exact location for the wind project; therefore, the exact project location can be based in part on state and developer collaboration processes, with federal approval.

**6.3.2 Policy and planning recommendations for U.S. states with offshore wind development objectives**

The policy and planning recommendations are not prescriptive in nature. Rather, they are guidelines, strategies, or approaches for states with offshore wind development objectives that also
consider how proposed projects impact communities and the marine environment. Although the primary objective of this project is to provide recommendations for states with offshore wind energy goals, this section also includes some policy and planning recommendations for offshore wind developers, given that this research also produced findings relevant to developers; further, providing recommendations to developers may also support states in their offshore wind development goals.

**Policy and planning recommendations for states with offshore wind development goals**

**Offshore wind procurement goal or mandate with clear policy and planning support that is grounded in a range of values, science, and local knowledge, or the coproduction of knowledge**

Musial et al. (2017), Dunn & Theobalds (2018), and IRENA (2017) clarify that low offshore wind procurement prices are based on a number of factors including the existence of a supply chain, commercially available technology for different offshore environments, and policy support mechanisms, like subsidies and siting assistance, that foster investor confidence and access to low-cost capital. This dissertation contributes to the literature from industry experts by providing recommendations for U.S. offshore wind policy support mechanisms, not only to promote investor confidence and access to low-cost capital, but also to encourage offshore wind development planning that considers impacts on the communities and the marine environment.

First, this dissertation asserts that since the U.S. lacks a supply chain and access to investor confidence at large, viable state and municipal offshore wind policies and plans may have to advance offshore wind projects with procurement prices higher than the market average at first and/or provide ample and viable policy support, like providing substantial subsidies and assistance in the permitting and siting process, to reduce projects’ capital expenditures. These processes may eventually create a context in the U.S. with investor confidence, access to low-cost capital, and a supply chain, reducing offshore wind’s procurement price and the need for state support and subsidies. Further, given that all U.S. states
are subject to change in administrations and offshore wind support levels, these recommendations are also meant to foster a timely development process.

(1) Developing an offshore wind procurement objective or mandate can assist in signaling to developers and industry the state’s interest in offshore wind development. However, this project recommends emphasizing, creating, and implementing a transparent, clear, and effective plan to develop offshore wind, as opposed to highlighting an offshore wind energy procurement goal in of itself.

(2) Evaluate state, municipal, & community groups’ aspirations and needs to realize ways in which offshore wind development can advance social, economic, energy, and other objectives. For instance, an offshore wind farm could revitalize a coastal community, through tourism and job creation, stabilize or reduce electricity prices for island communities, or provide electricity generation for areas with little land space for building new onshore power plants. Some communities may be downwind from a coal plant, which could be displaced in part through an offshore wind project. Additionally, as offshore wind projects are not water intensive, they could address energy needs and mitigate water usage in water scarce regions, especially in areas where water scarcity is expected to increase with climate change.

Moreover, determining specific state and community needs that can be met through offshore wind energy development, as opposed to general ways in which offshore wind can help a state, may increase political support – for instance, many actions can advance the state’s economy, or even contribute to climate mitigation, but development of an offshore wind farm may be a tangible means for a municipality to fill empty hotels, attract new businesses, and increase commerce.

However, in the process of evaluating how developers and offshore wind development can meet state, municipal, and community groups’ needs, research findings also indicate that it is critical to put reasonable demands on the developer; if the expectations are too high, the developer may not be able to address state/municipal/community needs, while also working on an intensive and expensive offshore wind project in of itself – especially in the nascent U.S. offshore wind development environment.
(3) Clarifying offshore wind project expectations and parameters early in the process & developing complementary legislation, may bolster an effective offshore wind development process. Defining project expectations and parameters, based in part on the evaluation of state, municipal, and community groups’ aspirations can potentially strengthen the offshore wind development process. Decision makers may not be able to clarify certain specifics early in the process, such as the precise location for a wind farm in state waters (or a suggested location for federal waters); however, decision makers can illuminate known expectations grounded in forethought. For instance, the state could back a certain sized project and general location to meet community needs and expectations.

