



Collaboration and Decision Making with Ocean Mapping and Reporting Tools

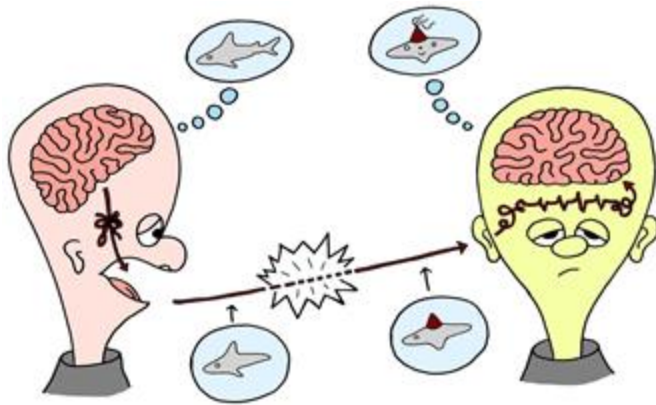
Christine Taylor (BOEM)

Gulf of Mexico Wind Task Force Meeting – 6/15/2021

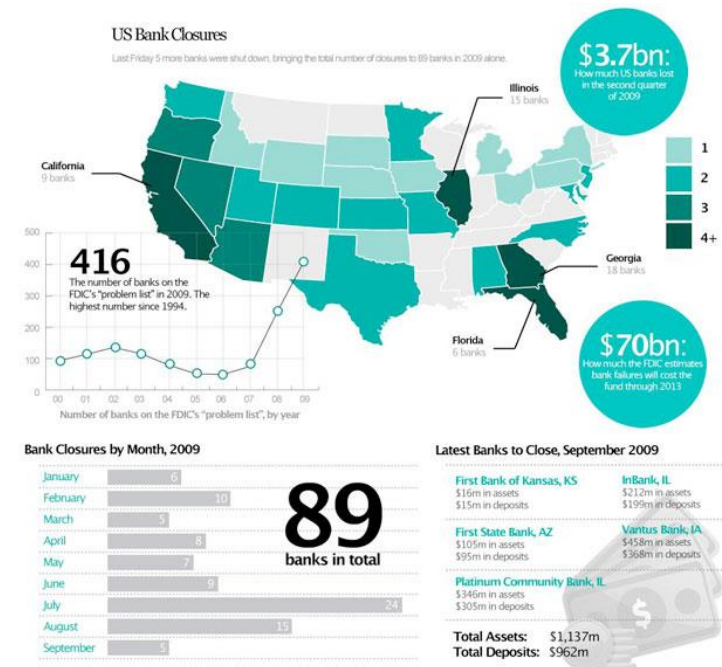


Maps...

- Are important visuals for communications
 - Get everyone on the same page quickly
- Provide a quick way to discern multiple on the ground/in the water issues at hand
 - Best locations for a project – physical conditions, distance to a resource
 - Potential conflicts for use – physical conditions, other uses, species interactions
- Often provide data that is actionable
- Easily **shared** in a digital format and can be updated with other existing data to help tell the whole story



