



Winds of Change: Navigating the Gulf of Mexico's New Energy Frontier



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INTRODUCTION

The Gulf of Mexico has long played a central role in energy production for the United States. Offshore oil and gas drilling in the federal Outer Continental Shelf (OCS) waters of the Gulf of Mexico currently amounts to 15% of the total U.S. crude oil production and 5% of natural gas production.² However, the outlook for Gulf of Mexico energy production is already changing. Dwindling reserves in shallow, lower cost lease areas, plus regulatory uncertainty regarding new oil and gas leases in the area have shifted the outlook for future fossil fuel production in the Gulf of Mexico. At the same time, the federal government has announced plans to deploy 30 GW of offshore wind energy across the U.S. by 2030.³ The development of wind energy in the Gulf of Mexico has the potential to leverage Louisiana's existing workforce and strengths in offshore development, diversify the region's energy mix, reduce greenhouse gas emissions, and provide a new source of public revenue.

Federal revenues from oil and gas leases in the Gulf of Mexico are allocated to nearby state and local governments through a structure established by the Gulf of Mexico Energy Security Act (GOMESA) and these revenues provide a critical source of funding for coastal restoration projects in Louisiana. A similar structure to allocate revenues from wind energy projects in the Gulf of Mexico has yet to be established, though pending legislation may expand the limits of GOMESA to include wind revenues. An in-depth research report from the Blanco Center titled,

HIGHLIGHTS

- **Developer interest in U.S. offshore wind has grown in recent decades, with recent lease bid amounts exceeding \$1,000 per acre.**
- **Shallow waters and a well-established marine industry and workforce will be appealing to Gulf of Mexico wind developers, but low wind speeds, weather risk, and other conditions could increase installation costs.**
- **The first offshore wind lease sale in the Gulf of Mexico generated \$5.6 million in bids for only one of three available areas suggesting additional technological advances and an expanded domestic supply chain may be needed to spark more widespread development of offshore wind in the region.**
- **The allocation of federal wind revenues is currently uncertain. Pending legislation in the U.S. Congress may expand existing laws like GOMESA to allocate federal wind revenues to state and local governments.**

"Offshore Wind in the Gulf of Mexico: Natural Resource Revenue Potential" examines the potential for wind development and estimates potential revenues from federal wind leases in the Gulf of

Mexico. This policy brief offers a summary of the report, with an overview of the growth potential for wind in the Gulf of Mexico and estimates of revenue from offshore wind lease bids, rents, and operating fees.

WIND ENERGY IN THE GULF OF MEXICO

The Gulf of Mexico has direct access to abundant offshore wind resources. The Department of Interior (DOI)'s Bureau of Ocean Energy Management (BOEM) is currently offering lease areas with potential to generate 3,663 MW (3.7 GW) of electricity. This represents a small but important first step for wind development in light of the National Renewable Energy Laboratory's 2022 assessment that the Gulf of Mexico has a total offshore wind energy technical capacity potential in of 696 GW from fixed-bottom turbines and 867 GW from floating-bottom, for a total of 1563 GW.⁴ These figures provide a technical ceiling for wind generation in the Gulf of Mexico, however with no precedent to look to, there is a degree of uncertainty about the level of interest among

potential developers in wind lease sales in the near future.

Compared with offshore wind areas in other parts of the U.S., the Gulf of Mexico offers some advantages for developers, but also some challenges that must be overcome. First and foremost, the Gulf of Mexico has fundamental infrastructure for energy transport in place thanks to the region's system of pipelines and specialization in offshore oil and gas production. A well-established pipeline system could lower costs associated with power generation, including transmitting green hydrogen produced from offshore wind.⁵ An existing workforce with experience from oil and gas related industries including offshore natural resource development could lower labor costs for offshore wind project construction and operation.⁶ Some features of the Gulf of Mexico's natural environment (e.g., shallow water depths, typically mild weather, and calm sea states) are favorable to the development of offshore wind production. In contrast several other environmental aspects of the Gulf of Mexico (e.g., lower annual average wind speeds, softer sea bottom substrate, and extreme

