Finding of No Historic Properties Affected
for the
Issuance of Commercial and Research Leases within the Gulf of Mexico Wind Energy Areas

and

Issuance of Right-of-Way and/or Right of Use and Easement Grants on the Outer Continental Shelf Offshore Texas and/or Louisiana

Finding

The Bureau of Ocean Energy Management (BOEM) has made a Finding of No Historic Properties Affected (Finding) for this undertaking, pursuant to Section 106 of the National Historic Preservation Act (NHPA) (54 USC 306108) and 36 Code of Federal Regulations (CFR) § 800.4(d)(l) of the Section 106 regulations, "Protection of Historic Places." Consistent with this Finding, BOEM will ensure the inclusion of lease and grant stipulations requiring lessees/grantees to avoid any potential historic properties identified through their high-resolution geophysical surveys during bottom-disturbing activities associated with site characterization activities.

Documentation in Support of the Finding

I. Description of the Undertaking

Summary

This document describes BOEM's compliance with Section 106 of the NHPA and documents the agency's Finding for the undertaking including the issuing of commercial and research leases within two Gulf of Mexico Wind Energy Areas (WEAs), designated I and M, and granting rights-of-way (ROWs) and rights-of-use and easement (RUEs) in the region. BOEM has prepared this documentation in support of the Finding, following the standards outlined in 36 CFR § 800.11(d) (Documentation Standards). BOEM is providing this Finding and supporting documentation to the entities that have agreed to be consulting parties for the undertaking (see the *Consultation with Appropriate Parties and the Public* section below). This Finding and supporting documentation will be made available for public inspection by placement on BOEM's public website prior to the bureau holding a lease auction.

Federal Involvement

The Energy Policy Act of 2005, Pub. L. No. 109-58, added Section 8(p)(l)(C) to the Outer Continental Shelf (OCS) Lands Act (OCSLA). This new section authorized the Secretary of the Interior to issue leases, easements, or ROWs on the OCS for the purpose of renewable energy development, including wind energy development (see 43 United States Code [U.S.C.] § 1337(p)(l)(C)). The Secretary delegated this authority to the former Minerals Management Service, now BOEM. Final regulations implementing the authority for renewable energy leasing under the OCSLA (30 CFR Part 585) were promulgated on April 22, 2009.

On October 31, 2022, BOEM announced that it completed the Area Identification process to delineate the WEAs, pursuant to 30 CFR § 585.211(b) (Appendix A). BOEM has determined that issuing commercial or research leases within the WEAs offshore Texas and Louisiana and granting ROWs and RUEs within the region constitutes an undertaking subject to Section 106 of the NHPA, and that the subsequent site characterization activities constitute activities that have the potential to cause effects on historic properties.

Description of the Wind Energy Areas

The Gulf of Mexico WEAs consist of two areas off Galveston, Texas, and Lake Charles, Louisiana, designated as Area I and Area M, respectively (Figure 1). Table 1 describes the number of whole or partial OCS blocks, the approximate distance to shore, and the area of each WEA.

Table 1. Description of the Gulf of Mexico Wind Energy Areas

Wind Energy Area	Number of OCS blocks	Area (Square Miles)	Approximate Distance from Shore (Nautical Miles)*
Area I	94	794.2	20
Area M	33	272.3	28

*Based on a GIS analysis conducted for this Finding to determine the approximate shortest distance between the WEA and the shoreline. These distances may differ from other publicly available BOEM documents (e.g., Appendix A) that alternatively provide the distances between the WEAs and closest port city.

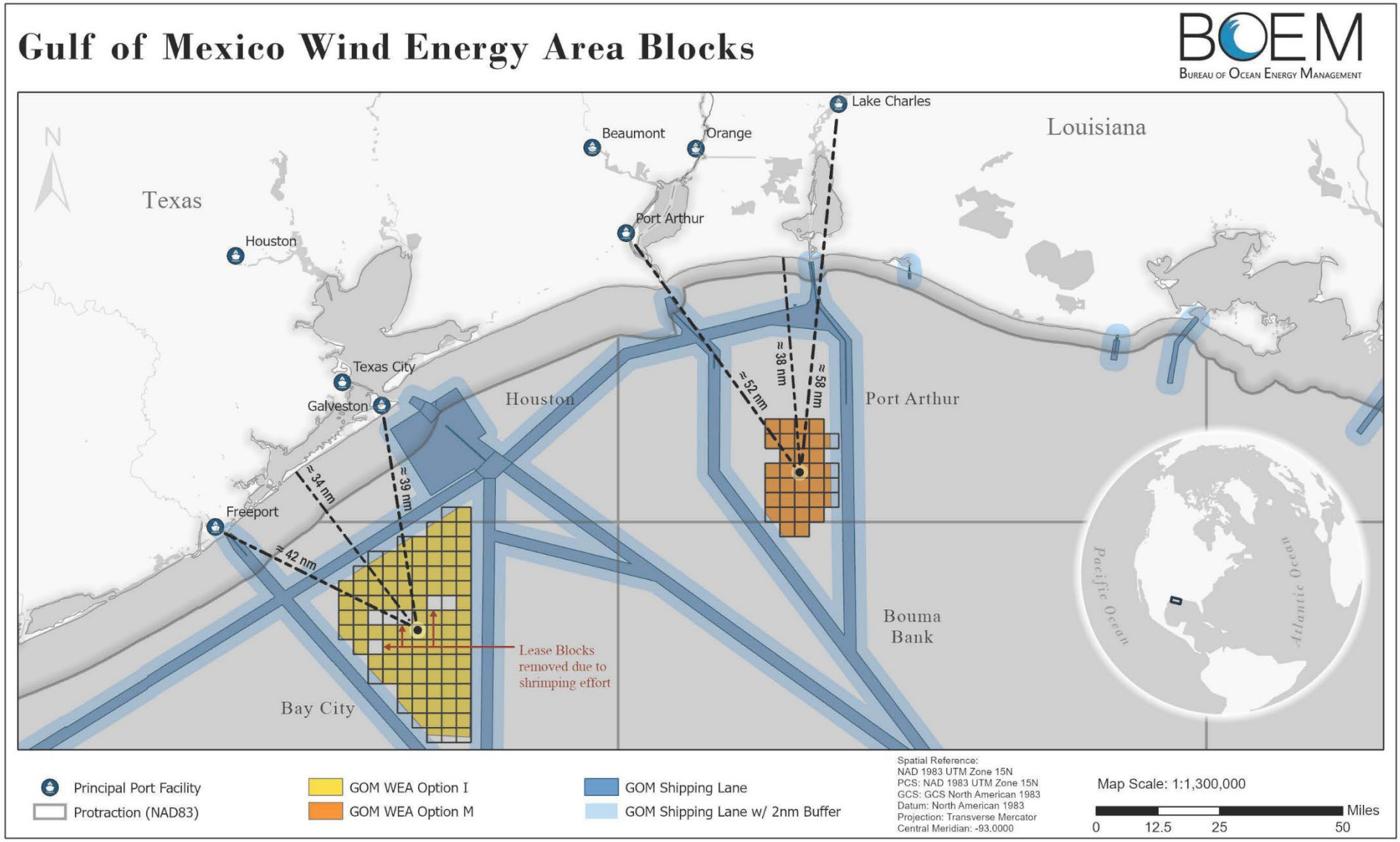

Figure 1. Gulf of Mexico Wind Energy Areas (source: https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities)

The Undertaking

The undertaking includes the proposed issuance of commercial or research leases within the WEAs and granting of ROWs and RUEs in the region and considers the execution of associated site characterization activities on these leases or grants. A lessee must submit the results of site characterization surveys with their plans (e.g., 30 CFR § 585.610, § 585.626, and § 585.645). Although BOEM does not issue permits or approvals for these site characterization activities, it will not approve a lessee's plan if the required survey information is not included.

Site characterization activities include both high-resolution geophysical (HRG) surveys, which do not involve seafloor-disturbing activities, and geotechnical investigations, which may include seafloor-disturbing activities. Should survey equipment be accidentally lost, retrieval of lost equipment may also occur, as necessary. The purpose of HRG survey is to acquire shallow hazards data, identify potential archaeological resources, characterize seafloor conditions, and conduct bathymetric charting. BOEM anticipates that HRG surveys would be conducted using the following equipment: swath bathymetry system, magnetometer/gradiometer, side-scan sonar, and shallow and medium (seismic) sub-bottom profiler systems. This equipment is typically towed from a moving survey vessel that does not require anchoring and is not expected to contact with seafloor. BOEM does not consider HRG survey to be an activity that has the potential to cause effects on historic properties and this activity is not considered further in this Finding.

Geotechnical testing or sampling involves seafloor-disturbing activities and therefore has the potential to cause effects on historic properties. Geotechnical testing is conducted to assess the suitability of sediments to support a structure or transmission cable under any operational and environmental conditions that might be encountered (including extreme events), and to document soil characteristics necessary for the design and installation of all proposed structures and/or cables. Geotechnical investigation may include the use of equipment such as gravity cores, piston cores, vibracores, deep borings, and Cone Penetration Tests, among others. Some of these methods may additionally require the use of anchored vessels, multi-point anchored barges, or jack-up barges.

BOEM also anticipates cases where geotechnical testing methods may be employed as part of the identification of historic properties. In some instances, direct sampling may be the only available method of testing the presence or absence of horizons of archaeological potential within features of interest identified during geophysical survey.

The undertaking does not, however, include cable installation or connection to shore-based facilities, installation of site assessment equipment (e.g., meteorological buoys), or construction or operation of commercial-scale wind energy facilities. Should a lessee propose to deploy site assessment equipment within the Gulf of Mexico WEAs, they would submit a Site Assessment Plan (SAP) to BOEM, which BOEM would consider under a separate Section 106 review. Should a lessee propose to construct and operate a commercial-scale wind energy facility within the Gulf of Mexico WEAs, they would submit a Construction and Operations Plan (COP) to BOEM, which BOEM would consider under a separate Section 106 review. Should a developer propose installation of a regional backbone transmission system, they would submit a General Activity Plan (GAP) to BOEM, which BOEM would consider under a separate Section 106 review.

Area of Potential Effects

As defined in the Section 106 regulations (36 CFR § 800.16(d)), the Area of Potential Effects (APE) is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The dimensions of the APE are influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. The APE for this undertaking has been modified since BOEM initiated the Section 106 process with potential consulting parties in July 2022 (see below and Appendix B). The preliminary APE included the entire Gulf of Mexico Call Area, which encompassed the areas subsequently selected for the WEAs. The APE has been updated in this Finding to include only the WEAs and potential cable corridors to shore as described below.

The APE for this undertaking is defined as the depth and breadth of the seabed that could potentially be affected by seafloor/ground-disturbing activities associated with site characterization activities. The APE for site characterization activities includes the discrete horizontal and vertical areas of the seafloor that may be impacted through geotechnical sampling which may include the collection of core samples, soil borings, or other bottom-disturbing techniques that could directly affect historic properties on or below the seafloor, if present. In addition, geotechnical sampling may also require the use of barges or anchored vessels that could also directly affect historic properties, if present.

Site characterization activities could occur within the extent of the Gulf of Mexico WEAs and along corridors that extend from the WEAs to the onshore energy grid, and additionally within the extent of regional backbone transmission systems that may be proposed. It is anticipated these ROW/RUE routes would consist of a minimum 300-meter-wide corridor centered on any anticipated cable locations. Because no ROW or RUE grants have been issued, BOEM is uncertain of the exact location of these cable corridor surveys. However, BOEM can anticipate their geographic extent. Power generated from potential Gulf of Mexico lease areas would need to be transmitted to shore, either directly from the lease areas by individual export cables to onshore cable landings and/or to offshore regional "backbone" transmission system(s). Because power may be purchased from nearby states, these potential export cables and regional transmission system(s) are anticipated to be offshore Texas and Louisiana. Therefore, for the purposes of this undertaking, BOEM estimates that the APE associated with cable site characterization activities would occur within discrete corridors located within the region between shore and the Gulf of Mexico WEAs.

Based on the distance from shore and the minor scale and temporary manner in which site characterization studies will likely occur, BOEM has concluded that the equipment and vessels performing these activities will be indistinguishable from existing lighted vessel traffic from an observer onshore. Therefore, BOEM has not defined as part of the APE onshore areas from which the site characterization activities would be visible. In addition, there is no indication that the issuance of a lease or grant of a RUE or ROW and subsequent site characterization will involve expansion of existing port infrastructure. Therefore, onshore staging activities are not considered as part of the APE for this specific undertaking.

Consultation with Appropriate Parties and the Public

On October 31, 2022, BOEM published a Final Area Identification Memorandum for the commercial wind energy leasing on the OCS in the Gulf of Mexico (Appendix A). Previously,

BOEM had issued a Call for Information and Nominations on November 1, 2021, and subsequently released Preliminary WEAs in July 2022. BOEM has engaged with stakeholders through public meetings and the Gulf of Mexico Intergovernmental Renewable Energy Task Force (Task Force) throughout the process, including holding Task Force meetings on June 15, 2021; February 2, 2022; and July 27, 2022, to facilitate coordination and consultation among federal, state, local, and tribal governments regarding offshore wind energy and the renewable energy leasing process on the OCS in the Gulf of Mexico.

BOEM is currently preparing an Environmental Assessment (EA) to consider potential environmental consequences of site characterization activities (i.e., biological, archaeological, geological, and geophysical surveys and core samples) and site assessment activities (i.e., installation of meteorological buoys) associated with issuing wind energy leases in the Gulf of Mexico Call Area (BOEM 2022). As described above, only site characterization activities are considered in this undertaking; site assessment activities, should they be proposed by a lessee, would be subject to a separate Section 106 review. The EA also considers project easements associated with each potential lease issued, and grants for subsea cable corridors in the Gulf of Mexico. BOEM held a public review and comment period for the EA, which closed on September 2, 2022. No comments were received that indicate historic properties would be affected by this undertaking or otherwise change this determination.

BOEM initiated Section 106 consultation for the undertaking of issuing a commercial lease and the issuance of ROW/RUE grants within the Gulf of Mexico Call Area by sending a letter to multiple parties listed below on July 1, 2022 (Appendix B), and a subsequent e-mail including an electronic copy of the letter on July 25, 2022, following the July 20, 2022, announcement and request for comment on the preliminary WEAs. On August 16, 2022, a letter was sent to additional potential consulting parties that had been identified through subsequent research. BOEM sent this letter to the Texas State Historic Preservation Office (SHPO), Louisiana SHPO, Advisory Council on Historic Preservation (ACHP), and the following federally recognized tribes: Absentee-Shawnee Tribe of Indians of Oklahoma, Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Apache Tribe of Oklahoma, Caddo Nation of Oklahoma, Cheyenne and Arapaho Tribes of Oklahoma, Chitimacha Tribe of Louisiana, Choctaw Nation of Oklahoma, Comanche Nation of Oklahoma, Coushatta Tribe of Louisiana, Jena Band of Choctaw Indians, Kialegee Tribal Town, Kiowa Indian Tribe of Oklahoma, Mescalero Apache Tribe, Mississippi Band of Choctaw Indians, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Shawnee Tribe, Thlopthlocco Tribal Town Tonkawa Tribe, and Tunica-Biloxi Tribe of Louisiana.

The list of potential Section 106 consulting parties for the undertaking was developed and included certified local governments, historical preservation societies, museums, and state-recognized tribes, and a letter was sent on July 1, 2022, to 45 individuals on the list of potential Section 106 consulting parties informing them about the undertaking and inviting them to be an NHPA Section 106 consulting party (Appendix B). These letters, in part, solicited comment and input regarding the identification of, and potential effects on, historic properties from leasing and site assessment activities for the purpose of obtaining federally recognized Tribes', SHPO's, the ACHP, and consulting parties' input for the Section 106 review (36 CFR § 800.2(d)(3)) and to determine the federally recognized Tribes' and consulting parties' interest in participating as a consulting party. BOEM received requests to become consulting parties from nine entities: Cameron Parish, Louisiana; Choctaw Nation of Oklahoma; Louisiana Division of Archaeology (LDA); Matagorda

County, Texas; National Park Service (NPS) Heritage Partnerships Program; Padre Island National Seashore; Palo Alto Battlefield National Historical Park; St. Bernard Parish, Louisiana; and the Texas Historical Commission (THC). BOEM shared this Finding in draft form with the consulting parties on January 26, 2023.

BOEM received concurrence on this Finding from the THC and NPS on February 23, 2023, from the Choctaw Nation of Oklahoma on February 26, 2023, and from the LDA on March 2, 2023 (Appendix C). The Choctaw Nation of Oklahoma further requested that work be stopped and the Tribe notified in the event that Native American artifacts or human remains are encountered during the undertaking. The Choctaw Nation also requested to review copies of archaeological survey reports conducted as part of the undertaking. No other comments were received on this Finding. Per 40 CFR§ 800.4(d)(1)(i), "If the SHPO/THPO, or the Council if it has entered the section 106 process, does not object within 30 days of receipt of an adequately documented finding, the agency official's responsibilities under section 106 are fulfilled."

II. Description of the Steps Taken to Identify Historic Properties

Pursuant to 36 CFR § 800.4(a)(2), BOEM has reviewed existing and available information regarding historic properties that may be present within the APE, including any data concerning possible historic properties not yet identified. Sources of this information include consultation with the appropriate parties, including the Texas and Louisiana SHPOs, and information gathered through BOEM-funded studies.

Relevant BOEM studies include a review of reported shipwrecks in BOEM's Gulf of Mexico Archaeological Resource Database (BOEM 2022b). BOEM's Archaeological Resource Database does not represent a complete listing of all potential shipwrecks on the Gulf of Mexico OCS, but rather serves as a baseline source of existing and available information for the purposes of corroborating and supporting identification efforts.

To date, the Gulf of Mexico WEAs have not been subjected to a complete and comprehensive archaeological identification survey; however, the types of historic properties expected to be present within the APE include both submerged pre-contact and historic-period archaeological sites.

Pre-contact Historic Properties

During the Late Pleistocene, at the Last Glacial Maximum (20,000 years before present [B.P.]), the glaciers that covered vast portions of the Earth's surface sequestered massive amounts of water as ice and lowered global sea level approximately 394 feet (120 meters). Available evidence suggests that sea level in the northern Gulf of Mexico was at least 90 m (295 ft), and possibly as much as 130 m (427 ft) lower than present sea level during the period 20,000-17,000 years before the present (B.P.) (Nelson and Bray 1970). Sea level in the northern Gulf of Mexico reached its present stand around 3,500 years B.P. (Pearson et al. 1986). During periods that the continental shelf was exposed above sea level, the area was open to human habitation.

Until the late 20th century, it was generally accepted by archaeologists that the earliest humans in North America were the so-called Clovis peoples, named for a lanceolate-shaped, fluted projectile point first found near Clovis, New Mexico. The Clovis culture was thought to have entered the continent around 13,500 years B.P. by way of Beringia, a landmass connecting Asia to North America exposed during the Last Glacial Maximum and along an ice-free corridor opened between

the Cordilleran and Laurentide ice sheets. Today, however, a growing body of evidence has dispelled the "Clovis First" model with the discovery of several sites with accurate pre-Clovis dates in the eastern United States (Goodyear 2005), Chile (Dillehay 1989; Meltzer et al. 1997), and central Texas (Waters et al. 2011). The Buttermilk Creek Complex identified by Waters et al. (2011) at the Debra L. Friedkin Site (41BL1239) is the nearest to the Gulf of Mexico WEA region and is dated from ~13,200 to 15,000 years B.P.

Establishing a reliable date for the entrance of Native Americans into the coastal regions of the Gulf of Mexico is complicated by the fact that archaeological deposits pre-dating 5,500 B.P lie buried under as much as 40 m (131 ft) of Holocene sediments or are underwater on the OCS (Rees 2010). Conclusive evidence for precontact sites on the OCS is sparse. The McFaddin Beach Site (41JF50) in Jefferson County, Texas, has produced hundreds of artifacts 8,000 years old or older that have been redeposited from an unknown site or sites eroding from the now-submerged Pleistocene shoreline. Forty-three percent of the total sample includes artifacts diagnostic of the Middle and Late Paleoindian periods and include Clovis, Dalton, Scottsbluff, and San Patrice projectile points (Stright et al. 1999).

Recent archaeological research in Florida has confirmed that Pre-Clovis peoples inhabited the southeastern region of North America more than 14,500 years ago (Halligan et al. 2016). The sea-level curve for the northern Gulf of Mexico proposed by CEI (1977a; 1977b) and Gagliano et al. (1982) suggests that sea level at 12,000 years B.P. would have been approximately 45-60 m (148-197 ft) below the present-day sea level. On this basis, the continental shelf shoreward of the 45- to 60-m (148- to 197-ft) bathymetric contours has potential for precontact sites dating after 12,000 years B.P. The Gulf of Mexico WEAs are within this range and have a maximum depth of approximately 45 m (148 ft).

Distinct precontact archaeological sites on the OCS are difficult to identify in wide-area, remote-sensing surveys due to their small footprint and material composition (e.g., stone, shell, wood, ceramics, etc.). Instead, archaeologists and geophysicists attempt to identify intact landforms that survived the erosional processes associated with sea-level rise and therefore may also contain intact archaeological materials. Based on their 1977 baseline study, CEI (1977a; 1977b) proposed that paleo-landforms analogous to the types of environments frequented by Paleoindians can be identified on the now-submerged shelf. Geomorphic features that have a high potential for associated archaeological sites include barrier islands and back-barrier embayments, river channels and associated floodplains and terraces, and salt-dome features. Investigations in Louisiana and Florida indicate that the mound-building activity by precontact inhabitants may have occurred as early as 6,200 years B.P. (Gibson 1994; Gibson and Shenkel 1988; Russo 1992; 1994; Saunders and Allen 1994; Saunders et al. 2005). Therefore, humanmade features, such as mounds, may also exist in the shallow inundated portions of the OCS.

Regional geological mapping studies by BOEM allow interpretations of specific geomorphic features and assessments of archaeological potential in terms of age, type of system the geomorphic features belong to, and geologic processes that formed and modified them. In general, sites protected by sediment overburden have a high potential for preservation from the destructive effects of marine transgression. The same holds for sites submerged in areas subjected to low wave energy and for sites on relatively steep shelves, which were inundated during periods of rapid rise in sea level. Although many specific areas in the Gulf of Mexico believed to have the potential for precontact site preservation have been identified through oil and gas-industry archaeological

and geohazard surveys, the operators generally have chosen to avoid these areas rather than conduct further investigations. Thus, the validity of the hypothesis that the landforms identified in industry surveys may contain archaeological sites remains speculative until further testing can be done.

Along the coast, archaeologists have documented precontact sites representing the period between the Paleoindian culture (circa 15,000 to 10,000 B.P.) and European contact (circa 16th century). The McFaddin Beach Site (41JF50), east of Galveston in the McFaddin National Wildlife Refuge, has produced late Pleistocene megafauna remains and lithics from all archaeological periods, including a large percentage of Paleoindian artifacts (Stright et al. 1999). A study funded by the Minerals Management Service (MMS) (BOEM's predecessor) to locate precontact archaeological sites in association with the buried Sabine-Calcasieu River Valley was completed in 1986 (Pearson et al. 1986). Five types of relict landforms were identified and evaluated for archaeological potential. Coring of selected features was performed, and sedimentary analyses suggested the potential presence of at least two archaeological sites. A subsequent BOEM study in the Galveston and High Island areas of the northwestern Gulf of Mexico conducted remote-sensing and coring surveys of four additional areas that had been identified in industry surveys and indicated a potential presence of archaeological sites (Evans 2016). The collected cores confirmed that the paleo-landforms are preserved and had been available for exploitation by Paleoindian or Early Archaic peoples, and evidence of a shell midden or localized burning was present at two of the study sites, both of which are in the general vicinity of the WEAs and less than 15 nm from Area I. However, the evidence was ultimately inconclusive as to whether these features were naturally occurring or the result of human-induced modifications to the landscape.

High-resolution geophysical surveys on the northern Gulf of Mexico OCS have produced evidence of floodplains, terracing, and point-bar deposits in association with relict late Pleistocene fluvial systems. Precontact sites associated with these features would have a high potential for preservation. Salt diapirs with bathymetric expression have also been recorded during lease-block surveys in the Gulf of Mexico. Solution features at the crest of these domes would have a high potential for preservation of associated archaeological sites. The Salt Mine Valley site (16IB23) in Avery Island, Louisiana, is a Paleoindian site associated with a salt-dome solution feature (CEI 1977a; 1977b).

Based on sea level rise, the Gulf of Mexico WEAs have a high potential for the presence of submerged archaeological sites dating from the Paleoindian through Early Archaic periods, and very low to no potential for the presence of submerged precontact archaeological sites more recent than the end of the Early Archaic.

Historic Period Historic Properties

Historic archaeological resources on the Gulf of Mexico OCS consist of historic shipwrecks, aircraft, and a single historic lighthouse, the Ship Shoal Light. A historic shipwreck is defined as a submerged or buried vessel or its associated components, at least 50 years old, that has foundered, stranded, or wrecked, and that is currently lying on or embedded in the seafloor. Europeans are known to have traversed the waters of the western Gulf of Mexico as early as 1519, and to have shipwrecked along the Texas coast as early as 1528 (Francaviglia 1998). The earliest shipwrecks in the Gulf of Mexico region to be identified and excavated by archaeologists are from a 1554

Spanish fleet that wrecked off Padre Island, Texas (Arnold and Weddle 1978), and the 1559 expedition of Tristan de Luna that wrecked in Pensacola Bay, Florida (Smith 2018).

Spanish navigation in the Gulf of Mexico continued throughout the 16th and 17th centuries as the early exploratory missions expanded to include conquest and colonization. French and, to a lesser degree, English excursions into the Gulf of Mexico began in the late 17th century. As the European colonial empires continued to expand their North American territories into the early 19th century, the maritime character of the Gulf of Mexico developed into a complex international network of trade, transportation, privateering, and warfare. Beginning in the mid-19th century, technological advancements ushered in a transition of vessel types from exclusively wooden-hulled sailing ships to steam-powered vessels and, by the end of the century, iron and steel-hulled merchant and military craft. By the end of World War I, wooden-hulled merchant vessels had become all but extinct and were replaced by steel-hulled ships of gradually increasing size and cargo capacity. During World War II, many of these vessels ended up at the bottom of the Gulf of Mexico as a result of German U-boat attacks, primarily near the approaches to the Mississippi River. Shipwrecks from the entire span of European and American Gulf of Mexico maritime history are represented in the archaeological record, and shipwrecks in the Gulf of Mexico remain frequent despite centuries of technological and navigational advancements. In addition to ever-present merchant vessel losses, modern examples include commercial fishing boats, scientific research vessels, pleasure craft, drilling rigs, and other support vessels associated with the oil and gas industry.

BOEM and its predecessor agencies have commissioned multiple studies aimed at modeling and predicting areas in the Gulf of Mexico where historic shipwrecks are most likely to exist (CEI 1977a, 1977b; Garrison et al. 1989a, 1989b, 1989c; Pearson et al. 2003a, 2003b, 2003c). The CEI study (1977a, 1977b) relied primarily on secondary-source literature to determine general shipwreck site distribution and identify "theoretical boundaries between zones of relatively high and relatively low occurrence of historic-period shipwreck[s]." That study concluded that two-thirds of the total number of shipwrecks in the northern GOM are likely to lie within 1 mi (1.6 km) of the shore, and most of the remainder lie between 1 and 6 mi (1.6 and 10 km) of shore. However, CEI acknowledged that these conclusions were untested and that several limitations were inherent in their source material. Published (and frequently non-scholarly) shipwreck volumes often repeat unreliable information from earlier sources, sometimes use poor translations of primary documents, and are purposefully selective in the shipwrecks they include (such as those laden with treasure) and those they omit, like small vernacular fishing and coasting vessels that are likely to be identified only in primary sources. Depending on their age, the primary sources themselves are often insufficient for identifying accurate shipwreck locations, or even the occurrence of shipwrecks. The early explorers were sailing in uncharted waters and often sank out of sight of land or near landmarks or place names that no longer are recognizable today. Many wrecks had no survivors to document even rudimentary information and were simply reported, if they were reported at all, as "lost at sea" after leaving a port and never arriving at their destination, which may have been hundreds of miles away.

Historic shipwreck reports in the archival record also are hampered by the fact that for centuries ship navigators had a limited ability to record their geographic location with any real accuracy. Sailors have long been able to accurately determine their latitude with instruments such as the astrolabe and sextant. But they could not determine their longitude with the same accuracy until the marine chronometer was invented in England in 1762, and it took several more decades before

that technology became commonly used on large merchant and naval vessels. Even the development of electronic navigation aids in the early 20th century did not significantly improve the accuracy of shipwreck reporting. World War II-era shipwrecks in the Gulf of Mexico, which had the benefit of radar positioning and eye-witness testimony, have been discovered tens of miles from their reported sinking locations, including one (the German U-boat, U-*166*) found over 100 mi (161 km) from where it was reported in official records (Church et al. 2007). Not until the advent of satellite-based technology in the second half of the 20th century, such as the global positioning system (GPS), could shipwreck locations be accurately reported.

Garrison et al. (1989a, 1989b, 1989c) built on CEI's (1977a, 1977b) study by examining not just the spatial distribution of Gulf of Mexico shipwrecks but also what factors influenced that distribution, such as port development, shipping lanes, and hurricanes. Garrison et al. concurred with CEI's main conclusion that the majority of shipwrecks occurred in nearshore waters within areas of heavy marine traffic, such as the approaches and entrances to seaports and the mouths of navigable rivers and straits. However, Garrison et al. countered that CEI had underestimated the number of wrecks in open seas due to changes in the late 19th- and early 20th-century sailing routes, particularly in the eastern Gulf, and that there was a higher potential for unreported shipwrecks in high-traffic maritime lanes than had been identified by CEI. Garrison et al. further recommended an expansion of the areas in the Gulf that should be considered as having the highest potential for shipwreck discoveries. Finally, Garrison et al. (1989a, 1989b, 1989c) acknowledged that CEI (1977a, 1977b) and similar studies aimed at modeling shipwreck locations "have conceptual merit but little predictive or hindcast power in the delineation of the archaeology of the OCS," and that "the [Garrison et al.] study cannot redress this lack of primary, direct archaeological observations which are necessary to construct a realistic picture of historic cultural resources on the northern Gulf OCS."

Pearson et al. (2003a, 2003b, 2003c) again revisited the concept of a probability model for shipwreck occurrence on the Gulf of Mexico OCS. Pearson et al. (2003a, 2003b, 2003c) produced a GIS-based database of over 2,000 reported Gulf of Mexico shipwrecks, adding over 600 new wrecks to the list compiled by Garrison et al. (1989a, 1989b, 1989c). Pearson et al. (2003a, 2003b, 2003c) also had the benefit of over a decade of confirmed shipwreck discoveries (or absence thereof) from oil and gas industry surveys with which to test the efficacy of Garrison et al.'s (1989a, 1989b, 1989c) model. In brief, they concluded that "there is no statistically significant difference between discovering a shipwreck in an identified high probability lease block or in finding one in a lease block not assigned a high probability of containing historic wrecks." This conclusion was based, in part, on the unreliability of reported wreck locations as well as a significant underreporting of vessel losses, particularly prior to the mid-19th century.

BOEM continues to add to the wreck database created by Pearson et al. (2003a, 2003b, 2003c), which now contains over 2,200 reported and confirmed shipwrecks (BOEM 2022b). Approximately 420 shipwrecks have confirmed locations, and BOEM has determined that 39 of these are potentially eligible for listing on the NRHP based on remotely operated vehicle or diver investigations. Eligible or potentially eligible OCS wrecks that have been discovered include a sailing vessel from the late 17th or early 18th century; numerous wooden-hulled merchant sailing vessels spanning the early 19th to early 20th centuries (Atauz et al. 2006; Brooks et al. 2016; Church and Warren 2008; Horrell and Borgens 2017); the mid-19th century sidewheel steamboats USS *Hatteras* (Enright et al. 2006; Evans et al. 2013) and SS *New York* (Gearhart et al. 2011); and 15 of the 56 Allied merchant vessel casualties, plus U-*166,* sunk during World War II (Brooks et al.

2016; Church et al. 2007; Enright et al. 2006; Evans et al. 2013). Eleven of these sites have been listed on the NRHP and they are currently the only shipwrecks listed from the Gulf of Mexico OCS. None of the confirmed historic shipwreck sites that BOEM has determined are potentially eligible for listing are located within the WEAs.

A search of BOEM's shipwreck database (BOEM 2022b) revealed that there are one verified and 18 reported shipwrecks within the WEAs, 16 of which have dates for sinking. The verified shipwreck and remaining two reported wrecks do not have associated dates and are listed as unknown vessels with no further data to suggest construction, rig, or purpose (Table 2). Additionally, the accuracy of the reported shipwreck locations is medium to low, and their actual locations may be outside of the WEAs. BOEM's database of known and reported shipwrecks is by no means exhaustive or complete. This is due to the underreporting and unreliability of shipwreck information in the historic record as discussed in CEI (1977a, 1977b), Garrison et al. (1989a, 1989b, 1989c), and Pearson et al. (2003a, 2003b, 2003c), as well as the inability of BOEM's previous studies to investigate every possible archival source.