Selecting a specific developer to work with at the start of the process – and working closely with that developer early on in the development processes – can potentially assist in streamlining the development process. Furthermore, implementing legislation that supports the project characteristics co-developed by the state, community groups, municipality, and the developer, and that clearly includes support for offshore wind development for meeting specific community and state objectives, despite potential losses associated with project development, like higher procurement prices, can assist states in meeting offshore wind development objectives. Also, implementing legislation that avoids language and analyses open to interpretation, like an under-defined cost-benefit-analysis, can potentially mitigate conflict and stalemate during the decision process for offshore wind energy.

On the other hand, research findings also suggest that it is not advisable or possible to develop all project expectations early in the planning process, as expectation and siting parameters will also be based on extensive stakeholder collaboration and policy-relevant information collected over time. Thus, decision makers and developers can adaptively manage the process, or begin the development process while collecting information and modifying decisions (and legislation and policy) as needed. Of note, the emphasis on information collection should not only be on whether or not to develop, but how to most effectively move forward with development, while mitigating impact on communities and the marine environment.
(4) **Develop a management plan for ocean development** that includes the following characteristics:

a. **Clear, transparent, and holistic objectives for ocean development** can potentially foster an effective, less controversial management environment for ocean development, including offshore wind energy development. For instance, ocean development plans that not only meet municipal, state, and federal regulatory and permitting criteria, but that also explicitly balance protection of natural resources, human uses, cultural, historical, and aesthetic values, and economic and development objectives may reduce project opposition and advance a fair development process. A holistic objective also provides a frame of reference for determining the acceptability of proposed offshore wind projects.

b. **Inclusive researcher and stakeholder collaboration may advance knowledge coproduction, a less controversial, and fair offshore wind development process.** According to research findings, determining where ocean development is acceptable based on protecting natural resources, cultural, historical, and aesthetic values, and advancing economic and development objectives, requires gathering, valuing, and incorporating local knowledge, as much as top-down-scientific knowledge. Fishermen, local tribes, recreational boaters, and commercial mariners can provide valuable information on areas that should be protected from development. NGOs, civic, and environmental groups can specify species protection and other environmental goals. Simultaneously, scientists can map the marine environment, including physical oceanography, geology, benthic communities, waves, marine mammals, sea turtles, avian populations, fisheries ecology, and ecosystem services. Historians and archeologists can also provide information on ocean areas that should be protected. It is also recommended that scientists provide information that is usable for policy, by highlighting main findings and conclusions and collaborating with decision makers, developers, and the community. Additionally, policy experts, and municipal, state, and federal agencies can provide knowledge for fulfilling permitting requirements for ocean development such as information necessary for an Environmental Impact Statement application, helping to streamline a developer’s permitting process and reducing capital expenditures. Ensuring information-gathering procedures are transparent and making information readily available for public
review, in tandem with stakeholder meetings in formal and informal settings to thoughtfully address
public concerns, feedback, and insights on ocean development, strengthens and promotes an offshore
wind development process that avoids or mitigates impact on communities and the marine environment.

c. Developing policies for ocean development based on values and coproduced knowledge may
potentially strengthen the offshore wind development process. For instance, based on information
gathered on the marine environment, human uses, archeology, tribal history, prime commercial fishing
grounds, offshore wind speeds, and other information, an ocean management plan can map areas that are
off limits to development, areas which can be considered for development, and areas that are best for
development. Third, as changes in the marine environment are inevitable, implementing adaptive
management strategies and ensuring ongoing stakeholder engagement, can reduce stakeholder tension and
opposition over time; areas that are best for development or that are off limits to development can shift, as
prime fishing grounds change, archeological discoveries are made, or other pertinent information is
gathered. Policies grounded in coproduced knowledge may also mitigate opposition and streamline the
development process for projects proposed for areas with minimal, or no impact.

(5) Determining the best, existing institution, or creating an institution to oversee the management
plan for ocean and offshore wind development, supported with expert, dedicated, and trusted staff,
funding, available time, and other necessary resources to carry out tasks may strengthen the offshore wind
development process. Already overburdened state agencies cannot expect to take on extensive
stakeholder engagement, knowledge gathering, and policy development processes for ocean and offshore
wind development. Moreover, institutions imbued with specific objectives and values, like ratepayer
protection or conservative fiscal values, cannot necessarily be expected to support offshore wind
development through holistic and creative means. Further, ensuring that staff have relevant expertise,
such as experience with policy development, offshore wind development, environmental and ocean
management, community engagement, or other characteristics, as well as ensuring that staff members are
trusted by community groups and have the necessary resources to implement plans, is likely important for a state to effectively implement its offshore wind development objectives.