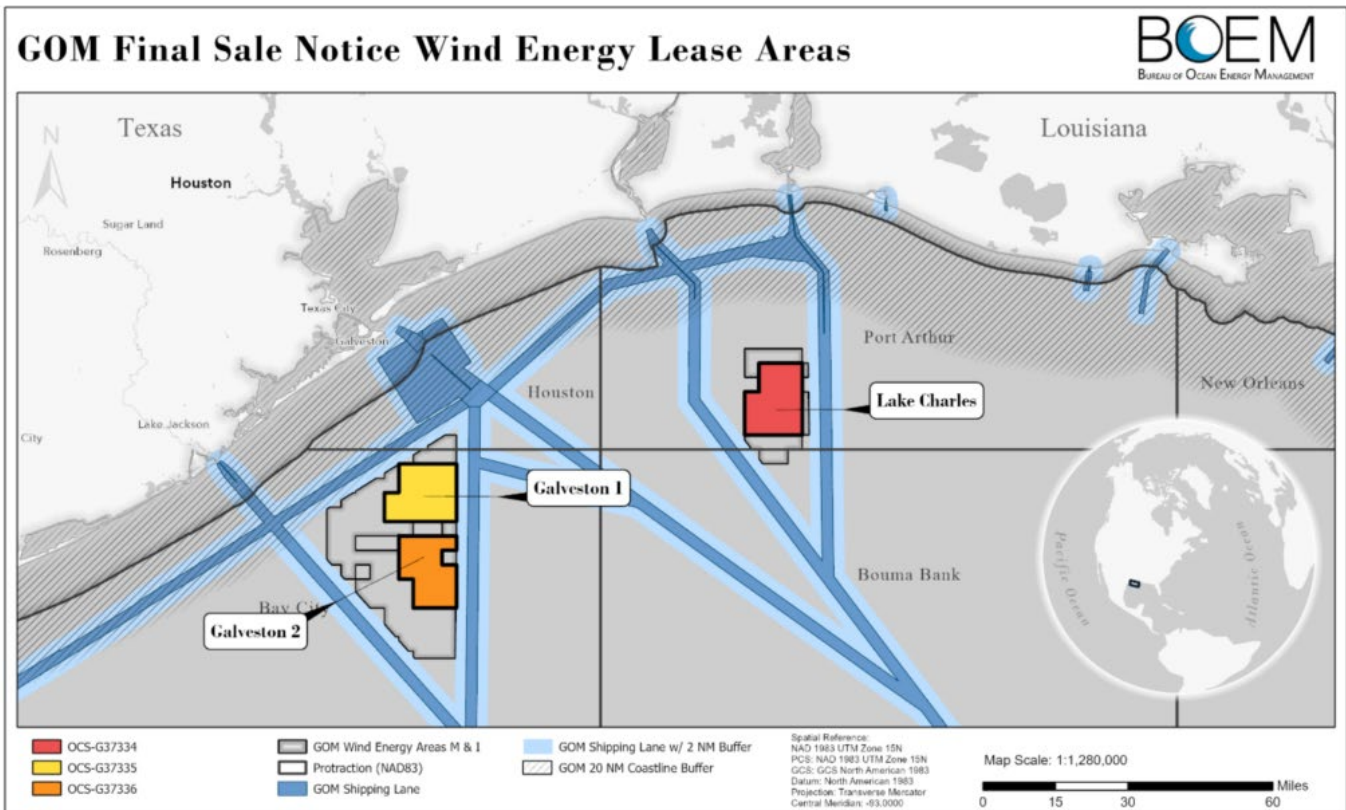


Figure 1. Map of final wind energy lease areas in the Gulf of Mexico. Source: [BOEM](https://www.boem.gov).



weather events such as tropical storms and hurricanes) make development of offshore wind more challenging in the Gulf of Mexico.⁷ Other challenges for developers include low average electricity prices in the region and a lack of renewable portfolio standards in all Gulf of Mexico states except Texas, which has already achieved its goal. These factors could lead to relatively low revenues from electricity produced from offshore wind energy.