OR



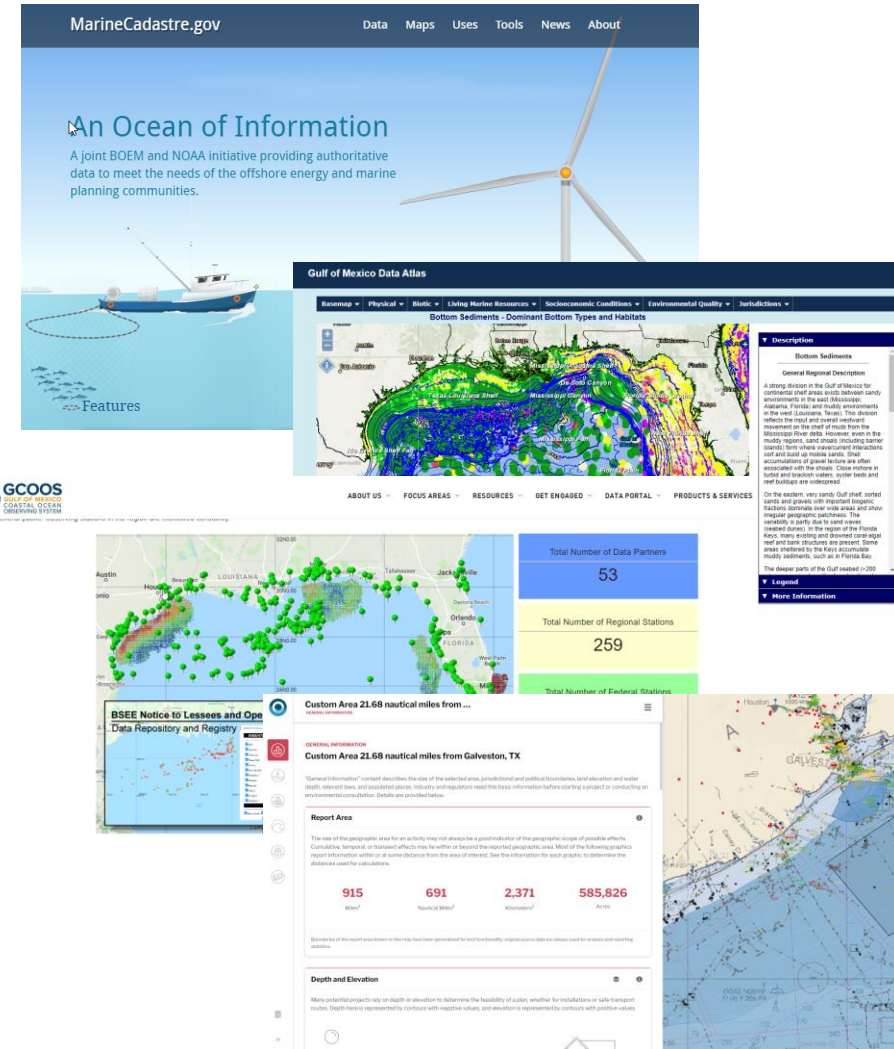
Decision Tools

- Always multiple stakeholders in any decision involving state or federally managed waters
- Best scenario is everyone is using the same and most up to date, authoritative maps and information
- States and Federal Agencies have collaborated on processes and tools to help you navigate through all the data



Maps & Decision Tools

- **MarineCadaastre.gov**
 - Authoritative, mostly federal data
 - Map viewer/ID tools/Data download
 - Historical AIS data
- **Regional Ocean Data Portals**
 - Authoritative, federal, state, local data
 - Map viewer/ID tools/Data download
 - Maps by topic area
- **Ocean Reports**
 - Map viewer/Custom Area Report/Data download/Data from MarineCadaastre.gov
 - A MarineCadaastre.gov Tool





MarineCadastr.gov Data Registry

MarineCadastr.gov

Data Registry

The MarineCadastr.gov Data Registry provides direct access to data currently available through MarineCadastr.gov. Filter the data by provider, thematic category, geographic region, and service type. If you are looking for a data set that is currently not available on MarineCadastr.gov, please email us.

MarineCadastr.gov works with data sources to provide highest quality data sets available. When using data for planning purposes, please read the associated metadata and use constraints to be sure the data will meet your needs.

Sign up to receive email updates on changes to our map services.