(6) **Deriving a pathway for a reliable off-taker for electricity sold from the offshore wind farm** could assist a state with meeting its offshore wind development objectives. Based on this study’s cross-case comparison, states can implement different mechanisms to procure a reliable off-taker for an offshore wind development project, such as selecting a “preferred developer” for securing a PPA with a local utility, or creating a renewable energy credit system for offshore wind projects. However, project findings also indicate that the terms under which a developer is eligible to secure a PPA or participate in a renewable energy credit system should be exceptionally clear and transparent. For instance, legislation can clarify support for a PPA and the associated offshore wind procurement price that is higher than the market average because the project meets state, municipal, and/or community aspirations or needs. Legislation which affirms that the state upholds offshore wind development projects that meet particular state or community goals, despite a higher procurement price for the electricity generated from the wind farm, can assist in upholding a PPA in the face of potential lawsuits.

(7) **Creating any additional governmental support mechanisms** (that also account for mitigating or avoiding project impact on communities and the environment) can also potentially advance a state’s offshore wind development objectives, based on research findings, as well as evidence from European nations with advance offshore wind energy markets. Drafting a comprehensive ocean management plan for development, as described above, in of itself provides planning, permitting, and regulatory support for offshore wind development. However, even with a comprehensive ocean planning scheme in place, it may remain difficult for a developer to secure a low procurement price in the U.S. without additional support. Assisting developers to the extent possible in a myriad of ways, such as through subsidies, tax exemptions, and supporting and / or providing funding for grid mapping and connection, site studies, and permitting can reduce capital expenditures, may help a developer gain access to low-cost capital, and lower the offshore wind procurement price. Further, not placing extra burdens or excessive requirements
on the developer, like excessive job creation, may also assist with developer and investor confidence. For regions in the U.S. that require technologies still in development for commercial use, such as floating turbine designs, states might consider effective R&D support to strengthen offshore wind development.

**Policy and planning recommendations for developers and industry**

As noted above, although the primary goal of this dissertation is to offer policy recommendations for states with offshore wind objectives, this project’s findings are also potentially applicable for offshore wind developers; these recommendations for developers may also potentially assist states with meeting offshore wind development goals, and mitigating or avoiding project impact on communities and the marine environment.

1. **Conduct a thorough state and municipal level risk assessment & modify development processes**

   Based on a comparison of offshore wind development processes in New Jersey and Rhode Island that appeared conducive to offshore wind development on the surface, despite a detailed review revealing different circumstances, it is recommended that developers thoroughly assess the following: (1) a state’s implemented policies for offshore wind energy, (2) a state’s institutional structure relevant to offshore wind energy planning and policy, and (3) state and municipal decision makers’ values, perspectives, resources, strategies, and policy-making processes.

   Based on research findings, offshore wind procurement goals or mandates are more likely to be achieved if clear planning processes are in place. Based on differing outcomes for the FACW and BIWF, assessing the state’s institutional structure and decision makers’ resources, strategies, values, and perspectives thoroughly is important. For instance, research findings indicate that although governor support is important to the offshore wind development process, it does not guarantee a low risk environment for development. It is also likely essential for a state to also have an institutional structure with the expertise, time, funding, and other resources to support and implements the state’s offshore wind plans and policy. Decision makers with expertise in ocean, or environmental planning, offshore wind
development, policy, and other relevant topics may help to create an environment conducive to timely offshore wind deployment. State offshore wind plans led by decision makers who are trusted in the community and who are willing to put in the time, effort, and extra measures to support an extensive and lengthy offshore wind development process may assist in project development. In terms of perspectives and values, research findings indicate that decision makers that embrace fiscal, conservative standards may be less likely to support government intervention policy, like subsidies, regulatory and site assessment support, or an offshore wind farm with a procurement price higher than the market average, despite the state’s offshore wind energy development objectives.