Table 2. Shipwrecks Reported in the Vicinity of the Gulf of Mexico WEAs

Vessel ID	Vessel	Position Accuracy	Year Sunk	History
1350	*Lisa Renee*	Medium	1996	Fishing Vessel sunk near a platform
1418	*Halliburton*	Medium	1976	No further information available
1068	*Lucky Star*	Medium	2000	Fishing vessel. No further information available
15452	Unknown	High	Unknown	Located during an oil and gas industry lease block survey. Potential wreck of *Lucky Star*
1016	*Linda M.*	Medium	1986	Fishing vessel. No further information available
240	*Sandra F.*	Low	1966	Fishing vessel lost 25 miles southeast of Galveston
1975	*Vitamin C*	Medium	2000	Fishing vessel. No further information available
238	*Cleo Sue*	Medium	1967	Cabin cruiser sunk adjacent to oil platform
1947	Unknown	Medium	1996	Pleasure craft, possibly salvaged
546	*Theresa F.*	Low	1960	Shrimp trawler lost 40 miles east/southeast of Freeport, Texas
12394	Unknown	Low	Unknown	No further information available
228	*Chicopee*	Low	1915	Schooner foundered with all nine aboard lost
231	*Miss Barbara Ann*	Low	1959	Collided with another vessel 40 miles east/southeast of Freeport, Texas
230	*Tropical*	Low	1957	No further information available
229	*San Jorge*	Low	1625	Foundered in a storm
2034	Unknown Barge	Medium	1957	No further information available
12497	Unknown	Low	Unknown	No further information available
1229	*Defiant*	Low	1999	Yacht. No further information available
222	*Dorothy*	Low	1949	Built in 1897; 38 gross tons

Source: BOEM 2022b

Additionally, BOEM maintains a separate database of magnetic anomalies and side-scan sonar targets that were located during oil and gas industry surveys, exhibit characteristics indicative of potential shipwrecks, and which have been assigned avoidance mitigation requirements during

previous BOEM-permitted activities. Within the WEAs there are approximately 226 magnetic anomalies and 21 sonar targets meeting those criteria. None of these targets have been further investigated to determine whether they are in fact historic properties; however, in the absence of additional information BOEM considers them to be potentially eligible for listing on the National Register.

III. Required Elements in the Lease and or Grant

BOEM will require lessees to avoid or minimize potential impacts on the environment by complying with regulatory requirements and conditions imposed by consultations. Standard Operating Conditions (SOCs) will be implemented through lease stipulations to reduce or eliminate potential risks to or conflicts with specific environmental resources, including potential historic properties. Implementation of these lessee requirements through lease stipulations will avoid or minimize potential impacts to historic properties, thus establishing BOEM's Finding of No Historic Properties Affected for this undertaking, consistent with 36 CFR § 800.4(d)(1). Inclusion of the following elements in the lease is expected to result in the identification and avoidance of historic properties and is a requirement of this Finding.

The following elements, designed to avoid impacts on offshore historic properties from ground-disturbing activities associated with site characterization surveys, would be included in a commercial lease issued for the Gulf of Mexico WEAs:

- The lessee must not knowingly affect a potential archaeological resource without the lessor's prior approval.
- The lessee must provide the results of an archaeological survey with its plans.
- The lessee must ensure that the analysis of archaeological survey data collected in support of plan submittal and the preparation of archaeological reports in support of plan submittal are conducted by a Qualified Marine Archaeologist who meets the Secretary of the Interior's Professional Qualifications Standards (48 *Federal Register* 44738–44739) and has experience analyzing marine geophysical data.
- The lessee may only conduct geotechnical exploration activities in support of plan submittal in locations where an archaeological analysis of the results of geophysical surveys has been completed. This analysis must include a determination by a Qualified Marine Archaeologist as to whether any potential archaeological resources are present in the area that could be affected by bottom-disturbing activities.
- Geotechnical sampling activities must avoid any potential archaeological resources by a minimum of 164 feet (50 meters). The avoidance distance must be calculated by the Qualified Marine Archaeologist from the maximum discernible extent of the archaeological resource.
- Upon completion of geotechnical exploration activities, a Qualified Marine Archaeologist must certify, in the lessee's archaeological report(s) submitted with a plan, that such activities did not affect potential historic properties identified as a result of the HRG surveys performed in support of plan submittal.

In addition, BOEM would require that the lessee observe the unanticipated finds requirements at 30 CFR 585.802. The following elements would be included in a commercial lease issued within the Gulf of Mexico WEAs:

- If the lessee, while conducting site characterization activities in support of plan (i.e., SAP and/or COP or GAP) submittal, discovers a potential archaeological resource such as the presence of a shipwreck or pre-contact archaeological site within the project area, the lessee must:
    - Immediately halt seafloor-disturbing activities in the area of discovery;
    - Notify the lessor within 24 hours of discovery;
    - Notify the lessor in writing by report within 72 hours of its discovery;
    - Keep the location of the discovery confidential and take no action that may adversely affect the archaeological resource until the lessor has made an evaluation and instructs the applicant on how to proceed; and
    - Conduct any additional investigations as directed by the lessor to determine if the resource is eligible for listing in the National Register of Historic Places (30 CFR 585.802(b)). The lessor will direct the lessee to conduct such investigations if: (1) the site has been affected by the lessee's project activities; or (2) impacts on the site or on the APE cannot be avoided. If investigations indicate that the resource is potentially eligible for listing in the NRHP, the lessor will tell the lessee how to protect the resource or how to mitigate adverse effects on the site. If the lessor incurs costs in protecting the resource, under Section 110(g) of the NHPA, the lessor may charge the lessee reasonable costs for carrying out preservation responsibilities under the OCSLA (30 CFR 585.802(c–d)).

IV. The Basis for the Determination of No Historic Properties Affected

This Finding is based on a review of existing and available information conducted by BOEM, consultation with federally recognized Tribes, SHPOs, and consulting parties, avoidance stipulations outlined in the required elements of a lease or grant, and conclusions drawn from this information. The proposed undertaking includes the issuance of commercial or research leases within the Gulf of Mexico WEAs and ROW/RUE grants in the region and takes into account the execution of associated site characterization activities.

The identification and avoidance measures that will be included as stipulations in leases and grants will require that any site characterization activities following lease issuance that have the potential to affect historic properties will avoid them. Therefore, no historic properties will be affected for the undertaking of issuing a commercial lease within the Gulf of Mexico WEAs, consistent with 36 CFR § 800.4(d).

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VI. Appendices

Appendix A: Gulf of Mexico Area Identification Memorandum Pursuant to 30 C.F.R. § 585.211(b)

Appendix B: List of Consulting Parties and Potential Consulting Parties and Letter Invitation

Appendix C: Concurrence Letters from the Texas and Louisiana State Historic Preservation Offices, Choctaw Nation of Oklahoma, and National Park Service

Appendix A: Gulf of Mexico Area Identification Memorandum Pursuant to 30 C.F.R. § 585.211(b)

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

New Orleans Office

1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

Memorandum

To: Amanda Lefton
Director, Bureau of Ocean Energy Management

From: Michael Celata
Regional Director, Gulf of Mexico Regional Office

MICHAEL CELATA
Digitally signed by MICHAEL CELATA
Date: 2022.10.31 08:30:00 -05'00'

Subject: Gulf of Mexico Area Identification Pursuant to 30 C.F.R. § 585.211(b)

I. Purpose

The purpose of this memorandum is to document the analysis and rationale used to develop recommendations for two Final Wind Energy Areas (WEAs) in the Gulf of Mexico (GOM) offshore the States of Louisiana and Texas. The Bureau of Ocean Energy Management (BOEM) New Orleans Office is requesting concurrence from the BOEM Director on the recommended Final WEAs.

II. Development of the Recommended Final WEAs

On July 20, 2022, BOEM published on Regulations.gov for public comment the analysis and rationale used to develop recommendations for Preliminary WEAs. The detailed analysis and the rationale for the recommendations are documented in the *GOM WEA Memorandum*, which can be found at https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-draft-weas and in **Appendix B** of this document.

Due to feedback received from stakeholders during the third GOM Renewable Energy Task Force meeting, BOEM extended the original 30-day comment period to 45 days. The 45-day comment period closed on September 2, 2022. Federal, State and local governments, federally recognized Tribes, nongovernmental organizations, other interested parties, and the public at large were invited to provide comments on the Preliminary WEAs. BOEM received 107 comments on the Preliminary WEAs. BOEM reviewed and analyzed the comments to help inform the recommendation for the Final WEAs. A summary of the major comments received on the Preliminary WEAs can be found in **Appendix A** of this document.

A. Major Differences Between the Preliminary and Final WEAs

BOEM recommends several changes to the Preliminary WEAs. These changes resulted from new information becoming available and comments received on the Preliminary WEAs. BOEM made the following changes to the size of the WEAs based on recommendations by the Department of Defense (DoD) and U.S. Coast Guard (USCG).

1. DoD Activities

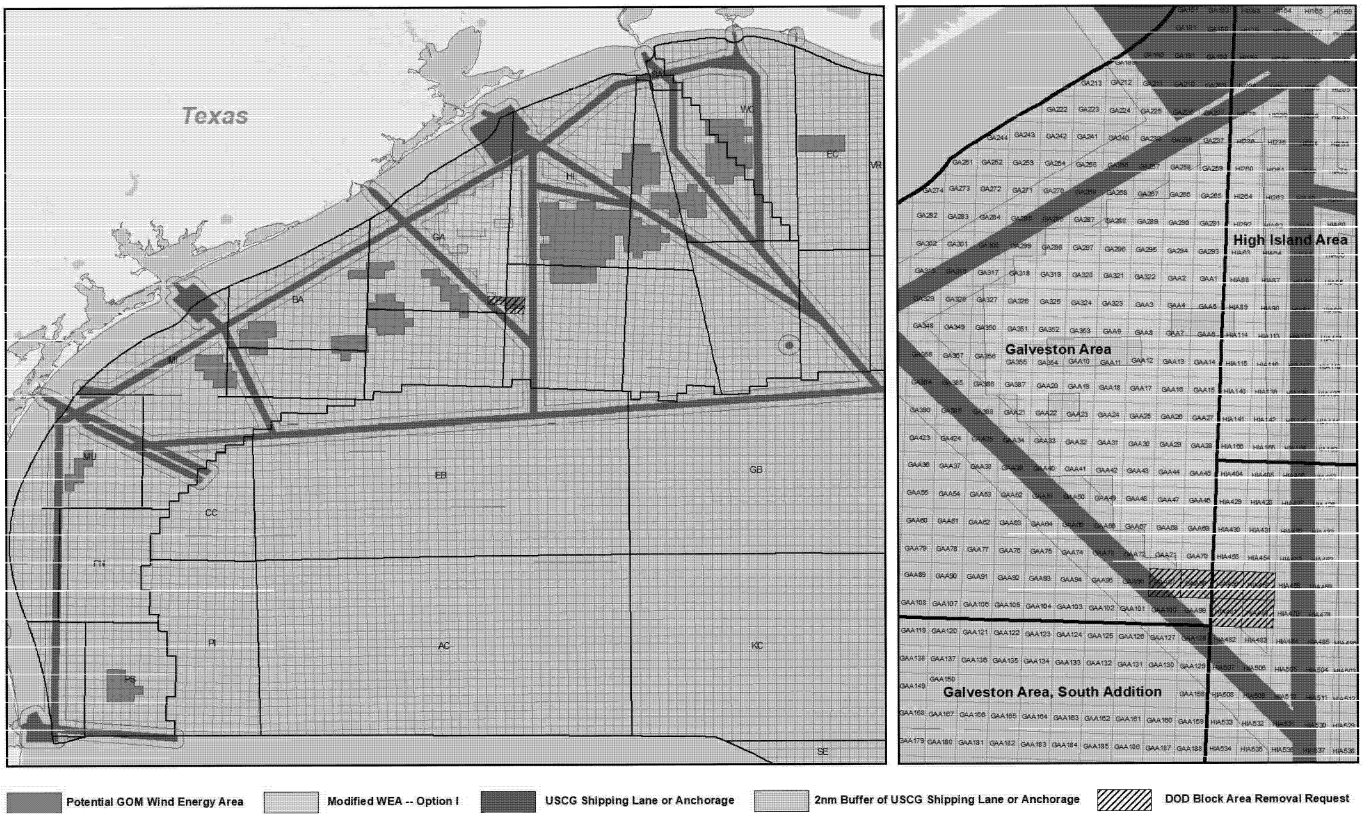
As a part of BOEM's ongoing coordination with DoD, the Military Aviation and Installation Assurance Siting Clearinghouse coordinated review of the Preliminary GOM Wind Energy Areas (Galveston and Lake Charles) within the DoD and provided comments. In the comment letter received from DoD, the Department of the Navy (Navy) identified areas in the Preliminary Galveston WEA (Option I) that might impact radar sites in Texas. To avoid conflict with Navy radar sites in Texas, at this time BOEM has removed the following lease blocks from the southernmost portion of Option I: Galveston Area blocks A97 and A98, High Island blocks A456 and A457, and High Island blocks A400 and A481 (**Figure 1**). Consequently, the size of the Preliminary Galveston WEA was reduced from 546,645 acres to 527,599.

In addition, DoD stated that wind energy activities within the Galveston and Lake Charles WEAs could adversely impact the Lake Charles, Louisiana Air Surveillance Radar (ASR-8); the Beaumont-Port Arthur, Texas (ASR-11); and the Houston-Ellington, Texas Common Air Route Surveillance Radar used for North American Aerospace Defense Command's (NORAD) air defense mission. DoD has developed two mitigation strategies that would potentially mitigate the radar impacts: overlapping radar coverage and Radar Adverse Impact Management (RAM). The DoD did not request removal of these areas, but has asked BOEM to include the following in any conditions for leases issued, or plans or permits approved, within these WEAs:

1) Project operator will notify NORAD 30-60 days ahead of project completion and when the project is complete and operational for RAM scheduling;
2) Project operator will contribute funds ($80,000) for each affected radar for the execution of RAM;
3) Curtailment for National Security or Defense Purposes as described in the leasing agreement.

Since any lease issued will not authorize any activities on the OCS and will only grant the exclusive right to submit plans for BOEM's consideration and approval, BOEM would consider including these provisions as conditions of future plan approval that would allow the development of a wind energy facility.

GOM Wind Energy Area (Option I) w/ DOD Recommendation



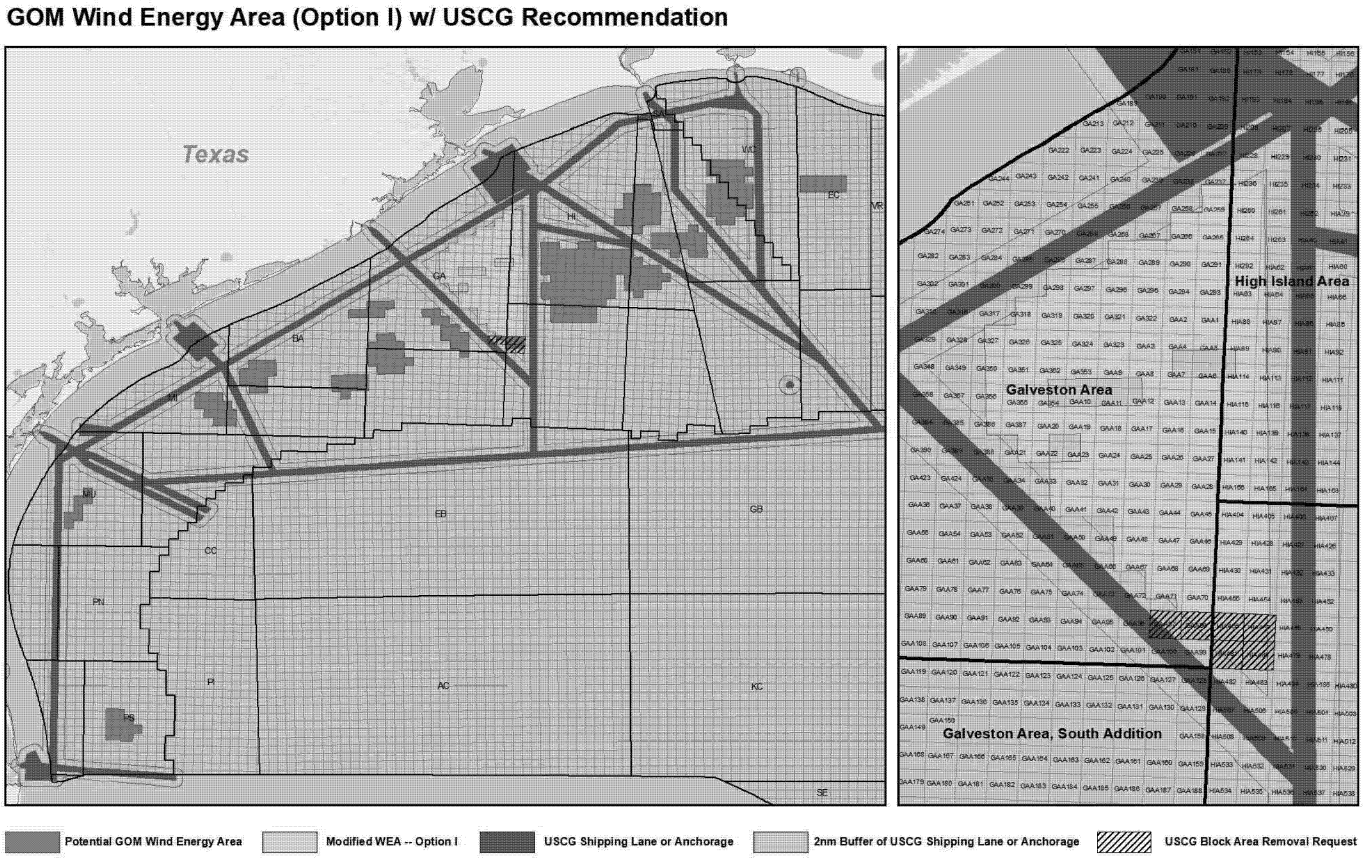


Figure 1: Galveston WEA with the removal of six blocks in the southernmost portion of the WEA.

2. *Navigation*

BOEM recognizes that the close proximity of the Preliminary Galveston WEA to nearby USCG shipping lanes may present a navigation concern to mariners in this region, particularly to vessels that may be experiencing mechanical or technical difficulties and require more room to maneuver. Based on the 2019 AIS track line analysis for tanker vessel traffic, however, a majority of tanker vessel traffic is confined to shipping lanes located on either side of the WEA. BOEM, therefore, considered a 2 nautical miles (nm) setback buffer between the shipping lanes and the WEA. In its comment letter, the USCG stated that the Preliminary WEA included a setback buffer of 2 statute miles, not 2 nm. Consequently, BOEM corrected the setback buffer to 2 nm. BOEM also has updated the acreage figures for the Galveston and Lake Charles WEAs (**Figure 2)** to reflect this correction. The correction to the 2 nm setback buffer resulted in the removal of additional acreage from the Galveston and Lake Charles WEAs. The update to the descriptive statistics in the *GOM WEA Memorandum* is provided in **Table 1**. This correction further reduces the Galveston WEA to 508,265 acres. With the 2 nm setback buffer, the Lake Charles WEA has been reduced from 188,023 acres to 174,275.

Due to concerns expressed by USCG on lightering areas in the southern portion of the Galveston WEA (Option I), BOEM will continue to work with the USCG to identify, quantify, and mitigate potential impacts and risks to lightering operations within the traditional lightering use areas within Galveston WEA (Option I) when considering any plans submitted for BOEM's consideration and approval after lease issuance.

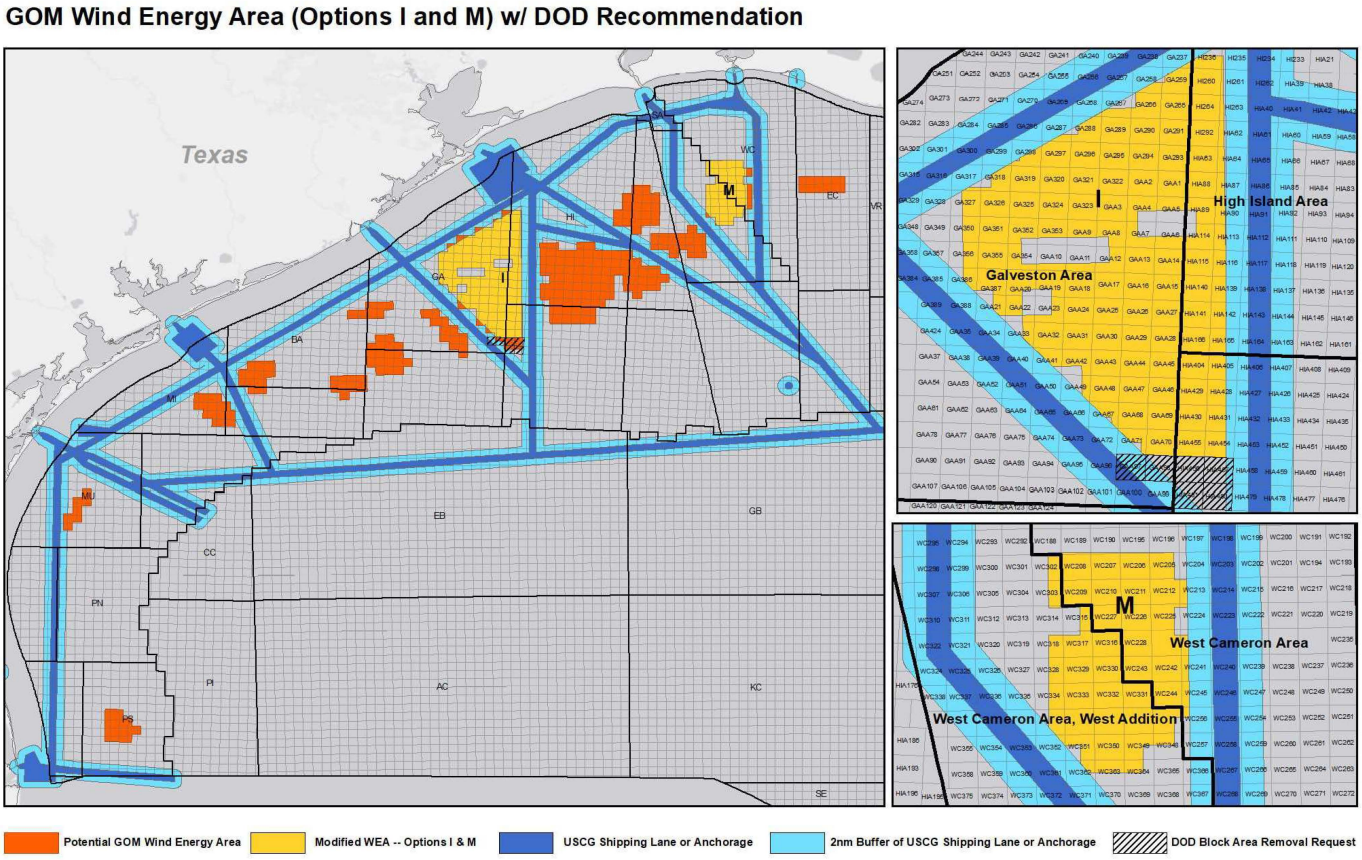


Figure 2: GOM WEAs with the 2 nm Buffers.

Table 1: GOM Recommended WEAs Descriptive Statistics

	Galveston Recommended WEA (Option I)	**Lake Charles Recommended WEA (Option M)**	**Total**
Acres	508,265	174,275	682,540
Installation Capacity[1]	6,171	2,115	8,286
Homes powered[2]	2,159,850	740,250	2,900,100
Power Production (MWh/yr)[3]	21,623,184	7,410,960	29,034,144
Max Depth (meters)	253	25	
Min Depth (meters)	16	10	
Closest distance to TX (nm)	24 (45 km)	79 (147 km)	
Closest distance to LA (nm)	28 (52 km)	56 (104 km)	

[1] Megawatts (MW) based upon 3MW/sqkm
[2] Megawatt hours per year (MWh/yr) based upon 350 homes per MW
[3] Formula = Capacity (MW) * 8760 (hrs/yr) * 0.4 (capacity factor)

3. Avian Species

The U.S. Fish and Wildlife Service (FWS) recommended a 20 nm coastline buffer for migratory birds. BOEM included the 20 nm buffer in the ocean planning model that is described in the *GOM WEA Memorandum*. After the review of the Preliminary WEAs, FWS, state wildlife agencies, and nongovernmental organizations raised additional concerns regarding migratory pathways for shorebird species near the Galveston and Lake Charles WEAs. As requested by FWS, BOEM will continue to work with FWS and state wildlife agencies to reduce potential effects to shorebird species and other long-distance migratory species of concern.

4. Marine Mammals and other Protected Species

Throughout the renewable energy leasing process and the ongoing environmental consultation process, BOEM will continue work with the National Marine Fisheries Service, Southeast Regional Office in advance of the GOM Wind Lease Auction in 2023.

5. Other Comments

During the Preliminary WEA comment period, several commenters expressed concern that a WEA near Port Fourchon was not included in the preliminary WEAs for the GOM. The State of Louisiana Governor's Office also suggested that an additional WEA near Port Fourchon would increase the potential for industry competition, spur investments in related infrastructure, and strengthen supply chains. Due to the time constraints and possible delays with analyzing additional areas, BOEM is not recommending inclusion of additional WEAs at this time. BOEM will further analyze the area near Port Fourchon for future offshore wind auctions in the GOM. This decision should not be read as expressing any opinion regarding the suitability of the Galveston or Lake Charles WEAs for leasing.

The Texas Parks and Wildlife Department (TPWD) recommended a 1 nm protective buffer around TPWD permitted artificial reefs. At this time, BOEM maintains in the final WEAs the same 1,000 ft protective polygon buffer around the permitted artificial reefs proposed in the preliminary WEAs. A 1,000-ft setback from artificial reefs was selected to be consistent with BOEM's distancing from other sensitive benthic habitats in the GOM, such as the Flower Garden Banks National Marine Sanctuary, and is a sufficient distance to avoid impacts to sensitive benthic habitats and/or artificial reef structures from bottom-disturbing activities associated with offshore wind development.

III. Conclusion

As a result of the comments received and as discussed above, BOEM has made several revisions to the Preliminary WEAs. However, the revisions made between the Preliminary and Final WEAs did not change the validity of the data or resources analyzed in the Preliminary WEAs in the *GOM WEA Memorandum*. Therefore, we recommend adopting the slightly modified Galveston and Lake Charles WEAs as depicted in Section II A. 2 as the Final WEAs for the GOM.

IV. Director Concurrence

☑ Yes

☐ No

Amanda Lefton
Director, Bureau of Ocean Energy Management

10/31/22
Date

APPENDIX A
Summary of Major Preliminary WEA Comments

COMMENTS ON THE PRELIMINARY WEAs

On July 20, 2022, BOEM announced the Preliminary WEAs for the GOM on regulations.gov. The comment period for the Preliminary WEAs closed on September 2, 2022. BOEM received 107 comments from Federal and State agencies, interest groups, industry, and the general public. Each comment was read and categorized according to its source and the nature of the information included. Of the 107 comments received, 27 presented substantive issues. All comments that were relevant to the modification of size or location of the Preliminary WEAs were considered in the preparation of the Final WEAs. A summary of all substantive comments received follows.

Texas Parks and Wildlife Department

- Artificial reefs should be provided a 1-nm protective buffer to avoid and minimize impacts to sensitive benthic communities that would result from pre-construction surveys as well as construction and decommissioning of the project.

- TPWD requests opportunities to provide site-specific information and recommendations to inform activities within the 1-nm boundary of any TPWD permitted leases for artificial reefs.

Texas Public Policy Foundation

- BOEM's plan to issue, publish, and potentially award an offshore wind lease within either of the Preliminary WEAs detailed in Doc. No. BOEM-2022-0036 using the Smart From The Start regulatory framework violates OCSLA.

- BOEM's plan to issue, publish, and potentially award an offshore wind lease within either of the Preliminary WEAs detailed in Doc. No. BOEM-2022-0036 using the Smart From The Start regulatory framework violates NEPA.

- In order to avoid a violation of federal law that would likely expose it to litigation, BOEM should abandon the misnamed Smart From The Start framework and adopt a regulatory approach to offshore wind leasing in the Gulf of Mexico that does not skip statutorily mandated steps required by OCSLA and NEPA, as set forth therein.

Coastal Protection and Restoration Authority

- The locations of the turbines and substations as well as the transmission cables have the potential to limit accessibility to critical restoration compatible sediment resources in the OCS.

Office of Louisiana Governor John Bel Edwards

- The State is very supportive of the two Initial Wind Energy Areas, particularly the one south of Lake Charles, LA, and we urge BOEM to finalize those Wind Energy Areas and include all or parts of both WEAs in the Gulf of Mexico lease sale anticipated for early next year.

- Further, we strongly urge BOEM to identify and designate one or more additional Wind Energy Areas on the east side of the Call Area south of Terrebonne Bay and Port Fourchon. Based on BOEM's suitability analysis, much of this far eastern portion of the Call Area is suitable for offshore wind development, including certain areas classified as having high and moderately high suitability. Based on conversations with stakeholders and developers, there is commercial interest in this eastern portion of the Call Area.

- The State respectfully requests that BOEM finalize the two Preliminary WEAs but also add at least one additional WEA on the east side of the Call Area, south of Terrebonne Bay and Port Fourchon. We greatly appreciate BOEM's efforts to expeditiously develop offshore wind in the Gulf of Mexico, and we look forward to continuing to work together towards that goal.

U. S. Fish and Wildlife Service

- Request that BOEM continue to consider important conservation lands, restored sites, and areas of high importance to avian and threatened and endangered species when considering which WEAs to develop in the future due to potential onshore transmission impacts.

- We request that BOEM consider avoiding areas that may also be impacted by oil and gas development and the current carbon sequestration leasing movement along the Texas and Louisiana coasts. Additional onshore impacts from transmission lines and other construction activities associated with these activities may result in negative cumulative impacts due to the scope and scale of these other actions.

- Wind Energy Area I is in the migratory pathway of many shorebird species including Lesser Yellowlegs and other long-distance migratory species of concern. We request that BOEM consider this information and any new information as they move forward in the development of offshore wind energy in the GOM.

- Wind Energy Area I is near onshore habitats where some of the highest concentrations of Buff-breasted sandpipers (near Bay City and Wharton) in Texas have been detected.

- We request that BOEM work with the USFWS to reduce effects to this species as they move forward with offshore wind energy development in the GOM.

- Wind Energy Area M is in direct line with stopover sites in Louisiana used by Red Knots (Calidris canutus rufa), a federally threatened shorebird subspecies making long-distance tracks across the GOM twice a year and regularly using coastal habitats in Louisiana to rest and replenish fat reserves.

- The WEA is also in direct line with important habitats for Reddish Egret, a coastal-obligate species of International and National conservation concern.

- Data submitted to BOEM indicate that Hudsonian Godwits and Lesser Yellowlegs may

be impacted. We request that BOEM work with the USFWS to reduce effects to these species as they move forward with offshore wind energy development in the GOM.

- The WEA Blocks I and M are in close proximity to some of the largest concentrations of roosting and foraging shorebird, the Whimbrel (Numenius phaeopus). Block I is near one of the world's largest roosting sites near the Anahuac National Wildlife Refuge (pers. Communication, Brad Winn, Manomet). We request that BOEM work with the USFWS to reduce effects to this species as they move forward with offshore wind energy development in the GOM.

U.S. Coast Guard

- The Coast Guard recommends BOEM consider the navigational impacts to traditional lightering areas identified within WEA Option I. Traditional lightering areas are used extensively in the Gulf of Mexico, and while these areas are not federally designated, they are commonly used by mariners to avoid busy fairways and large concentrations of offshore exploration and production platforms.

- Wind energy development in traditional lightering areas could restrict where and how vessels carry out their cargo transfer operations, potentially impacting access to ports, safety of navigation, and the facilitation of commerce.

- The Coast Guard requests these figures be updated to reflect the agreed upon setback distance of 3,704 meters, which equates to two nautical miles.

- The Commander of the Eighth Coast Guard District is considering the necessity of conducting a PARS for the GOM.

- When finalizing specific WEAs, lease areas, or when approving the siting of wind energy installations once an area has been leased, the Coast Guard insists BOEM apply the Marine Planning Guidelines detailed in Enclosure 3 to Navigation and Vessel Inspection Circular O 1-19.

Department of Defense

- The two Wind Energy Areas (Option I and M) will adversely impact the Lake Charles, Louisiana Air Surveillance Radar (ASR-8), the Beaumont-Port Arthur, Texas ASR-11, and the Houston-Ellington, Texas Common Air Route Surveillance Radar radars used for NORAD's air defense mission. We have developed two mitigation strategies that would potentially mitigate the radar impacts: overlapping radar coverage and Radar Adverse Impact Management (RAM). We ask that BOEM include the following in any approval conditions:
    1) Project owner will notify NORAD 30-60 days ahead of project completion and when the project is complete and operational for RAM scheduling;
    2) Project owner contribute funds ($80,000) for each affected radar for the execution of RAM;
    3) Curtailment for National Security or Defense Purposes as described in the leasing agreement.

- The Department of the Navy (DON) requests development in Option I near Galveston, Texas be located as far north as possible to avoid the southern-most lease blocks (GA A97, GA A98, HI A456, HI A457, HI A400 and HI A481). Avoiding these blocks will reduce the potential for negative effects on the Relocatable Over the Horizon Radar sides in Texas. DON also requests continued coordination to account for mission changes.

Taproot Earth

- We believe the incompatibility of oil and wind should guide BOEM to embrace policies that mitigate the impacts of the currently irreconcilable conflict between oil and gas infrastructure and justly sourced renewable energy, including:
    1. Incentivizing expansive Community Benefit Agreements that would include climate/environmental justice communities in the Gulf South that have been excluded from the proposed Wind Energy Areas (WEAs) as beneficiaries.
    2. Using BOEM's existing authority to order the removal of oil and gas infrastructure in the Gulf of Mexico that has been decommissioned in place, as well as remediating the areas impacted by this oil and gas development.
    3. Issuing no new leases beyond what is legally required by Congress for the 2023-2028 National Outer Continental Shelf Oil and Gas Leasing Proposed Program.
    4. Establishing a public offshore development company to ensure that the greatest number of people benefit from the profitable development of offshore wind energy.

