



Gulf of Maine Data Layers under Consideration for Draft Wind Energy Area Suitability Modeling

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Background

In September 2022, BOEM [announced](#) enhancements to its area identification process. Through our commitment to use the best available science and modeling approaches, BOEM has partnered with NOAA’s National Centers for Coastal Ocean Science (NCCOS) to employ a spatial model that analyzes entire marine ecosystems to identify the best areas for wind energy sites. NCCOS and BOEM are leveraging a team of expert spatial planners, marine and fisheries scientists, project coordinators, environmental policy analysts, and other subject matter experts to develop the Gulf of Maine Offshore Wind Suitability Model (suitability model). An overview of this modeling approach is available [here](#).

BOEM and NCCOS intend to use the same methods previously applied to offshore wind energy siting efforts in the Gulf of Mexico and Central Atlantic to inform Gulf of Maine draft wind energy areas (WEAs). NCCOS’s spatial modeling approach integrates a broad range of natural resource and socioeconomic considerations to provides a powerful, data-driven tool for assisting in the identification of areas that are most suitable for offshore wind energy development. Additionally, BOEM intends for this partnership and modeling approach to enhance transparency, improve engagement, and provide a consistent, reproducible methodology for understanding and deconflicting ocean space.

Tables 1-5 (below) are organized by the 5 submodels BOEM intends to use within the draft WEA suitability model, and describe the subset of data layers that BOEM plans to utilize within those submodels. This document will be updated as new data become available and BOEM learns new information through public comment and engagements with Tribal, federal, and state governments, and other important stakeholder groups. Please note the **date** the document was last updated in any comment letters provided to BOEM.

Table 1: Fisheries

Fisheries Datasets	Already Constrained/Removed? ¹	Source	Source/link	Metadata link
Charter/Party Vessel Trip Report (VTR), 2008-2020	No	NOAA	Received directly from NMFS	https://repository.library.noaa.gov/view/noaa/4806
Fishing Footprint Raster (Commercial VTR Raster), 2008-2021	No	NOAA	Received directly from NMFS	https://repository.library.noaa.gov/view/noaa/23030
Georges Bank Northeast Groundfish Closures (Closed Area I North, Closed Area II)	Yes	NOAA	https://media.fisheries.noaa.gov/2020-04/gb-spawning-groundfish-closures-20180409-noaa-garfo.zip?null	https://media.fisheries.noaa.gov/dam-migration/gb-spawning-groundfish-closures-metadata-noa-fisheries_.pdf
Large Pelagic Survey, 2011-2021	No	NOAA	https://www.st.nmfs.noaa.gov/st1/recreational/LPS_Data/CSV/	https://www.st.nmfs.noaa.gov/st1/recreational/LPS_Data/LPS_Read_Me_website.doc
Lobster Effort, 2016-2020	No	NOAA	Received directly from NMFS	https://media.fisheries.noaa.gov/2023-01/DST-Model-Peer-Review-Documentation_Jan2023-nefsc.pdf
Northeast Groundfish Closure Areas (Cashes Ledge Closure Area, Closed Area II Closure Area, Western Gulf of Maine Closure Area)	Yes	NOAA	https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-09/Groundfish_Closure_Areas_20180409_0.zip?ON7sHgWHiJxpWm.B1IW5REVNRKhUvMrz	https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-09/Groundfish_Closure_Areas_METADATA_0.pdf?xWv1p3RjolcasWxdTIEn8MJlvaySUvxx
Vessel Monitoring System (VMS) Putative Fishing (2-5.5kts), 2012-2021	No	NOAA	Confidential; version for public distribution available at https://www.northeastoceandata.org/	https://www.northeastoceandata.org/files/metadata/Themes/CommercialFishing/VMSCCommercialFishingDensity_2022.pdf

¹ A “Yes” in this column indicates that BOEM either A) treated the feature as a constraint, thus removing the area from further leasing consideration; or B) the feature was indirectly removed from leasing consideration because the area overlapped with one or more constraints (e.g., the 20 nautical mile coastline buffer). See Section 6 of the Gulf of Maine Call for Information and Nominations for more information. A “No” in this column indicates that BOEM intends to use this feature and the accompanying dataset within the suitability model to further analyze it for potential leasing consideration.