In October 2022, BOEM designated two wind energy areas totaling 682,540 acres in the Gulf of Mexico, including a 508,265-acre area whose geographic center is approximately 35 nautical miles from the coastline of Texas, and a 174,275-acre area whose geographic center is 38 nautical miles from the coastline of Louisiana.⁸ In February 2023, the DOI announced a Proposed Sale Notice for three lease areas in the Gulf of Mexico that could be sufficient to power over 1.3 million homes once fully operational.

These lease areas include (1) a 102,480-acre area near Lake Charles, Louisiana; (2) a 102,480-acre area near Galveston, Texas; and (3) a 96,786-acre area also offshore of Galveston.⁹

The Gulf of Mexico designated wind energy areas are outside of state waters and under federal jurisdiction. While states have options for some non-oil and gas revenue sharing in the Outer Continental Shelf Lands Act 8(g) zone, these rules would not apply to the proposed lease areas offered by BOEM because they are further offshore and outside of the 8(g) zone.¹⁰

Public revenues from offshore wind production are generated from four sources in different phases of the leasing processes. BOEM oversees the leasing and permitting of federal offshore wind projects on the U.S. Outer Continental Shelf, and DOI's Office of Natural Resources Revenue (ONRR) is authorized to

Mean price per acre

Offshore wind leases in the **Atlantic**, **Pacific**, and **Gulf of Mexico**.