Greater LaFourche Port Commission and Port Fourchon

- While we applaud BOEM's leadership and efforts in the earlier Call for Information for Offshore Wind Leasing in the Gulf of Mexico (BOEM-2021-0077) and the current request for comments on the proposed Wind Energy Areas in the Gulf, we are disappointed that additional areas located in Federal waters offshore coastal Louisiana were not proposed in this initial WEA publication. We encourage BOEM to consider additional areas within the original Call Area for future leases.

- The State of Louisiana is actively pursuing a renewable energy program located in State waters in the Gulf, and in turn, Port Fourchon and associated offshore industries are actively participating in the State's efforts. Thus, there is the potential for tremendous synergy between the Federal and State governments in seeking mutual goals of renewable energy development in State and Federal waters in the Gulf of Mexico. We encourage BOEM to capitalize on these efforts.

- Port Fourchon and businesses located in our region and across the country that have been engaged in offshore energy exploration and production for nearly 90 years will serve a vital role in providing expertise, manufacturing capabilities, logistics and services to the offshore renewable energy industry. Thus, we encourage further cultivating of relationships by BOEM with the offshore industry in the Gulf and taking advantage of the expertise that our region offers in offshore energy development.

- The use of hydrocarbons as an energy source will continue to be a significant part of America's energy portfolio, certainly in the near-term, but likely for generations. Renewable energy has the capacity to replace certain hydrocarbons for power generation for electric

utilities, vehicles and more, and to a degree for use as feedstock for certain manufacturing, but all of this will come over a period of time, and moreover, the reliance on hydrocarbons as feedstock for a host of manufacturing, including as part of renewable energy development and manufacturing, is likely to be indefinite. Thus, federal climate and energy policy needs to acknowledge this reality and proceed with an orderly and thoughtful transition into renewable energy in a manner that does not impede our Country's efforts to meet current and near-term conventional energy demands through the use of domestically produced fossil fuels.

- We encourage BOEM and other Federal agencies to holistically incorporate into the planning of offshore renewable development other sources of offshore and onshore renewable energy and carbon reduction, ancillary or separate from wind, such as green hydrogen, ammonia, kinetic wave energy, as well as carbon capture and sequestration efforts onshore and offshore.

Entergy Services, LLC

- Entergy is interested in the potential to create green hydrogen from offshore wind in the Gulf of Mexico.
- Entergy supports the two call areas selected for initial leasing activities, but suggests that, due to the exclusive nature of the leasing rights, BOEM should exclude potential transmission corridors from lease activities until areas of interest have been identified based on the exploratory activities anticipated in the EA. Entergy suggests using the available pipeline, fisheries, ocean usage data utilized by BOEM in selecting the proposed WEAs to further evaluate transmission corridors while developers are evaluating ideal turbine locations, and additional areas should not be released until technology has been proven with projected LCOE that is competitive with commonly utilized power generation resources.

World Shipping Council

- Options M and I should be developed to take into account poor weather conditions, accommodating three vessels abreast of one another with a minimum of 2 nautical miles between each vessel (CPA), and another 2 nautical miles from any wind turbines that may be on the outer edges of the Navigational Safety Corridors (NSC). This results in the NSC being eight nautical miles across, four miles on either side of the center line of the safety fairway. As such Options I and M should be contracted to meet these measurements.

Sierra Club

- The preliminary wind energy areas identified in the Gulf of Mexico indicate that proposed offshore wind in the Gulf of Mexico is being considered in a manner that is protective of wildlife and the human environment. However, continued agency and community consultation are necessary prior to ultimately leasing these regions, given the changing infrastructure, climate, and policy landscape impacting the Gulf of Mexico.

National Wildlife Federation

- We appreciate BOEM's consideration of our comments in response to the Request for

Interest and on the Gulf of Mexico Call Area and support the agency advancing both Option I (the Galveston Preliminary WEA) and Option M (the Lake Charles Preliminary WEA) as WEAs.

- We appreciate this additional comment period and applaud BOEM for adaptively managing the offshore wind site identification process to increase transparency and stakeholder engagement.

- Based on recommendations by National Wildlife Federation: Both the Galveston and Lake Charles Preliminary WEAs meet these siting guidelines and we applaud BOEM for making smart siting decisions. Additionally, we were heartened to see that BOEM assigned a score of less than one to natural resources like marine mammal populations that were large and increasing, as BOEM should be proactively thinking about reducing impacts to species that are not of immediate conservation concern. We support BOEM's identification of these two preliminary WEAs and encourage the agency to move the areas forward for WEA designation.

- The process BOEM has used to identify preliminary WEAs in the Gulf of Mexico—namely, the development of preliminary WEAs, publication of the WEA Identification Memo, and seeking public comment on these—represents a significant improvement in BOEM's offshore wind site identification process. The decision-making process and regional approach described in the Memo, in which all possible areas in the region were assessed for WEA suitability, conflicts, and adverse impacts, captures much of the intent behind our previous requests for BOEM to identify WEAs through a Programmatic Environmental Impact Statement (PEIS), although a PEIS would capture the improvements in data availability, transparency, and stakeholder engagement identified herein.

Mainstream Renewable Power

- Mainstream applauds BOEM's proactive approach to deconfliction within the Gulf of Mexico OCS and WEA identification process to accommodate this opportunity, and supports its intent to establish a plan for regular leasing activities in forthcoming years.

- Mainstream recommends that BOEM heed this call by making additional lease areas available during the auction anticipated for 2023 to accelerate the deployment of this new regional economic driver, while providing certainty and scale for both developers and suppliers to make meaningful local supply chain investments that will accelerate the deployment of renewable energy and a new green fuels economy in the region.

- Provide a designated corridor for shrimping activities: It is important to ensure that such designated fishing areas are not "lease locked" by establishing an access corridor prior to finalizing the lease areas.

- Collection and publication of existing subsea infrastructure, and clarification on interaction: The rich history of industrial use in the Gulf, however, presents potential challenges to offshore wind development, as the existence of operational and decommissioned infrastructure on or below the seabed is both abundant and unclear. A coordinated effort ahead of the auction led by BOEM with the participation of State and associated industries

to develop a comprehensive catalog of existing infrastructure would facilitate the safe and predictable development of offshore wind for years to come. Further, clarification regarding the interaction and responsibilities between offshore wind developers and existing infrastructure, specifically that which is decommissioned or abandoned, is essential to ensure safe coexistence among ocean users.

- Proactive, coordinated, regional transmission planning: Multiple radial lines may be difficult to site given the abundance of sensitive coastline environments and habitats, compounded by the challenges presented by existing seabed infrastructure from the legacy oil and gas industry.

South Louisiana Economic Council (SLEC)

- BOEM's pursuit of offshore wind in the Gulf of Mexico should operate in partnership with oil and gas and with other OCS users in the region such as the emerging carbon capture and storage ("CCS") sector.

- We also urge BOEM to allow the intermingling of renewable energy with the oil and gas industry.

- SLEC supports BOEM's two WEAs, the Galveston WEA and Lake Charles WEA; however, SLEC respectfully requests BOEM to consider including another WEA in closer proximity to the central GOM. The addition, a WEA in the central GOM would allow wind developers the opportunity to consider its feasibility and would be strategically located to existing energy infrastructure, a key component to building out an offshore windfarm.

GNOwind Alliance

- The Galveston WEA (Option I) is multiple times larger than the Lake Charles WEA (Option M). Considering this difference in scale, we encourage eventual examination of more substantial WEA option blocks offshore of Louisiana, due to unique conditions and capacity of the State.

- We value the ability of the offshore wind lease process to reciprocally incentivize workforce development and infrastructure improvements for the immediately impacted states. Following concurrence on Preliminary WEAs, in a future notice, we appreciate BOEM's ability to administer a multiple-factor auction format and employ an auction credit system.

American Waterways Operators

- AWO concurs with the Coast Guard that a buffer of two nautical miles (NM) or more needs to be added to the existing safety fairways in the Gulf of Mexico. To ensure navigational safety, AWO asks that BOEM not lease within the current fairway and a buffer zone of at least two NM on each side of the established fairway.

- AWO urges BOEM to consult closely with the tugboat, towboat, and barge industry throughout this process and employ clear and consistent methods of communication.

Oceana

- We appreciate BOEM's consideration of our comments in response to the Request for Interest and on the Gulf of Mexico Call Area and support the agency advancing both Option I (the Galveston Preliminary WEA) and Option M (the Lake Charles Preliminary WEA) as WEAs. We appreciate this additional comment period and applaud BOEM for adaptively managing the offshore wind site identification process to increase transparency and stakeholder engagement.

- Based on recommendations by National Wildlife Federation: Both the Galveston and Lake Charles Preliminary WEAs meet these siting guidelines, and we applaud BOEM for making smart siting decisions. Additionally, we were heartened to see that BOEM assigned a score of less than one to natural resources like marine mammal populations that were large and increasing, as BOEM should be proactively thinking about reducing impacts to species that are not of immediate conservation concern. We support BOEM's identification of these two preliminary WEAs and encourage the agency to move the areas forward for WEA designation.

TotalEnergies Renewables USA, LLC

- TotalEnergies would recommend that BOEM subdivide draft wind energy areas "I" and "M" into areas that will allow for a final size between 75,000 acres and 150,000 acres. Leases of this size will allow a competitive bidding process while guaranteeing at the same time the necessary size for economies of scale to be realized. Additionally, TotalEnergies would request that BOEM keep all leases approximately the same size.

- TotalEnergies proposes that given the abundance of potential areas available for offshore wind leasing in the Gulf of Mexico from the State to Federal water boundary out to the 1,300m bathymetric, BOEM would be able to consider a recurring annual lease sale for offshore wind acreage similar to BOEM's routine oil and gas sales of years past that provided significant income to the Department of Interior and allowed for continuous development year over year. This would allow for the greatest economies of scale, a rapid growth of U.S. supply chain and workforce development and bring years of economic benefits to the Gulf Coast communities.

- TotalEnergies would urge BOEM to keep their existing ascending clock, multi-asset, single site per bidder, monetary auction with bidding credit mechanism. This model has been assessed internally as an optimum one among the solutions used worldwide to approach market lease price's discovery while granting BOEM, the bidders, and stakeholders a transparent and functional auction process.

- TotalEnergies applauds the bidding credit mechanism introduced by BOEM for the Carolina Long Bay lease auction and planned for California auction later this year.

- TotalEnergies would welcome for BOEM to consider with state entities in Texas and Louisiana how to best apply this overall bidding credit mechanism to the specificities of these two areas, markets, and stakeholders, in particular in terms of which % of the bid credit shall recognize past efforts in the local economy and which % of the bid credit shall commit developers forward as was the case in North Carolina auction. For example, and not precluding upcoming consultation with state authorities, TotalEnergies would welcome BOEM's consideration of existing community benefit agreements with key stakeholders in addition to the bidding credit for supply chain and workforce.

- Future low and zero-carbon energies such as the offshore production of green hydrogen with power from (floating) offshore wind is one such technology, as is CCUS (CO2 capture, storage, transport and recovery), again possibly combined with the power from (floating) offshore wind.

The Nature Conservancy

- Publish the modeling data used in selecting wind energy areas (WEAs) and provide opportunity for the additional public comment after the report is available and before leasing occurs.

- Enhance and continue to collect natural resource and ocean use data to refine the WEAs and inform future leasing and site development plans

- Consider how to assess and plan for the cumulative impacts of offshore wind energy development across the Gulf of Mexico and multiple WEAs

- Ensure that strong protective measures are included as Standard Operating Conditions (SOC) and require their implementation

- Engage stakeholders in the development of transmission pathways, looking for ways to utilize existing infrastructure and minimize the number of lines.

- We acknowledge and support BOEM's decision to create a 20 NM coastal buffer which will reduce conflicts with birds that migrate along the coast. However, this buffer should not serve in lieu of a suitability layer for coastal migratory birds in the WEA identification process.

Business Network for Offshore Wind

- The advancement of leasing in the Gulf of Mexico will be a key driver of the offshore wind industry beyond just the region, but across the U.S. For this reason, it is critical that BOEM maintain the proposed timeline and issue a lease sale in the Gulf of Mexico in early 2023.

- The Network urges BOEM to maintain the maximum possible space for the final WEA. As it is currently delineated, the Preliminary WEA covers an area of just over 188,000 acres. This size is ideal for division into two proposed Lease Areas, while still maintaining enough space within each lease area to maximize economies of scale. Further restriction of the WEA would pose one of two risks. Either the restrictions would make each of the subdivided Lease Areas too small to drive local supply chain investment, or a single larger lease area would eliminate any form of competition with just a single Lessee to develop the project. Establishment of multiple Lease Areas off the coast of Louisiana will be key to unlocking supply chain investments and aiding in the rehabilitation of economically depressed coastal communities.

- At a size of just over 546,000 acres, the Galveston Preliminary WEA ought to support between five and six Lease Areas, as long as further restrictions are not imposed on the WEA.

- The Network recommends that BOEM maintain the deep-water portion of the lease area, which extends from the 37 meter contour line out to a depth of 252 meters. This will allow for the development of floating offshore wind in the Gulf of Mexico, which will advance the national interest of deploying floating offshore wind in all three major offshore wind markets

- Direct power purchase agreements (PPAs) for facilities with high electricity demand for renewables is a well-established mechanism, especially in Texas, where onshore wind currently provides 54% of the power for such agreements.

- Support hydrogen production through the Greater New Orleans Development Foundation grant.

Hy Stor Energy LP

- As an entity supporting the development of coastal Louisiana as a global offshore wind energy hub, Hy Stor Energy LP shares BOEM's commitment to sustainably advancing offshore wind development in the Gulf of Mexico. This has been demonstrated by BOEM's professional staff in the organization of the Gulf of Mexico Task Force, with WEAs selected having clear considerations for the Gulf of Mexico ecology and economy in administrative processes undertaken to date.

- Hy Stor Energy is developing and advancing green hydrogen production, storage, and delivery at scale in the United States.

Shell New Energies US, LLC

- BOEM should offer leases that average 2 gigawatts ("GW") and/or approximately 100,000 acres per lease.

- Shell recommends that BOEM consider the addition of wind Energy Areas ("WEAs'); in the forthcoming lease sale. Additional WEAs in the wafers off Louisiana, particularly between the Atchafalaya and Mississippi Rivers centered near Belle Pass and Bayou Lafourche, offer more robust opportunities for research and development of offshore wind and renewable technologies that may eventually be commercially scalable.

- BOEM should take a programmatic approach to leasing, which would increase certainty and accelerate the development of the domestic supply chain to attract and increase local investments in the Gulf of Mexico and further encourage oil and gas developers to plan for shared service resources within a fully integrated renewable energy basin thereby even further reducing the carbon intensity of energy production in the Gulf of Mexico.

- BOEM should offer leases that average 2 GW and/or approximately 100,000 acres per lease.

- There are unresolved items that require more clarity and investigation, specifically the presence of abandoned oil and gas infrastructure. BOEM should consider further investigating this infrastructure and determine how best to minimize liabilities that could be associated with development of offshore wind energy given the age and status of the infrastructure. BOEM should consider whether it is appropriate to remove clusters of infrastructure or larger swaths of WEA acreage to minimize interference and risks potentially associated with co-location of offshore wind.

- BOEM should consider adding more WEAs to the first auction, specifically in federal waters between the Atchafalaya and Mississippi Rivers easily accessible from existing service hubs like Port Fourchon.

- BOEM should consider a unique lease area strategy where non-contiguous lease areas are created, versus the common practice of auctioning contiguous leases. Considering such an approach may help to mitigate or avoid use-conflicts. This approach could optimize offshore wind development in shallower waters of the Gulf region, particularly in areas with high levels of ongoing oil and gas activities, which could result in lowering LCOE and allow the necessary scale to meet targets.

National Park Service (NPS)

- NPS manages two units of the National Park System in proximity to the Call Area; Padre Island National Seashore and Palo Alto Battlefield National Historical Park. While NPS cannot identify specific resource concerns at this time, we would be able to share our special expertise regarding resources at Padre Island and Palo Alto with BOEM to help identify any relevant issues and potential effects of future proposals.

Louisiana Department of Wildlife and Fisheries (LDWF)

- The Department recognizes that the Bureau of Ocean Energy Management (BOEM) is generally aware of migratory bird concerns in the Call Area and supports the 20 nm coastline buffer that BOEM implemented to eliminate those areas from further consideration. The 20 nm coastline buffer should reduce negative interactions between wind energy infrastructure/activities and nearshore waterbirds (e.g. herons and egrets, shorebirds, most gulls and terns) during non-migratory periods. To some degree, the 20 nm buffer may also reduce negative interactions between wind energy infrastructure/activities and birds actively migrating through the airspace over the Gulf (i.e., greater than 20 nm offshore). However, the impact to trans-Gulf migratory birds remains as a significant concern during spring and fall migration periods within the Lake Charles WEA.

- The Department appreciates BOEM's inclusion of a pelagic seabird suitability layer that demonstrates low likelihood of negative interactions between wind energy infrastructure/activities and pelagic seabirds in the Lake Charles WEA. However, pelagic seabirds are not the primary avian guild of concern with respect to wind energy in the Lake Charles WEA, particularly given the area's low habitat suitability for pelagic seabirds. Indeed, the use of pelagic seabirds may greatly misrepresent the risk to migratory birds in general. Different guilds of birds will experience different risks of collision with wind energy infrastructure based on their ecology, behavior, and habitat use in the WEA, with the airspace over the Gulf representing a critically important bird habitat type in the WEA should focus efforts on potential impacts to trans-Gulf migratory birds.

National Marine Fisheries Service (NMFS)

- We encourage BOEM to invoke a similar marine spatial planning process as the one conducted to evaluate and identify draft WEAs to ensure that cable transmission corridors are planned in a thoughtful and calculated manner that advances the nation's renewable energy generation goals while considering the ecosystem-wide impacts to NOAA's trust resources and industries and communities reliant upon them.

- **ESA-listed species**: If project vessels are expected to traverse the 100- to 400-meter isobath or the CDA, then protective measures particular to Rice's whale will need to be included in ESA Section 7 consultations related to offshore wind energy development in these WEAs.

- If project vessels are expected to originate from or return to ports along the U.S. eastern seaboard or European waters, then potential effects to ESA-listed species particular to the Atlantic Ocean will need to be considered. Both Option I and Option M are located within the boundary of Sargassum critical habitat for the Northwest Atlantic DPS of loggerhead sea turtle. NMFS plan to publish a proposed rule for green sea turtle critical habitat in 2023 and both I and M will potentially overlap with that designation.

- **Fish and Wildlife Coordination Act**: From the information provided, the designation of two WEAs will impact areas where aquatic resources we seek to conserve and enhance under the FWCA occur; consultation under the FWCA will be required.

- **Magnuson-Stevens Fishery Conservation and Management Act**: Both of the proposed WEAs are found in Eco-region 4, which extends from Freeport, Texas, east to the Mississippi River Delta. This eco-region is directly influenced by the Mississippi and Atchafalaya Rivers and contains offshore rocky reefs, many of which have been identified by the Gulf Council as Habitat Areas of Particular Concern.

- **Federal Fisheries-Independent Surveys in WEAs and SEFSC Engagement**:
    - Impacts to SEFSC GOM fishery-independent surveys from the establishment of WEAs within the GOM may occur through four main mechanisms:
        1. Exclusion of NOAA Fisheries and NOAA cooperative research program vessels and aircraft from the wind development area, resulting in (a) a reduction in the area over which we are making inferences from our surveys, and (b) a loss in ability to determine living marine resource status and trends within the wind development area;

        2. In combination with adjacent developments (i.e., petroleum and gas platforms), decreased sampling efforts outside of developed areas due to increasing vessel transit time.

        3. Impacts on the random-stratified and other statistical designs that are the basis for data analysis and use in scientific assessments, advice, and analyses; and

        4. 4. Alteration of benthic and pelagic habitats, and airspace in and around the wind energy development, requiring new designs and methods to sample new habitats.

- To mitigate for the loss of ability to survey within the WEAs, the SEFSC would develop and perform analogous (to the extent possible) surveys in the WEAs. Anticipated approaches, relative to each current survey with which Options I and M overlap: see comment.

- **Social and Economic Considerations**: NOAA Fisheries supports the social and economic considerations addressed in the original spatial modeling but notes that several key data layers could not be provided in time for the analysis, particularly related to economics that could inform potential fishery compensation. NOAA is currently compiling this information.

- NOAA is pleased to hear that BOEM is considering Community Benefit Agreements as part of the lease sale agreements. Our understanding is that these would establish a community benefit agreement (CBA) with a community or stakeholder group whose use of the geographic space of the Lease Area, or whose use of resources harvested from that geographic space, is directly impacted by

the Lessee's potential offshore wind development. We have a number of fishing communities in areas potentially impacted by lease areas I and M, which must also include and are not limited to Gulf of Mexico Vietnamese fishermen and their community, Federal and State recognized Native American Tribes, and Hispanic and African American communities.

Michael Myers

- During my 33-year career as an engineer working in an international chemical manufacturer, I learned the importance of generating 'bullet-proof' justification for any and all major projects (feasibility, economic, operational, reliability, maintainability, life expectancy, alternative approaches). All of which were subject to scrutiny at various levels of management depending upon location, nature and expected cost of the project; and that serves as my perspective for commenting on this energy proposal as I offer the following observations:
    - Requires all new access and infrastructure, miles offshore (starting from 'bare ocean')
    - Location has frequent storms, including hurricanes
    - Must be integrated with existing power grid on land
    - Based on energy generation, which has troublesome history of reliability worldwide
    - Limited operating lifetime with inordinately high initial investment
    - Will compete for maintenance funds available for maintaining existing power grid
    - Cost of construction and maintaining would be greatly inflated due to location

- If the intended purpose of this project is to assure economical and reliable energy for the USA for the immediate future and decades beyond, it must be seriously, thoroughly and objectively evaluated and compared with all alternatives. The very size and cost of this installation would be such to influence or dictate any future energy development; it could prove to be death sentence for this nation's economical and reliable energy infrastructure.

APPENDIX B
GOM Preliminary WEA MEMORANDUM

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

New Orleans Office

1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

Memorandum

To: Amanda Lefton
Director, Bureau of Ocean Energy Management

From: Michael Celata
Regional Director, Gulf of Mexico Regional Office

Subject: Request for Concurrence on Preliminary Wind Energy Areas for the Gulf of Mexico Area Identification Process Pursuant to 30 C.F.R. § 585.211(b)

I. Purpose

This memorandum documents the analysis and rationale used to develop recommendations for Preliminary Wind Energy Areas (WEAs) in the Gulf of Mexico. The BOEM New Orleans Office is requesting concurrence from the Director of the Bureau of Ocean Energy Management (BOEM) on the Preliminary WEAs in order to obtain further stakeholder input on the WEA development process.

II. Recommended Preliminary WEAs

As described in Table 1 and depicted in Figures 1 and 2, the recommended Preliminary WEAs for the Gulf of Mexico consist of 734,668 total acres.

Table 1: GOM Preliminary WEAs Descriptive Statistics

	Galveston Preliminary WEA (Option I)	Lake Charles Preliminary WEA (Option M)	Total
Acres	546,645	188,023	734,668
Installation Capacity[1]	6,636	2,283	8,919
Homes powered[2]	2,322,600	799,050	3,121,650
Power Production (MWh/yr)[3]	23,252,544	7,999,632	31,252,176

[1] Megawatts (MW) based upon 3MW/sqkm
[2] Megawatt hours per year (MWh/yr) based upon 350 homes per MW
[3] Formula = Capacity (MW) * 8760 (hrs/yr) * 0.4 (capacity factor)

Max Depth (meters)	253	25	
Min Depth (meters)	16	10	
Closest distance to TX (nm)	24 (45 km)	79 (147 km)	
Closest distance to LA (nm)	28 (52 km)	56 (104 km)	

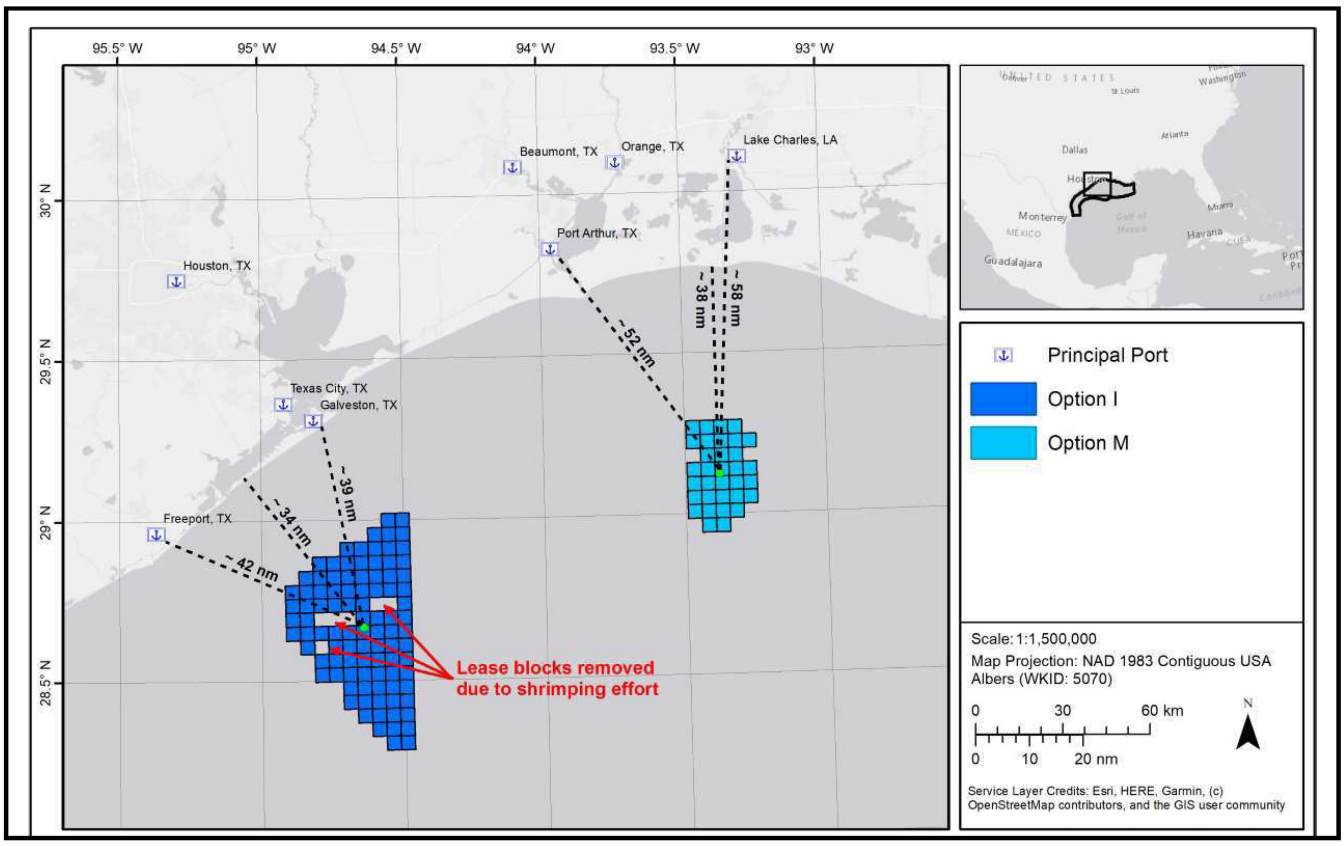


Figure 1: Map of the Gulf of Mexico Wind Energy Area offshore Texas and Louisiana

III. Legal Standard

Pursuant to subsection 8(p)(1)(C) of the Outer Continental Shelf Lands Act (OCSLA), the Secretary of the Interior (Secretary), in consultation with the U.S. Coast Guard (USCG) and other relevant Federal agencies, may grant a lease, easement, or right-of-way on the Outer Continental Shelf (OCS) for activities that "produce or support production, transportation, or transmission of energy from sources other than oil and gas" (43 U.S.C. § 1337(p)(1)(C)). The Secretary must ensure that activities under this subsection are carried out in a manner that provides for 12 different goals ("OCSLA factors"), including safety, protection of the environment, and consideration of other uses of the sea or seabed. *Id.* § 1337(p)(4)(A)–(L). BOEM has issued regulations governing the leasing process and management of offshore renewable energy projects. *See* 74 Fed. Reg. 19,638 (Apr. 29, 2009); *see also* 30 C.F.R. part 585.

This memorandum documents BOEM's consideration of the OCSLA factors for identifying Preliminary WEAs during the Area ID determination within its leasing process (43 U.S.C. §

1337(p)(4)(A), (B), (D), (F), (I), and (J)), as explained further in Section IV below. The identification of Preliminary or Final WEAs does not constitute a final leasing decision, and BOEM reserves the right under its regulations to issue leases in smaller, fewer and/or different areas—or issue no leases. Moreover, BOEM may conduct additional Area ID processes within the Gulf of Mexico in the future. After publicizing the Preliminary WEAs, BOEM will conduct further analysis under OCSLA and the National Environmental Policy Act (NEPA) at subsequent stages of its process, (1) before the lease auction and (2) when renewable energy facilities are proposed on those leases.

IV. Development of Preliminary WEAs and the Area Identification Process Overview:

BOEM's competitive lease issuance process starts with the publication of an optional Request for Interest (RFI) or a mandatory Call for Information and Nominations (Call), which requests comments from the public about areas of the OCS that they believe should receive consideration and analysis for the potential development of renewable energy (30 C.F.R. § 585.211(a)). The RFI may not always be necessary to assist BOEM in determining potential interest in offshore wind and BOEM could move directly to publication of the Call when there is sufficient information to inform the Call process. For the Gulf of Mexico (GOM), BOEM decided it was prudent to issue an RFI to gauge specific interest in obtaining commercial wind leases in an area on the OCS in the GOM.

All comments received on the RFI, and the Call are submissions from private citizens; Federal, State, and local government agencies; environmental and other advocacy groups; industry groups; and wind developers. The RFI and Call comments are then used to inform the Area ID process.

An Area ID process is a required step under the renewable energy competitive leasing process used to identify areas for environmental analysis and consideration for leasing (30 C.F.R. § 585.211(b)). The Area ID process takes into consideration multiple competing uses and environmental concerns that may be associated with a proposed area's potential for commercial wind energy development. The development of Preliminary WEAs and seeking public comment on these areas is not required under BOEM's regulations. However, in this instance, BOEM believes that such processes will result in a more transparent and inclusive Area ID process.

BOEM prepares an Environmental Assessment (EA), pursuant to NEPA, before any lease sale. The objective of the environmental analysis is to estimate the nature, severity, and duration of impacts that might occur from site assessment and site characterization activities and to compare the impacts of the various alternatives for a proposed OCS wind energy lease sale. Potential impacts of a specific proposed renewable energy facility in the identified areas would be addressed during the review of a Construction and Operations Plan (COP) when post-lease information is available.

A. Request for Interest

On June 11, 2021, BOEM issued an RFI for Commercial Leasing for Wind Power Development on the GOM OCS to gauge interest in obtaining commercial wind leases in area on the OCS offshore GOM and to gather information about the RFI Area. The RFI Area comprised the entire Central Planning Area (CPA) and Western Planning Area (WPA) of the Gulf of Mexico,

excluding the portions of those areas located in water depths greater than 1,300 meters (Figure 2). BOEM issued the RFI to identify potential opportunities for renewable energy development in the GOM and to gather additional information about possible constraints. In addition to soliciting public comment in the *Federal Register*,[4] BOEM held its first GOM Intergovernmental Renewable Energy Task Force meeting on June 15, 2021. The Task Force meeting included representatives of the Louisiana, Texas, Mississippi, and Alabama State governments, as well as other representatives from Tribes, and relevant Federal and local government entities.

The comment period for the RFI ended on July 26, 2021. BOEM received 39 comments and 10 nominations, which are available at https://www.regulations.gov/document/BOEM-2021-0041-0001.

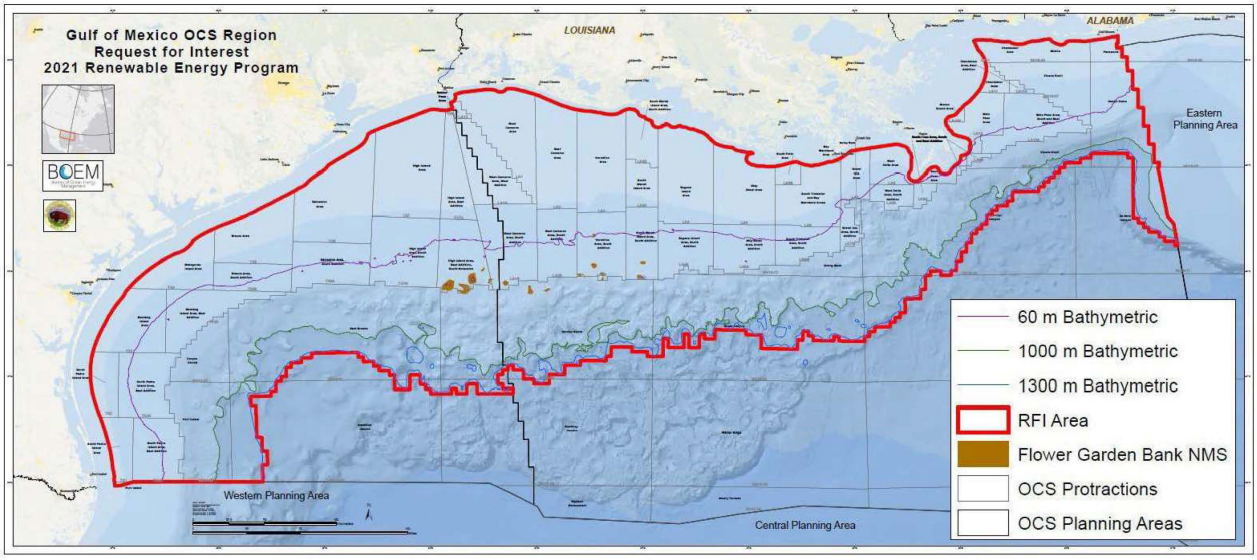


Figure 2: Gulf of Mexico RFI Area

B. Call

On November 1, 2021, BOEM published a Call for Wind Power Development on the OCS in GOM.[5] The Call Area comprised the area located seaward of the Gulf of Mexico Submerged Lands Act Boundary, bounded on the east by the north-south line located at -89.857° W. longitude, and bounded on the south by the 400-meter bathymetry contour, and the U.S. Mexico Maritime Boundary established by the Treaty between the Government of the United States of America and the Government of the United Mexican States on the Delimitation of the Continental Shelf in the Western Gulf of Mexico beyond 200 Nautical Miles (U.S.-Mexico Treaty), which took effect in January 2001.