Search

Help

My Map 0

Currently displaying 310 Datasets

Clear Filters

Theme

Bathymetry

Birds

Corals

Economics

Elevations

Show More

Region

Alaska

Caribbean

East Coast

Great Lakes

Gulf of Mexico

Show More

Provider

Bureau of Indian Affairs

Bureau of Ocean Energy Management

DOE National Renewable Energy Laboratory

Department of Energy Office of Energy Efficiency and Renewable Energy

Currently displaying 191 Datasets

Search traffic

Help

My Map 8

Clear Filters

2009 - 2020 National AIS at 1 Minute Intervals

MarineCadastr.gov

+ Add to Map

2009-2010 Commercial Vessel Density (October - AIS)

NOAA Office of Coast Survey

+ Add to Map

2011 Vessel Density

MarineCadastr.gov

+ Add to Map

2011 Vessel Density: Cargo

MarineCadastr.gov

+ Add to Map

2011 Vessel Density: Fishing

MarineCadastr.gov

+ Add to Map

2011 Vessel Density: Passenger

MarineCadastr.gov

+ Add to Map

2011 Vessel Density: Pleasure Craft and Sailing

MarineCadastr.gov

+ Add to Map

Layers do not draw at all scales. Please zoom in or out to view layers

(Remove Layer)

Artificial Reefs

MarineCadastr.gov

(Remove Layer)

Atlantic Seafloor Sediment (CONMAP)