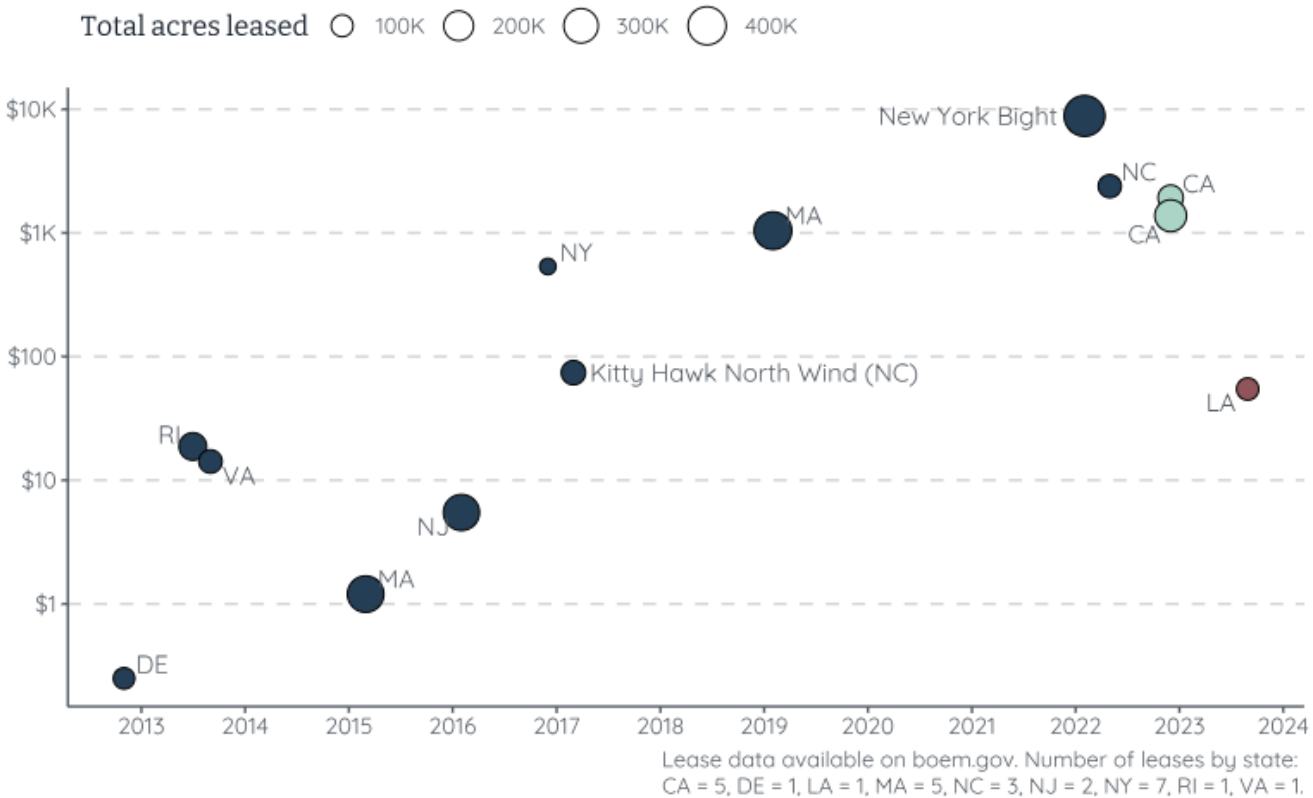


Figure 2. Mean bonus bid per acre for offshore wind lease auctions in the United States from 2012 to 2023. Note the logarithmic scale.

collect four categories of revenues during the different stages.¹¹

1. Developers secure leases from BOEM. For competitive lease sales, ONRR collects a **bonus bid** from the highest bidder in exchange for granting the lease.
2. Before energy production begins, the developer pays an **annual rent** to ONRR. Annual rent payments are based on the area granted in the lease, using a set rate at \$3 per acre.
3. Once operations begin, ONRR collects **operating fees** from the developer, similar to royalties in oil and gas production. The operating fee is set to 2% of the anticipated revenue of wind energy produced in the facility.
4. Additionally, the ONRR also collects other revenues such as settlement agreements and interest payments.

This framework is similar to that for oil and gas production in federal waters but varies slightly regarding rents and operating fees: oil and gas companies pay rents for the entire lease area until production begins anywhere within the leased block, yet wind companies pay rents for the portion of a lease area not under operation while paying operating fees for areas under production as a development is gradually built out.

While the unit price of rent and operating fees have been similar across most lease sales to date, records of offshore wind leasing demonstrates a fluctuating, but generally increasing trend in bonus bids through the first part of 2022, which is particularly clear after controlling for the acreage of each lease sale (Figure 2).¹² Early lease sales attracted lower levels of bidding while sales in more recent years reached record numbers. In 2022, the first lease areas in the Pacific were sold in California with bonus bids of \$1,400 per acre (total cash bids at \$332 million, Morro Bay) and \$2,000 per acre (total cash bid at \$255 million, Humboldt/Eureka), respectively. In the Atlantic, the Carolina Long Bay lease sold for a cash bid similar to those off the California coast (total cash bid at \$262.5 million), with a higher price-per acre at \$2,400. The sale of the New York Bight made headlines with record-breaking bonus bids of \$8,831 per acre, and a total cash bid of \$4.37 billion.

Expectations for the first lease sale in the Gulf of Mexico were fairly high in the months leading up to the sale following the long run trend of increasing bids with 16 firms qualifying to bid in the lease sale. Despite high expectations, some less favorable regional factors including lower annual average wind speeds, softer sea bottom substrate, and extreme weather events such as tropical storms and hurricanes kept early expectations below the recent high water mark of the New York Bight. A more detailed discussion of initial expectations is detailed in the full Blanco Center report released in May 2023.

However, in the weeks leading up to the lease sale, companies learned of sizeable supply chain cost increases for ongoing offshore wind developments, regulatory changes to address Rice's whale protection in the Gulf of Mexico, and continued rise in borrowing costs as a result of inflation.^{13,14} In addition, the timing of the lease sale on August 29, which is the anniversary of Hurricane Katrina's landfall in Louisiana, was unfortunate and during the week leading up to the wind lease sale, Hurricane Idalia approached the Gulf of Mexico with forecasters anticipating it would strengthen rapidly to category 4 with sustained wind speeds of 130 mph.¹⁵ The timing of this stark reminder of hurricane risks may have also contributed to a drop in interest as the lease sale opened. Ultimately, the first lease sale in the Gulf of Mexico garnered two bidders with a high bid of \$5.6 million in one leased area off the coast of Louisiana.¹⁶

GULF OF MEXICO WIND REVENUE OUTLOOK

While the first lease sale did not deliver the high level of interest that many stakeholders had hoped for, it offers a tangible first step that may serve as a critical test case to demonstrate how well technical solutions can be engineered to address concerns around hurricane risk in particular, which is greater in the Gulf of Mexico than in other areas where offshore wind has been developed. As technology continues to advance and the domestic supply chain expands to reduce cost pressures currently facing developers, the long-term outlook for offshore wind in the Gulf of Mexico remains bright. However, it will take time for developers to overcome challenges facing the region and the industry.