BOEM delineated the Call Area taking into account the comments from the RFI and consultation with numerous parties and information sources, including the States of Alabama, Mississippi, Louisiana, Texas, and the Intergovernmental Renewable Energy Task Force (Figure 3). In

[4] https://www.regulations.gov/document/BOEM-2021-0041-0001

[5] https://www.federalregister.gov/documents/2021/11/01/2021-23800/call-for-information-and-nominations-commercial-leasing-for-wind-power-development-on-the-outer

addition to soliciting public comment in the *Federal Register*,[6] BOEM hosted a second task force meeting on February 2, 2022. The Task Force meeting included participation from members of all involved States, as well as other representatives from Tribes and relevant Federal and local government entities. BOEM also hosted four sector specific fisheries meetings to collect information that would help to avoid, minimize, or mitigate potential impacts on commercial and recreational fisheries and fishing. During and after the Call Area comment period, BOEM held or attended over forty informational sessions with many stakeholders to better understand concerns related to potential impacts to military activities, fisheries, navigation, and other potential use conflicts.

The comment period for the Call ended on December 16, 2021. BOEM received 40 comments and 8 nominations, which are available at https://www.regulations.gov/document/BOEM-2021-0077.

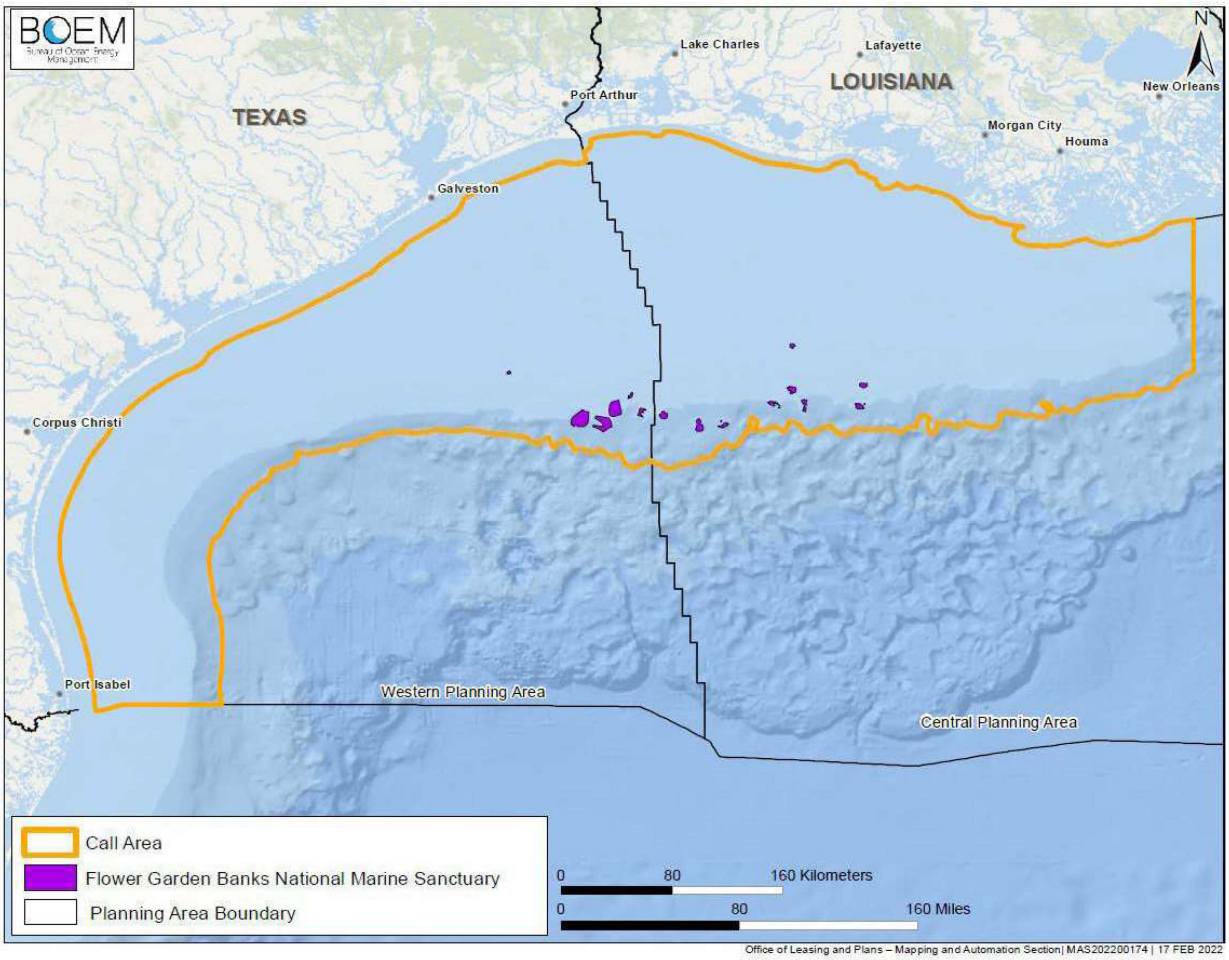


Figure 3: Gulf of Mexico Call Area

C. GOM Preliminary WEAs and Area ID

6 https://www.regulations.gov/docket/BOEM-2021-0077

For purposes of recommending the Preliminary WEAs, BOEM considered the following non-exclusive list of information sources: comments and nominations received on the RFI and Call; information from the GOM Intergovernmental Renewable Energy Task Force; input from Alabama, Mississippi, Louisiana, and Texas State agencies; input from Federal agencies (e.g. DoD, USCG); comments from stakeholders and ocean users, including the maritime community, offshore wind developers, and the commercial fishing industry; state and local renewable energy goals; and information on domestic and global offshore wind market and technological trends.

BOEM received ocean users feedback to consider leveraging an existing ocean planning model previously used in the GOM for National Oceanic and Atmospheric Administration's (NOAA) Aquaculture Opportunity Areas for ocean planning purposes. In response, BOEM used the ocean planning model to help support identification of Preliminary WEAs.

1. *Ocean Planning*

BOEM's process to identify Preliminary WEAs in the GOM was based on rigorous science to drive an informed, forward-looking, and sustainable industry to maximize operational efficiency and limit adverse interactions with other industries or natural resources. Additionally, the Gulf of Mexico Regional Office of BOEM (GOMR) and the NOAA National Centers for Coastal Ocean Science (NCCOS) collaborated utilizing an ocean planning tool to identify Preliminary WEAs in the Federal waters of the GOM. Due to its vast richness of data and decades of active management in the GOM, BOEM was able to utilize this tool in the region. Preliminary WEAs are identified, based on the best available science and through public engagement, to facilitate wind energy development; support environmental, economic, and social sustainability; and minimize resource use conflicts. The WEA process seeks to identify and minimize potential conflicts in ocean space as well as to mitigate interactions with other users and adverse interactions with the environment, the NCCOS model is a tool to help support that effort.

2. *Study Area*

The Call Area as defined in Section IV.B was also used as the study area boundaries. (See Figure 4).

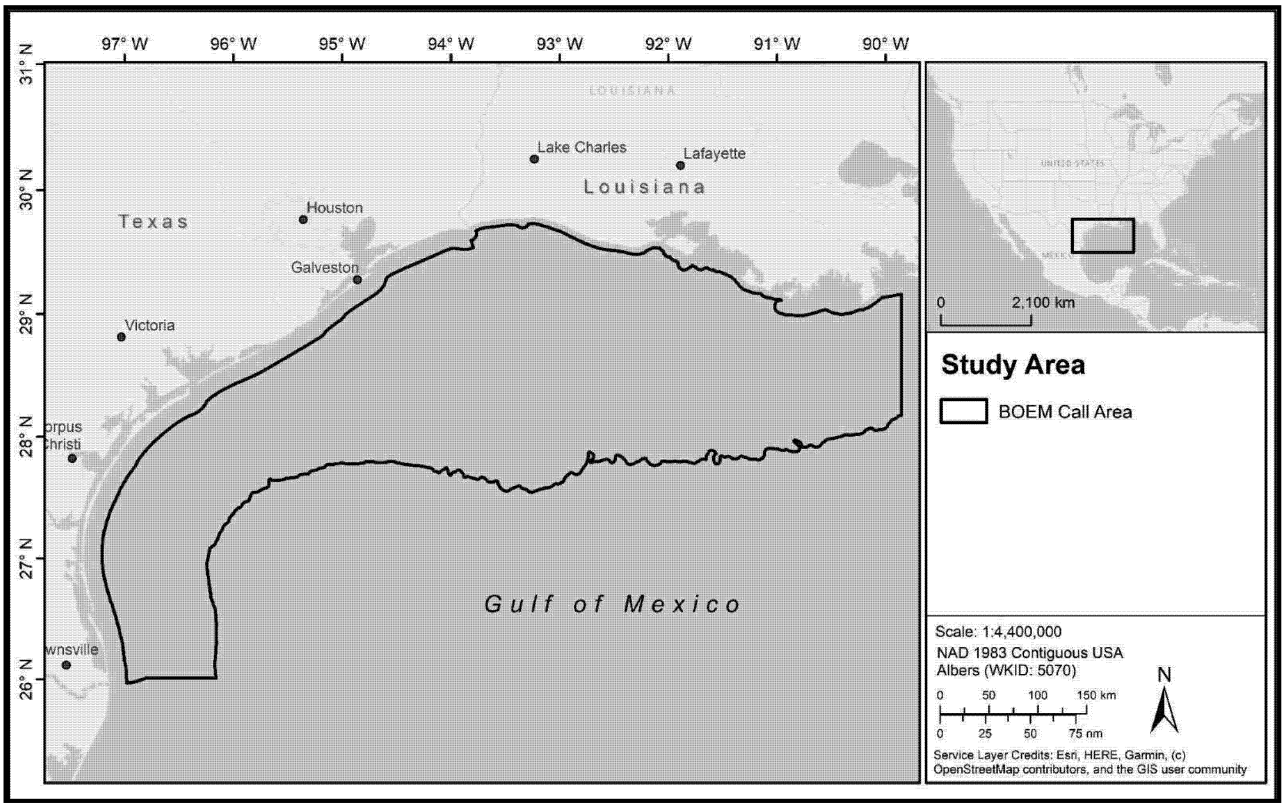


Figure 4: Gulf of Mexico Study Area for Ocean Planning

3. *WEA Planning*

Planning and siting for the WEAs requires thorough synthesis and spatial analyses of critical environmental data and ocean space use conflicts. BOEM used Geographic Information Systems (GIS) to integrate pertinent spatial data, perform analyses, and generate map-based products to inform where potential wind energy area(s) may be located within the Call Area. BOEM seeks to identify wind energy areas in a manner that avoids or minimizes impacts to environmental resources. The use of this model is one approach to meet that objective.

Historically, BOEM has engaged in similar ocean planning efforts in other OCS Regions. Ocean planning processes often follow a standard workflow by 1) identification of the planning objective, 2) inventory of data, 3) geospatial analysis of data, 4) interpretation of results, and 5) delivery of map products and reports to decisionmakers and other ocean users. Spatial data are used to represent known or potential environmental and ocean space use conflicts that could constrain, or conditionally constrain, the siting of offshore wind facilities in Federal waters. Using a multi-criteria decision approach allows for evaluation of numerous spatial data types for an area and provides a relative comparison of how suitable the areas are for offshore wind development. Additionally, natural and cultural resources, industry and operations, various fishing activities, logistics, economics, and national security are described and identified in the WEA model suitability analysis which is discussed in detail in *Gulf of Mexico Wind Energy Area Modeling Report*.

Additionally, WEA siting informed by ocean planning is helpful in avoiding and minimizing adverse environmental, social, and existing user interactions. Throughout the Area ID process, BOEM used existing datasets to have discussions with ocean users to receive early feedback. BOEM incorporated the feedback from ocean users in the spatial and temporal planning strategies to allow initial compatibility to be assessed, while also increasing efficiency of meaningful communications within and among stakeholders, and potentially with industry. The Preliminary WEAs resulting from this analysis are then considered by the decisionmaker to inform the siting of offshore wind in the GOM.

4. Ocean Planning Model: Step-by-Step Approach

In BOEM's Area ID process, the determination of the Preliminary WEAs requires an understanding of the relationship between different elements of the environment and ocean use as well as the practical requirements for offshore wind development. Developing a model for an expansive region like the Gulf of Mexico requires compilation and analysis of best-available data. A step-by-step approach was developed for ocean planning using a logical workflow that began with framing the research questions (i.e., number of acres needed for a wind facility), data collection and inventory, then continued with spatial suitability modeling, identifying potential WEA options using a unique precision siting modeling strategy, further characterization of options, and finally, interpretation of results. Each step of the workflow diagram corresponds to an essential step of the study, with corresponding methods detailed in the *Gulf of Mexico Wind Energy Area Modeling Report* (Figure 5).

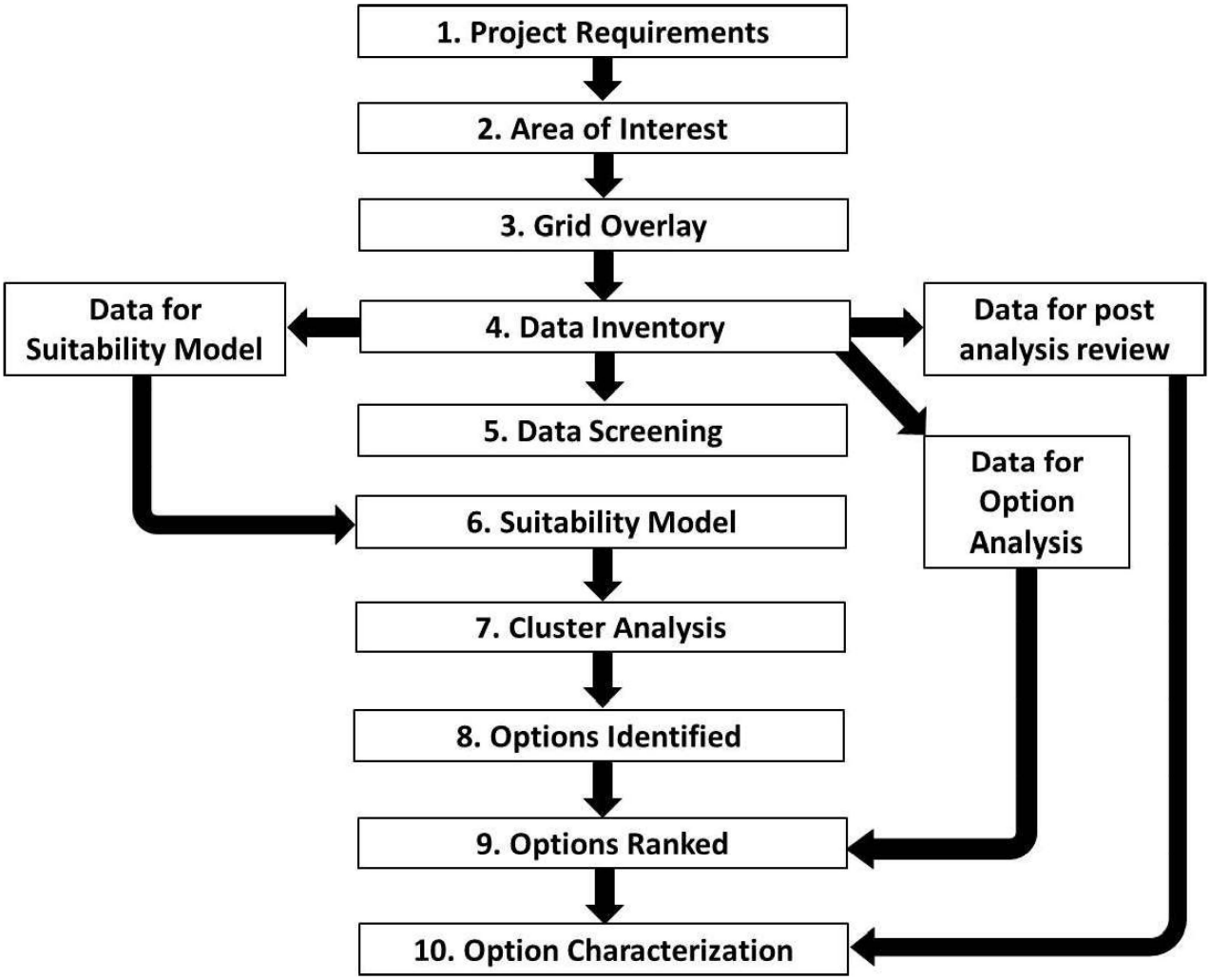


Figure 5: Workflow for Wind Energy Area options spatial analysis for the Gulf of Mexico Call Area

Geospatial analysis for identification of WEA options was based on a categorical framework to ensure relevant, comprehensive data acquisition and characterization for spatial suitability modeling. An authoritative spatial data inventory was developed that included data layers relevant to administrative boundaries, national security (i.e., military), navigation and transportation, energy and industry infrastructure, commercial and recreational fishing, natural and cultural resources, and oceanography. With over 200 data layers included in this analysis, the maps, models, and descriptions provide the most comprehensive marine spatial modeling in the GOM to date.

a. *Grid Overlay*

Based on world-wide historical trends for acreage for wind energy facilities, this spatial modeling approach was specific to the planning goal of identifying discrete areas ranging from 40,000 to 80,000 acres that met the distance of more than 20 nm from shore with a maximum water depth of 400 meters. These industry and engineering requirements of water depth and distance from shore and are the most suitable for all types of wind energy development in the GOM. Ocean planning was performed at 10-acre (4.05-ha) hexagon grid cell resolution providing high contrast of

suitability (Figure 6). A hexagon grid was used because it fits organic shapes and curves (ex. pipeline, submarine cable, etc.) better than square grids, and it provides advantages for statistical analysis as all neighboring cells share a side and the distance from the center is the same distance to all neighboring cells. [7]

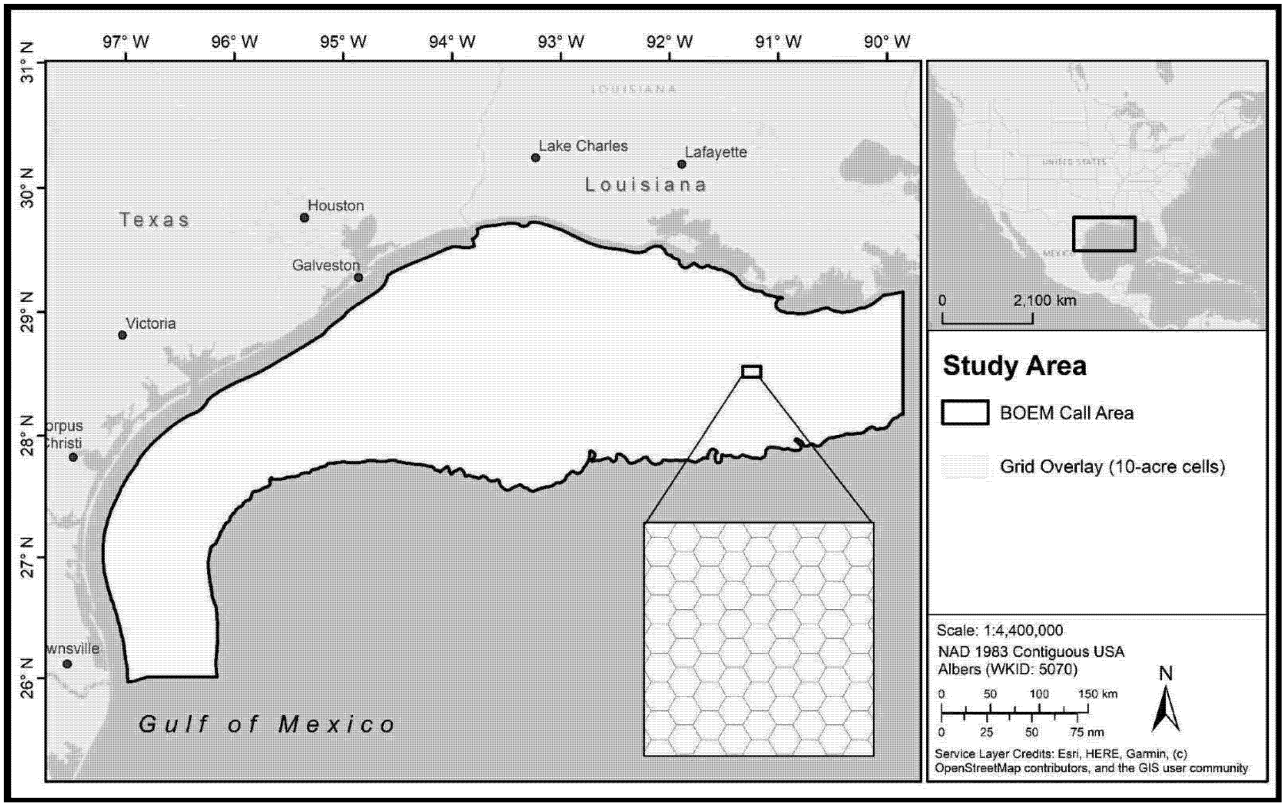


Figure 6: An example of grid cells formulated for the Call Area. Each cell is a 10-acre or 4.05-ha hexagon.

b. *Data Acquisition, Categorization, and Inventory*

Geospatial analyses and ocean planning require the consideration of multiple, authoritative datasets that require substantial data acquisition to properly understand and implement within ocean planning suitability models. Spatial suitability modeling is a type of multi-criteria analysis that provides BOEM with the ability to calculate a relative suitability score for each grid cell in an area. Data categorization is needed to describe the relationship among the data input into the models and to organize information into appropriate submodels for relative suitability modeling. Data categorization was modified from the schema provided in Lightsom et al. (2015) as the intent of the categorical structure is for ocean planning. The structure intends to bring transparency and a consistent framework for organizing complex and dynamic ocean systems.[8] The framework works to include necessary data that are needed for the wind energy area site suitability analysis, a specific type of ocean planning.

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[7] Birch CPD, Oom SP, Beecham JA. 2007. Rectangular and hexagonal grids used for observation, experiment, and simulation in ecology. Ecol Model. 206(3-4):347–359.

[8] Lightsom FL, Cicchetti G, Wahle CM. 2015. Data categories for marine planning: U.S. Geological Survey open-file report 2015–1046.

Acquisition of spatial data is a key factor in model success because it is the base for further calculations and analysis.[9] BOEM completed an initial review to determine the broad suite of data and categories needed to properly support this ocean planning process. BOEM then developed a comprehensive, authoritative spatial data inventory including data layers relevant to national security, natural and cultural resources, industry and operations, fisheries, logistics, and economics. BOEM developed the data holdings through engagement with non-governmental organizations and U.S. Federal and State agencies representing a diverse array of stakeholders. The Marine Cadastre and many studies conducted throughout the years by BOEM's environmental studies program were used to supply data for the study.

BOEM evaluated data for completeness and best quality, and used the most authoritative, up-to-date sources available. All data were projected, and calculations performed using the NAD 1983 Contiguous USA Albers projection (WKID: 5070, Projection: Albers, False Easting: 0.0, False Northing: 0.0, Central Meridian: -96.0, Standard Parallel 1: 29.5, Standard Parallel 2: 45.5, Latitude of Origin: 23.0). The *Gulf of Mexico Wind Energy Area Modeling Report* provides a list of data used for this ocean planning analysis.

c. *Data Processing Steps*

Many datasets required processing prior to use in the suitability model, subsequent cluster analysis, or for the option ranking model and characterization. Methods are provided for all data that required processing in the *Gulf of Mexico Wind Energy Area Modeling Report*; many data were received in a ready-to-use format and processing notes can be found in metadata provided by the data originator. BOEM applied setbacks (i.e., buffers) when they were established by governance, policy, or regulations. In cases where an established setback requirement was not available from an authoritative source, BOEM used conservative professional judgment when assigning setback distances.

d. Suitability Analysis

BOEM performed a gridded relative suitability analysis, commonly used in a multi-criteria decision analysis, to identify the grid cells with the highest suitability for WEA development in the Call Area.[10] Spatial data layers included in the suitability analysis identify space-use conflicts and environmental constraints such as active national security areas, maritime navigation, active oil and gas infrastructure, and natural resource management. We used a submodel structure to capture ocean use and conservation concerns including national security, natural and cultural resources, industry and operations, fisheries, logistics, and economics (Figure 7). This submodel structure ensures that each submodel is given equal weight in the final suitability model regardless of how many data layers are present in each submodel. Constraints are reflected in data layers identifying areas of reduced compatibility (e.g., shipping fairways, known sand resources areas, or Rice's Whale habitat) and those areas are removed from further analysis at this time due to the

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[9] Molina JL, Rodríguez-Gonzálvez P, Molina M-C, González-Aguilera D, Balairon L., Espejo Almodóvar F, Montejo J. 2013. River morphodynamics modelling through suitability analysis of geomatic methods. In: Wang Z, Lee JHW, Gao J, Cao S, editors. Proceedings of the 35th IAHR World Congress, Chengdu, China. Beijing: Tsinghua University Press.

[10] Mahdy M, Bahaj AS. 2018. Multi criteria decision analysis for offshore wind energy potential in Egypt. Renewable energy, *118*, 278-289.

availability of other less conflicted areas that would meet current known demand. The data layers used in the constraint model can be found in Table 2.

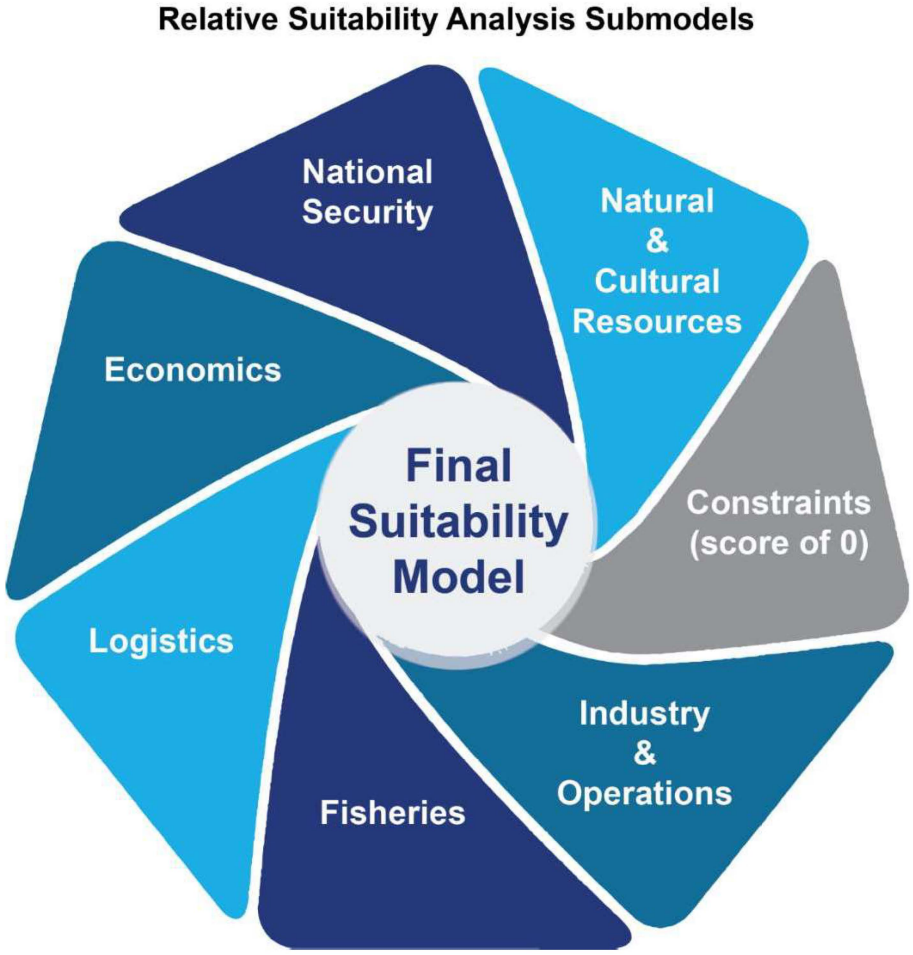

Figure 7: Overview of relative suitability model design and the submodel components. The constraints submodel includes all data layers with a score of 0; these data layers were removed before the remaining submodel scores were calculated.

d.1 Scoring Categorical Data

BOEM evaluated categorical datasets (i.e., in which data are distinct and separate groups) to determine if a constraining feature was present or absent in each grid cell. If a feature was absent, a score of 1 was given indicating suitability with offshore wind energy development, otherwise a score ranging from 0 to 1 was assigned (0 = unsuitable with offshore wind energy development; 1 = more suitable with offshore wind energy development). For example, a regulated shipping lane that experiences regular traffic would be deemed unsuitable for offshore wind energy and thus receive a score of 0 and be treated as completely unsuitable. However, within certain military operating areas where uncertainty exists, additional communications and resources may be required to determine suitability. As a result, a score of 0.5 would be given to capture that uncertainty.

After we gathered and integrated all data into the greater data inventory, certain data layers with constraints also required, either by action agency or for safety and security reasons, setbacks from the discrete/categorical layer. If a setback (i.e., existing oil and gas infrastructure) was established by a permitting authority as a 'no go' area, a score of 0 was applied as the setback (e.g., shipping lanes and a 2 nm setback from the outer boundary, all scored as 0). Based on governance, policy and regulations, BOEM used the most conservative setback distances to avoid interactions with other ocean activities (Table 2). Table 2 and Figure 8 present a summary of the constraints that are likely to limit offshore wind energy development either because of environmental sensitivities or high level of conflict with other ocean industries. The constraints submodel in total overlapped with 67% of the Call Area. BOEM used the best available science and the degree of conflict to assign scores. If there is potential for interaction with a transient resource, but uncertainty remains as to what that interaction is with wind industry infrastructure, then varying scores were assigned. These scores range from 0.2 to 0.7. A detail analysis of the scores can be found in the *Gulf of Mexico Wind Energy Area Modeling Report*.

Table 2: Constraints submodel data layers included in the relative suitability analysis. Each dataset in the constraints submodel was scored 0 for complete avoidance. A dash denotes when a dataset did not have a setback applied.