(2) Communicate early and often with the state, municipalities, and community groups and modify project and planning decisions accordingly

Based on project findings, it is imperative for developers to communicate early and often with state and municipal decision makers, and impacted community groups, such as fishermen, tribes, and residents. In this way, developers can learn decision makers’ values and other objectives – values and objectives that can potentially be obtained through modifying development plans such as the project size, location, or turbine manufacturer. The policy recommendation for developers to communicate with community groups is especially supported by a substantial body of literature that specifically articulates the importance of procedural justice, community benefits, and bidirectional learning. Procedural justice embraces a public engagement process that promotes transparency and possibilities for community groups to participate in the planning process. In terms of community benefits, research suggests that developers, decision makers, and community-groups reach mutual agreement on which communities should receive benefits and which benefits are suitable (Agterbosch et al., 2009; Klain et al., 2017; Firestone et al., 2012; Wolsink, 2005; Walker & Baxter, 2017, Ellis et al, 2007).

In contrast, a developer assuming knowledge of state or community values and conducting an “information campaign” in an effort to persuade will not likely result in conflict resolution or mitigate opposition (Wolsink, 2005). Ellis et al. (2007) clarify, “Public engagement should be viewed as
interactive, rather than a one-way, process, with the aim of changing the attitude of the developers as much as the objectors” (p. 538). Public opinions can be based on “deep values.” The difficult (if not impossible) nature of changing deep values, suggest that a participative process should recognize and uphold deep values, rather than spending substantial resources and time attempting to change values and achieve consensus. Thus, perceiving and incorporating differences of opinion as a means for achieving “better conceived schemes” may facilitate the development process (Ellis et al., 2007).

On the other hand, this research suggests that upholding the deep values of some must be balanced with values and aspirations of the wider community and state, as well as the parameters of ocean spatial planning. It may not be possible to find a location suitable for development and that appeals to all parties’ deep values. Thus, it is important to balance common interests and environmental sustainability with more personal and exclusive interests when determining wind farm locations. Finally, some siting locations may meet with minimal public resistance, like the FACW; nevertheless, it remains important to collaborate with municipal and state decision makers and community members to ensure that all aspects of the proposed project align with, or advances state, municipal, and community objectives.

**Policy and planning recommendation summary**

The policy and planning recommendations are strategies, approaches, and guidelines for states with offshore wind development objectives, as well as offshore wind developers. Some policy suggestions may apply more-or-less, depending on a state’s contextual conditions or the parameters of a project. Additionally, as states pursue their offshore wind energy objectives and developers pursue project deployment, these policy recommendations are also meant to advance planning processes that avoid, or mitigate impact on communities and the marine environment.
6.3.3 Potential application of policy recommendations to current U.S. federal and state offshore wind policy and planning endeavors

This section is based on the information provided in section 6.1.3 that provides an overview of some of the federal and state offshore wind policy and planning endeavors, to date. For example, section 6.1.3 explains that the federal government selects developers based on the highest bid for a lease area. Based on this project’s policy recommendations, federal policy also support direct communication between state and municipal decision makers, communities, and selected developers to help ensure that developers address state, municipal, and community objectives and values early in the development process. This recommendation for federal offshore wind policy could help mitigate certain issues from arising later in the development process, such as the Town Council of Ocean City, Maryland rejecting federal offshore wind projects that are less than 26 miles from shore and refusing to meet with developers.

States with offshore wind development objectives could develop and implement management plans for ocean development and broad stakeholder engagement. For instance, early communication and broad stakeholder engagement might have dissuaded the Massachusetts High Technology Council from urging the Massachusetts Department of Energy Resources to “give the highest priority considerations” to the economic impact of offshore wind projects on Massachusetts ratepayers. Early engagement with the Council may have fostered an understanding of the difficult task of reducing offshore wind procurement prices to the point where they have no impact on ratepayers, and how projects may still be worth promoting for advancing other state objectives and community aspirations.