U.S. Geological Survey

Open in ArcGIS.com

Open in National Viewer

Clear Layers



MarineCadastre.gov – Map Viewer

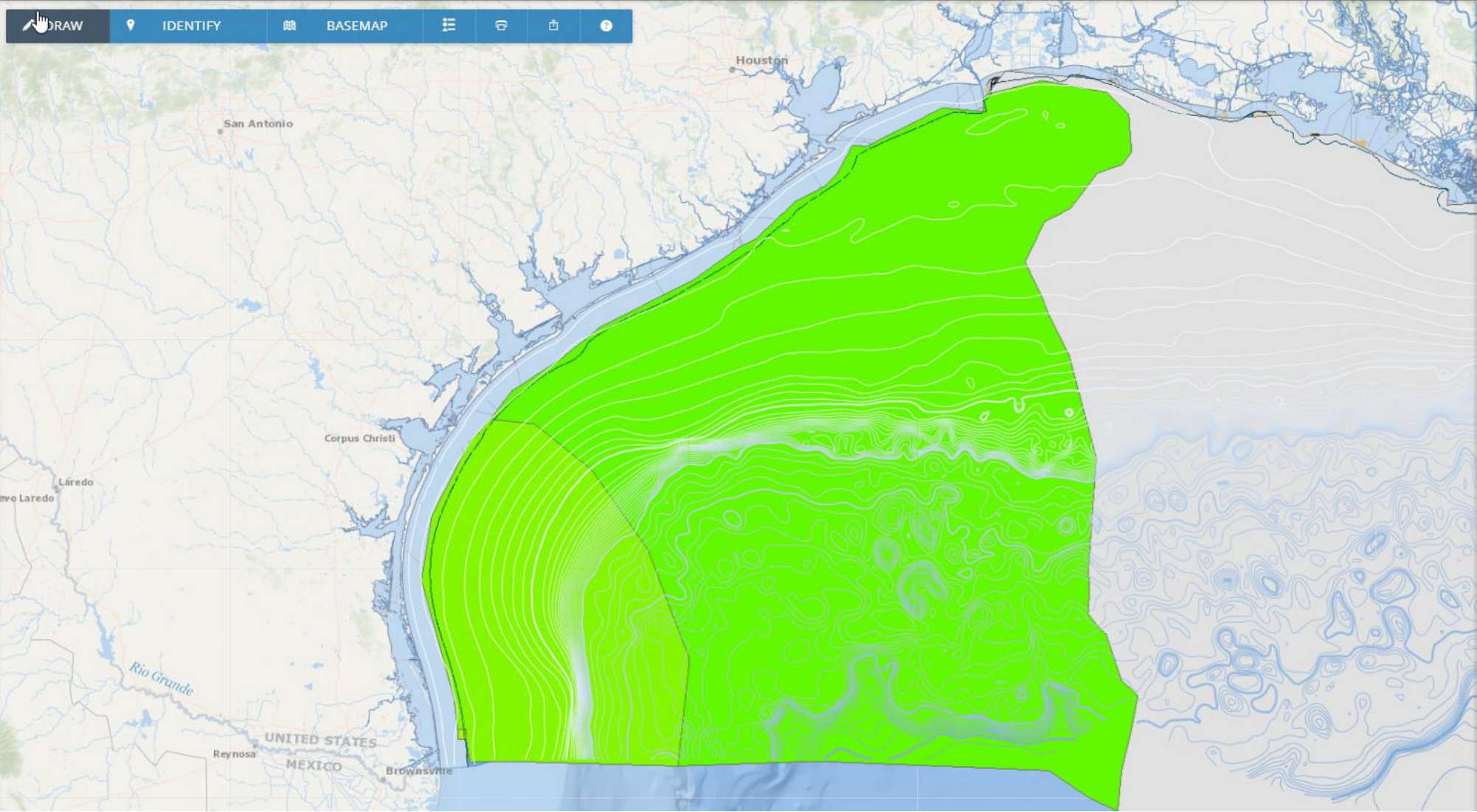
Marine Cadastre National Viewer

X HIDE LAYERS

DRAW

IDENTIFY

BASEMAP



X

Gulf of Mexico Offshore Wind Resource Potential

DOE NATIONAL RENEWABLE ENERGY LABORATORY

DATA

SERVICES

MORE INFO

DESCRIPTION

These data depict annual average wind speed (meters per second) at 100 meters above sea level for the Gulf of Mexico offshore areas of the United States, for a seven year period from 2007 to 2013. The sampling resolution of 2km was generalized into polygons shown in the legend classes. Data include both point and polygon data sets intended to provide broad estimates of wind speed variation for the purposes of identifying potential offshore wind energy sites. They are not intended to provide specific estimates of energy production for the purpose of making offshore wind project investment or financing decisions in specific locations. The source data is National Renewable Energy Laboratory's Wind Integration National Dataset (WIND) Toolkit. Please see metadata for more detailed process information. Monthly averages are available within the downloads menu, either as GIS data or Esri REST map services.

VISIBLE SCALE RANGE

0 to 0

LEGEND PATCH

1.0 - 3.5
3.6 - 4.0
4.1 - 4.5
4.6 - 5.0
5.1 - 5.5
5.6 - 6.0
6.1 - 6.5
6.6 - 7.0
7.1 - 7.5
7.6 - 8.0
8.1 - 8.5
8.6 - 9.0
9.1 - 9.5



MarineCadastre.gov – Map Viewer

Marine Cadastre National Viewer

DRAW

IDENTIFY

BASEMAP

Copy the link below to share.