Data Layer	**Setback Distance**	**Score**
Vessel Monitoring System (VMS) Shrimp Fishing areas of Moderate-High fishing	-	0
20 nm coastal buffer	-	0
Shipping Fairways and Regulations	2 nm	0
Rice's whale 100 m to 400 m	-	0
Active Oil and Gas Lease Blocks (Including FGBNMS Blocks)	-	0
BOEM Lease Blocks with Significant Sediment Resources	-	0
BOEM No Activity Zones	-	0
Oil and Gas Pipelines (Only Active Pipelines)	200 ft	0
Menhaden Fishing - Area between 90° - 91° out to 20 miles	-	0
Oil and Gas Boreholes, Test Wells, and Wells	200 ft	0
Anchorage Areas (used/disused)	-	0
Oil and Gas Drilling Platforms	500 ft	0
Submarine Cables	500 ft	0
Unexploded Ordnance (UXO) polygon	-	0
Louisiana permitted artificial reefs	500 ft	0
Aids to Navigation (beacons and buoys)	500 m	0
Texas permitted artificial reefs	1000 ft	0
Environmental Sensors and Buoys	500 m	0

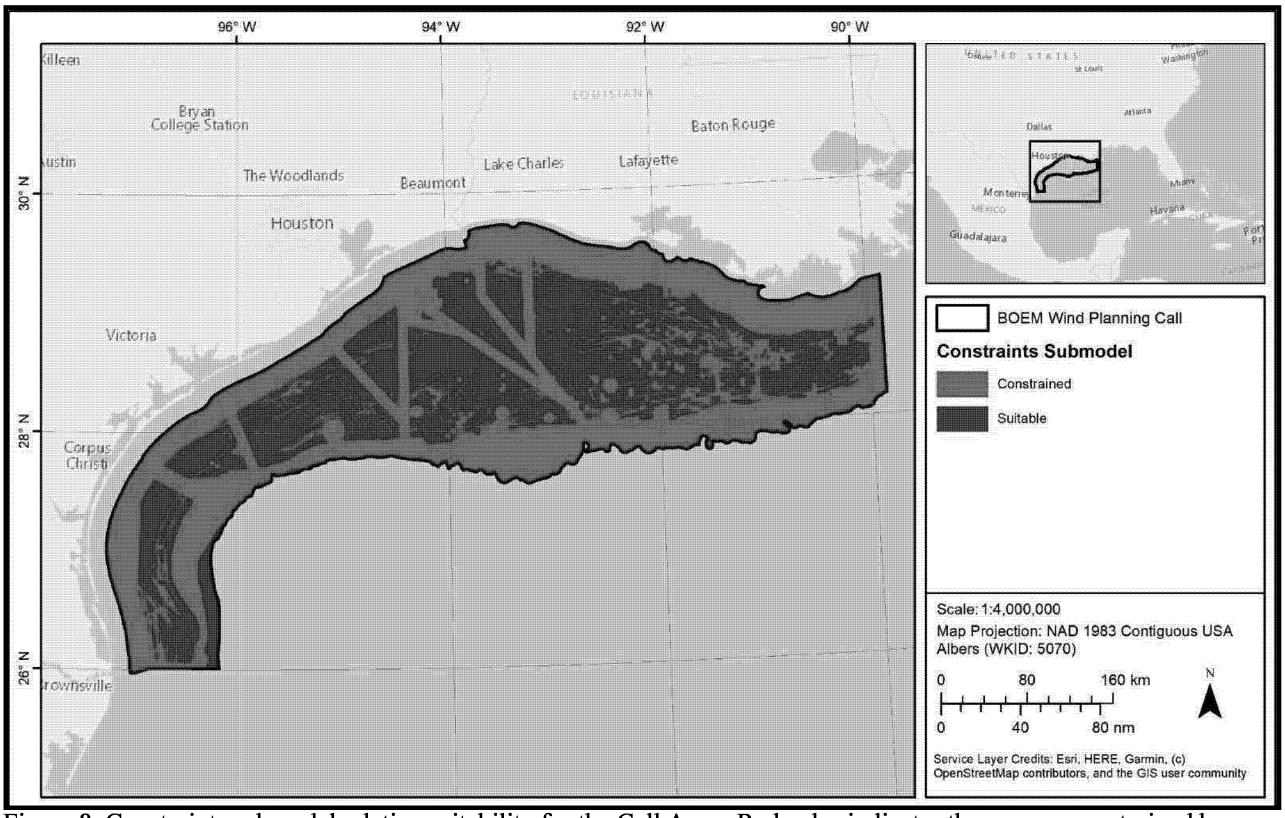

Figure 8: Constraints submodel relative suitability for the Call Area. Red color indicates those areas constrained by ocean activity, while green areas are considered potentially suitable for offshore wind development.

d.2 Scoring Numerical Data

BOEM reclassified the numerical data (i.e., data can represent any value within a given range) (e.g., continuous data) to a 0 to 1 scale using a linear function or fuzzy logic membership functions.[11] The fuzzy membership functions are similar to a linear or non-linear functional approach, however, use of fuzzy logic membership functions accounts for additional uncertainty when assigning scores to the data.[12] The function used for each numerical dataset was chosen based on the data and known interactions or compatibility with offshore wind energy development. The range of the numerical datasets (i.e., the minimum and maximum values) were used as the inputs for creating the function and were modified to ensure no output value would equal 0. BOEM did not use 0 values because no observed value in any numerical dataset used was sufficient to warrant complete exclusion from consideration for offshore wind energy infrastructure.

BOEM used the Z-shaped membership function from the Scikit-Fuzzy (Version 0.4.2) Python library to determine if vessel traffic, low fishing effort, and pelagic bird habitat suitability datasets were compatible with wind energy. If the dataset had a higher observed value (e.g., fishing effort,

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[11] Vafaie F, Hadipour A, Hadipour V. 2015. GIS-based fuzzy multi-criteria decision-making model for coastal aquaculture site selection. Environ Eng Manage J. 14(10):2415–2425.

[12] Kapetsky JM, Aguilar-Manjarrez J. 2013. From estimating global potential for aquaculture to selecting farm sites: perspectives on spatial approaches and trends. In: Ross LG, Telfer TC, Falconer L, Soto D, Aguilar-Manjarrez J, editors. Site selection and carrying capacities for inland and coastal aquaculture. FAO/Institute of Aquaculture, University of Stirling, Stirling (UK), Expert Workshop, 6–8 December 2010. FAO Fisheries and Aquaculture Proceedings No. 21. Rome: FAO. p. 129–146.

vessel traffic) then it resulted in lower compatibility with wind energy, and thus the lower the suitability score.[13] Other numerical datasets, such as distance to shore, used a standard linear function because of high certainty that the closer a location is to shore, the more suitable a wind energy area is regarding logistics and cost.[14] The categorical and numerical data used in scoring for the relative suitability analysis are in Tables 3 through 8, with a detailed list and rationale for each score found in the *Gulf of Mexico Wind Energy Area Modeling Report*.

Table 3. National security submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
Military Operating Area (MOA)- Corpus Christi	0.3
Military Operating Area (MOA)- New Orleans	0.5
Military Training Routes (MTR)- Flight Corridors - 12-mile setback	0.3
Special Use Airspace (SUA) A381 - Alert Area LOOP facility	0.5
Special Use Airspace (SUA) Warning Area - W59A, W59B, W54A, W54B, W54C, W92, W147A, W147B, W147C, W147D, W228A, W228B, W228C, W228D	0.5 – Area B in the WEA options was eliminated due to W228A Warning Area.

Table 4: Natural and cultural resources submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
NOAA Fish Havens (500-ft setback included in polygon)	0.7
Potentially Sensitive Biological Features provided by FGBNMS (1000-ft)	0.5
Low Relief Structures provided by FGBNMS (1000-ft setback)	0.5
BOEM's Potentially Sensitive Biological Features (250-ft setback)	0.2
Existing Coral HAPCs (with regulations and without regulations)	0.2
Coral 9 HAPC (no regulations and regulated areas)	0.2
Protected Resource Division Combined Layer	BOEM/NMFS values
U.S. Fish and Wildlife Service (FWS) - GOMAPPS 24 Pelagic Bird Spp. Habitat Suitability	Z Membership Function

Table 5: Industry and operations submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
Federal Lightering Rendezvous Areas	0.5

[13] Warner J, Sexauer J, scikit-fuzzy, twmeggs, alexsavio, Unnikrishnan A, Castelão G, Pontes FA, Uelwer T, pd2f, et al. 2019. JDWarner/scikit-fuzzy: Scikit-Fuzzy version 0.4.2. Zenodo. Available from: https://doi.org/10.5281/zenodo.3541386

[14] Abdel-Basset M, Gamal A, Chakrabortty RK, Ryan M. 2021. A new hybrid multi-criteria decision-making approach for location selection of sustainable offshore wind energy stations: A case study. Journal of Cleaner Production, 280, 124462.

Outside of Potential Carbon Capture Blocks	0.5
NEXRAD Sites	0 - 35 km = 0 35 -70 km = 0.5
NMFS's Fishery-Independent Surveys	Z membership function
AIS Vessel Traffic 2019 – Cargo	Z membership function
AIS Vessel Traffic 2019 – Fishing	Z membership function
AIS Vessel Traffic 2019 – Other	Z membership function
AIS Vessel Traffic 2019 – Passenger	Z membership function
AIS Vessel Traffic 2019 – Pleasure and Sailing	Z membership function
AIS Vessel Traffic 2019 – Tanker	Z membership function
AIS Vessel Traffic 2019 – Tug and Tow	Z membership function

Table 6: Logistics submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
Distance to shore	Linear function (Closer to shoreline is better)
Distance to ports	Linear function (Closer to principal port is better)
Water Depth	Linear function (Shallower depth is better)

Table 7: Economics submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
National Renewable Energy Laboratory (NREL) Revenue Model - Netvalue2015 [15]	Linear function (Greater net value is better)
Competitive Lease Blocks	Cells outside =0.5, Cells inside =1

Table 8: Fisheries submodel data layers included in the relative suitability analysis and the score assigned to each dataset. Scores closer to 0 are less suitable for wind energy development, while scores closer to 1 are more suitable.

Data Layer	Score
Commercial Shrimp Electronic Logbook Data (2015 - 2019) Mean days fished per year	Z membership function - The moderate, mod/high, and high effort data categories (natural breaks) are included in the constraints model.

[15] Musial W, Beiter P, Stefek J, Scott G, Heimiller D, Stehly T, Tegen S, Roberts O, Greco T, Keyser D (National Renewable Energy Laboratory and the Alliance for Sustainable Energy, LLC, Golden, CO). 2020. Offshore wind in the US Gulf of Mexico: regional economic modeling and site-specific analyses. New Orleans (LA): Bureau of Ocean Energy Management. 94 p. Contract No.: M17PG00012. Report No.: OCS Study BOEM 2020-018. https://espis.boem.gov/final%20reports/BOEM_2020-018.pdf

Menhaden Fishery Data (2000 - 2019)	Z membership function - Area between 90° - 91° strata (coastal Louisiana) out to 20 miles are used in the constraints model.
Highly Migratory Species Pelagic Longline Gear (2011-2020)	Z membership function
Reef Fish Bandit Gear Fishing Data (2007 - 2021)	Z membership function
Reef Fish Longline Gear Fishing Data (2007 - 2021)	Z membership function
Southeast Region Headboat Survey Data (2014 - 2020)	Z membership function

e. Calculation of the Final Score

Each data layer was scored on a 0 to 1 scale, with scores approaching 0 representing low suitability and 1 representing high suitability relative to the other grid cells for offshore wind energy development. All constraints data layers were not considered for offshore wind energy development at this time and therefore, not further considered in the analysis. Next, a final suitability score was calculated for each submodel by taking the geometric mean of all scores within each grid cell. The geometric mean of all submodels was used to calculate a final overall suitability score. The geometric mean was chosen because it grants equal importance to each variable.[16, 17, 18, 19] All data layers and submodels had equal weight within the suitability model.

f. Final Suitability

The final suitability results for all submodels are presented in Figure 9. Several suitable areas were distributed off the east coast of Texas to southwest Louisiana. It is important to note that these suitability results are reflective of the planning objective to identify wind energy areas. In the Gulf of Mexico region, wind energy opportunities may exist under different planning objectives or at different scales than suitable for WEAs if the project rules are changed to < 40,000 acres.

The cluster analysis identified 2,398,150 acres of high-high clusters (p=.05), which are groups of cells with high values that are statistically significant. Based on the cluster analysis, there are 14 potential WEA options that ranked in the top five percent, ranging from 39,836 ac to 546,645 ac (Figure 10) that were identified. After the model had been run, DoD submitted its preliminary assessment of the Call Area. As a result of the DoD preliminary assessment, WEA Option B was eliminated from further consideration. With the elimination of Option B, there are now 13 WEA options. BOEM has selected Option I (Galveston) and Option M (Lake Charles) as the recommended Preliminary WEAs for the GOM. A detailed analysis of the rationale for the selection can found in Section VI.

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[16] Bovee KD. 1986. Development and evaluation of habitat suitability criteria for use in the instream flow incremental methodology. Instream Flow Information Paper 21, Report 86(7), U.S. Fish and Wildlife Service.
[17] Longdill PC, Healy TR, Black KP. 2008. An integrated GIS approach for sustainable aquaculture management area site selection. Ocean Coastal Manage. 51(8–9): 612–624.
[18] Silva C, Ferreira JG, Bricker SB, DelValls TA, Martín-Díaz ML, Yáñez E. 2011. Site selection for shellfish aquaculture by means of GIS and farm-scale models, with an emphasis on data poor environments. Aquaculture. 318(3-4):444–457.
[19] Muñoz-Mas R, Martínez-Capel F, Schneider M, Mouton AM. 2012. Assessment of brown trout habitat suitability in the Jucar River Basin (Spain): Comparison of data-driven approaches with fuzzy-logic models and univariate suitability curves. Sci Total Environ. 440:123–131.

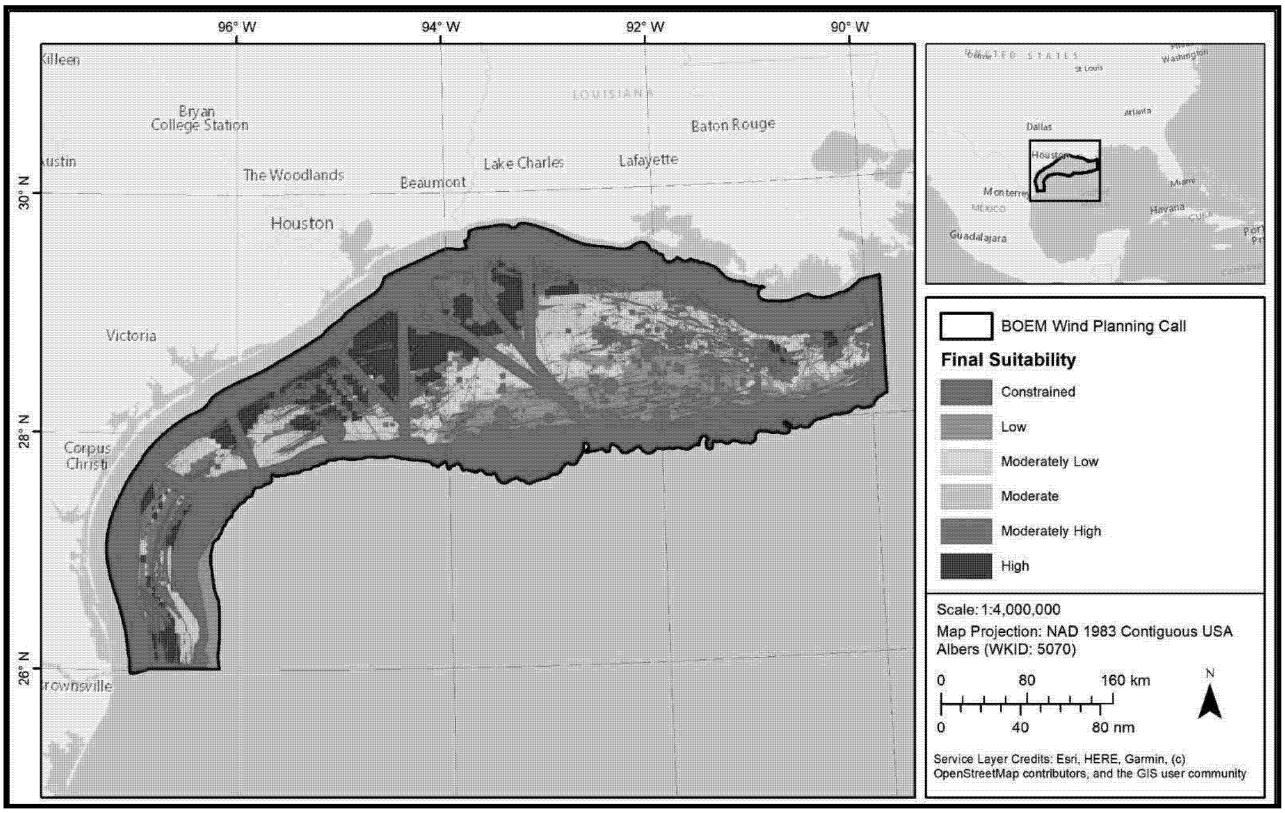


Figure 9: Final suitability modeling results for the Call Area. Red color indicates those areas where layers with a score of 0 occurred due to conflict with ocean activity. Green color indicates areas of highest suitability for offshore wind development.

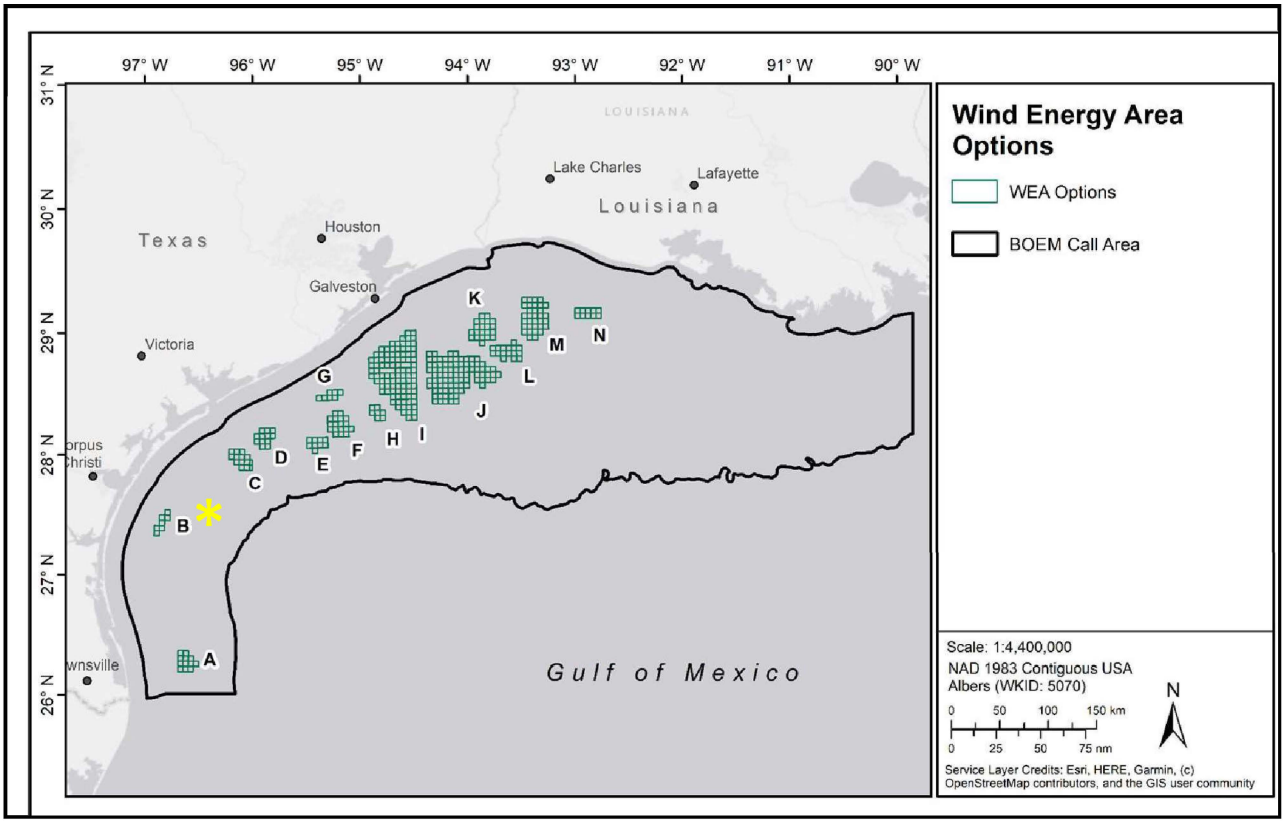


Figure 10: 13 WEA Options from the model Output. Area B is no longer an option due to a later DoD assessment requesting its removal.

D. Environmental Review

BOEM is preparing a programmatic GOM Environmental Assessment (EA) pursuant to NEPA which will be completed before the first GOM OCS wind energy lease sale. The analysis provided in the GOM EA can be used for the issuance of up to 18 OCS wind energy leases and will consider the potential impacts from activities expected to take place after lease issuance, including site characterization activities (such as biological, geological, geotechnical, and archaeological surveys) and site assessment activities (such as meteorological and oceanographic buoy deployment). The EA also compares the potential impacts of site characterization and site assessment activities to the potential cumulative effects from these activities as well as other past, present, and reasonably foreseeable future activities in the GOM.

BOEM's EA will analyze the entire GOM Call Area rather than the Final WEAs that will be identified through the Area ID process. Although NEPA analysis is not required at the Area ID stage, BOEM decided to prepare an EA prior to the identification of the Draft WEAs as an exercise of agency discretion. This approach not only allows greater flexibility for future identification of WEAs, but also provides NEPA coverage for unsolicited requests for commercial or research projects and grants that could be received in the GOM Call Area. The Call informed the environmental review process by identifying and informing the geographic scope of that environmental analysis for any future OCS wind energy lease sales in the area. If there is an OCS wind energy lease sale in the GOM, the issuance of an OCS wind energy lease would grant the lessee the exclusive right to submit plans for BOEM's review. The issuance of a lease by BOEM

does not convey the right to proceed with construction and operation of a wind energy facility. Therefore, BOEM does not consider the issuance of a lease to constitute an irreversible and irretrievable commitment of resources. Before any OCS wind energy lease sale, BOEM will conduct associated consultations to consider the potential impacts from the activities that are reasonably foreseeable to take place after lease issuance. Those activities include site characterization activities (such as biological, geological, geotechnical, and archaeological surveys) and site assessment activities (such as meteorological and oceanographic buoy deployment).

The EA will incorporate pertinent supporting material in appendices from studies sponsored by BOEM, as well as other government and academic institutions; consultation documents; and other peer-reviewed literature. Once the draft EA is completed, a notice to stakeholders will be issued by BOEM, along with a 30-day public comment period. During the public comment period, BOEM will host virtual meetings, provide information on the project website, and solicit public input on the EA. If BOEM publishes a Proposed Sale Notice (PSN), comments received on the PSN would also be considered and incorporated into the NEPA process (considered in the Final EA), as applicable.

BOEM is also conducting environmental consultations with relevant Federal and State agencies and Nationally recognized Tribes in advance of the first GOM wind auction. The EA and associated consultations might also identify potential lease stipulations or conditions of plan approval to reduce or eliminate potential environmental impacts associated with site characterization and site assessment activities. The EA will analyze the impacts to resources both with the application of potential protective measures and without protective measures to assist the decisionmaker in choosing the applicable protective measures to apply as lease stipulations or conditions of plan approval. The chosen protective measures would be identified in the Finding of No Significant Impact and detailed in the Final Sale Notice (FSN), should BOEM publish a FSN.

If an OCS wind energy lease is issued and a lessee submits a COP proposing development activities on that lease, BOEM would consider its merits; perform the necessary consultations with the appropriate State, Federal, local, and Tribal entities; solicit input from the public and Task Force members; and perform an independent, comprehensive, environmental analysis under NEPA. This separate environmental analysis for a COP would provide additional opportunities for public involvement pursuant to NEPA and the Council on Environmental Quality regulations at 40 CFR Parts 1500–1508. BOEM would use this information to evaluate the potential environmental and socioeconomic impacts associated with the lessee-proposed project, and potential cumulative effects from these activities as well as other past, present, and reasonably foreseeable future actions, when considering whether to approve, approve with modification, or disapprove a lessee's COP pursuant to 30 CFR 585.628.

E. Proposed and Final Sale Notices

If BOEM decides to offer an area(s) for lease, BOEM would publish a PSN describing the proposed area(s) for competitive leasing, the associated terms and conditions, and a proposed format of the competitive auction issued pursuant to 30 C.F.R. § 585.216. The PSN would be followed by a 60-day formal comment period, which helps to inform the FSN. BOEM may use information from the NEPA analysis for any lease sale, as well as information gathered in response to the PSN, to further refine lease areas and develop lease terms and conditions.

V. Background

A. Gulf of Mexico: General Description

The present-day GOM is an ocean basin with a water-surface area of more than 1.5 million square kilometers (km^2) (371 million acres). The greatest water depth is approximately 3,700 meters (m) (roughly 12,000 feet [ft]). It is almost completely surrounded by land, opening to the Atlantic Ocean through the Straits of Florida and to the Caribbean Sea through the Yucatan Channel. The northern GOM may be divided into several physiographic sub-provinces. In the OCS area, these include the Texas-Louisiana Shelf, Texas-Louisiana Slope, Rio Grande Slope, Mississippi Fan, Sigsbee Escarpment, Sigsbee Plain, Mississippi-Alabama-Florida Shelf, Mississippi-Alabama-Florida Slope, Florida Terrace, Florida Escarpment, and Florida Plain (Figure 11**)**. In the GOM, the continental shelf extends seaward from the shoreline to about the 200-m (656-ft) water depth and is characterized by a gentle slope of a few meters per kilometer (less than 1 degree). The shelf is wide off Florida and Texas, but it is narrower where the Mississippi River delta has extended seawards to near the shelf edge. The continental slope extends from the shelf edge to the Sigsbee and Florida Escarpments in about 2,000- to 3,000-m (6,562- to 9,843-ft) water depth. The topography of the slope is irregular and characterized by canyons, troughs, and salt structures. The gradient on the slope is normally 1-2 degrees, while the gradient of the Florida Escarpment may reach 45 degrees in some places. The Mississippi Fan has a gentle incline, with slopes of 4 m (13 ft) or less per kilometer (21 ft or less per mile), with the lower Mississippi Fan having an even flatter slope at 1 m (3 ft) or less per kilometer (5 ft or less per mile). The Sigsbee and Florida abyssal plains (ocean floor) are basically horizontal physiographic sub-provinces and are surrounded by features with higher topography.

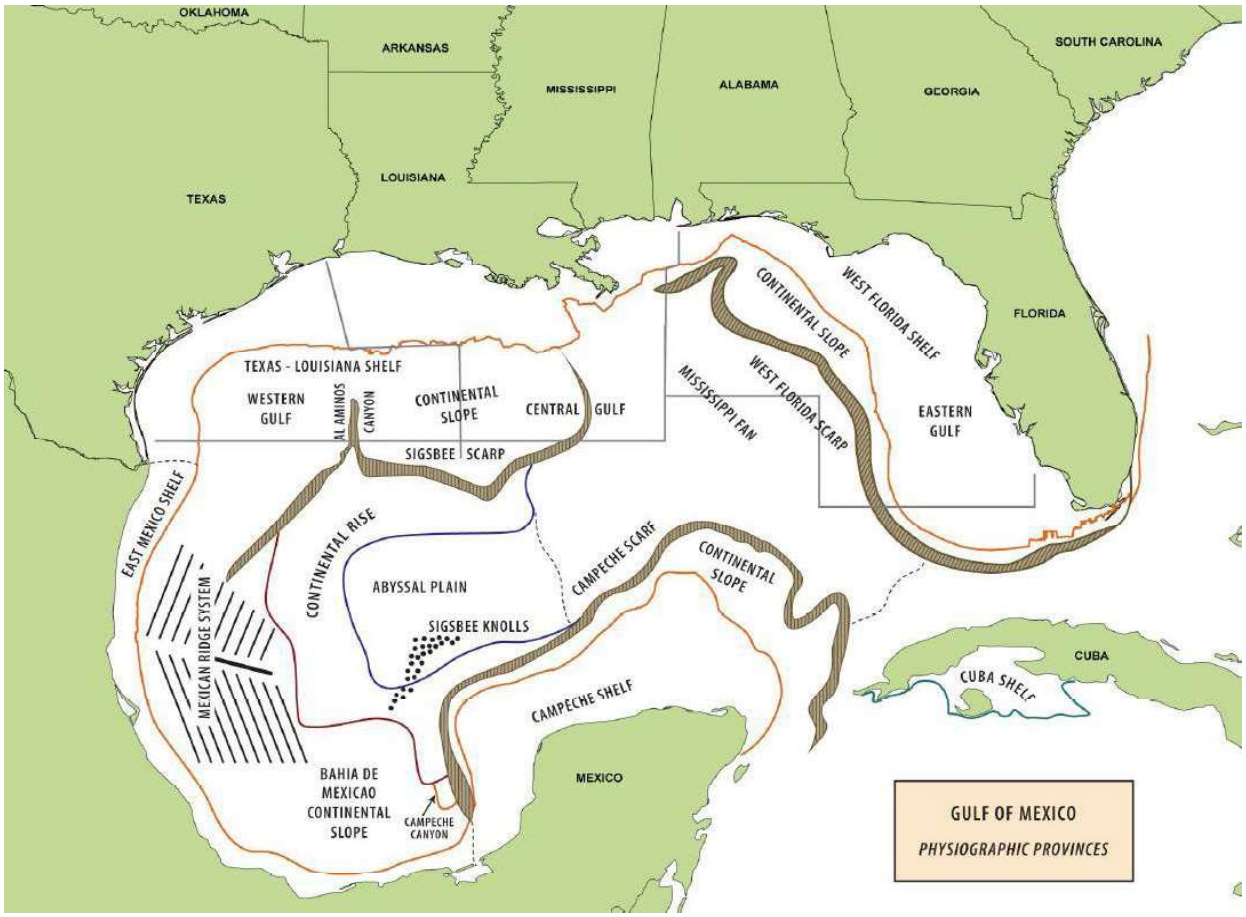


Figure 11: Generalized Physiographic Map of the Gulf of Mexico OCS (Adapted from The Encyclopedia of Earth (2011).

B. Regional State Activities

1. Louisiana

In August 2020, Governor John Bel Edwards signed Executive Order JBE2020-18 to establish a Climate Initiatives Task Force and set greenhouse gas emission reduction goals for the State of Louisiana. On October 21, 2020, the State of Louisiana sent a request to BOEM for the establishment of a Renewable Energy State Task Force. BOEM recognizes the regional nature of ocean uses and renewable energy development on the OCS and the importance of incorporating regional perspectives into the planning process. As such, BOEM responded to the request by establishing a Regional Task Force. The GOM Task Force membership consists of representatives from Federal, State, local, and Tribal governments within Alabama, Louisiana, Mississippi, and Texas.

On February 1, 2022, The Louisiana Climate Initiatives Task Force delivered the state's first ever Climate Action Plan to the Governor. The 2022 Louisiana Climate Action Plan contains a balanced set of recommendations to limit the severity of climate change while positioning the state to maintain its economic competitiveness in a low-carbon future. The science-based plan achieves the Governor's goals of reaching net zero greenhouse gas emissions by 2050. The plan also calls on the state to plan for development of offshore wind and proposes the enactment of an offshore wind generation goal of 5 GW by 2035.

2. *Alabama*

The State of Alabama is currently gathering information related to offshore wind. The state has been conducting exploratory outreach to key stakeholders, including Alabama State Port Authority, Alabama Department of Environmental Management, Baldwin and Mobile Counties, Public Service Commission, energy utilities, and environmental groups to understand concerns, potential impacts, and industrial synergies related to offshore wind energy.

3. *Mississippi*

Currently, the State of Mississippi has not yet established any offshore wind renewable energy goals.

4. *Texas*

Currently, the State of Texas has not yet established any offshore wind renewable energy goals.

C. Nominations

In response to the Gulf of Mexico RFI and Call, BOEM received 10 nominations from entities proposing to develop offshore wind within the GOM Call Areas, as shown in Figure 12. Submitting the nominations were:

1. East Wind-EnBW, LLC
2. Enterprize Energy USA, LLC
3. Avangrid Renewables, LLC
4. Hecate Energy, LLC
5. OW North America, LLC
6. Shell New Energies US, LLC
7. Bayou Renewables, LLC
8. Hy Stor Energy LP
9. Mainstream Renewable Power, Inc.
10. 547 Energy LLC

Several developers noted in their submissions that, while they were nominating a specific area, they would be interested in any area that BOEM were to lease in the GOM.

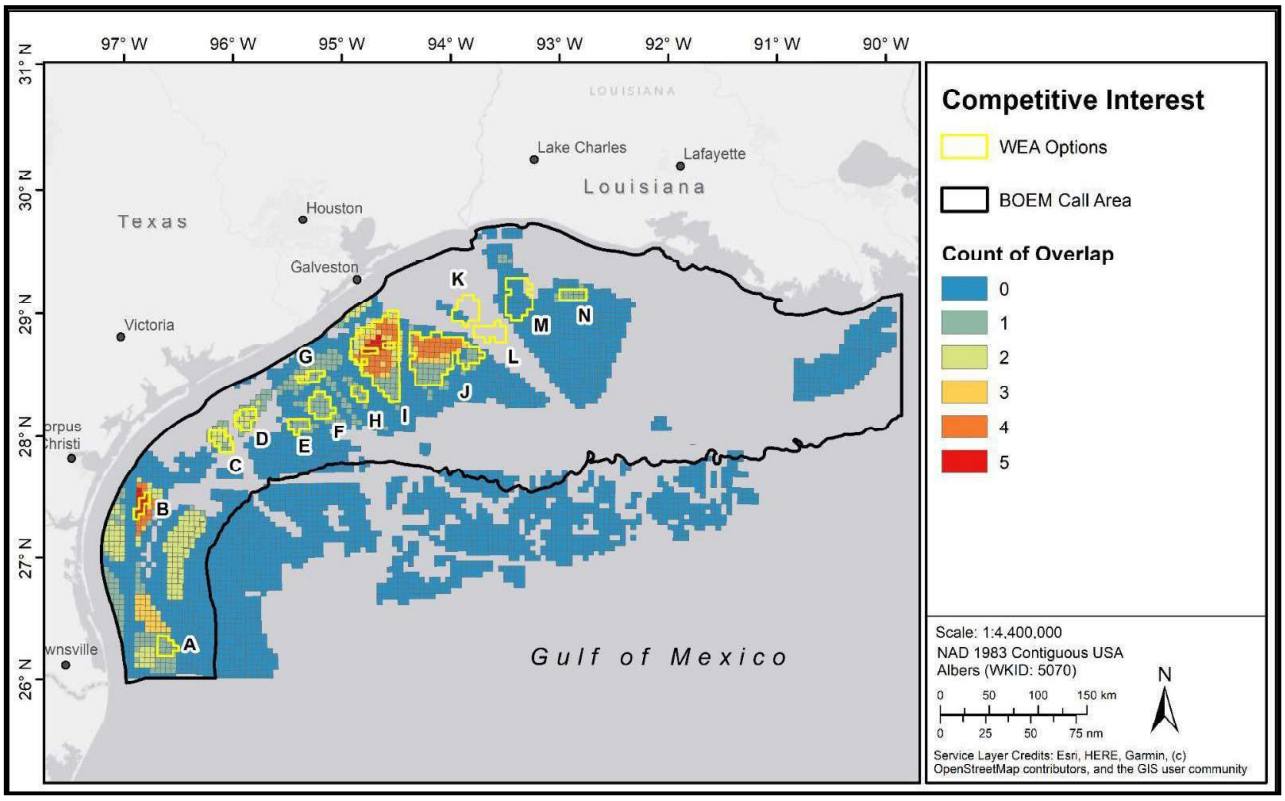


Figure 12: GOM Nominations Received in Response to the RFI and the Call.