The South Fork Wind Farm off the coast of New York appears to meet particular community aspirations of Long Island, providing needed energy to Long Island without taking up land space – assisting the developers of the South Fork Wind Farm to secure a PPA with LIPA. However, securing PPAs for other offshore wind farms off the coast of New York may not be as clear cut, and may require additional broad-scale planning to determine how offshore wind projects can meet other state and community objectives. The New York offshore wind planning scheme includes offshore-wind-specific
research conducted by NYSERDA, including environmental assessments and stakeholder engagement. However, a modified NYSERDA plan that promotes broader collaboration and local knowledge inclusion may help to mitigate opposition from the Fisheries Survival Fund, a group with backing from numerous businesses and organizations, and that opposes the federal offshore wind lease off the New York coast, which may not bode well for other offshore wind projects proposed for the New York coast.

Although Maryland legislation approved two offshore wind projects for the state’s renewable energy credit (OREC) system, providing a pathway to a reliable off-taker for these projects, for developers to secure the PPA, they must invest substantial resources into the state, from creating nearly 5,000 jobs, to contributing more than $120 million to Maryland’s economy. These requirements may potentially deter timely development, given the high, up-front capital costs and substantial requirements of developing an offshore wind project to start. Thus, for Maryland to reach its offshore wind procurement goals, it may be important for the state to dramatically reduce requirements for offshore wind developers, and/or provide assistance with regulatory, siting, stakeholder engagement, and other planning efforts.

As the newly elected New Jersey Governor, Phil Murphy, aims to reinvigorate offshore wind development in his state, modifying the state’s offshore wind energy legislation, and policy and panning efforts may assist New Jersey with meeting its offshore wind development objectives. For example, decision makers might propose specific parameters and goals for offshore wind projects, such as recommending a project location to bolster a municipal, coastal economy. In terms of the OWEDA legislation, decision makers might consider eliminating the cost-benefit analysis, or defining clear parameters for the cost-benefit analysis. New Jersey might also create an institution to oversee offshore wind policy and planning efforts, with appropriate expertise and resources to provide regulatory, siting, and stakeholder engagement assistance for proposed projects. Further, passing, or modifying legislation that supports offshore wind projects through subsidies and/or despite a procurement price higher than the market average, may also assist New Jersey in meeting its offshore wind energy development objectives.
States along the Southeast Atlantic seaboard, Gulf of Mexico, Great Lakes, and Pacific can support research efforts and test projects to support efforts for developing technology suitable for regional development, such as the offshore wind test projects off the coast of Virginia and Ohio. Yet, even for test projects, decision makers should consider ocean-area, management plans and stakeholder engagement, to mitigate opposition and impact on the marine environment and communities. Several environmental groups expressing opposition to the Fred. Olsen, Icebreaker test project exemplifies this need.

Additionally, section 6.1.3 notes that several states have formed committees or task forces for deriving recommendations, considerations, and questions concerning offshore wind development. States have expressed concern for the high procurement price associated with offshore wind, such as Oregon withdrawing support for a pilot project because of the high cost and Delaware questioning whether the state should support offshore wind until the “market drives down costs.” Several offshore wind committees and task forces at the state level have also recommend “more research.”

Based on this project’s policy recommendations, these state offshore wind task-forces and committees might consider and provide recommendations as to how a state might proceed with offshore wind development, in spite of high capital costs and procurement prices, and how a state might advance potential benefits associated with offshore wind development, like economic growth for communities and a state’s renewable energy objectives. Further, in consideration of the extensive planning efforts required for offshore wind development, state offshore wind planning groups might conduct more research not only to understand the costs and benefits of offshore wind energy, but also conduct research to understand how a state might begin strategizing for offshore wind project development, i.e., understand where an offshore wind project might be developed to bolster state objectives and minimize impact on communities and the marine environment.

6.4 Application to complex problem-solving and lessons learned for climate mitigation strategies

Most real-world problems at the human-environment interface entail substantial complexity, including people’s values and perceptions and extensive uncertainty. Although complicated, “the
problems are real and demand a solution.” Thus, in a general fashion, this holistic and empirically-based research approach in of itself provides certain insights for professionals and academics in the social and policy sciences looking to improve policy outcomes, no matter the problem. More specifically, this research may especially be of interest to scholars and others who are drawn to studying how to address climate mitigation, other than through largely market-based approaches. In their article, “The ‘New Carbon Economy:’ What’s New?” Boyd, Boykoff, & Newell (2011) call for scrutiny of the constitution, governance, and effects of the “new carbon economy.” To address climate change mitigation, the carbon economy is grounded in neoliberal, market-based approaches, namely emissions trading schemes and the purchasing of carbon offsets.