Table 2: Industry, Navigation, and Transport

Industry, Navigation, and Transport Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Aids to Navigation	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/AtoN.zip	https://inport.nmfs.noaa.gov/inport/item/56120
Automatic Identification System (AIS) Vessel Traffic (2015, 2016, 2017, 2018, 2019, 2020, 2021) for All Vessel Types (Cargo, Passenger, Fishing, Tug and Tow, Fishing, Tanker, Pleasure and Sailing, Military, and Other)	No	NOAA and BOEM (i.e., marinecadastre.gov) and USCG	https://marinecadastre.gov/ais/	https://marinecadastre.gov/ais/
Cable and Pipeline Areas	No	NOAA and Northeast Ocean Data Portal	https://www.northeastoceandata.org/files/metadata/Themes/EnergyAndInfrastructure.zip	https://www.northeastoceandata.org/files/metadata/Themes/EnergyAndInfrastructure/CableAndPipelineAreas.htm
Environmental Sensors and Buoys	Yes (with 500-m setback)	NOAA	https://www.ndbc.noaa.gov/	https://www.ndbc.noaa.gov/
Gray Area	Yes	ME DMR	Received directly from ME DMR	-
Isle of Shoals North Disposal Site (IOSN)	Yes	USEPA	https://epa.maps.arcgis.com/home/item.html?id=a183aea47781468382b4b612c672bba8	https://epa.maps.arcgis.com/sharing/rest/content/items/a183aea47781468382b4b612c672bba8/info/metadata/metadata.xml?format=default&output=html
Liquefied Natural Gas Pipelines	Yes (with 200-ft setback)	MA CZM and Northeast Ocean Data Portal	http://www.northeastoceandata.org/files/metadata/Themes/EnergyAndInfrastructure.zip	https://www.northeastoceandata.org/files/metadata/Themes/EnergyAndInfrastructure/LNGPipelines.pdf
Liquefied Natural Gas Sites	Yes (with 200-ft setback)	USCG and Northeast Ocean Data Portal	http://www.northeastoceandata.org/files/metadata/Themes/EnergyAndInfrastructure.zip	https://services.northeastoceandata.org/arcgis1/rest/services/EnergyAndInfrastructure/MapServer/9

Industry, Navigation, and Transport Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Maine, New Hampshire, and Massachusetts Port Access Route Study (MNMPARS)	No	USCG and Northeast Ocean Data Portal	https://www.northeastoceandata.org/data-download/?#MarineTransportation	https://www.northeastoceandata.org/files/metadata/Themes/MarineTransportation/MNMPARSDraftReport_ExecutiveSummary.pdf
Next Generation Weather Radar (NEXRAD) Stations	Yes (with 35-km setback)	NOAA	https://www.ncdc.noaa.gov/nexradinv/map.jsp	https://www.ncei.noaa.gov/products/radar/next-generation-weather-radar
NOAA NMFS Survey Areas (Atlantic Marine Assessment Program for Protected Species (AMAPPS), Bottom Trawl, Cooperative Research Branch (CRB) Bottom Longline, Ecosystem Monitoring (EcoMon), North Atlantic Right Whale, Shrimp, Surfclam, Scallop-Shellfish, Ocean Quahog)	No	NOAA	Received directly from NMFS	https://www.fisheries.noaa.gov/national/science-data/research-surveys
Shipping Fairways, Lanes, and Zones for US Waters	Yes (with 2-nm setback from TSS sides; 5-nm setback from TSS entry)	NOAA and BOEM (i.e., marinecadastre.gov)	http://encdirect.noaa.gov/theme_layers/data/shipping_lanes/shippinglanes.zip	https://inport.nmfs.noaa.gov/inport/item/39986
Submarine Cables	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/SubmarineCableArea.zip	https://www.fisheries.noaa.gov/inport/item/66190
Vessel Monitoring System (VMS) Transits, 2012-2021	No	NOAA	Confidential; version for public distribution available at https://www.northeastoceandata.org/	https://www.northeastoceandata.org/files/metadata/Themes/CommercialFishing/VMSCommercialFishingDensity_2022.pdf
Wrecks and Obstructions	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://nauticalcharts.noaa.gov/data/wrecks-and-obstructions.html	https://www.fisheries.noaa.gov/inport/item/39961

Table 3: National Security

National Security Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Danger Zones and Restricted Areas	Yes	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/DangerZoneRestrictedArea.zip	https://www.fisheries.noaa.gov/inport/item/48876
Military Operating Area - Boston	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitaryOperatingAreaBoundary.zip	https://www.fisheries.noaa.gov/inport/item/55364
Special Use Airspace (SUA) AEGIS	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W102H	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W102L	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W103	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W104A	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W104B	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Special Use Airspace (SUA) W104C	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/MilitarySpecialUseAirspace.zip	https://www.fisheries.noaa.gov/inport/item/48898
Unexploded Ordnance Point Data	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/UnexplodedOrdnance.zip	https://www.fisheries.noaa.gov/inport/item/66208
Unexploded Ordnance Polygon Data	No	NOAA and BOEM (i.e., marinecadastre.gov)	https://marinecadastre.gov/downloads/data/mc/UnexplodedOrdnanceArea.zip	https://www.fisheries.noaa.gov/inport/item/66206