D. Competing Uses Analyzed During the Area ID Process

BOEM considered multiple existing uses of the GOM in developing the Preliminary WEAs and identified several potential conflicts between offshore wind development and existing uses. The uses that were found to interact with potential offshore wind development offshore the GOM are (i) commercial and recreational fishing, (ii) maritime navigation, (iii) existing infrastructure, and (iv) DoD activities. Several additional uses and potential impacts were considered and are discussed below (including migratory birds, marine mammal species, and protected resources).

1. Commercial and Recreational Fishing

During the WEA identification process, BOEM considered ways to minimize space-use conflicts between future offshore wind developments and commercial and recreational fisheries operating within and adjacent to the Call Area. The major commercial fisheries operating within and adjacent to the Call Area include the commercial shrimp, reef fish, pelagic longline, coastal migratory pelagic, and Gulf menhaden fisheries. Recreational fisheries can generally be separated into those targeting reef fish and pelagic/highly migratory species.

Both recreational and commercial fisheries data were included in the fisheries submodel (Section C). The commercial penaeid shrimp fishery data used in this analysis for the period of 2015-2019 had the largest overlap with the Call Area at 68.4%, especially in areas closer to shore. The moderate, moderate/high, and high effort data categories were included in the constraints model. The moderate low and low effort data was placed in the suitability model and analyzed using the Z membership function. After consultation with the Southern Shrimp Alliance, the 2015-2019 commercial shrimp dataset was used because these years had the most comprehensive and

complete data sets. The menhaden fishery had 5.6% overlap with the Call Area and was predominantly present off the coast of Louisiana. Highly Migratory Species Pelagic Longline Gear Fishing for the period 2011-2020 had extremely low overlap of only 0.6% and is located primarily in deeper waters in the GOM. Both bandit gear fishing and longline gear fishing for reef fish for the period of 2007-2021 had similar amounts of overlap with the study area with the longline gear occurring in deeper waters than the bandit gear fishing. The only recreational fishing data included was the Southeast Region Headboat Survey (SRHS) for the period of 2014-2020 trips, which identified the highest area used by headboat fishing off the coast of Corpus Christi, Texas (TX). In Figure 13, the green areas indicate lower fishing effort which makes the area more suitable for offshore wind.

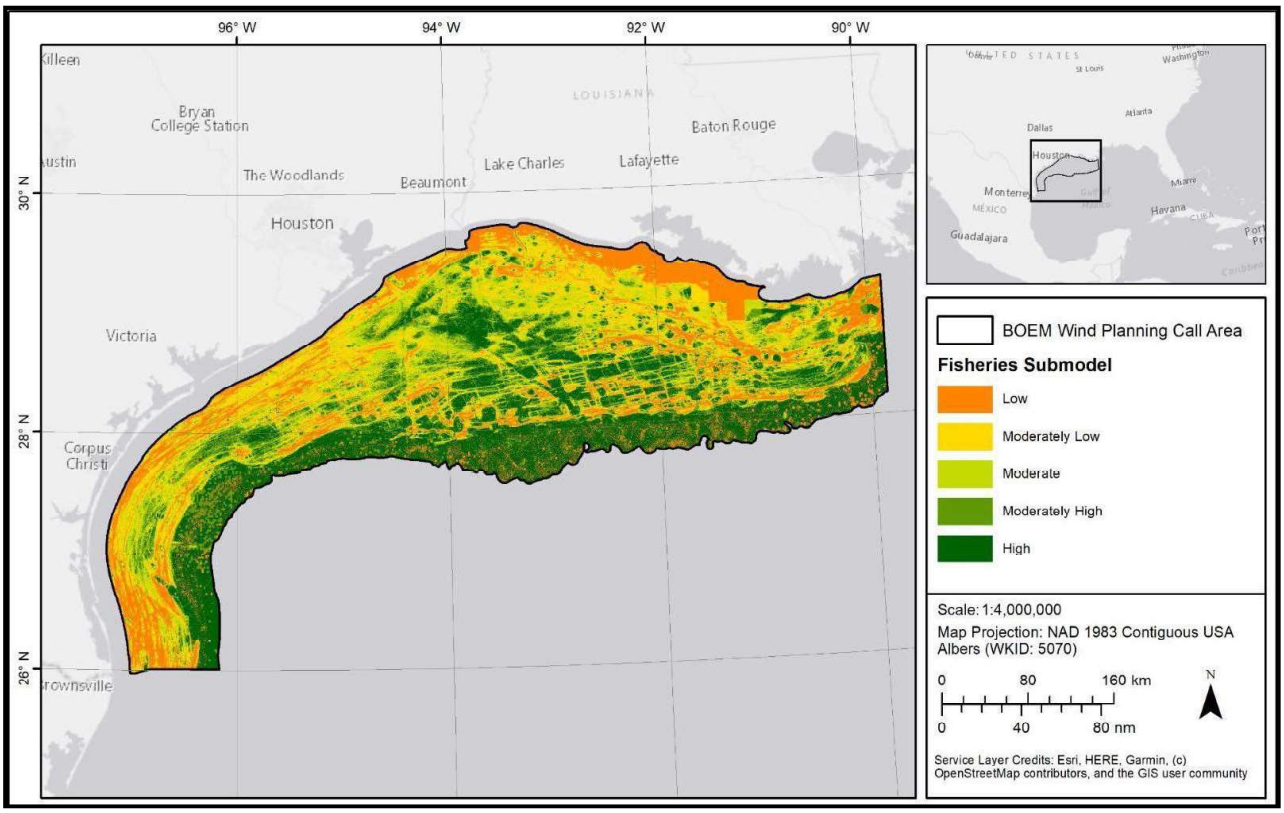


Figure 13: Fisheries submodel used in the ocean planning model. The color orange represents areas of lower suitability with offshore wind energy development, while the color green indicates areas of higher suitability for offshore wind energy development.

The model also factored in fishing vessel transit routes based on 2019 Automatic Identification System (AIS) data to understand potential impacts to fisheries access. Transit counts from fishing vessels with AIS transponders in 2019 indicate 53.5% intersection with the Call Area (Figure 14). The red areas indicate higher fishing vessel traffic. More information on vessel transit routes is presented in the Maritime Navigation section.

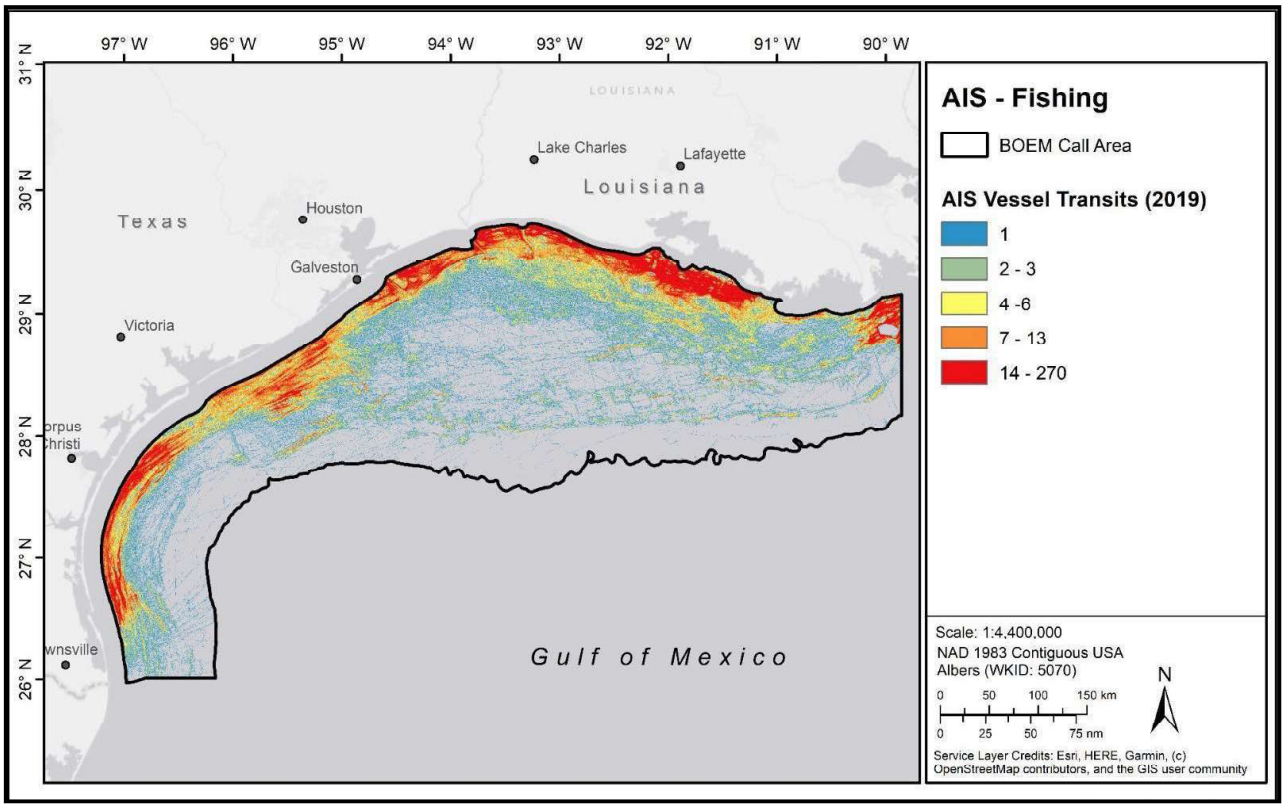


Figure 14: Automatic Identification System Vessel transit data from 2019 for fishing vessels in the Call Area.

While BOEM does not explicitly preclude fishing within a potential wind farm, BOEM recognizes that offshore wind developments could impact certain fisheries, particularly those using techniques that require large areas to operate (e.g., commercial shrimp and Gulf menhaden). To minimize space-use conflicts, BOEM conducted extensive outreach efforts with the GOM fishing community in the form of small, targeted meetings with fishermen's organizations that represent large constituencies, as well as a series of four, sector-specific fisheries workshops held January 19-20, 2022. For more information on the GOM fisheries workshops, go to https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-fisheries-summit.

Information collected during the outreach efforts helped BOEM to identify and address potential space-use conflicts in the Call Area. For example, commercial shrimp industry stakeholders raised concerns during the meetings about displacement of the shrimp fishery in areas of moderate to high shrimp fishing grounds. After review of the comprehensive 2015-2019 Shrimp Electronic Logbook Dataset, BOEM noted that most of the high shrimping areas were within the 20 nm coastline buffer. The remaining high shrimping effort areas were near existing oil and gas infrastructure, and those areas were not further considered in the model due to the proximity to active pipelines and platforms. With most of the moderate to high shrimp fishing grounds located in the 20 nm coastline buffer that was requested by the menhaden fisheries and FWS for migratory birds, BOEM has currently decided to exclude the red areas of moderate to high shrimping effort from consideration during the Area ID process at this time (Figure 15). BOEM also received concerns from the Gulf Menhaden fishery. The Gulf menhaden fishery raised safety concerns with their spotter planes. The spotter planes are used within the 20 nm area from the coastline and

can fly as low as 500 ft above sea level. At this time, BOEM has currently decided to not consider areas within 20-nm of the coast from offshore wind development.

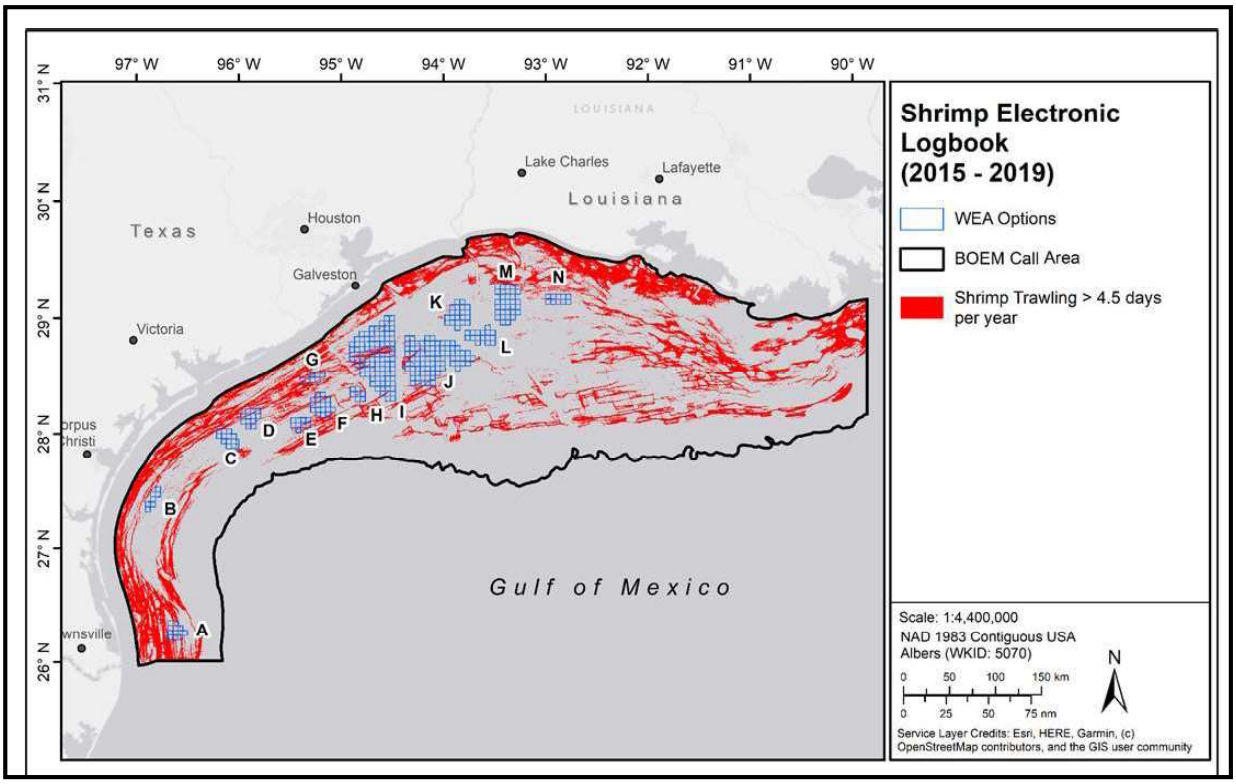


Figure 15: Mean days of shrimp trawling >4.5 days (2015-2019) in relation to the WEA options.

2. *Maritime Navigation*

Commercial vessels 65 feet or greater in length are required to carry AIS transponders. BOEM conducted a review of 2019 (AIS) vessel information. BOEM analyzed the AIS track line and density data within the Call Area to determine historic vessel usage patterns and identify how they may conflict with potential offshore wind energy development. BOEM shared the findings with the USCG and sought their comments. Three main areas of concern emerged: the navigational complexity for deep draft vessels within the traffic lanes due to the smaller traffic lanes in the GOM, larger vessels entering or exiting traffic lanes, and tug and towing vessels crossing the Call Area. BOEM also considered vessel transit, using AIS and Shrimp Logbook data.

Cargo and tanker vessel transits disperse from land-based ports in the Houston/Galveston, TX area with additional dense traffic dispersing from Cameron, Louisiana, and Freeport, Port Arthur, Matagorda, Corpus Christi, and Brownsville, TX. Cargo transits intersected with 23.3% of the Call Area, while tanker transits intersected with 27.2% (Figures 16-17). Dense traffic for cargo and tanker vessels (larger vessels) is largely confined to shipping fairways within the Call Area, with some deviations of vessels, especially of tanker vessels. Tug and tow vessels tend to occur inshore around major ports or working around the shipping fairways as tenders. Tug and tow overlapped 31.6% of the Call Area, mostly in areas closest to land-based infrastructure associated with ports in Louisiana and Texas. Passenger vessels intersected with 49.0% of the Call Area. Pleasure and sailing vessel transits were relatively low with 8.5% overlap. Transit counts from

fishing vessels with AIS transponders in 2019 indicate 53.5% intersection with the Call Area (Figure 8 above). Transits by the other category of AIS vessels, which includes several different craft types, are the most widely dispersed in the Call Area with 66.4% overlap. Suitability results for the transit vessel data were analyzed with the Z membership function. The suitability results for the industry and operations submodel, which includes cargo and vessel traffic, are presented in Figure 18. The color orange represents areas of lower suitability with offshore wind energy development, while the color green indicates areas of higher suitability with offshore wind energy development.

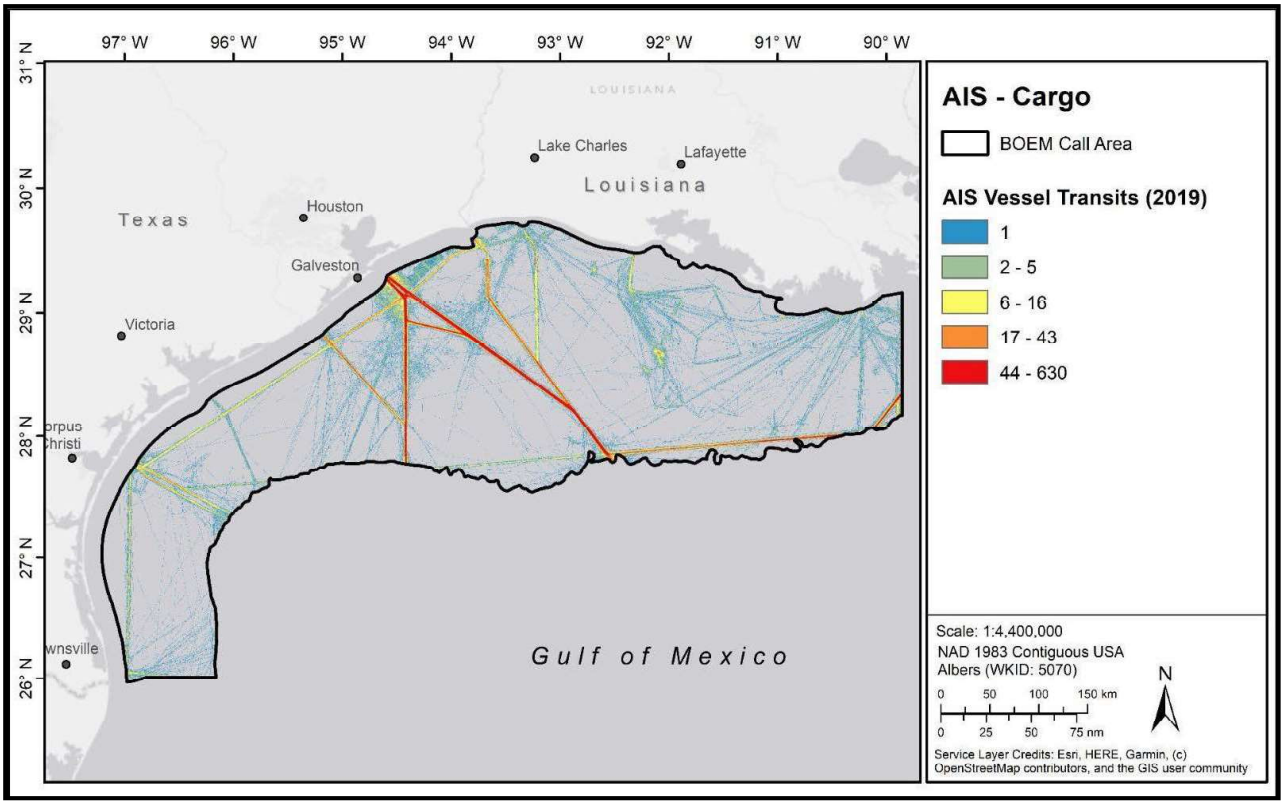


Figure 16: Automatic Identification System Vessel transit data from 2019 for cargo vessels in the Call Area.

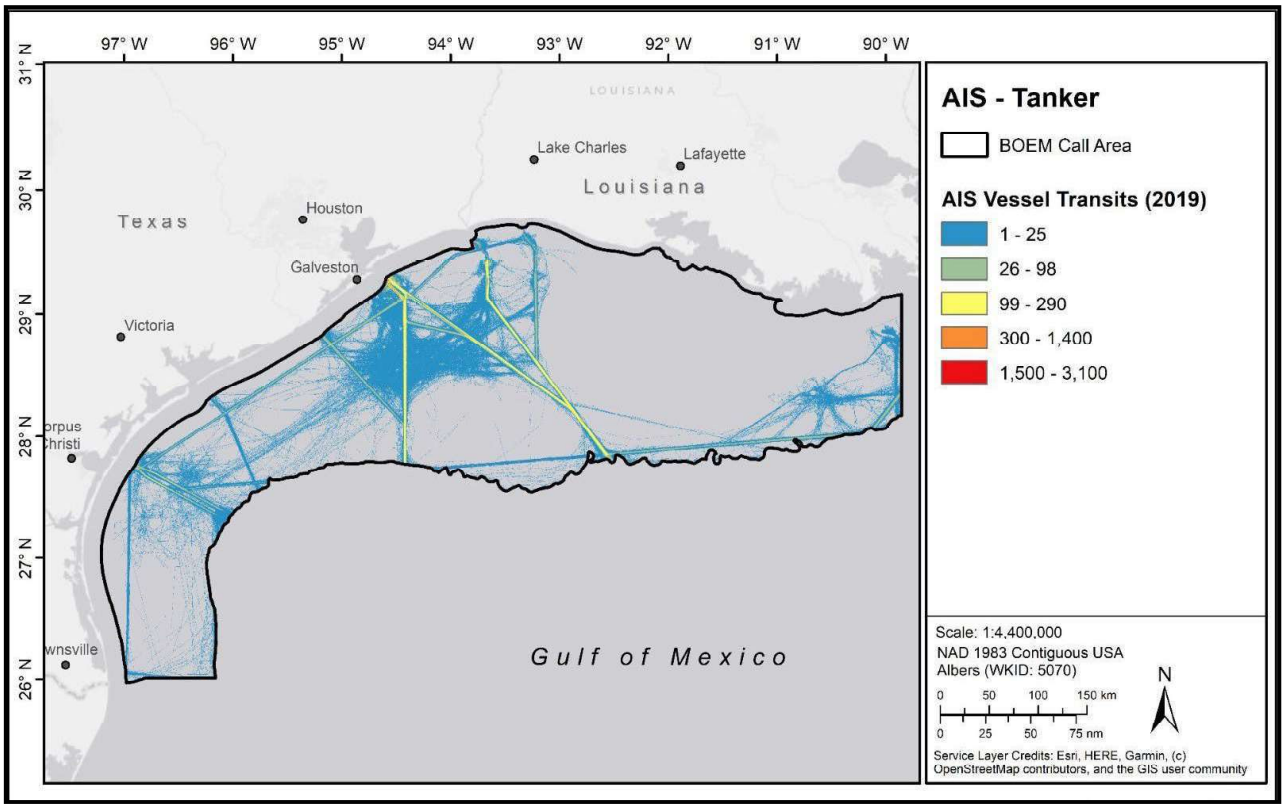


Figure 17: Automatic Identification System Vessel transit data from 2019 for tanker vessels in the Call Area.

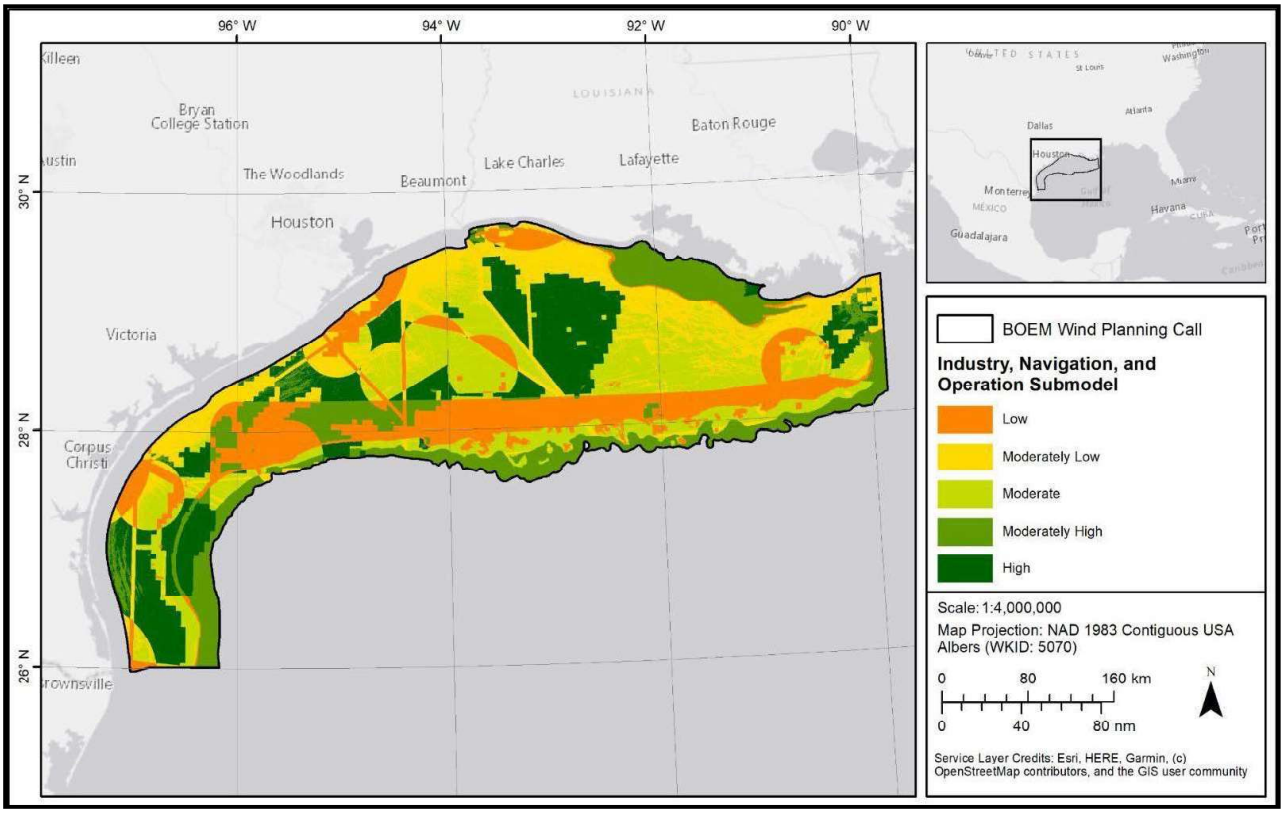


Figure 18: Industry and operations submodel used in the relative suitability model. The color orange represents areas of lower suitability, while the color green indicates areas of higher suitability.

BOEM has held bi-weekly meetings with the USCG since February 2022. The USCG has raised the possibility of adding a 2 nm buffer to the existing fairways due to the smaller vessel traffic lanes in the GOM. The USCG has submitted a proposed fairway anchorage area off Sabine Pass, Texas (Figure 19). BOEM acknowledges additional deconflicting with the maritime community may be necessary prior to establishing final WEAs and plans to continue to consult with the USCG prior to publishing lease areas in the PSN.

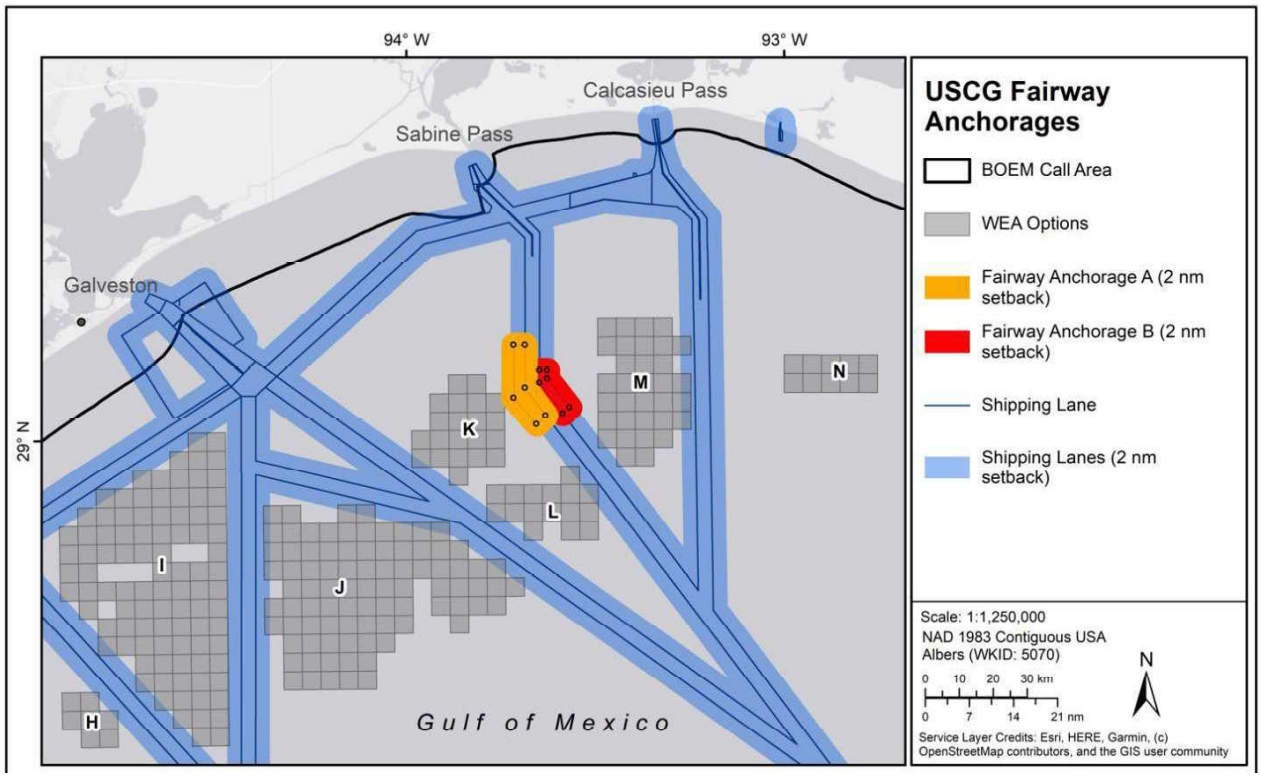


Figure 19: USCG Fairway Anchorages in relation to the WEA options.

3. *Department of Defense*

As a part of BOEM's ongoing coordination with DoD, the Military Aviation and Installation Assurance Siting Clearinghouse Office coordinated within the DoD a review of the GOM Call Area. On May 9, 2022, DoD provided a draft assessment, illustrated in Figure 20. DoD identified a portion of the GOM Call Area as a "Wind Exclusion Area" due to the potential conflict with the low-altitude training by the Department of Navy-Training Air Wing Two, based out of Naval Air Station in Kingsville, Texas, in Warning Area W-228A, and Military Training Route VR-151. The area of overlap between the DoD Wind Exclusion areas and the Call Areas has been removed from the Recommended Preliminary WEAs to reduce this conflict.

The BOEM areas labeled PS (South Padre Island), PN (North Padre Island), MU (Mustang Island), MI (Matagorda Island) and northern areas of GA (Galveston), HI (High Island), WC (West Cameron Area), EC (East Cameron Area), VR (Vermillion Area), and SM (South Marsh Island Area) in Figure 21, lie within radar line of sight of multiple North American Aerospace

Defense Command (NORAD) radar sites and may adversely impact NORAD operations. The potential adverse impacts are mitigatable through Radar Adverse-impact Management (RAM). For projects where the RAM mitigation is acceptable, BOEM will include the project approval conditions in any lease sale notification.

No major impacts to current Air Force missions were identified, however, many of the blocks of interest in the Call Area for wind turbines lie within Military Warning Area Airspace. Wind turbines can affect radar returns, which could result in impacts to DoD aircraft operations within this airspace. Radar interference from the turbines remains a concern with DoD and may require future evaluation.