Although some positive results can be gleaned from these market tactics, critics maintain that carbon markets have lost us more than ten years “in the battle to keep climate change within tolerable levels” (Boyd et al., 2011, p. 609). Critics further argue that not only have emissions-trading schemes and carbon offsets been unsuccessful in carbon reduction and resulted in a range of perverse consequences for human and environmental communities, but they have also “successfully sidelined” other policy options that could have been more effective (Boyd et al., 2011, p. 609).

This section argues that similar to neoliberal ideology and market-based mechanisms infiltrating and limiting climate mitigation policies, neoliberal ideology has, to some extent, infiltrated and limited U.S. policy responses to offshore wind, resulting in offshore wind projects not going forward, or states not meeting their offshore wind development objectives. Paradoxically, evidence from Europe and Rhode Island indicates that market intervention may actually result in capital accumulation and a thriving offshore wind market – opening the door to a new kind of policy response, not only for offshore wind, but climate mitigation strategies. Whether for offshore wind, or other clean energy endeavors, clear governmental support, driven by a range of values beyond procurement price and free-market policy, signals to financial institutions a low-risk environment for investing, offering governments and
stakeholders a tangible opportunity to support carbon mitigation beyond carbon offsets and emissions-trading schemes.

The nexus of climate mitigation policy and politics, market-based strategies, and outcomes, can be conceptualized more broadly as the nexus of environmental governance, environmental change, and environmental politics, and neoliberal policies (Heynen et al., 2007). As an economic and political philosophy that rejects government intervention in the market, control over the behavior and practice of firms, the movement of capital, regulating socio-economic relationships, and emphasizes the emancipatory power of free markets, the freedoms and responsibilities of individuals, and opportunities for capital investment and accumulation, commodity production, circulation and exchange, neoliberalism affects environmental politics, policy, and change (Heynen et al., 2007).

Empirically-grounded data on the FACW and offshore wind development in New Jersey, and preliminary research on offshore wind development in other U.S. states reveals that – similar to global climate mitigation strategies grounded in neoliberalism – the nexus of neoliberalism and offshore wind governance is impacting outcomes for U.S. offshore wind development, to some extent. This dissertation notes the extensive capital expenditure associated with an offshore wind farm, where a wind farm greater than 200 MW require an average investment of more than $1 billion (Musial et al., 2017). Given the high price tag associated with offshore wind development, evidence indicates that the industry requires substantial financial and policy support. European practices and policies for offshore wind that reject the “emancipatory power of the free market,” capital accumulation, and developer responsibility as the means for driving the industry forward, and that instead embrace government intervention and “market tinkering” to achieve offshore wind objectives, exemplify this notion.

Germany’s policy, including a feed-in-tariff system offering “bonus amounts for offshore wind,” eliminating sea-bed lease fees, and legal processes that support project approval stand in opposition to neoliberalism. U.K. lawmakers clearly implemented market interventionist tools, directing energy suppliers to invest in and purchase offshore wind energy, through “buy-out penalties” when renewable
energy obligations for offshore wind are not met (Toke, 2011). In Denmark, electricity consumers finance grid connection and offer above-market, price premiums for offshore wind (IRENA & GWEC, 2012). Recently, European nations have implemented auction mechanisms that have resulted in reduced offshore wind procurement prices, as the developer with the lowest bid wins the right to develop. Nevertheless, the recently, low auction strike prices would not be possible had Europe not implemented policy mechanisms that attracted financial institutions, low-cost capital, and a supply chain. In other words, government intervention resulted in market growth for offshore wind. Additionally, although European nations have retracted some policy support mechanisms for offshore wind, as the industry grew, certain support mechanisms remain in place, like paying for grid connection, and site development costs, also allowing for lower procurement prices (IRENA, 2017).

