**Evaluation of Strategies When Introducing Wind Turbines to New Areas**

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Mark Maguire

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Signature _____ Date _____

Mark Maguire

Approved _____ Date _____

Travis Elliott, Department of Engineering and Society

## Abstract

Wind power is a green technology that is widely supported by many for the production of electricity. It produces a large amount of energy with a small carbon footprint. For that reason, there has been a push to increase the number of wind turbines globally. The increase of wind production would lead to a decrease in the necessity of coal and other fossil fuel power plants. This has a two-fold positive benefit. First, by transitioning to electrical production techniques with a smaller carbon footprint, the number of greenhouse gasses and the amount of pollution produced is limited. Second, unlike coal and oil, wind is a renewable resource. Harnessing the wind today does not diminish humanity's ability to harness the wind in the future, whereas nonrenewable sources can take millions of years to replenish.

However, wind power is not without its critics. There are debates about the negative impact of wind turbines to local flora and fauna, particularly birds. Also, there is a large percent of people that support wind power, but do not support wind power being built in their community. This community, frequently referred to as "Not In My BackYard" or NIMBYs, resists the wind turbines being built close to them for a number of reasons. These reasons include wind turbines being unsightly, and decreasing home values in the near proximity. In this paper I will look at two cases in the United States where developers dealt with NIMBY resistance. This paper will evaluate which strategies were successful and which were not. It can be used as a template for future endeavors to increase the number of wind turbines in the United States.

## Evaluation of Strategies When Introducing Wind Turbines to New Areas

In polling, wind power is quite popular nationally. “Wind power receives overwhelming support public support in national surveys. For example, in a recent CBS/New York Times Poll (2007), 75 percent of the respondents said they would be willing to pay more for electricity if it were generated by renewable sources such as wind or solar. In addition, over 60 percent of respondents supported requiring government office buildings to use renewable sources of energy such as solar and wind power, even if this kind of regulation resulted in higher taxes” (Smith, 2007). In addition to being quite popular, there is a large amount of untapped wind power at present. Building more green production plants is excellent public relations for electric utilities, and in addition the potential for expansion into these untapped markets make it seem like it should be a sure thing for utilities to be able to build more wind power plants.

The resistance of local communities where the wind power is being constructed has consistently stymied utilities. By researching successful and unsuccessful attempts by utilities to implement more wind power, this research paper hopes to be a guide to help developers be more successful in the future. The increased expansion of wind generation technologies is a societal good that will help to decrease the carbon footprint of electric generation, and also decrease the reliance of electric generation on limited resources like coal and oil. Generally, everyone wants what is good for society provided it does not negatively affect them. People support wind power, but only if they do not have to be the ones that look at the wind farm every day. The different factors affecting this will be analyzed under the Social Construction of Technology (SCOT) STS

framework, where relevant social groups will be highlighted and explained. By using a SCOT analysis and having an understanding of what happened in successful scenarios, electric utilities can avoid this tragedy of the commons to do what is needed to enhance the sustainability of the electrical grid.

## Cape Wind Case Study

In 2001, Cape Wind Associates submitted a plan for the Cape Wind Energy Project. The proposal was to install 130 wind turbines off the coast of southeastern Massachusetts in federal water space. The proposed wind turbines would be almost five miles from the coast of Massachusetts, and over 15 miles from Nantucket. The projected output of these turbines was 1500 gigawatt hours per year. This output would be enough electricity to power 75% of the demands of Martha's Vineyard, Nantucket, and Cape Cod. The installation of these wind turbines would also lead to a reduction of the amount of oil shipped to an existing generation plant that currently powered those areas. Shipping oil to this plant had already resulted in two environmental disasters where millions of gallons of oil had been spilled into the ocean (Cape Wind, 2018).

Completion of the Cape Wind Energy Project would have resulted in one of the largest wind generation plants in the world. From a meteorological perspective, the proposed location was excellent. The average wind speed in the area was high, and moreover it was consistent. "The project is also one of the most significant greenhouse gas (GHG) reduction measures in our

nation. It would reduce GHG emissions by an estimated 730,000 tons per year, which is the equivalent of taking 175,000 cars off the road each year" (Kimmell, 2011). In 2002, the Army Corps of Engineers permitted Cape Wind Associates to build a tower in the proposed location to study how much wind power would be available. The Army Corps of Engineers was anticipated to approve the project, but in 2005 a congressional bill changed what department was responsible for approving the measure. The Department of the Interior became responsible, resulting in the approval process being dramatically slowed down. The Cape Wind Authorities were hit with lawsuits and legislative setbacks over the next twelve years, and finally in 2017 they gave up trying to implement the project.