As mentioned in the previous section, the Gulf of Mexico differs from other wind leasing areas in the U.S. Relatively low wind speeds will require taller and

larger turbines, and a soft sea floor means more costly platforms will be required to anchor the turbines in place. In addition, Louisiana and Texas both have lower than average electricity prices compared to other offshore wind areas that have already been leased. Texas is the only state in the region with a renewable portfolio standard, but those standards have been met, leaving minimal additional regulatory pressure on the market to secure new renewable resources. These factors effectively lower developer interest in Gulf of Mexico lease areas relative to other areas.

In comparison to recent lease auctions in California and North Carolina, the Gulf of Mexico region has some advantages. For instance, Louisiana and Texas both have strong maritime and manufacturing industries with decades of experience installing platforms in the Gulf of Mexico. In fact, Gulf Island Fabrication, a Louisiana-based company, was selected to build the turbine platforms for the first offshore U.S. wind farm at Block Island in Rhode Island. Even with a soft sea floor, the Gulf of Mexico has shallow waters and normally calm seas that will be attractive to wind developers in contrast to the deeper and rougher waters along the coast of California, which will require expensive and difficult to install floating platforms. Despite the engineering challenges facing offshore wind developers in California, the three 2022 lease sales in the region fetched bonus bids ranging from \$1,400 to \$2,400 per acre and, as seen in the New York Bight lease sale, the potential for lease bids could reach even higher. In fact, as shown in Figure 2, per acre lease amounts for offshore wind have been increasing over time, indicating a growing level of interest from developers.

Nonetheless, locations with higher per acre values often had robust competition during the bidding process. During the New York Bight lease in February 2023, 18 developers bid in 64 rounds leading to a record bid amount paid for the lease. While 16 bidders qualified to bid in the Gulf of Mexico lease auction, only two chose to bid on the Lake Charles section and none bid on either Galveston sections. While the prequalification of multiple bidders suggests initial optimism and interest, outside factors occurring between the qualifying period and the auction date influenced the number of companies willing to bid on the leases.

The revenue estimates outlined in our May 2023 report reflect the considerations mentioned above

and others. The medium scenario reflected an average bonus bid of \$2,384 per acre (an equivalent value to the Carolina Long Bay sale of May 2022), with 75% of the leasable area, or 226,000 acres sold. While the bid per acre of the August 2023 lease sale in the Gulf of Mexico ended up closer to the first lease sale in North Carolina (Kitty Hawk in 2017), it nonetheless establishes the first offshore wind development opportunity in the Gulf of Mexico.

As noted previously, bonus bids make up a large portion of all public revenues from offshore wind lease sales signaling that it may be some time yet before future lease sales in the Gulf of Mexico generate bonus bids in line with the long-run trends seen in other parts of the country.

CONCLUSION

Wind offers an exciting opportunity for developing new energy in the Gulf of Mexico. The recent leasing of an area off the coast of Louisiana offers a first step toward establishing offshore wind energy in the region.

The changing landscape for revenue sharing as it pertains to wind in the Gulf of Mexico remains a concern for state and local governments. Bonus bids provide the largest opportunity for revenue from wind; annual rents and operating fees will provide a smaller long-term revenue stream. While current revenue sharing for oil and gas projects provides substantial annual revenue for state and local governments, wind energy does not generally have the same authorization to share revenue with state and local government. Pending legislation at the federal level may update or expand existing revenue sharing agreements for oil and gas so that they also include other energy sources. However, no enacted federal legislation currently provides revenue sharing opportunities for local and state governments in the three proposed wind energy area blocks in the Gulf of Mexico.

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