Although there are government intervention policies in the U.S. for renewable energy development, namely the ITC and PTC for renewable energy, and the federal government offering support for site assessment, R&D, and stakeholder engagement, and U.S. states funding basic research, siting, and baseline studies, there is also evidence to indicate that some policy for offshore wind development on the federal and state levels reflect neoliberal tendencies. For example, some federal and state policy for offshore wind promotes accumulation of investment and capital, as opposed to moving capital to support offshore wind. To an extent, there is also evidence to indicate that federal and state policy for offshore wind promotes free markets for reducing price procurement, rather than “market tinkering” to adjust offshore wind’s socio-economic status, and calls for developer responsibility, as opposed to developer assistance. Several specific examples support the notion of U.S. offshore wind policy exhibiting neoliberal characteristics.

Money raised from the federal offshore wind, auction leasing process places an additional financial burden on developers. Moreover, the money generated from the auction process is not utilized to advance federal offshore wind goals and proposed project. Instead, the capital “flows into the U.S. treasury and to American taxpayers” (Polefka, 2017). Maryland legislation is especially focused on
capital accumulation and developer responsibility, requesting that developers meet a set of nearly 30 requirements, such as creating 4,977 direct jobs and contributing more than $120 million to port upgrades, a steel fabrication plant, and/or Maryland’s business development fund for offshore wind (Musial et al., 2017). As another example, Illinois’s offshore wind advisory committee advised that state lawmaker should be adequately compensated for lakebed leases (Southeast Evanston Association, 2012). Additionally, state organizations and offshore wind committees express concern over offshore wind’s high procurement price, as opposed to focusing on means for supporting offshore wind despite a higher price, or ways to reduce the price.

In Massachusetts, the Massachusetts High Technology Council requested that lawmakers “give the highest priority considerations” to the cost and economic impacts of renewable energy projects on electricity ratepayers, namely, offshore wind (High Technology Council, 2017). As described in detail above, the FACW project was effectively stalled, because of the Board’s focus on FACW’s lack of economic self-sufficiency. The Delaware offshore wind working group expressed hesitation toward “large-scale” offshore wind development “until the market drives costs lower” (Offshore Wind Working Group, 2017). The Oregon offshore wind advisory committee brought an end to a proposed, offshore wind pilot project, stating that it would be difficult for any utility to procure a power purchase agreement with an offshore wind developer, due to the Northwest’s “historically low-cost” electricity prices (Oregon.gov). In 2010, government officials in Michigan withdrew support from offshore wind, in part because of the steep decline in onshore wind energy prices (Balaskovitz, 2017).

This project recognizes that other factors can impede offshore wind development, namely, opposition from the governor, residents, and fishermen and that these factors must be accounted for in the development process. Yet, while governor and stakeholder opposition are generally recognized by the media, decision makers, and developers, this project argues that the impact of neoliberal-based planning and policy on offshore development goals is under recognized. Or, discourse on offshore wind energy takes as self-evident that high procurement prices and other offshore wind market conditions impede the
development process, as opposed to a recognition of the institutional forces, beliefs, and values that let prices and market conditions dictate outcomes.

Rhode Island decision makers involved in offshore wind development and the state’s offshore wind policy and planning process, generally embodied values, perspectives, and practices distinct from neoliberal ideology – clarifying that a neoliberal environment for offshore wind development is not a given. Although the Block Island Wind Farm is widely recognized as means to mitigate the high and unstable electricity prices on Block Island, ultimately, decision makers’ interventionist strategies substantially contributed to the development of the Block Island project. The Rhode Island legislature crafted critical legislation in support of the Block Island Wind Farm, despite explicit acknowledgment that the wind farm would result in Rhode Island mainlanders paying more than $370 million in above market costs over the span of twenty years. In addition to market intervening legislation, rather than focusing on Deepwater Wind developing local port infrastructure and creating jobs (for instance, Deepwater Wind’s foundations were manufactured in Louisiana), decision makers provided substantial siting, stakeholder, and research support, streamlining the development process.

