Block Island: Wind for Our Future?

A Case Study on the Implementation of Block Island Offshore Wind Farm & its Implications for Future Offshore Wind Projects to Come

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Abstract:

Block Island is 15 miles off the coast of Rhode Island and has always been known for its frequent and powerful winds, along with its massive diesel-burning generators that powered the island. This all changed when five 6-megawatt turbines were implemented offshore and south of the island's Mohegan Bluffs in May of 2017, making Block Island the only community to be fully powered by offshore wind in the United States. This case study will investigate the controversy around the project during the time of proposal of the project, construction of the Wind Farm, and still today.

While the project ultimately was implemented, controversy around ecological impacts, energy output, and obstructing views were all important issues discussed by stakeholders, including full-time and part-time Block Island residents, fishermen, the local and federal governments, and environmental groups. This project is extremely significant as it established a precedent for large-scale offshore renewable energy and has influenced similar projects to come.

Timeline:

May 2016 — Five 6-megawatt turbines were implemented offshore and south of the island's Mohegan Bluffs, making Block Island the only community to be fully powered by offshore wind in the United States.

December 2020 — Energy production peaked at 46% capacity. The turbines have been consistent and met expectations, producing more than 100,000 megawatt-hours of electricity.

August 2023 — The U.S. The Interior Department approved the construction of an additional 704 megawatt and up to 65 turbine wind farm, called Revolution Wind, off Point Judith, Rhode Island. This brings into question how the Block Island Wind Farm will influence future offshore wind projects.

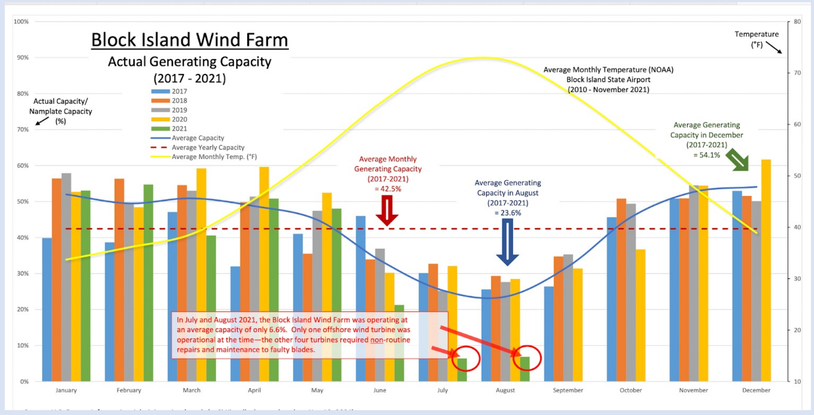

Figure 1: Actual generating capacity for the Wind Farm is lower than it could be, especially in comparison to the energy output of fossil fuels. However, experts say the farm's generating capacity meets expectations.

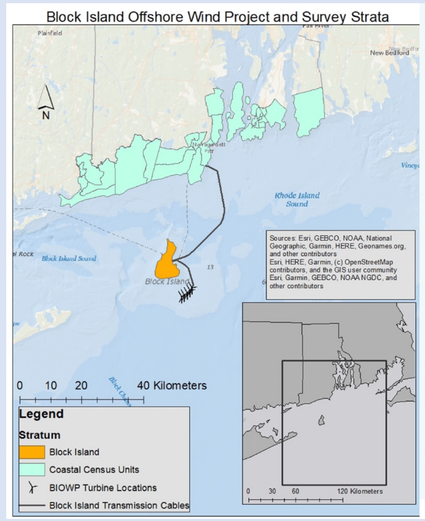

Figure 2: Map showing site location.

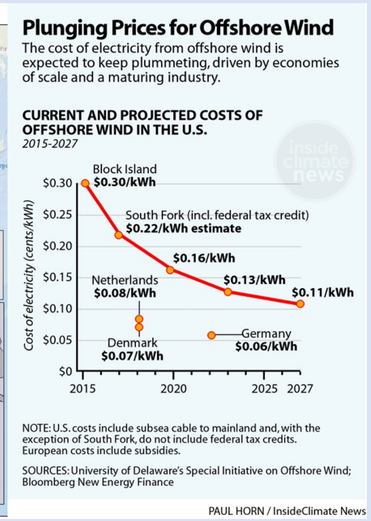

Figure 3: Data projects that future offshore wind projects will decrease in price, suggesting this project might have been a key step in the advance of offshore wind.