<https://bit.ly/2RbbQMm>

IMPORT COMMODITIES (TONS)	25454599
EXPORT COMMODITIES (TONS)	19816410
SHAPE	Point

VIEW IN ARCGIS.COM

esri

HIDE LAYERS

ALL LAYERS

ACTIVE LAYERS

Drag to reorder layers

Zoom to active layer extents

☒

US Historical Lighthouses

LAYER OPACITY

☒

Shipping Lanes and Regulations

LAYER OPACITY

☒

Principal Ports

LAYER OPACITY

☒

Coastal Energy Facilities

LAYER OPACITY

☒

Gulf of Mexico Outer Continental Shelf Blocks with Significant Sand Resources

LAYER OPACITY

☒

Oil and Natural Gas Wells

LAYER OPACITY

☒

Selected Pipelines

LAYER OPACITY

☒

Seismic Water Bottom Anomalies

LAYER OPACITY

☐

AIS Vessel Transit Counts 2018

LAYER OPACITY

☒

Gulf of Mexico Offshore Wind Resource Potential

LAYER OPACITY



MarineCadastre.gov – Map Viewer

The screenshot displays the MarineCadastre.gov Map Viewer interface. At the top, the title 'MarineCadastre.gov – Map Viewer' is visible. The interface includes a top navigation bar with 'ArcGIS' and 'My Map' options, and a search bar on the right. A left sidebar contains a 'Contents' panel with a list of map layers, including 'BOEM Seismic Water', 'MMC Layers - OCS O', 'BOEM OCS Areas W', 'MMC Layers - OCS D', 'Planning and Administ', 'Marine Transportation', 'MMC Layers - Submerged Lands Act Boundary', 'GOM Deepwater Bathymetry Contours - Depth', 'US Gulf Coast Monthly Offshore Wind Speed - Gulf of Mexico Wind Speed - Annual Average', 'Planning and Administration - Marine Minerals Lease Areas', 'MMC Layers - BOEM Oil and Gas Leases', 'AIS Vessel Transit Counts 2018', 'Coastal Energy Facilities', and 'Principal Ports'. A central dialog box titled 'Add Layer from File' is open, prompting the user to 'Locate the file you want to import.' and listing supported file formats: Shapefile (ZIP archive containing all shapefile files), CSV or TXT files with optional address, place or coordinate locations (comma, semi-colon or tab delimited), GPX (GPS Exchange Format), and GeoJSON (open standard format for simple geographical features). The dialog box also includes a 'File:' field with a 'Choose File' button and 'No file chosen' text, and two buttons at the bottom: 'IMPORT LAYER' and 'CANCEL'. The background map shows a coastal area with various colored overlays representing different data layers.

ArcGIS My Map

Open in new Map Viewer New Map Christine

Details Add Basemap

About Content Legend

Contents

- ☒ BOEM Seismic Water
- ☒ MMC Layers - OCS O
- ☒ BOEM OCS Areas W
- ☒ MMC Layers - OCS D
- ☒ Planning and Administ
- ☒ Marine Transportation
- ☒ MMC Layers - Submerged Lands Act Boundary
- ☐ GOM Deepwater Bathymetry Contours - Depth
- ☒ US Gulf Coast Monthly Offshore Wind Speed - Gulf of Mexico Wind Speed - Annual Average
- ☒ Planning and Administration - Marine Minerals Lease Areas
- ☒ MMC Layers - BOEM Oil and Gas Leases
- ☐ AIS Vessel Transit Counts 2018
- ☒ Coastal Energy Facilities
- ☒ Principal Ports

File: Choose File No file chosen

IMPORT LAYER CANCEL



OceanReports

The background is a composite image featuring a large view of Earth from space at the top, a NOAA research ship on the left, a US Coast Guard aircraft on the right, a red and white buoy in the middle right, and an underwater scene with divers, fish, and coral at the bottom.

Unlocking Ocean Intelligence, Empowering Ocean Decisions

<https://marinecadastre.gov/oceanreports>

Ocean Reports Components

- Draw your own area – results in about 2 seconds
 - Move it around if you don't get the results you need
 - Or use known coordinates