A high profile, and quite unexpected alliance emerged during this time. Prominent Republicans in the state like politician Mitt Romney and donor William Koch, and prominent Democrats in the state like Senator Edward Kennedy joined together in fierce opposition to the plan. One of the most significant sources of opposition came from the home owners of Nantucket. Many of these residents that lived along the coast funded the opposition to the Cape Wind Energy Project. Mitt Romney ran for Governor of Massachusetts opposed to the project, and William Koch, a Nantucket resident, donated two million dollars to help Romney win the election (Bump, 2012). In Congress, Senator Kennedy helped design a Coast Guard funding bill that would allow Governor Romney to veto the Cape Wind Energy Project (Associated Press, 2006). Kennedy wrote a piece in the New York Times expressing his general support of wind power, but strongly attacking the proposal for the project that would be visible from his family's home. In spite of this high-profile opposition, a poll conducted by the Boston Globe found that

80% of adults in Massachusetts supported the construction of the wind turbines (Wirzbicki, 2010).

The implementation of these wind turbines would have overall been quite positive for the residents of Massachusetts and the world as a whole. Shifting to the greener technology was projected to vastly decrease greenhouse gasses, and oil imports that had been prone to disaster in the past thirty years. Decreasing the greenhouse gasses would arguably benefit all citizens of the world. By decreasing the output, it would delay or even prevent negative effects of climate change. A reduction in the potential for oil spills would have been good for the ecology, but also for fishermen and tourism. One of the spills resulted in the closure of 100,000 acres of shell fishing beds (Cape Wind, 2018).

The implementation would have been negative for a much smaller group of residents. The primary group that this would have affected is the coastal residents that would be able to view the wind turbines from their property, and considered the turbines to be unsightly. Another complaint brought up regarding the project was that it took up 25 square miles of ocean that was quite popular for yachting. Although the negative impact affected a much smaller group of Massachusetts' citizens, the group it negatively impacted had a disproportionate amount of power. The residents with coastal Nantucket homes and yachts had the finances and political influence to collapse the project.

An analysis of the situation using SCOT can help explain why the Cape Wind Energy Project failed. Like all STS frameworks, it is essential to remember that technology does not exist in a vacuum. Just because an idea is technologically sound and logical does not mean that society

will adopt it: technology adoption is far more nuanced and complex. A central aspect of SCOT is the consideration of the relevant social groups. In all societies, different groups have different amounts of power. The adoption of a given technology will impact certain groups positively, and other groups negatively. If this project had been considered through a SCOT lens prior to beginning it, the utility company could feasibly have realized the amount of opposition from powerful people that would outweigh the overwhelming support of all the people the project could benefit.

## Jones Beach Case Study

Two offshore wind farms have been proposed for the state of New York. One is to be 14 miles off the coast of Jones Beach Long Island, and the other is being built 30 miles north of Montauk. In spite of not being visible from the shore, the plans have been met with opposition on the way to being implemented. A lot of the opposition has come from people that make their living off fishing. The wind turbines proposed off the coast of Montauk is located in the center of a popular scallop fishing location (Downes, 2019).

New York state has a commitment to have 70% of its power produced from renewable sources by the year 2030. New York's Governor Cuomo has wholly endorsed the plan to build the turbines in an effort to achieve these goals. Between the two wind farm locations, there will be a combined capacity of 1,700 MW. This is enough to power over 1.1 million homes. Governor Cuomo has expressed the goal of having 9,000 MW of offshore generation by the year 2035. "While New York's plans are ambitious, the offshore wind industry in the U.S. is still in its early stages of development. The country's first offshore wind farm, the five turbine, 30 MW

Block Island Wind Farm, only began commercial operations in late 2016. By comparison, Europe is home to 18,499 MW of installed offshore wind capacity, according to industry body WindEurope" (Zambito, 2018).

The fishermen who currently fish from the location of the proposed north-of-Montauk wind farm have raised the biggest objection, but those who depend on them have as well. Commercial fishing supports a number of other industries. Ice vendors will also be affected if scallops, squid, and other fish can not be harvested from these waters. Deepwater Wind is the project that is scheduled to be north of Montauk. Deepwater Wind has stated that they do expect short term effects from construction to affect the scallop beds, but they do not expect these affects to last. "[The] plan will have a negative impact on the roughly 100 commercial boats registered in Montauk, which pull in between 12 and 15 million pounds of fish from local waters, generating between $15 million and $17 million annually, Brady said. They're the backbone of what Brady estimates to be a $1 billion boat-to-plate industry." In spite of the fact that Deepwater Wind claims that there will be no long-term affect to the environment, the fishermen and the businesses they support are dubious (Downes, 2019).