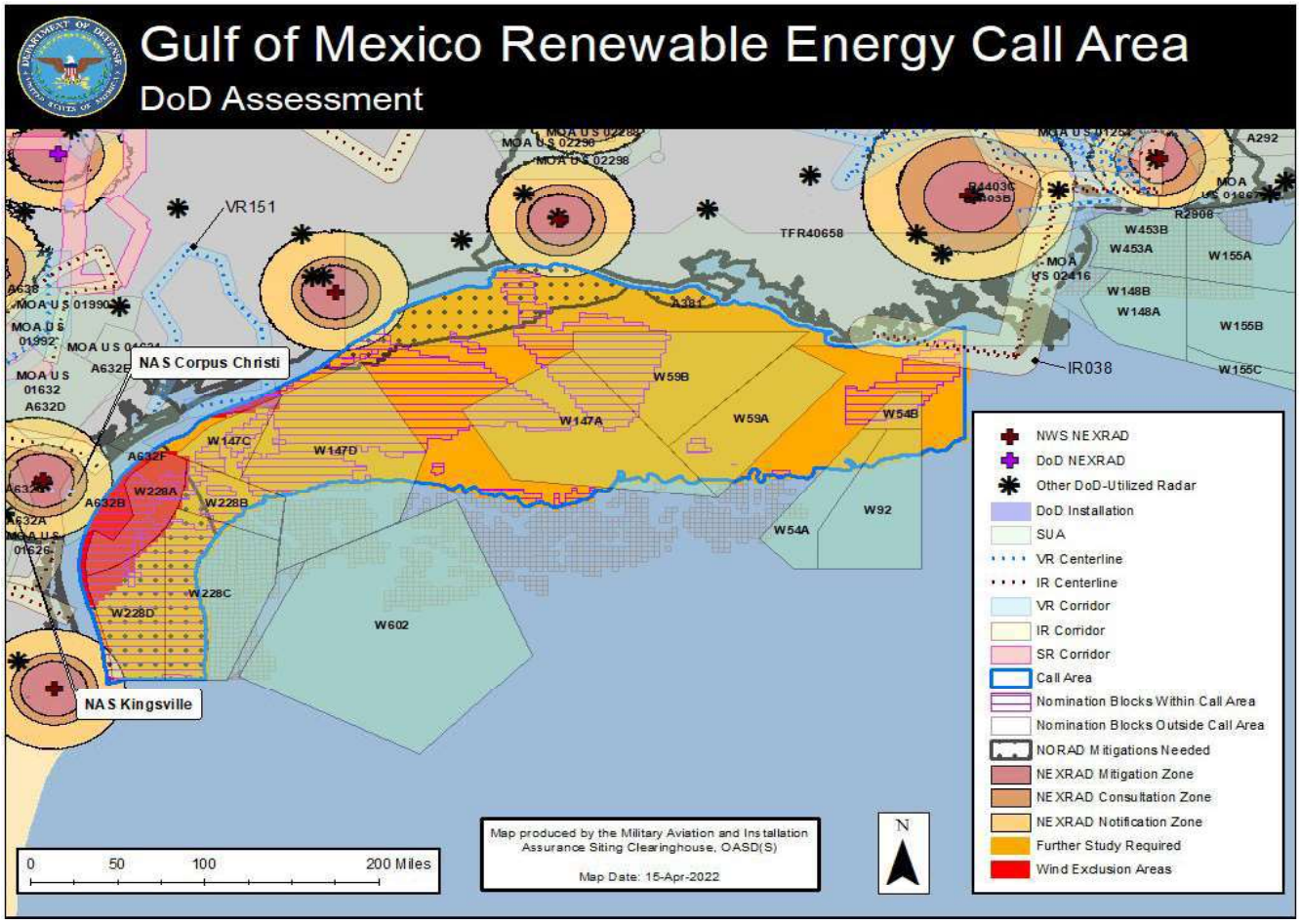


Figure 20: Preliminary DoD Offshore Wind Compatibility Assessment presented to BOEM on May 9, 2022.

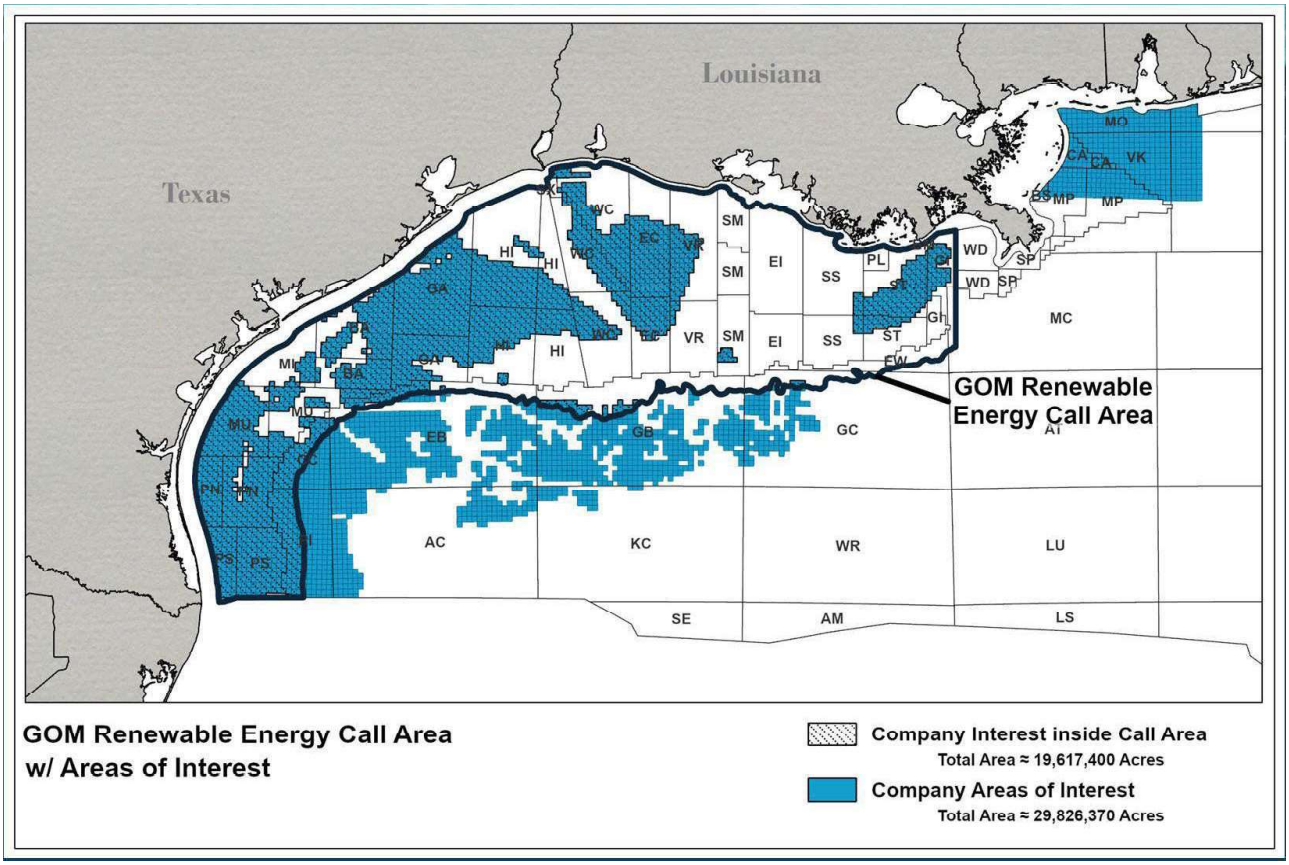


Figure 21: BOEM Generated Gulf of Mexico Renewable Energy Call Area Map with areas nominated by wind developers during the RFI and Call.

4. *Avian Species*

During the outreach meetings and in the comments received in response to the Call, FWS and other stakeholders raised concerns about migratory birds and migratory bird flight paths in the GOM. The GOM includes three of the four North American Flyways for migratory birds. As a result, FWS recommended a 20 nm coastline buffer to mitigate potential impacts to migratory birds in the GOM. After careful review of the cited literature and recommendations, BOEM has currently added a 20 nm coastline buffer to the constraints model in the ocean planning model to eliminate those areas from further consideration in the Area ID process at this time (Figure 22).

In the Natural and Cultural Resource submodel, BOEM added a 24 pelagic seabird species data layer to the submodel to create a combined pelagic seabird suitability layer. The 24 seabird species include: Audubon's Shearwater, Black-capped Petrel, Black Tern, Bonaparte's Gull, Brown Booby, Brown Noddy, Brown Pelican, Bridled Tern, Band-rumped Storm-Petrel, Cory's Shearwater, Common Loon, Common Tern, Great Shearwater, Herring Gull, Laughing Gull, Masked Booby, Magnificent Frigatebird, Northern Gannet, Parasitic Jaeger, Royal Tern, Sandwich Tern, Sooty Tern, Wilson's Storm-Petrel, and Pomarine Jaeger. In Figure 23, the areas of orange/yellow are less suitable for offshore wind development due to their suitability for the pelagic birds. The blue areas are more suitable for offshore wind development. As a result of the data, the ocean planning model avoided the orange/yellow areas that were less suitable with offshore wind (Figure 23).

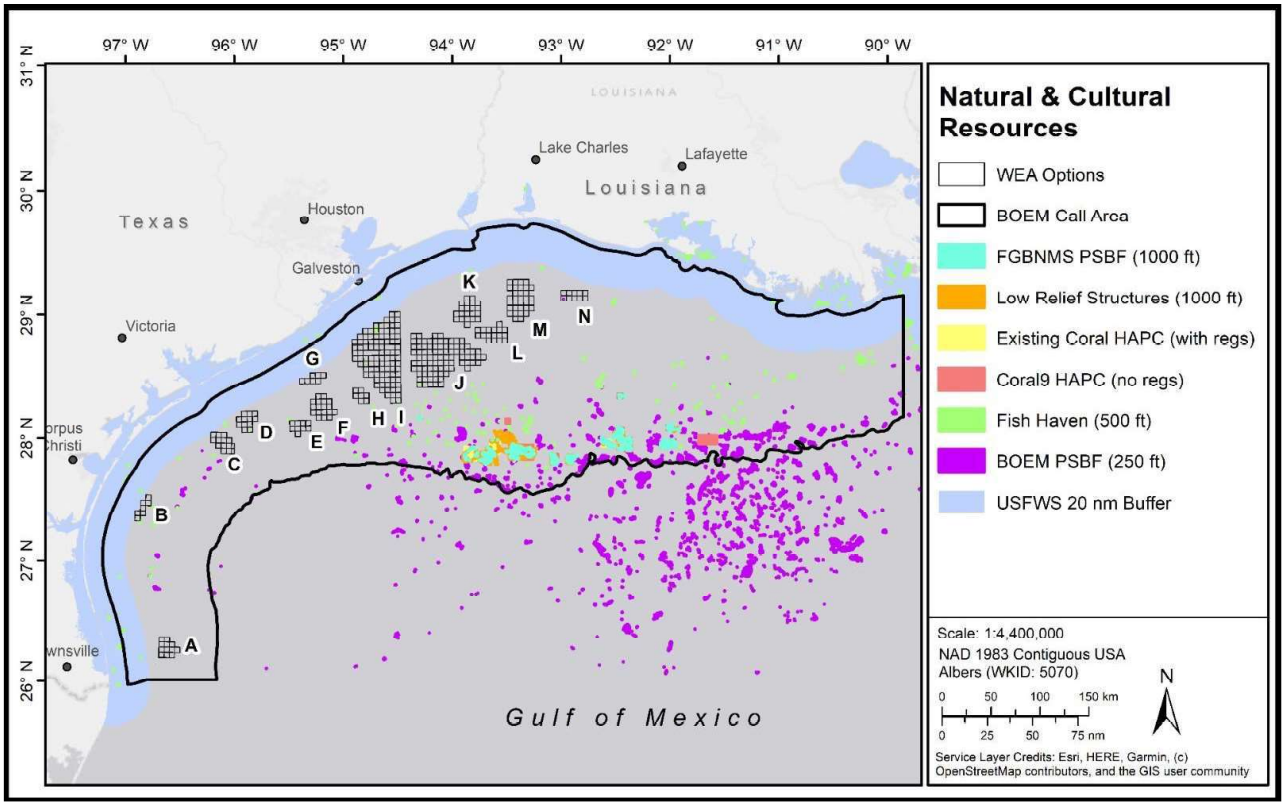


Figure 22: Natural and Cultural resource considerations in relation to the WEA options. The light blue area represents the recommended 20 nm buffer by USFWS.

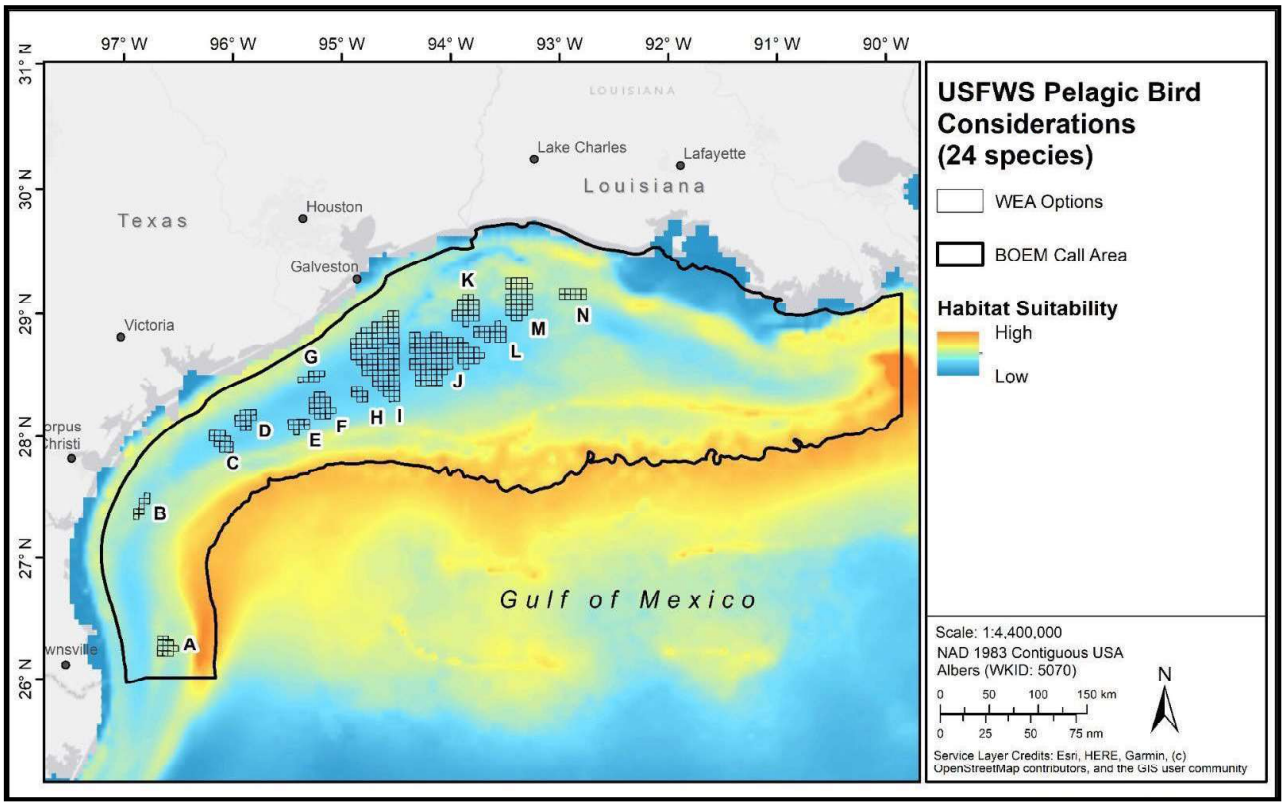


Figure 23: USFWS GoMMAPPS pelagic seabird (24 species) combined habitat suitability layer in relation to the WEA options. The orange/yellow areas represent high habitat suitability for birds therefore, less suitability for offshore wind development. The blue areas represent low habitat suitability for birds. These areas are more suitable for offshore wind development.

5. *Marine Mammals and other Protected Species*

To holistically consider protected species in the GOM region, a novel combined data layer used in calculating the overall score for select protected species was developed through collaboration with NMFS Southeast Regional Office (SERO) and NMFS Office of Protected Resources. A total of 23 protected resource data layers were combined and used in the suitability model as a single NMFS protected resources layer. The combined layer was place in the Natural and Cultural submodel.

Protected species considered include those listed under the Endangered Species Act (ESA) and/or protected under the Marine Mammal Protection Act (MMPA). This approach was preferred given that this ocean planning process does not consider gear-specific wind planning or other secondary interactions with protected species. This combined data layer contains only highly vulnerable protected species. As a result, a number of protected species, including some marine mammals, were excluded from this analysis. The Rice's whale 100-400 m data layer was included in the constraints model and assigned a score of 0 for complete avoidance.

Scores were assigned to each species based on species' status, population size, and trajectory. The scores in Table 9 for MMPA, and ESA-listed species range from 0.1 (most vulnerable species, based on their biological status) to 0.8 (least vulnerable species) were provided using best available data for the Call Area. This scoring approach was developed for each species/stock

using factors that are more or less likely to affect their ability to withstand mortality, serious injury, or other impacts that could affect the species' ability to survive and recover.

Table 9: Scoring system for NMFS protected resources

Status	Trend	Score
Endangered	Declining, small population* or both	0.10
Endangered	Stable or unknown	0.20
Endangered	Increasing	0.30
Threatened	Declining or unknown	0.40
Threatened	Stable or increasing	0.50
MMPA Strategic	Declining or unknown	0.60
MMPA Listed	Small population* or unknown/declining	0.70
MMPA Listed	Large population or stable/increasing	0.80

*Small population equates to populations of 500 individuals or less (Franklin 1960)

A total of 23 data layers including Atlantic spotted dolphin (coastal), Atlantic spotted dolphin (oceanic), Beaked whale, Bottlenose dolphin (coastal), Bottlenose dolphin (oceanic), Clymene dolphin, Blackfish (False killer, Pygmy killer, and Melon-headed whales), Giant manta ray, Green sea turtle, Gulf sturgeon, Hawksbill sea turtle, Kemp's ridley sea turtle, Kogia (Dwarf and Pygmy sperm whale), Leatherback sea turtle, Loggerhead sea turtle, Oceanic whitetip shark, Pantropical spotted dolphin, Pilot whale, Rice's whale, Smalltooth sawfish (U.S. DPS), Sperm whale, Spinner dolphin, and Striped dolphin were combined into a single data layer using the product method, which provides the highest weight to the lowest score. Table 10 provides each species' status and trend, as well as the score used when creating the combined data layer for use within the relative suitability model. The combined data layer provides the highest resolution and contrast allowing for meaningful comparisons between grid cells, and correctly attributing increasing levels of concern for areas with multiple overlapping protected species data layers (Figure 24).

Table 10: Score and justification for ESA-listed and MMPA species known to occur within the Gulf of Mexico used in suitability modeling.

Species Common Name	Status and Trend	Score
Atlantic spotted dolphin (coastal)	MMPA Listed, unknown	0.7
Atlantic spotted dolphin (oceanic)	MMPA Listed, large population	0.8
Beaked whale	MMPA Listed, unknown	0.7
Bottlenose dolphin (coastal)	MMPA Listed, large population	0.8
Bottlenose dolphin (oceanic)	MMPA Listed, unknown	0.7
Clymene dolphin	MMPA Strategic, unknown	0.6
Blackfish (False killer, Pygmy killer, & Melon-headed whale)	MMPA Listed, unknown	0.7
Giant manta ray	Threatened, declining	0.4
Green sea turtle	Threatened, increasing	0.5
Gulf sturgeon	Threatened, increasing	0.5

Hawksbill sea turtle	Endangered, unknown	0.2
Kemp's ridley sea turtle	Endangered, unknown	0.2
Kogia (Dwarf and Pygmy sperm whale)	MMPA Listed, unknown	0.7
Leatherback sea turtle	Endangered, declining	0.1
Loggerhead sea turtle	Threatened, unknown/stable	0.4
Oceanic whitetip shark	Threatened, unknown/declining	0.4
Pantropical spotted dolphin	MMPA Listed, unknown	0.7
Pilot whale	MMPA Listed, unknown	0.7
Rice's whale	Endangered, small population	0.1
Risso's dolphin	MMPA Listed, unknown	0.7
Smalltooth sawfish (U.S. DPS)	Endangered, increasing	0.3
Sperm whale	Endangered, unknown	0.2
Spinner dolphin	MMPA Strategic, unknown	0.6
Striped dolphin	MMPA Strategic, unknown	0.6

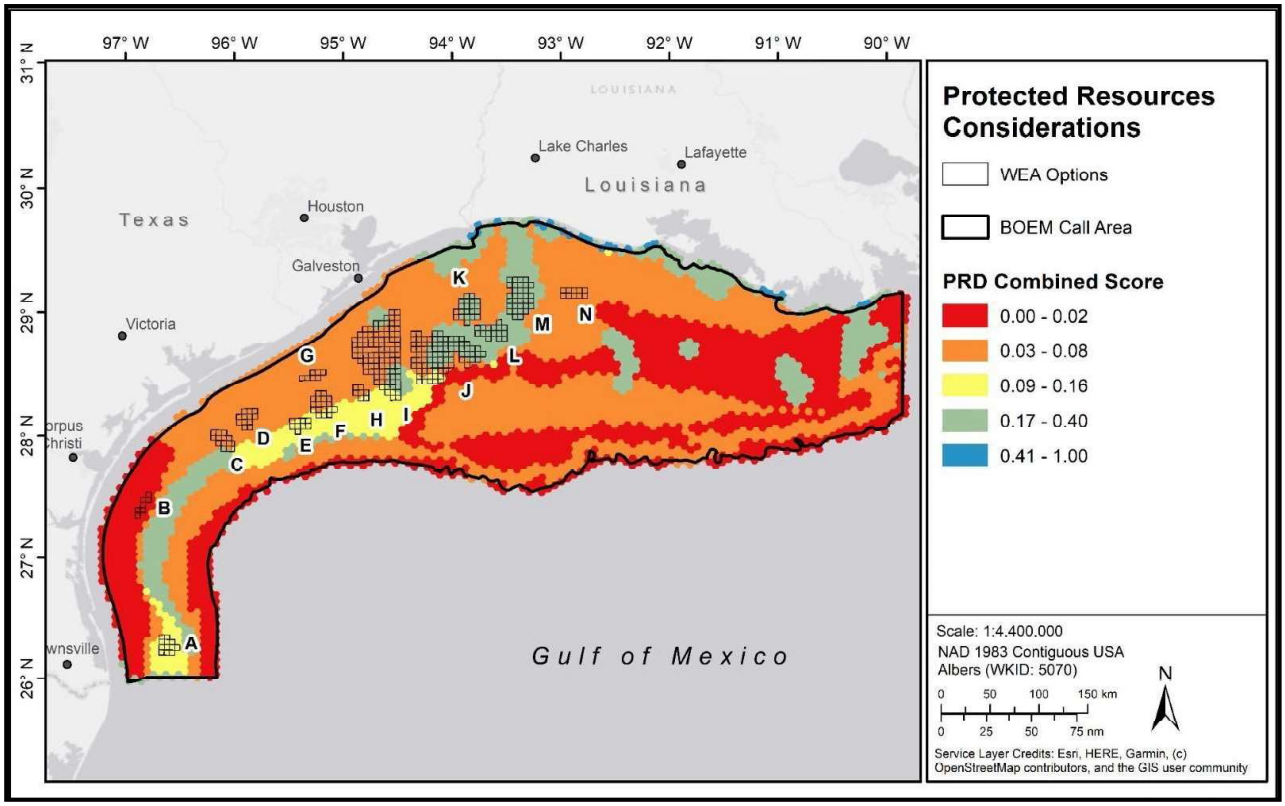


Figure 24: Protected resources considerations in relation to the WEA options.

Through the review of these data on a broad scale, the goal was to avoid designating WEAs in areas where the presence of these protected resources is significant. BOEM will conduct a more detailed analysis during the consultation process to further reduce risk to marine mammals and other protected species for the recommended Galveston Preliminary WEA (Option I). BOEM also determined that site-specific mitigations to impacts on marine protected species would be

identified at later stages in the development process, such as through lease stipulations and terms and conditions of COP approval.

a) Cables, Pipelines, and other Infrastructure

The GOM supplies trillions of dollars annually to the national economy via major marine industries (e.g., oil and gas production, commercial seafood, shipping). Given the substantial presence of ocean industries in the region, industry activity in and around the Call Area was spatially examined.

U.S. oil and gas production in the Gulf of Mexico is one of the largest industrial users of regional marine resources. BOEM's active oil and gas lease blocks, platforms (including active drilling structures), oil and gas pipelines (active), and oil and gas boreholes were all assigned a score of 0 and moved to the constraints submodel for analysis. Submarine cables transmit 95% of international communications and approximately ten trillion dollars (USD) in financial transactions each day,[20] therefore, these were considered critical infrastructure and were avoided.

VI. Rationale for Preliminary WEA Recommendation

A. Introduction

To facilitate the Area ID planning process, BOEM prefers to maintain flexibility by identifying more (and some cases, larger) WEAs. In recommending the Galveston and Lake Charles Preliminary WEAs, BOEM is advancing the Biden-Harris Administration's goal to achieve 30 GW of offshore wind by 2030 and net zero emissions by 2050 and aims to be responsive to Louisiana's renewable energy goals, increase the potential for competition in future offshore wind energy solicitations, and develop a predictable leasing pipeline.

BOEM understands that some of the recommended Preliminary WEAs (or portions thereof) may ultimately not be offered as lease areas. BOEM is also aware that some portions of the recommended areas may overlap with commonly used navigation corridors. As described in the navigation section, above, the USCG is currently engaging with BOEM to investigate potential navigational measures, such as adding a 2 nm buffer to the existing fairways in the GOM. For the purposes of this effort, BOEM is working closely with the USCG and stakeholders and believes that there is enough space offshore Texas and Louisiana to safely accommodate both offshore renewable energy and maritime traffic aspirations.

BOEM also recognizes that coastal states closest to a lease area are afforded many potential opportunities related to offshore wind industry development, including workforce and supply chain development. Conversely, potential impacts to existing ocean users generally fall most heavily on the state whose coastline is closest to the leased area. The inclusion of these recommended Preliminary WEAs in proximity to both Louisiana and Texas coastlines would facilitate more equitable distribution of the positive and negative offshore wind development externalities.

BOEM's Preliminary WEA recommendations are a result of balancing key existing interests, resources in the GOM, state renewable energy goals, and anticipated future uses based on the best

[20] Tri-Service Strategy. 2020. Advantage at sea: Prevailing with integrated all-domain naval power. Available from: https://media.defense.gov/2020/Dec/16/2002553074/-1/- 1/0/TRISERVICESTRATEGY.PDF

available science and information. Areas offered for lease would be identified in a PSN, as discussed in Section IV. BOEM would consider, in its final leasing decision, the results of the NEPA analysis and associated consultations. Additionally, BOEM maintains its flexibility to offer only a portion of the WEAs for lease, leaving unselected areas for future consideration. This section discusses the rationale for the recommendation of each WEA and, where appropriate, the exclusion of portions of the Call Area that BOEM is not currently recommending for leasing consideration. As different areas had different balancing factors, select area-specific issues are discussed in more detail for specific recommended WEAs below.

B. Galveston Preliminary WEA (Option I)

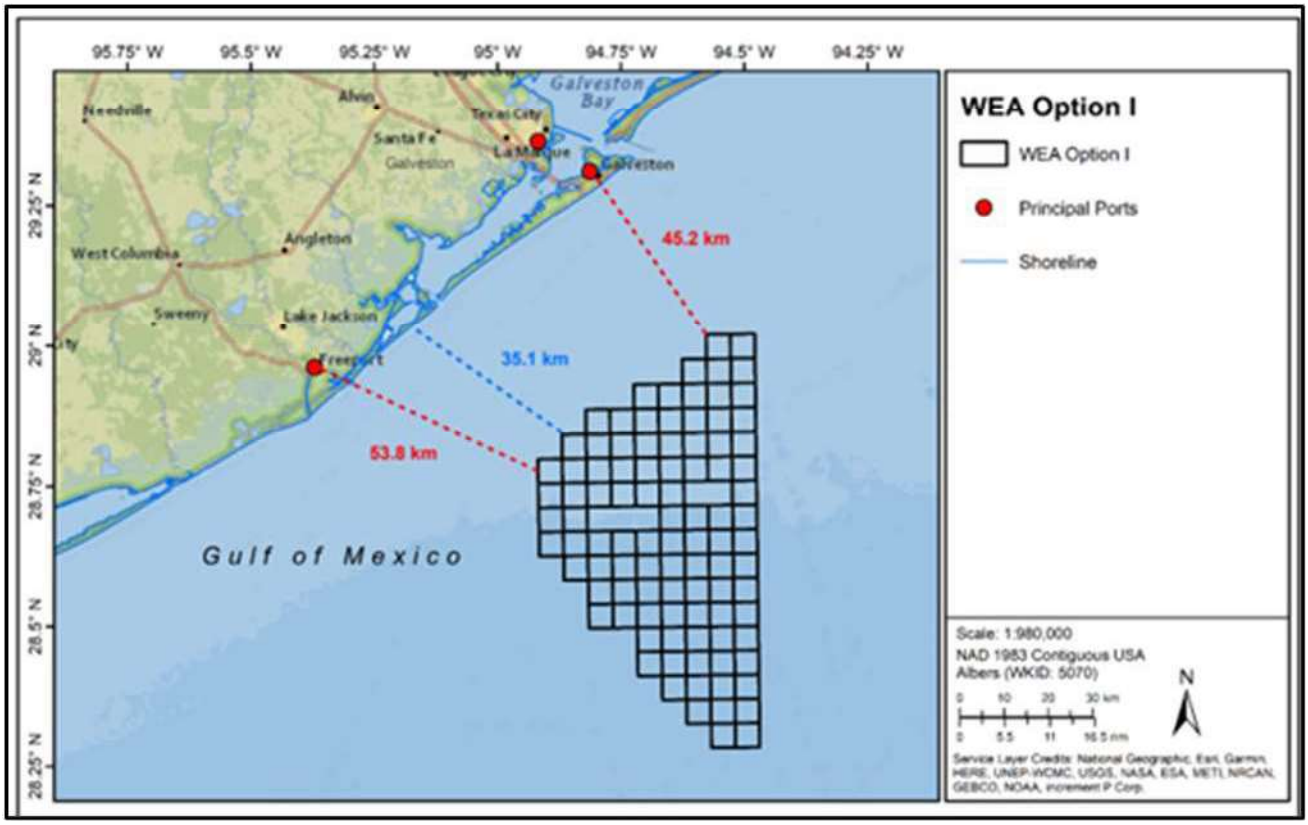


Figure 25: Galveston Preliminary WEA

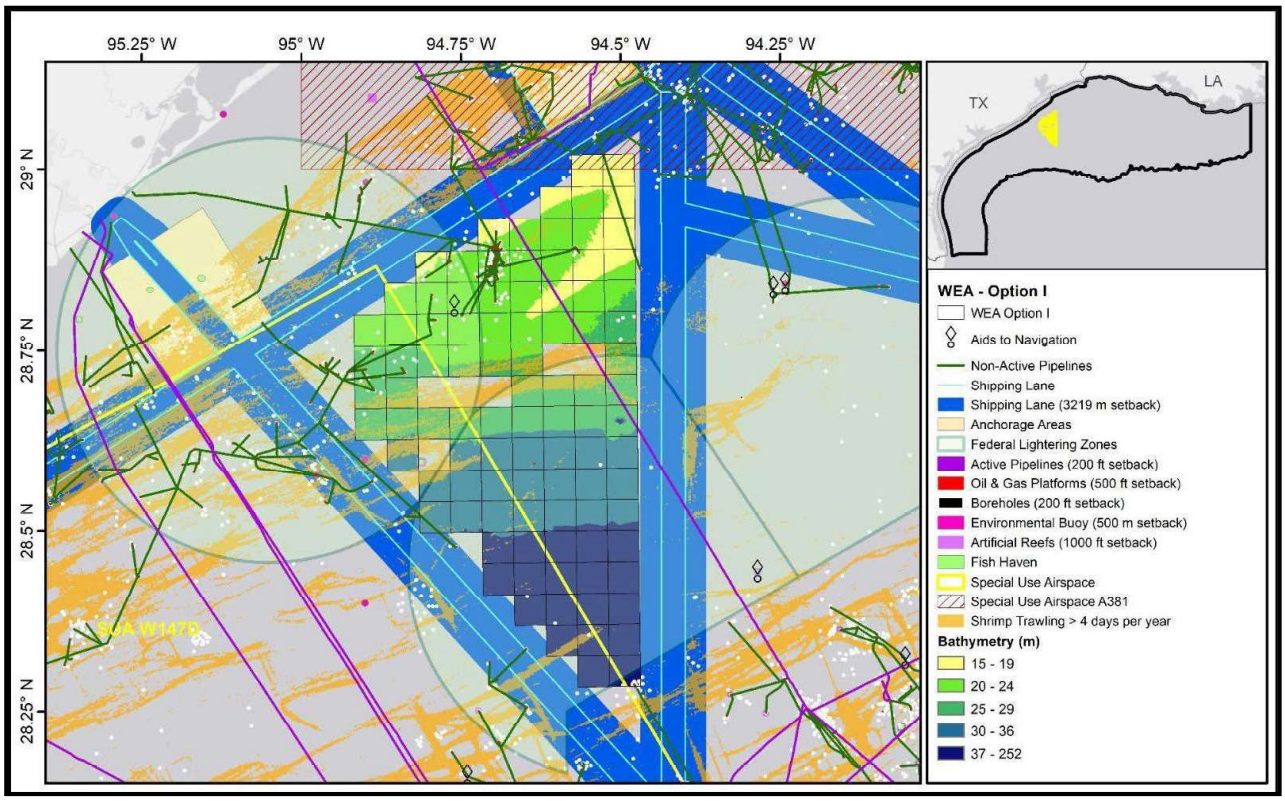
BOEM acknowledges that offshore wind activities in portions of the recommended the Galveston Preliminary WEA could potentially result in conflicts with other uses of these areas. The recommended Galveston Preliminary WEA was chosen by balancing several factors, the most prominent being commercial fisheries, DoD activities, navigation, and commercial viability.

1. Fisheries

The 2019 AIS Tracking Data for fisheries showed relatively high usage in the portion north of the Galveston Preliminary WEA, with fisheries usage decreasing as it approaches the Galveston Preliminary WEA. In comparison with the other WEA options, the Galveston Preliminary WEA scored in the top 3 for most suitable for wind for fisheries with less than ten percent of moderate-high VMS shrimp fishing areas. The two areas with high shrimp trawling were removed from further consideration at this time (Figure 26 depicted in gray).

Fish havens are defined as artificial reefs or "submerged structures deliberately constructed or placed on the seabed to emulate some functions of a natural reef, such as protecting, regenerating, concentrating, and/or enhancing populations of living marine resources."[21, 22] Fish haven boundary data were extracted from the NOAA electronic navigational chart (ENC) using the ENC Direct to GIS tool. The extracted features were quality assured by overlaying the features onto the ENC within ArcGIS Pro and performing manual checks to ensure polygons lined up with those on navigation charts. As recommended by the USACE, a setback of 500 ft (152 m) was applied to preserve ecosystems associated with fish havens and artificial reefs, and to avoid recreational user activity for WEA planning. There are only 3 fish havens within the recommended Galveston Preliminary WEA.

