Environmental Studies Program: Ongoing Study

Field	Study Information
Title	Onshore Infrastructure Utilization, Development, and Potential Scenarios Related to Gulf of Mexico Outer Continental Shelf Unconventional Energy Projects
Administered by	Gulf of Mexico OCS Regional Office
BOEM Contact(s)	Doleswar Bhandari (Doleswar.bhandari@boem.gov)
Procurement Type(s)	Contract
Conducting Organization(s)	Acadian Consulting Group, LLC (ACG)
Total BOEM Cost	$681,824.00
Performance Period	FY 2023-2026
Final Report Due	March 14, 2026
Date Revised	October 19, 2023
Problem	BOEM needs to understand how potential offshore renewable energy projects may develop using existing coastal infrastructure, what new onshore infrastructure may be required, and how Gulf Coast communities and businesses that may potentially provide support for offshore renewable energy projects could be affected.
Intervention	This study will conduct a coherent and thorough assessment within the context of a range of scenarios regarding existing and potential new onshore support infrastructure that may develop as offshore wind energy projects develop in the GOM.
Comparison	Comparative to wind energy development in the North Sea where, like the GOM, oil and gas activities have been ongoing for decades.
Outcome	BOEM decision-makers and various stakeholders will gain a better understanding of how renewable energy projects may develop in the GOM and the potential social, economic, industrial, and community-level effects that may occur.
Context	GOM Region

BOEM Information Need(s): BOEM requires specific, detailed information about the various types of onshore coastal infrastructure that may be utilized to provide upstream and downstream support for the development of wind energy projects on the GOM OCS. Of particular interest is how existing onshore coastal infrastructure may interact with offshore wind energy development and what new types of onshore infrastructure may be required to support this frontier industry (e.g., ports, shipyards, fabrication yards, support services, electric grid). This information is critical for developing scenario projections that will inform BOEM's environmental impact analyses across all resources and will ultimately inform BOEM decision-makers in their oversight and management of OCS resources as mandated by the OCS Lands Act.

Background: While seasoned over many decades with conventional energy activities, the GOM OCS is a frontier area for renewable energy with an uncertain development trajectory. For example, regarding offshore wind, the relationship of its offshore component to its upstream support (e.g., the fabrication of wind turbines and necessary support vessels, along with the existing supply chain), and its relationship to its downstream component (how it will fit into the larger electric grid and the economics driving the grid in the Gulf Coast states) are true unknowns. BOEM funded two exploratory studies focused on how and where offshore wind energy activities may develop in the GOM (Musial et al. 2019, 2020). Both studies found that more detailed infrastructure information would be needed in the future if wind energy were to become a reality in the GOM. Similarly, the development of offshore green hydrogen and carbon sequestration projects resulting from the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act, Public Law 117-58), will require onshore infrastructure utilization that will interact with existing conventional energy infrastructure (e.g., ports, vessels, component fabrication, support services, labor needs).

Development of renewable energy projects in the GOM Region will be fundamentally different from other OCS regions in numerous ways, from population density and shoreline development to the socioeconomic standing of coastal populations and the fragility of a coastal topography battered by issues of land loss, subsidence, and climate change. Also unique to the GOM is the expansive onshore coastal infrastructure and support services network that has developed in response to offshore oil and gas industry activities for many decades and has been described extensively in numerous BOEM studies (The Louis Berger Group, Inc. 2004, Dismukes 2010, Dismukes 2011, Kaplan et al. 2011). The potential future interaction between renewable and conventional energy industries and synergies among onshore infrastructure types and transferability across labor skillsets need to be further explored. Furthermore, the GOM Region faces the challenging situation of hosting multiple offshore energy industries where one extensive, well-developed offshore energy producing industry, which states have relied upon for employment and economic development (i.e., oil and gas), is operating alongside emerging renewable energy industries and their potential relationships and interactions with existing uses of the OCS. Many of the labor skills used in the oil and gas industry will be transferable to the emerging renewables industry in the GOM. This synergistic interaction across industries needs to be explored and better understood to inform decision making.

Objectives: BOEM seeks increased understanding of onshore coastal infrastructure needs for renewable energy development in the GOM to better inform environmental impact assessments across resources and with attention to potential socioeconomic impacts on coastal communities. The objectives of this study are to:

1. Gather insights into how frontier GOM renewable energy activities will affect and interact with existing onshore energy infrastructure and the regional labor and energy markets, within the context of a range of potential development scenarios for wind, green hydrogen, and carbon sequestration activities on the GOM OCS.
2. Better understand how potential changes in land use, coastal infrastructure and labor demands to support offshore renewable energy projects may produce social and economic consequences in coastal areas, particularly in communities with environmental justice concerns.

Methods: In order to address the broad range of conventional and renewable energy industries to be analyzed, methods specific to multiple disciplines will be involved including social science, economics, petroleum engineering, geology, geophysics and chemical engineering. Some of the anticipated methods may include but are not limited to focused literature review; some limited, guided discussions with a range of subject matter experts; and analytical research of the latest information regarding

offshore renewable energy projects' infrastructure needs, specifically, wind, green hydrogen, and carbon sequestration. Methods may also include a comparative analysis of how offshore renewable energy industries in the GOM may evolve similarly or differently from renewable energy development in the North Sea where oil and gas activities were already well-established over many years with particular attention to onshore support infrastructure and effects to communities at a local level.

This is a new arena and offerors must provide a coherent approach to this unusual problem—frontier development of renewable energy projects within a mature offshore conventional energy environment. The study should result in a thoughtful consideration of possible scenarios for offshore renewable energy development in the GOM Region.

Specific Research Question(s):

1. How will offshore renewable energy industries develop on the GOM OCS regarding onshore coastal infrastructure, land use, supply chain support and labor?
2. What currently existing specific coastal infrastructure in GOM coastal states will be able to provide support for offshore renewable energy projects? (e.g., fabrication yards, shipbuilding, ports, etc.)
3. What new onshore support infrastructure may need to be constructed in the coastal GOM states as a result of offshore renewable energy development in the GOM?
4. How will these new frontier industries affect coastal communities regarding land use, coastal infrastructure, supply chain support, and labor?

Current Status: Acadian Consulting Group was awarded the contract for the Unconventional Energy Projects on September 14, 2023. Since then, the kickoff meeting has been held and all project tasks are currently on track to be completed by March 14, 2026.

Publications Completed: None to date

Affiliated WWW Sites: N/A

References:

Dismukes DE. 2010. Fact book: offshore oil and gas industry support sectors. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 138 p. Report No.: OCS Study BOEMRE 2010-042.

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Kaplan MF, Laughland A, Mott J. 2011. OCS-related infrastructure fact book. Volume II: communities in the Gulf of Mexico. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 163 p. Report No.: OCS Study 2011-044.

Musial W, Tegen S, Driscoll R, Spitsen P, Roberts O, Kilcher L, Scott G, and Beiter P. 2019. Survey and assessment of the ocean renewable resources in the US Gulf of Mexico. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 82 p. Report No.: OCS Study BOEM 2020-017.

Musial W, Beiter P, Stefek J, Scott G, Heimiller D, Stehly T, Tegen S, Roberts O, Greco T, Keyser D. 2020. Offshore wind in the US Gulf of Mexico: regional economic modeling and site-specific analyses. New Orleans (LA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 94 p. Report No.: OCS Study BOEM 2020-018.

The Louis Berger Group, Inc. 2004. OCS-related infrastructure in the Gulf of Mexico fact book. New Orleans (LA): U.S. Department of the Interior, Minerals Management Service. 234 p. Report No.: OCS Study MMS 2004-027.