Benefits

- 44% lower energy prices
- Increase in tourism, 19% increase in Airbnb occupancy rates
- Creation of over 300 jobs
- Operating at 46% capacity in 2020, which is considered high and meets expectations
- Decreases reliance on fossil fuels
- Increases price stability
- Turbines create marine habitats, beneficial for fish and recreational fishermen
- Provides a precedent for future offshore wind projects

Drawbacks

- Jevons Paradox: greater energy consumption
- High costs of project, $300 million, increasing throughout project ($50 million)
  - Substation was done cheaply, ended up costing an additional 2.5 million
  - These costs are paid by residents, with an extra 5 cents price per kwh
- Energy capacity is still low when compared to non-renewable sources of energy
- Residents didn't receive the promised high-speed internet from the project
- Increased boat traffic, negatively affecting some marine species
- Disadvantages commercial fishermen

Lesson Plan:

Pre-class: divide into 2 groups randomly, each group receiving a subsequent set of articles biased for or against the offshore wind farm.

This will give each group internal biases about the Block Island Wind Farm and future wind projects to come.

In class, reconvene with the larger groups. Then, form smaller groups within each larger cohort. Each smaller group of 2-3 people will pick and research an offshore wind project that was proposed and/or implemented in the United States.

Each group will prepare a one-slide presentation on the offshore wind farm selected and make a final recommendation on whether the project should/should have been implemented on not.

After all groups present, discuss the overall policy recommendations, and how the information given to groups beforehand influenced decisions.

Sources:

Conclusions:

Although there are clear benefits of the Block Island Offshore Wind Farm, such as reducing energy prices, boosting the economy, providing habitats, and setting precedents for a more renewable future, there are also clear drawbacks. It is uncertain whether the increases in tourism will be temporary and specific only to this revolutionary project. There are also negative environmental consequences, and numerous concerns about the actual economic costs of the construction and maintenance of the project, as opposed to the proposed prices.

It is inevitable that this project will raise such questions as to why time, energy, and money are invested into new projects when fossil fuels are a much more reliable source with higher energy output. Are such large-scale renewable energy projects "worth it"? What can the Block Island Wind Farm show us? Should the project have been implemented, and if so, should it serve as a precedent for future projects? Finally, how does the study of this project influence how we think about other offshore wind projects?

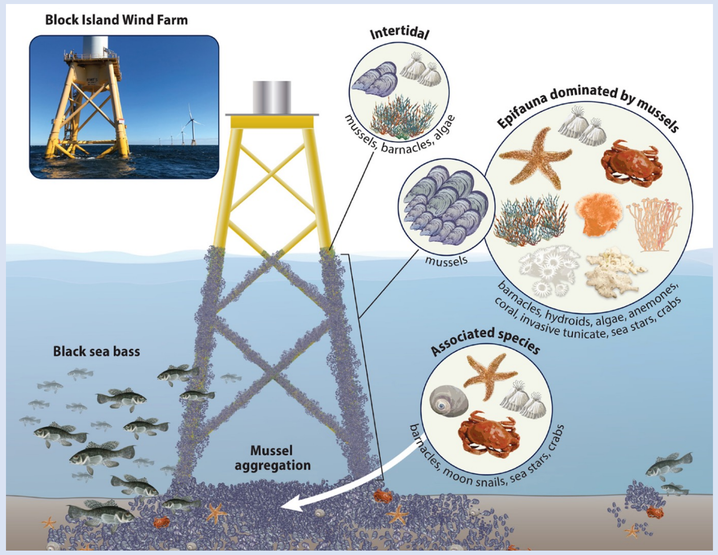

Figure 4: Creation of ecosystems and habitat because of the construction of the wind turbines.