

BOOM OR BUST: TEXAS OFFSHORE WIND INDUSTRY FACES ECONOMIC CHALLENGES

Cody Hoffman

ABSTRACT

Already a significant part of the European electricity generation mix, technology and cost improvements are allowing offshore wind to enter new markets around the world. With over 200 GW of announced projects globally, the offshore wind industry is hitting its stride and joining both onshore wind and solar as another alternative to fossil-fueled generation. So far, the US has struggled to even participate in the industry, with only a single 30 MW offshore project in operation. Navigating a complicated regulatory framework, no coherent national policy, and facing sometimes significant local opposition, the industry has had some spectacular failures in recent years. But the US now has an opportunity to take advantage of the lessons learned from years of (mostly) European development and combine them with excellent offshore wind resources close to transmission-constrained load centers. There are 25 GW of announced offshore projects in the US pipeline, and while many of those projects are still in early stages, a number of them have reached major milestones and are showing real promise.

Both wind generation and offshore development are not new to the state of Texas. By far the leader of the US onshore wind industry, and with a long history of offshore oil and gas development, Texas has some major advantages when it comes to offshore wind. Wind resources in the Gulf of Mexico, though not as strong as many East Coast sites, are more than adequate for offshore production. With shallow depths and relatively calm seas, the Texas Gulf Coast is also well suited to offshore wind development. These factors, coupled with a pro-development state regulatory scheme and extended jurisdiction over submerged lands, seem to make Texas an ideal candidate for offshore wind development.

With no currently active projects in the US pipeline, this thesis examines the economic viability of offshore wind development on the Texas Gulf Coast at the project level. Using an ideal location and cost data from NREL, the EIA, and industry sources, a hypothetical "test project" was developed and tested with three cost estimate cases and ten regulatory scenarios. These inputs were fed into a Discounted Cash Flow model to determine if prospective developers would be able to compete for long-term Power Purchase Agreements (a financing requirement) in the ERCOT wholesale market.

Results indicate that without significant cost reductions or major changes to either ERCOT market conditions or federal/state incentive schemes, Texas Gulf Coast offshore wind cannot compete with other forms of onshore generation. With ever-decreasing costs, it is not impossible that offshore wind could become viable at some point in the future, but given current conditions, it is not likely that any projects are on the near-term horizon.



Advisor: Dr. Fred Beach

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