Several Rhode Island decision makers also supported the wind farm for reasons other than its ability to produce stable electricity prices for Block Island, and despite its impact on mainlanders’ electricity prices. For instance, a staff member who led Rhode Island’s Ocean Special Area Management Plan (OSAMP) – an effort that was critical to the Block Island Wind Farm going forward – supported the OSAMP process because she cared about the future of Rhode Island and her children’s future, noting, “I want this place [Rhode Island] to be good for them and this is an opportunity to do it.” Another staff member who led the OSAMP efforts noted his support for the process because of the chance to address climate change and better manage offshore wind development processes. In this light, efforts to support offshore wind development goals and strategies do not necessarily have to be driven by, or only by economic agendas.
In sum, evidence suggests that to some extent, neoliberal ideology has limited U.S. policy responses to offshore wind, resulting in a circumstance generally similar to the nexus of neoliberalism and climate mitigation policy. Paradoxically, evidence from Europe and Rhode Island indicate market intervention and broader practices of support, grounded in a range of values, result in capital accumulation and an offshore wind market – opening the door to another kind of policy response, not only for offshore wind, but climate mitigation strategies. Whether for offshore wind, or other clean energy development endeavors, clear governmental support and intervention, driven by a range of values in addition to economic goals, could signal to financial institutions a low-risk, investment environment and a climate mitigation opportunity.

6.5 Conclusion to the dissertation: Chapters 1 - 6

This dissertation research began with the goal of determining the primary factors at the U.S. state and local levels affecting offshore wind development, such as the planning processes of state and municipal decision-makers, and a state’s institutional structure, for an empirically-based understanding of why proposed U.S. offshore wind farm projects go forward, or do not go forward. To achieve this goal, this project applied the policy-sciences frameworks that promote a discovery-driven approach to better understand a complex problem and how to address it, as well as complementary theory, including theory associated with Advocacy Coalition Framework, Political Ecology, Political Economy, and Science & Technology Studies. A comparative case-study approach that selected the Fishermen’s Energy Atlantic City Wind Farm (FACW) and the Block Island Wind Farm (BIWF), with differing outcomes, but similar timelines, technical factors, and siting locations assisted with a focus on the influence of state and municipal conditions on outcomes for the proposed offshore wind projects. This project collected empirical data from about 600 documents associated with the BIWF or the FACW case studies, and relevant stakeholder interviews and observations, and analyzed the data using a qualitative coding system.

Based on methods, data collection, and assessment, this study concluded that the following factors are strong and underassessed drivers of U.S. offshore wind project deployment: (1) the values and
perspectives of state and municipal decision makers, (2) state and municipal decision makers’ resources and strategies, including decision makers’ processes for creating and implementing policies; and (3) a state’s institutional structure for offshore wind planning and policy. Additionally, the extent to which the offshore wind developer communicates early and often with the state, municipalities, and impacted community groups – and modifies decisions based on those interactions – plays an important role in project deployment; however, developer involvement and communication alone does not guarantee that a proposed project will be developed.

Empirically-derived evidence from stakeholder documents, observations, and interviews reveals that decision makers and decision processes that incorporate substantial planning and economic, or market support mechanisms for proposed offshore wind projects may advance implementation of proposed offshore wind projects and a state’s goals for offshore wind energy. In contrast, decision makers and a decision process that primarily advocate for developer responsibility and economic self-sufficiency conflict with the high up front capital costs associated with offshore wind development and state objectives for offshore wind energy. This research also found that state institutional structure with the appropriate expertise, resources, and community trust is important for managing offshore wind planning and regulatory efforts, and ensuring that proposed offshore wind projects avoid, or mitigate impacts on human and environmental communities. Additionally, timely enactment of transparent legislation, or modifications of existing legislation that clarifies support for offshore wind energy development because of the benefits and in spite of potential impacts, may also support the deployment of proposed offshore wind projects. Lastly, research findings indicate the importance of decision makers ensuring that policy and planning efforts for offshore wind development are working as intended, and modified to the extent necessary to achieve a state’s offshore wind development objectives.

This dissertation research also suggests future research opportunities. Other cross-case comparisons on U.S. state- and municipal-level offshore wind development planning and policy efforts could provide additional insight for why proposed offshore wind projects go forward, or do not go
forward in the U.S. Research might address not only how a state’s offshore wind policy and planning efforts advance (or do not advance) proposed offshore wind projects, but also the extent to which state plans avoid or mitigate project impacts on human and environmental communities, or account for (or do not account for) community aspirations and broad-based stakeholder engagement.
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