Fishing activities were broadly considered during the Area ID stage of the process to ensure that major conflicts are identified and addressed to the extent practicable, but further outreach and consideration of fishing issues will continue throughout the several phases of the BOEM process. BOEM understands that the placement and development of floating wind turbines could impact certain types of commercial fishing (e.g., pelagic longline and shrimping). BOEM will continue to study the exact types of fishing and areas that are of most concern and work with industry, state, and the fishing community to mitigate these concerns.



[21] United Nations Environment Programme (UNEP). 2009. London Convention and Protocol/UNEP guidelines for the placement of artificial reefs. London (UK): United Nations Environment Programme.
[22] NOAA. 2016. Understanding fish havens. Available from: https://nauticalcharts.noaa.gov/publications/docs/us-chart-1/UnderstandingFishHavens- 2016Feb.pdf

Figure 26: Map depicting notworthy characterization features for the Galveston Preliminary WEA (Option I).

2. *DoD Activities*

As noted above in Section V.D.3, DoD identified potential conflicts with Department of Navy training denoted in the red areas identified in Figure 27 and with radar used by North American Aerospace Defense Command (NORAD). The recommended Galveston Preliminary WEA requires further study relating to Relocatable Over the Horizon Radar (ROTHR). ROTHR supports DoD/U.S. Southern Command counter-narcotics missions. The identified lease blocks are located within and adjacent to the look angle of ROTHR transmit and receive sites. Other assessments have shown that wind turbines located within the look angle can degrade ROTHR performance (based on modeling conducted for the Kitty Hawk Wind Energy Area off the coast of North Carolina). It is acknowledged that the conditions in Texas are different than North Carolina, such as the distance between the sites and potential offshore development. The additional study area in the DoD assessment occurs throughout the GOM Call Area.

BOEM has eliminated areas that conflict with most DoD activities and will resolve remaining conflicts within the recommended Preliminary WEAs (denoted in light orange in Figure 27) during the process of identifying lease areas for a PSN, where certain areas may be excluded from leasing, and by developing site-specific stipulations in coordination with DoD.

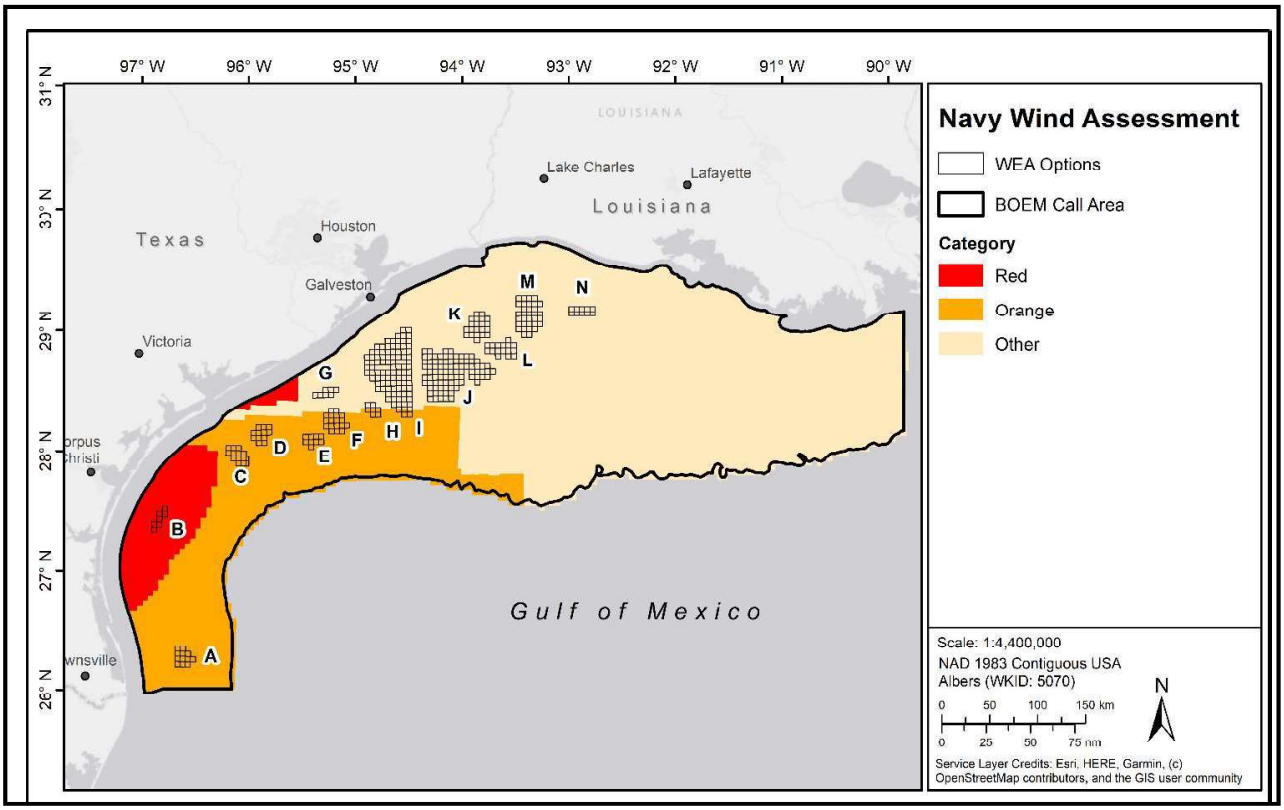


Figure 27: Initial DoD assessment for Wind Exclusion Areas (red areas) for the GOM Call Area. The orange areas require further analysis and study and the light orange areas may require additional mitigations.

3. *Navigation*

BOEM recognizes that the proximity of the recommended the Galveston Preliminary WEAs to the fairways near the blocks may present a concern to mariners in this region, particularly to vessels that may be experiencing mechanical or technical difficulties and require more room to maneuver. Based on the 2019 AIS track line analysis for Tanker Vessel traffic, however, a majority of tanker vessel traffic is largely confined to shipping fairways transiting on either side of the area. Some tankers could alter course to avoid any structures. BOEM therefore considered a 2 nm buffer between the fairway and the recommended WEA. Site-specific navigation studies may be conducted if the site is proposed for development, which will inform the siting of any future wind energy facility.

4. Commercial Viability

The recommended Galveston Preliminary WEA had the greatest interest from developers in response to the Call with 5 nominations. This area was recommended as a WEA because it provides enough acreage for several commercially viable projects, while avoiding potential conflicts with DoD activities and reducing potential conflicts with most of the fishing activities within the Call Area. The recommended WEA is close to shore, close to the Port of Galveston, close to points of interconnection onshore, and in shallow waters, which may decrease development costs relative to deeper sites farther from shore.

The National Renewable Energy Laboratory (NREL) Revenue model used wind speed, closeness to shore, proximity to population centers and the cost of electricity prices to determine economic viability of a commercial wind facility. Regions where locally high electricity prices coincide with lower cost of energy have the highest net value, which is a primary indicator for economic viability. Based on the NREL data from 2015, the recommended WEA is also in the high net value area. BOEM used this dataset in the economics submodel.

C. Lake Charles Preliminary WEA (Option M)

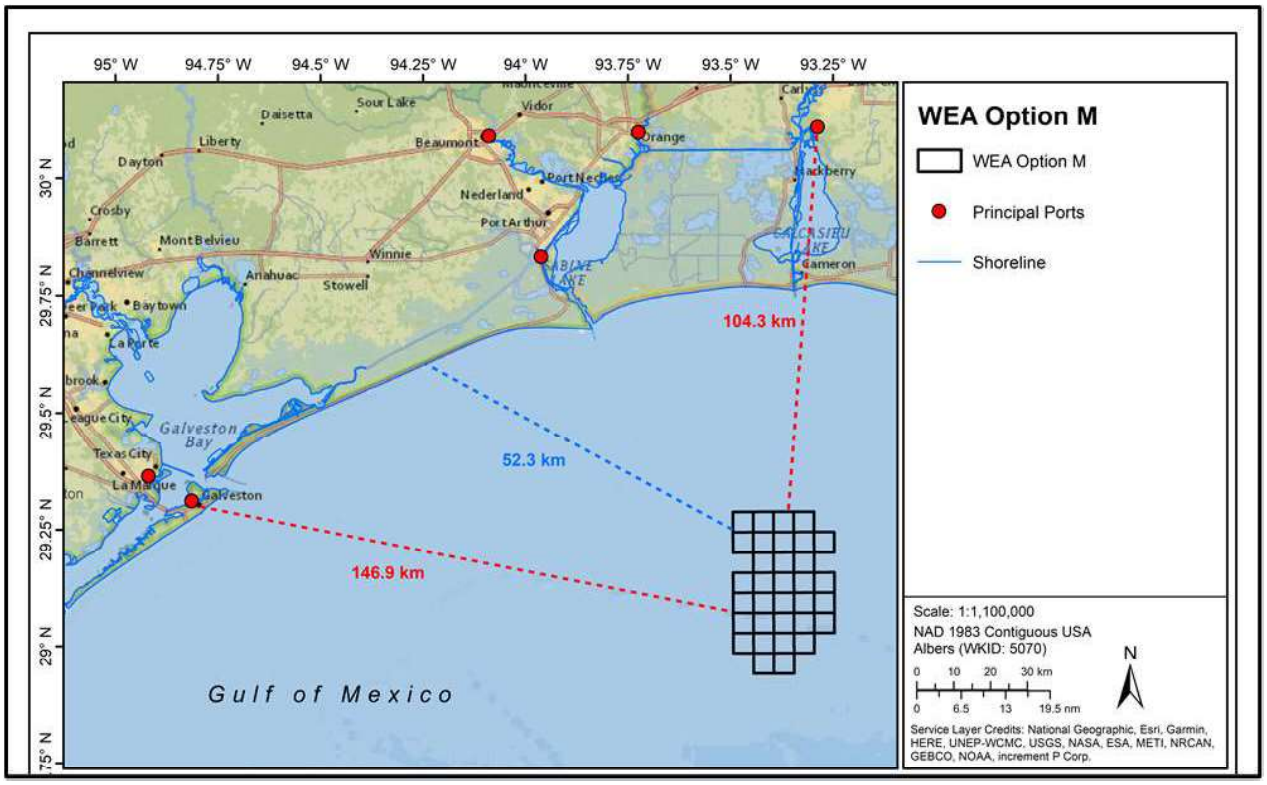


Figure 28: Lake Charles Preliminary WEA

BOEM acknowledges that offshore wind activities in portions of the recommended Lake Charles Preliminary WEA could potentially result in conflicts with other uses of these areas. The recommended Lake Charles Preliminary WEA was chosen by balancing several factors, the most prominent being DoD activities, commercial fishing, navigation, and commercial viability. BOEM understands that the placement and development of floating wind turbines could impact certain types of commercial fishing (e.g., pelagic longline and shrimp fisheries). Due to the recommended Lake Charles Preliminary WEA being in water depths less than 60 meters, currently, floating wind turbines will not be used in this area. BOEM will continue to study the exact types of fishing and areas that are of most concern and work with industry, state, and the fishing community to mitigate these concerns.

1. *DoD Activities*

As noted above in Section V.D.3, DoD identified potential conflicts with Department of Navy training denoted in the red areas identified in Figure 27 and with radar used by NORAD. BOEM has eliminated areas that conflict with most DoD activities and will resolve any remaining conflicts within the recommended Preliminary WEAs (denoted in light orange in Figure 27) during the process of identifying lease areas for a PSN, when certain areas may be excluded from leasing, and by developing site-specific stipulations in coordination with DoD.

2. *Vessel Navigation*

BOEM recognizes that the proximity of the recommended Lake Charles Preliminary WEA to the fairways near the blocks may present a concern to mariners in this region, particularly to vessels that may be experiencing mechanical or technical difficulties and requiring more room to

maneuver. Therefore, BOEM considered a 2 nm buffer between the fairway and the recommended Preliminary WEA. Based on the 2019 AIS trackline data, most vessels travel within the bounds of the established traffic lanes. Site-specific navigation studies may be conducted if the site is proposed for development, which will inform the siting of any future wind energy facility.

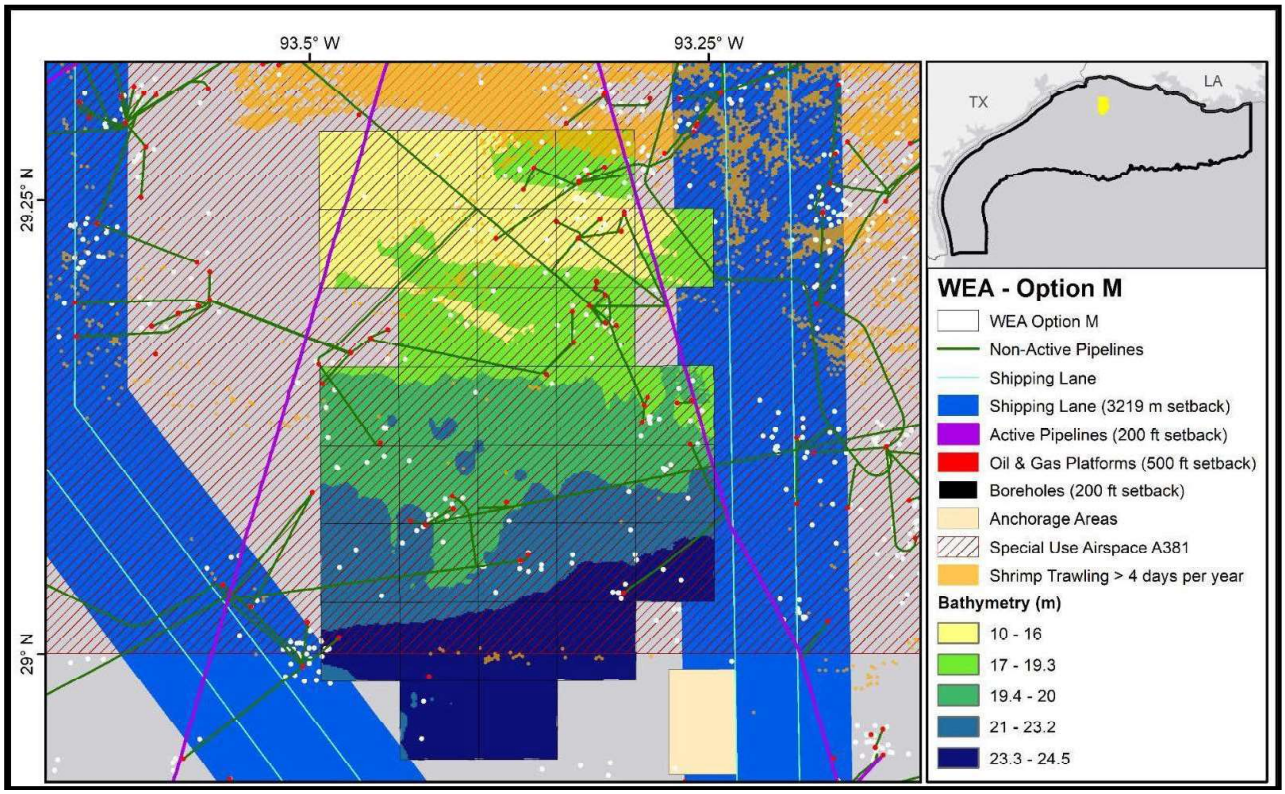


Figure 29: Map depicting shipping lanes and other noteworthy characterization features for the Lake Charles Preliminary WEA (Option M).

3. *Fisheries*

The shrimp fishery has the largest overlap within the Call Area, especially in areas closer to shore. However, the recommended Lake Charles Preliminary Wind Energy Area was determined to be relatively less impactful to fisheries interests with less than five percent for shrimp fishing areas of moderate-high fishing. The menhaden fishery had a six percent overlap within the Call Area and was predominately present off the coast of Louisiana. The recommended Lake Charles Preliminary WEA is located outside of the recommended 20 nm coastline buffer for menhaden fisheries. The 20 nm coastline buffer was recommended by the GOM menhaden fisheries. The Highly Migratory Species Pelagic Longline Gear and bandit gear fishing data showed a low overlap in the Call Area. The data also showed that pelagic longline and bandit gear fishing are in waters deeper than the recommended Lake Charles Preliminary WEA.

4. *Commercial Viability*

The Lake Charles Preliminary WEA was recommended because the size of the area provides enough acreage for more than one commercially viable project while avoiding potential conflict with DoD activities and reducing potential conflict with most of the moderate-high shrimp fishing

activities within the Call Area. The Preliminary WEA is relatively close to shore and in shallow waters, which may decrease development costs relative to deeper water sites. The Preliminary WEA is also suitable for development not only due to opportunities for offtake from neighboring states, but also due to its proximity to points of interconnection, and consistent winds. In addition, the area overlaps with at least one nomination received in response to the Call.

VII. Changes from Call Area to Recommended Preliminary WEAs

After analyzing over 200 data layers and 54 datasets in the ocean planning study, the Call Area was substantially winnowed down based on the above factors and factors that were included in the constraints model including primarily the 20 nm coastline buffer, 100-400m buffer for the Rice's Whale, existing oil and gas infrastructure, active oil and gas leases, active pipelines, moderate-high shrimp fishing concerns, navigation, and national security interests. The original Call Area consisted of an area of approximately 30 million areas offshore Louisiana and Texas. After the ocean planning study, the Call Area was winnowed down to 2,398,150 acres with 13 potential WEA options. With the selection of the recommended Preliminary WEA options of Galveston (Option I) and Lake Charles (Option M), the Call Area would be further winnowed to 734,668 acres. The recommended Galveston Preliminary WEA (Option I) consists of 546,645 acres with the closest principal port being the Port of Galveston. The second area is the recommended Lake Charles Preliminary WEA (Option M) which consists of 188,023 acres with the closest principal port being Lake Charles. Both areas are located near onshore points of interconnection.

VIII. <u>Director Concurrence for Preliminary WEA Recommendations</u>

☑ Yes

☐ No

AMANDA LEFTON

Digitally signed by AMANDA LEFTON
Date: 2022.07.20 12:40:50 -04'00'

7/20/22

Amanda Lefton — Date

Director, Bureau of Ocean Energy Man

United States Department of the Interior
BUREAU OF OCEAN ENERGY MANAGEMENT
New Orleans Office
1201 Elmwood Park Blvd
New Orleans, Louisiana 70123-2394

July 1, 2022

[redacted]

Dear [redacted],

In January 2022, the Bureau of Ocean Energy Management (BOEM) announced the identification of a Call Area for potential wind energy leasing located in Federal waters offshore Texas and Louisiana, pursuant to 30 Code of Federal Regulations (CFR) Part § 585.211(a). The Call Area was designated in consultation with the Gulf of Mexico Intergovernmental Renewable Energy Task Force and it represents an area of the Outer Continental Shelf (OCS) where BOEM may issue leases and grant rights-of-way (ROW) or rights-of-use (RUE) in support of wind energy development. BOEM additionally announced in January 2022 that it is developing an environmental assessment, which will be available for public comment upon publication, that considers the potential impacts associated with issuing a lease (e.g., installation of meteorological [met] buoys) and granting a ROW or RUE, or actions expected to take place after lease issuance (e.g., geophysical and geotechnical surveys within the Call Area and potential export cable corridors, including in state waters). BOEM has determined that the issuance of commercial and research wind energy leases and the potential granting of a ROW or RUE constitutes an undertaking subject to Section 106 of the NHPA and, as such, BOEM will serve as the lead Federal agency for the NHPA Section 106 review.

This letter has three purposes:

- To invite [redacted] to be a consulting party to the Section 106 review;
- To provide information on the undertaking and the preliminary Area of Potential Effect (APE) (enclosed, Figure 1) to help inform your decision as to whether you wish to be a consulting party; and
- To provide information on the next steps in the Section 106 process for parties choosing to participate.

1. **Invitation to Consult Under Section 106 of the NHPA**

With this letter, BOEM invites you to be a consulting party to this project regarding potential impacts to historic properties. Consulting parties have certain rights and obligations under the NHPA and its implementing regulations at 36 Code of Federal Regulations Part 800. The review process, known as Section 106 review, is described at: https://www.achp.gov/digital-library-section-106-landing/citizens-guide-section-106-review. By becoming a consulting party, you will be actively informed of steps in the review process and your views will be actively sought.

2. **Definition of the Undertaking and Area of Potential Effect for the Undertaking**

The proposed undertaking includes the issuance of commercial wind energy leases within the Call Area and takes into account the execution of associated site assessment and site characterization activities within these commercial leases. Issuance of a lease does not grant the lessee the right to construct any facilities; rather the lease grants the lessee the right to conduct site assessment and site characterization activities to inform its lease development plans. BOEM must approve a plan before the lessee can move on to the next stage of the process. Should a lessee submit a plan in the future, a separate plan-specific Section 106 review would take place at that time.

Site assessment activities on leases and site characterization activities on the leases, ROW, and RUE grants are anticipated. Site characterization and assessment activities associated with leases would occur in the Call Area and along potential export cable corridors to shore. It is assumed up to two export cable corridors would be surveyed for each lease. Site assessment activities include the temporary placement of up to two met buoys per lease area. Site characterization activities may include geophysical, geotechnical (i.e., coring and seabed sampling), and biological surveys of the lease area and export cable corridors.

Site characterization surveys for a proposed export cable route to shore would occur linearly along a 1,000-m wide corridor centered on the potential export cable location to characterize the seabed locations where physical disturbances may occur during lease development (e.g., anchoring of vessels, installing the cable, or movement of the proposed cable location, if necessary).

Because the leases or right-of-way grants considered as part of this undertaking have not been issued, BOEM is uncertain of the exact location of these cable surveys. However, BOEM can anticipate their geographic extent. Power generated from potential Gulf of Mexico lease areas would need to be transmitted to shore, either directly from the lease areas by individual export cables to onshore cable landings and/or to offshore regional export system(s). Because power may be purchased from nearby states, these potential export cables and regional export system(s) are anticipated to be located offshore Texas and Louisiana. Therefore, for the purposes of this undertaking, BOEM anticipates cable surveys may occur anywhere in the preliminary APE between the Call Area and Texas and Louisiana state waters.

A map of the Call Area is enclosed and more information regarding the Call Area and environmental assessment may be found at https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities.

3. Next Steps

Please submit your request to become a consulting party ***no later than 30 days of receipt of this letter.*** While you may also request to be a consulting party at a later date, this consultation may advance without your input and your opportunity to fully comment on each step of the process may be affected. If you are requesting consulting party status, please also include the contact information of one representative and one alternate from your organization to receive correspondence and attend meetings, if applicable, and indicate the nature of your organization's demonstrated interest in the undertaking or historic properties that may be affected by the undertaking. We also request that you indicate your preferred correspondence method: via email, hard copy correspondence by mail, or both.

In your response, please provide any known information regarding additional historic properties that may be present with the preliminary APE. This will help inform a Draft Finding of Effect document, which will be developed and distributed by BOEM at a later date. BOEM will then request comments and feedback within 30 days and distribute the Final Finding of Effect.

If you would like to formally consult on the undertaking, please respond to me at Douglas.Jones@boem.gov or (504) 736-2859. Correspondence can also be sent to me at the following address:

Attn: Doug Jones
Bureau of Ocean Energy Management
Office of Environment
1201 Elmwood Park Blvd
New Orleans, Louisiana 70123

Sincerely,

Douglas Jones

Douglas Jones, M.A.
Archaeologist/Regional Preservation Officer

Enclosures:
- Call Area Map

Appendix C

BILLY NUNGESSER
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

KRISTIN P. SANDERS
ASSISTANT SECRETARY

2 March 2023

Doug Jones, M.A., RPA
Marine Archaeologist/Gulf of Mexico Region Tribal Liaison
Bureau of Ocean Energy Management
1201 Elmwood Park Blvd
New Orleans, LA 70123

Re: Finding of No Effect for Gulf of Mexico Wind leases

Dear Doug Jones:

We acknowledge receipt of the Bureau of Ocean Energy Management's Finding of No Historic Properties Affected for the Issuance of Commercial and Research Leases within the gulf of Mexico Wind Energy Areas. WE have reviewed the Finding and have no concerns for the issuance of commercial and research leases in the proposed Gulf of Mexico energy areas. We look forward to consulting with the Bureau as these projects progress.

If you have any questions, please contact Chip McGimsey at cmcgimsey@crt.la.gov or 225-219-4598.

Sincerely,

Kristin P. Sanders

Kristin Sanders
State Historic Preservation Officer

P.O. BOX 44247 • BATON ROUGE, LOUISIANA 70804-4247
PHONE (225) 342-8170 • FAX (225) 342-4480 • WWW.CRT.LA.GOV

From: noreply@thc.state.tx.us
To: Jones, Douglas S; reviews@thc.state.tx.us
Subject: [EXTERNAL] Gulf of Mexico Renewable Energy Leasing
Date: Thursday, February 23, 2023 5:53:01 PM

Re: Project Review under Section 106 of the National Historic Preservation Act
THC Tracking #202304497
Date: 02/23/2023
Gulf of Mexico Renewable Energy Leasing
1201 Elmwood Park Blvd, New Orleans, LA 70123
Galveston,TX

Description: BOEM Sec. 106 Finding of Effect for offshore renewable energy leasing and associated site characterization activities.

Dear Douglas Jones:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act.

The review staff, led by Amy Borgens, has completed its review and has made the following determinations based on the information submitted for review:

Archeology Comments

- THC/SHPO concurs with information provided for the underwater project area.

We have the following comments: The Texas Historical Commission concurs with BOEM's finding of No Historic Properties under the stipulated conditions required for lessees that include survey and detection of submerged cultural resources in advance of the undertaking and avoidance during the proposed work. Work conducted in Texas state waters associated with site characterization activities for offshore renewable energy projects is additionally under Texas jurisdiction and would require compliance to the Antiquities Code of Texas and the Texas Administrative Code, Title 13, Part 2.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: amy.borgens@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

Appendix C

United States Department of the Interior

NATIONAL PARK SERVICE
INTERIOR REGION 6
Padre Island National Seashore
P.O. Box 181300
20301 Park Road 22
Corpus Christi, Texas 78418

February 21, 2023

Doug Jones
Bureau of Ocean Energy Management
Office of Environment
1201 Elmwood Park Boulevard
New Orleans, Louisiana 70123

Dear Mr. Jones,

Thank you for your email to Palo Alto Battlefield National Historical Park (PAAL) and Padre Island National Seashore (PAIS) dated January 26, 2023. As a consulting party for the Bureau of Ocean Energy Management's (BOEM) National Historic Preservation Act (NHPA) Section 106 review, the National Park Service (NPS), on behalf of PAAL and PAIS, appreciates the continuation of consultation regarding BOEM's potential wind energy leasing within areas located in waters offshore of Texas and Louisiana. NPS thanks BOEM for the inclusion of the NPS Heritage Partnerships Program because the overall Wind Energy Area program Area of Potential Effect (APE) identified by BOEM includes waters offshore from National Historic Landmarks (NHL) not located on NPS property. NPS administers the NHL Program and has special expertise in management of all NHL properties under Section 110(f) of the NHPA.

Your email transmitted BOEM's determination of effect finding of No Historic Properties Affected (the Finding) for the undertaking, pursuant to 36 CFR § 800.4(d)(l). The undertaking as described, "includes the issuing of commercial or research leases within the two Gulf of Mexico Wind Energy Areas (WEAs) and granting rights-of-way (ROWs) and rights-of-use and easement (RUEs) within the region and takes into account the execution of associated site characterization activities" (BOEM 2023). BOEM has determined that these activities constitute an undertaking subject to Section 106 of the National Historic Preservation Act (54 U.S.C. 306108) and its implementing regulations (36 CFR § 800). The NPS agrees that the listed actions constitute an undertaking as described and are subject to Section 106 review.

The Finding document discusses that "these site characterizations include both high-resolution geophysical (HRG) surveys, which do not involve seafloor-disturbing activities, and geotechnical investigations, which may include seafloor-disturbing activities. BOEM does not consider HRG surveys to be an activity that has the potential to cause effects on historic properties and this activity is not considered further in this Finding" (BOEM 2023). NPS agrees with this determination and decision.

The Finding also details that "geotechnical testing or sampling involves seafloor-disturbing activities and therefore has the potential to cause effects on historic properties. Geotechnical testing is conducted to assess the potential to cause effects on historic properties. Should a lessee propose to deploy site assessment equipment within the Gulf of Mexico WEAs, they would submit a Site Assessment Plan (SAP) to BOEM, which BOEM would consider under a separate

Section 106 review" (BOEM, 2023). NPS has a continued interest in consultation for such potential future site assessment plans.

Further, the NPS recognizes that the Finding is based on a review of existing and available information conducted by BOEM, consultation with interested and affected parties, avoidance stipulations outlined in the required elements of the lease or grant, and conclusions drawn from this information.

NPS concurs with the Finding of No Historic Properties Affected for the undertaking of issuing of commercial or research leases and granting ROWs and RUEs. NPS also recognizes that the process and activities for issuing leases and granting ROWs and RUEs will likely be similar for future WEAs closer in proximity to the PAAL and PAIS park units, and we look forward to being invited to consult on those actions in addition to the current undertaking. We also wish to express our interest in consultation during future site- and plan-specific Section 106 reviews that would take place when facility construction is proposed by a lessee.

BOEM's Finding states that the APE for this undertaking does not include cable installation nor connection to shore-based facilities or other site assessment activities, onshore staging, construction, or operation of facilities. While exact locations of cable corridors and associated on shore facilities are not yet identified, NPS acknowledges that future Section 106 review will occur on a site-specific basis. We wish to express our interest in consultation regarding APE development for future site- and plan-specific Section 106 reviews to ensure consideration of historic properties in federal and state lands and waters.

We appreciate your inclusion of the NPS in BOEM's Section 106 consultation efforts, and we look forward to continuing discussion regarding the analysis of potential effects from the proposed project. If you have any questions, please contact me at the phone number or email address listed below.

Sincerely,

ERIC BRUNNEMANN

Digitally signed by ERIC BRUNNEMANN
Date: 2023.02.22 23:41:24 -06'00'

Eric Brunnemann
Superintendent
(391) 949-8173 x 222
Eric_Brunnemann@nps.gov

cc:

Lisa Carrico, NPS Deputy Regional Director, Protection, Partnerships, and Interpretation, NPS Regional Office Serving Interior Regions 6, 7, & 8 (Region)
Oralia Fernandez, Superintendent, PAAL
Justin Henderson, Heritage Partnerships Program Manager, Region
Nida Holliday, Regional Energy Specialist, Region
Shelley Todd, Supervisory Resource Management Specialist, PAIS

Appendix C

From: Lindsey Bilyeu
To: Jones, Douglas S
Subject: [EXTERNAL] RE: Gulf of Mexico Renewable Energy Sec. 106 Finding of Effect
Date: Sunday, February 26, 2023 1:59:24 PM

Mr. Jones,

The Choctaw Nation of Oklahoma thanks the BOEM for the correspondence regarding the above referenced project. The portion of this project lying in the offshore area of Louisiana lies in our area of historic interest. Our office has reviewed the proposed survey work, and inadvertent discovery procedure, and we concur with what is proposed. However, please include in your inadvertent discovery plan that work be stopped and Choctaw Nation contacted immediately in the event that Native American artifacts or human remains are encountered.

In addition, could you please provide copies of the survey reports that will be conducted as part of this work?

If you have any questions, please contact me.

Thank you,

Lindsey D. Bilyeu, M.S.
Program Coordinator 2
Choctaw Nation of Oklahoma
Historic Preservation Department
P.O. Box 1210
Durant, OK 74702
Office: (580) 642-8377
Cell: (580) 740-9624

From: Jones, Douglas S <Douglas.Jones@boem.gov>
Sent: Thursday, January 26, 2023 9:21 AM
To: Lindsey Bilyeu <lbilyeu@choctawnation.com>
Subject: Gulf of Mexico Renewable Energy Sec. 106 Finding of Effect

Good morning Ms. Bilyeu,

The Bureau of Ocean Energy Management (BOEM) has made a Finding of No Historic Properties Affected (Finding) for the undertaking of issuing commercial or research leases within two Gulf of Mexico Wind Energy Areas (WEAs) and granting rights-of-way (ROWs) and rights-of-use and easement (RUEs) within the region and takes into account the execution of associated site characterization activities. BOEM has determined that these activities constitute an undertaking subject to Section 106 of the National Historic Preservation Act (54 U.S.C. 306108) and its implementing regulations (36 CFR § 800).

The Finding is based on a review of existing and available information conducted by BOEM, consultation with interested and affected parties, avoidance stipulations outlined in the required elements of the lease or grant, and conclusions drawn from this information.

BOEM initiated Section 106 consultation on July 1, 2022. Your response from July 26, 2022, is attached for reference. Pursuant to 36 CFR § 800.4(d)(l), this e-mail transmits the Draft Finding for your review (attachment). This draft also has been submitted to appropriate SHPOs and other consulting parties. We respectfully request your review and concurrence with this Finding no later than February 25, 2023. If you have any questions, concerns, or comments, please contact BOEM Section 106 Lead and Regional Tribal Liaison Officer Doug Jones at Douglas.Jones@boem.gov or (504) 736-2859.

Sincerely,

Doug Jones, M.A., RPA
Marine Archaeologist/Gulf of Mexico Region Tribal Liaison
Bureau of Ocean Energy Management
1201 Elmwood Park Blvd
New Orleans, LA 70123
(504) 736-2859