Table 4: Natural and Cultural Resources

Natural Resources Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Avian Abundance All Species Summary Product	No	Marine-life Data and Analysis Team (MDAT)	https://seamap.env.duke.edu/seamap-models-files/mdat/MDAT_AvianModels_SummaryProducts.zip	https://seamap.env.duke.edu/models/mdat/Avian/MDAT_Avian_Summary_Products_Metadata.pdf
Avian Flyways	No	USFWS	https://ecos.fws.gov/ServCat/DownloadFile/113670	https://ecos.fws.gov/ServCat/DownloadFile/60697
Birds/Whales/Turtles Persistent Hotspots	No	BOEM	Received directly from BOEM	https://noaa-edab.github.io/tech-doc/protected-species-hotspots.html Note: the Gulf of Maine suitability model will incorporate 2023 data that is an updated version of the data described above. The updated data will be published with the 2023 State of the Ecosystem Report
Coral Protection Areas (CPAs) considered by not designated by NEFMC (WJB 114 Fathom Bump, WJB 96 Fathom Bump, WJB 118 Fathom Bump, Central Jordan Basin, Lindenkohl Knoll)	No	NOAA and NEFMC	Received directly from NMFS	https://d23h0vhs26o6d.cloudfront.net/200102_Coral_Amenendment-final-with-IRFA-edits.pdf
Deep-Sea Coral and Sponge Observations	No	NOAA	https://www.ncei.noaa.gov/maps/deep-sea-corals/mapSites.htm	https://deepseacoral.data.noaa.gov/library/dscrtp-database-metadata/ ; https://data.nodc.noaa.gov/coris/library/NOAA/CRCP/other/other_cr_cp_publications/DeepSeaCoralRT/Intro_Natl_DB_for_DSCS.pdf

Natural Resources Datasets	Already Constrained/ Removed?	Source	Source/link	Metadata link
Georges Bank	Yes (BOEM removed areas from the southern edge of the Call Area following the 140-meter line of bathymetry to avoid Georges Bank)	NOAA	Received directly from NMFS	https://www.integratedecosystemassessment.noaa.gov/regions/northeast/georges-bank
Gulf of Maine Northeast Spawning Groundfish Closures (Gulf of Maine Cod Spawning Protection Area, Spring Massachusetts Bay Spawning Protection Area, Winter Massachusetts Bay Spawning Protection Area)	Yes	NOAA	https://media.fisheries.noaa.gov/2020-04/gom-spawning-groundfish-closures-20180409-noaa-garfo.zip?null	https://media.fisheries.noaa.gov/dam-migration/gom-spawning-groundfish-closures-metadata-noaa-fisheries_.pdf
Habitat Areas of Particular Concern (HAPCs) (Cashes Ledge, Great South Channel Juvenile Cod, Inshore 20 m Juvenile Cod, Jeffreys & Stellwagen, Northern Edge Juvenile Cod)	Yes	NOAA and NEFMC	https://www.habitat.noaa.gov/protection/efh/newInv/data/new_england/neweng_hapc.zip	https://idpgis.ncep.noaa.gov/arcgis/rest/services/NMFS/HAPC/MapServer/info/metadata; https://www.marinecadastre.gov/SiteCollectionDocuments/SoWhat_HAPCs_final_template.pdf
Habitat Management Areas (HMAs) considered but not designated by NEFMC (Bigelow Bight, Machias, Platts Bank 1, Platts Bank 2, Toothaker Ridge)	No	NOAA and NEFMC	Received directly from NMFS	https://cdxapps.epa.gov/cdx-enepa-ll/public/action/eis/details;jsessionid=44CC0DF1A3622D8F8B54C6173D553BE4?downloadAttachment=&attachmentId=240639
Habitat Management Areas (HMAs) (Eastern Maine HMA, Jeffreys Bank HMA, Cashes Ledge HMA, Fippennies Ledge HMA, Ammen Rock HMA, Western Gulf of Maine HMA, Closed Area II Habitat Closure Area)	Yes	NOAA	https://media.fisheries.noaa.gov/2020-04/habitat_management_areas_20180409_%282%29.zip?null	https://media.fisheries.noaa.gov/dam-migration/habitat_management_areas_metadata.pdf