OceanReports
A BOEM/NOAA PARTNERSHIP

Know what's happening in your ocean area

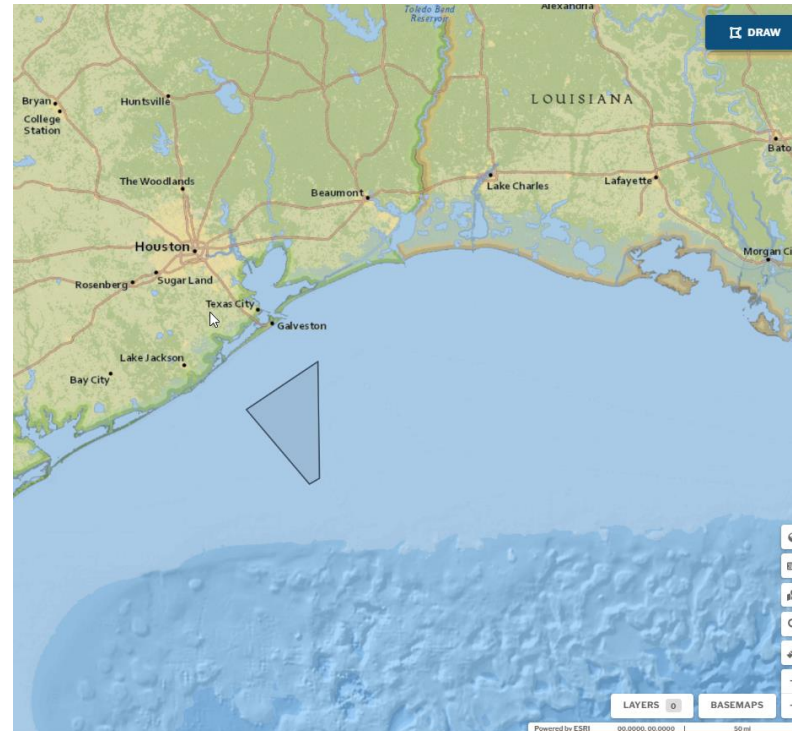
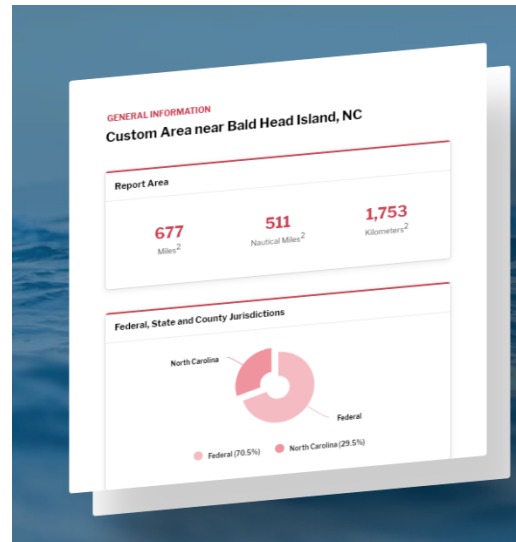
Draw a custom area anywhere in U.S. waters or pick from a predefined list of locations to get instant custom reports. Reports include descriptive infographics and supporting data that can be used for offshore planning, permitting, environmental review, public relations, and more. New features allow printing by industry, sharing, and adding custom coordinates.

Report Topics Include

General Information	Oceanographic and Biophysical
Energy and Minerals	Transportation and Infrastructure
Natural Resources and Conservation	Economics and Commerce

DRAW CUSTOM AREA

VIEW QUICK REPORTS









CREATE A POLYGON WITH COORDINATES

Enter a minimum of four geographic coordinate pairs, each on their own line. The first and last pair must be the same. For example:

```
-70.2301, 41.8634  
-70.4360, 41.8204  
-70.8178, 41.4344  
-70.4690, 41.2881  
-70.2301, 41.8634
```



6 Chapters, 80+ layers, 67 infographics

Chapter Theme	Symbol	Infographic Reports Available			
General Information		Report Area Depth/Elevation Populated Places Federal/State/County Jurisdictions	Congressional and Legislative Districts Federal Statutes Tribal Lands		
Energy & Minerals		Offshore Wind Potential Offshore Wind Planning Areas Offshore Wind Energy Leases OCS Revenue Sharing Areas Oil and Gas Potential	Oil and Gas Planning Areas Oil and Gas Leases Energy Facilities OCS Blocks with Sand Resources	Beach Nourishment Projects Surficial Sediment Texture Ocean Disposal Sites Federal Sand and Gravel Leases	
Transportation & Infrastructure		AIS Vessel Count Vessel Routing N. Atlantic Right Whale Management Areas Anchorage Areas Pilot Boarding Areas	Ports Coastal Maintained Channels Danger Zones/Restricted Areas Unexploded Ordnances Formerly Used Defense Sites	Wrecks/Obstructions Cables and Pipelines Wastewater Outfalls Aquaculture Oil Lightering Zones	Deepwater Ports Oil/Gas Platforms Oil/Gas Wells
Natural Resources		Endangered Species ESA-Critical Habitat Designations Habitat Areas of Particular Concern Managed Highly Migratory Species Audubon Important Bird Areas	Protected Areas Artificial Reefs Shallow Corals Deep-sea Sponge/Coral Obs. Deep-sea Coral Habitat Suitability	Historical Lighthouses Cetacean Biologically Important Areas	
Oceanographic & Biophysical		Wave Height, Period and Direction Wind Speed and Direction Current Speed and Direction at Depths Sea Surface Height Water Temp/Salinity	Nitrates Phosphates Silicates Aragonite Light Attenuation KD PAR	Light Attenuation KD 490 Chlorophyll a Concentration	
Economics & Commerce		Ocean Job Contributions GDP of Ocean Economy Contributions by Sector	Census Statistics Fishing Economic Value (North and Mid Atlantic)		