To combat this construction, a number of lawsuits have been filed against Deepwater Wind. One of the lawsuits is a federal suit against the Bureau of Ocean Energy Management (BOEM). The BOEM is a federal agency that allowed for the construction of wind turbines to the north of Montauk. A number of businesses are involved in this lawsuit, including scallop fishermen, squid fishermen, ice producers, and they are located from New York to Massachusetts. The locals are framing the struggle against the incoming wind power as a have's

versus have-not's struggle. In order to afford the new wind turbines, utility prices are being increased across the state, which has a disproportionate effect on lower income families. Locals have voiced that everyone wants renewable energy, but no one wants to have to look at it. By putting it far off the coast everyone is happy but the fishermen.

In spite of strong community resistance, the plan for the offshore wind in New York and future ones seem to be on track. New York's state website prominently displays, "Offshore wind energy is poised to become a major source of affordable, renewable power for New York. As codified by the Climate Leadership and Community Protection Act, the State is supporting the development of 9,000 megawatts of offshore wind energy by 2035, enough to power up to 6 million homes" (Frangoul, 2019). It will be in the best interest of the majority of the state to transition to a renewable power supply. Moreover, the transition to a clean local power like wind is quite popular in the state as a whole. It will likely remain unpopular in the communities in which it is implemented however.

A SCOT analysis of this case helps to show why the local fishermen in New York have been unsuccessful and will likely continue to be so. Considering the relevant social groups requires looking at what social groups stand to benefit from this project, and also which stand to lose from the construction of the wind farms. The group that most prominently stands to benefit would be the government, and particularly the Governor of New York. By constructing these wind turbines, New York gets closer to the expressed goal of 9000 MW of offshore power by 2035. In addition to this, the citizens of New York and the world benefit by more power coming from renewable sources. The societal group harmed by this is much smaller. The area in Long

Island that will be most affected by this is a rural one. The fishermen and small business owners lack the capital and connections to make this a huge national story. From analyzing the relevant social groups, it can be concluded that it is more than likely that the wind turbine construction will be completed.

## Conclusion:

The Massachusetts case study prominently displayed a successful NIMBY effort. The measure was overwhelmingly popular with Massachusetts adults. Massachusetts also has among the most expensive electricity in the country. The state is liberal and progressive, and the green initiative is certainly in line with those motives. So, what went wrong? In the Massachusetts case study, the proposed location upset the wrong people. Uniting a Republican governor and a Democratic senator on an issue is rare, but this issue did it. The reason for that is although both publicly endorsed wind power, neither were a proponent when it inconvenienced them. In the case of Senator Kennedy, the wind turbines would be visible from his family home in Hyannis, Ma. Senator Kennedy was an advocate of wind power as a whole, but he did not want to have to look at it from his house. He wanted the environmental benefits and electricity, but not in his backyard. Governor Mitt Romney also opposed it. Traditionally, the Republican party is less focused on climate change in comparison to the Democrats, so Romney's objection to the wind power may be less of a surprise. Romney also had a strong financial incentive to be against Cape Wind however. Outspoken critics of Cape Wind were large donors to his campaign.

The New York case study prominently displays a failed attempt at NIMBYism. In the state of New York offshore wind power is highly popular. New York is in a committed contract to achieve 9000 MW of offshore wind power by 2035, and are presently a long way from that target. New York's Democratic Governor, Andrew Cuomo, is an outspoken ally of the movement. In spite of that there has been strong local push back to the two locations proposed for the wind turbines. Nine lawsuits were filed in one month against the construction of the wind turbines in response to the plans. Residents charged the plan with attempting to turn the beautiful waterfront into an industrial area (Firestone, 2020). Newspapers have interviewed local citizens describing their displeasure and how unfair they think the whole process is. Business owners have testified to the strong negative impact this will have to them, and the community as a whole. Regardless of this negative PR, the plan continues to be executed.

Why is the story of New York a success for offshore wind power and the story of Massachusetts a failure? The biggest difference between the two cases is who had to pay the price for society. Whenever wind power is implemented a small group of citizens will be disadvantaged for a larger group of citizens to be advantaged. In the Massachusetts case, the small group of individuals was a wealthy and politically important group. This group of individuals had a disproportionate ability to self-advocate. They could directly propose laws to prevent the incoming wind turbines in Cape Wind. Conversely, the social group disadvantaged by the incoming New York wind turbines is a much more average group of citizens. The political elite stand a large gain from inconveniencing this group, so the less powerful social group will not be able to stop them. In the future, a SCOT analysis of the relevant social groups being

affected could go a long way to prevent a lot of time and energy being invested into a project that will ultimately be unsuccessful.

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