Natural Resources Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Integrated Seabird Risk and Vulnerability Assessment	No	Biodiversity Research Institute (BRI)	Received directly from BRI	
Jeffreys Ledge	Yes (Depths shallower than 120 m)	NOAA	Received directly from NMFS	Received directly from NMFS
Maine Seabird Nesting Islands	No	BRI and FWS	Received directly from FWS	-
NOAA NMFS combined Habitat Layer	No	NOAA	Received directly from NMFS	In development
NOAA NMFS combined Protected Species Layer	No	NOAA	Received directly from NMFS	In development
North Atlantic Right Whale Density Model	No	MDAT	https://seamap.env.duke.edu/seamap-models-files/mdat/MDAT_MammalModels_Abundance.zip	https://seamap.env.duke.edu/models/mdat/Mammal/MDAT_Mammal_Model_Metadata.pdf
Omnibus Deep-Sea Coral Amendment (Mount Desert Rock Coral Protection Area (CPA), Outer Schoodic Ridge CPA, Jordan Basin Dedicated Habitat Research Area)	Yes	NOAA	https://media.fisheries.noaa.gov/2021-07/Omnibus_Deep_Sea_Coral_Amendment.zip?null	https://media.fisheries.noaa.gov/2021-07/Omnibus%20DeepSea%20Coral%20Protection%20Area_metadata.pdf?null
Passive Acoustic Monitoring (PAM) Data	No	NOAA	Passive Acoustic Cetacean Map. 2023. Woods Hole (MA): NOAA Northeast Fisheries Science Center v1.1.4 [April 12, 2023]. https://apps-nefsc.fisheries.noaa.gov/pacm	Passive Acoustic Cetacean Map. 2023. Woods Hole (MA): NOAA Northeast Fisheries Science Center v1.1.4 [April 12, 2023]. https://apps-nefsc.fisheries.noaa.gov/pacm
Stellwagen Bank National Marine Sanctuary	No	NOAA	https://sanctuaries.noaa.gov/library/imast/sbnms_py2.zip	https://sanctuaries.noaa.gov/library/imast/sbnms_py.html#1

Natural Resources Datasets	Already Constrained/ Removed?	Source	Source/link	Metadata link
Stellwagen Dedicated Habitat Research Area	Yes	NOAA	https://media.fisheries.noaa.gov/2020-04/dedicated_habitat_research_area_20180409_%281%29.zip?null	https://media.fisheries.noaa.gov/dam-migration/dedicated_habitat_research_area_metadata.pdf
Tracking Data for Diving Birds - Utilization Distributions from Dynamic Brownian Bridge Movement Models (50% core range contour)	No	BRI	Received directly from BRI	https://downloads.regulations.gov/BOEM-2022-0040-0037/attachment_2.pdf

Table 5: Wind Industry

Wind Industry Datasets	Already Constrained/ Removed?	Source	Source/link	Metadata link
Average Wind Speed at All Heights	No	NREL	https://www.nrel.gov/gis/assets/images/us-wind-data.zip	https://www.nrel.gov/gis/wind-resource-maps.html
3 Arc Second Digital Elevation Model (DEM) of the Gulf of Maine	No	USGS	https://pubs.usgs.gov/of/2011/1127/data/gom03_v1_0asc.zip	https://pubs.usgs.gov/of/2011/1127/GOM03_v1_0meta.htm
Data Quality Index for usSEABED Atlantic Coast Offshore Surficial Sediment	No	USGS	https://www.northeastoceandata.org/files/metadata/Themes/Habitat.zip	https://www.northeastoceandata.org/files/metadata/Themes/Habitat/usSEABEDDataQuality.pdf
Principal Ports	No	USACE	ftp://ftp.coast.noaa.gov/pub/MSP/PrincipalPorts.zip	https://inport.nmfs.noaa.gov/inport/item/56124
NOAA Medium Resolution Shoreline	20-nm setback from mainland	NOAA	https://coast.noaa.gov/hpdata/Shoreline/us_medium_shoreline.zip	https://shoreline.noaa.gov/data/datasheets/medres.html
Offshore Wind Levelized Cost of Energy (LCOE), 2027 Projection	No	NREL	https://data.nrel.gov/system/files/67/170514_OSW%20cost%20analysis_output%20file%20%281%29.xlsx	https://data.nrel.gov/submissions/67

Wind Industry Datasets	Already Constrained/Removed?	Source	Source/link	Metadata link
Request for Interest (RFI) Developer Nominations	No	BOEM	Received directly from BOEM	https://www.boem.gov/renewable-energy/state-activities/maine/gulf-maine; https://www.boem.gov/sites/default/files/images/Gulf_of_maine%20Total_nominations.png