Custom Area 21.68 nautical miles from ...

GENERAL INFORMATION



Congressional and Legislative Districts



1

Congressional Districts

5

State Districts

US Congressional Districts



State Senate



State House



Showing all districts within 24 nautical miles of the report area, or the closest one if none are within 24 nautical miles.

Federal Statutes



Federal statutes cover a broad variety of legal restrictions and permitted activities within state and U.S. federal waters. It is important to know these statutes and where they are applicable before planning for any activities in these waters. Those listed below apply within the area of interest outlined in this report. Please note that other federal statutes with complex or uncertain geographic boundaries may exist in the area and can be found by using the Ocean Law Search tool.

Act to Prevent Pollution from Ships and MARPOL 73/78

Marine Debris Research, Prevention and Reduction Act

Clean Water Act

Marine Mammal Protection Act

Coastal Zone Management Act

National Environmental Policy Act

Comprehensive Environmental Response, Compensation, and Liability Act

National Historic Preservation Act

Endangered Species Act

National Marine Sanctuaries Act

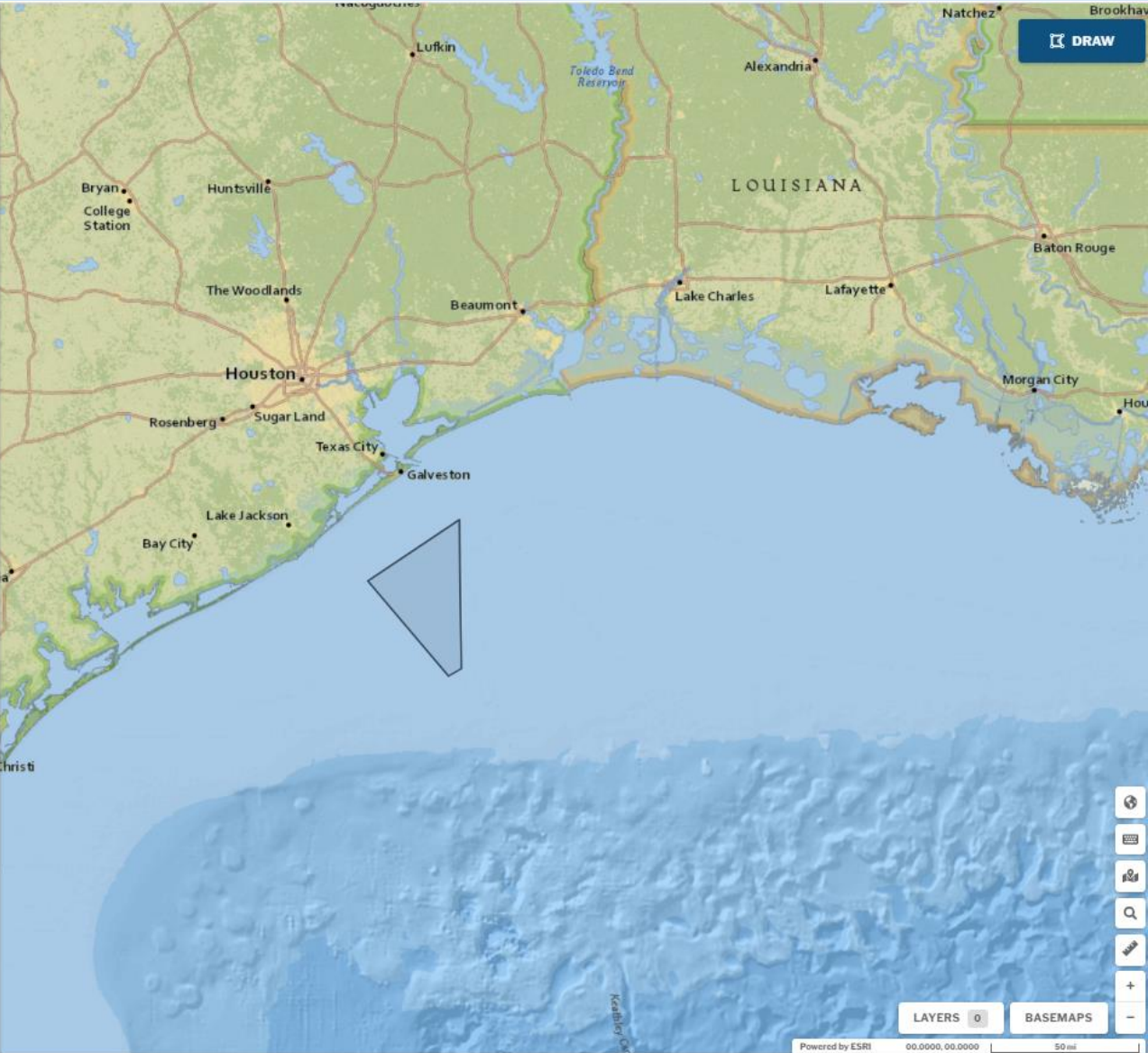
Energy Policy Act








Outer Continental Shelf Lands Act

Magnuson-Stevens Fishery Conservation and Management Act

Showing federal statutes that apply inside the report area.

Indian Land Areas






Custom Area 21.68 nautical miles from ...
ENERGY AND MINERALS


current U.S. energy needs. America's coastal and marine waters also provide sand and gravel, which is used to restore hundreds of miles of coastline and protect billions of dollars in infrastructure and ecological habitats from coastal erosion and destructive storms.

Offshore Wind Resource Potential


Areas with annual average wind speeds of 7 meters per second (m/s) and greater, at 100-meters (328-feet) height, have sufficient wind resources suitable for offshore development. Our nation's offshore wind resource potential, with development, is predicted to be more than 2,000 gigawatts of capacity per year. This is nearly double the nation's current capacity. If 1 percent of the potential available areas were built by 2050, they could support 160,000 jobs, reduce power sector greenhouse gas emissions by 1.8 percent. Floating wind platforms could potentially provide access to the nation's greatest wind capacity, expanding this potential.



7.50
Weighted Average (m/s)



2,314,800
Potential Houses Supported



2,370,000
Area with suitable wind resource

Outstanding (9.0+)

Superb (8.5)

Excellent (8.0)

Good (7.5)

Fair (7.0)

Unsuitable (< 7.0)

Outstanding (9.0+)

Superb (8.5)

Excellent (8.0)

Good (7.5)

Fair (7.0)

Unsuitable (< 7.0)

Additional Information

In 2016, the average annual electricity consumption for a U.S. residential utility customer was 10,766 kilowatt hours (kWh), an average of 897 kWh per month. Louisiana had the highest annual electricity consumption at 14,881 kWh per residential customer, and Hawaii had the lowest at 6,061 kWh per residential customer.

(Turbine Name Plate Capacity (Based on National Renewable Energy Laboratory conversion 3MW/km2) * Hours per year (8,760) * Capacity Factor (.4)) / Average Household Electricity Use (in megawatt hours per year)

[1 U.S. Department of Energy offshore wind potential](#)

[2 U.S. Energy Information Administration FAQ](#)

One meter per second is equivalent to approximately 2.25 miles per hour.

Check the metadata page for more information, or use the download link to get the latest available geospatial layer.

Legend

Outstanding (9.0+)

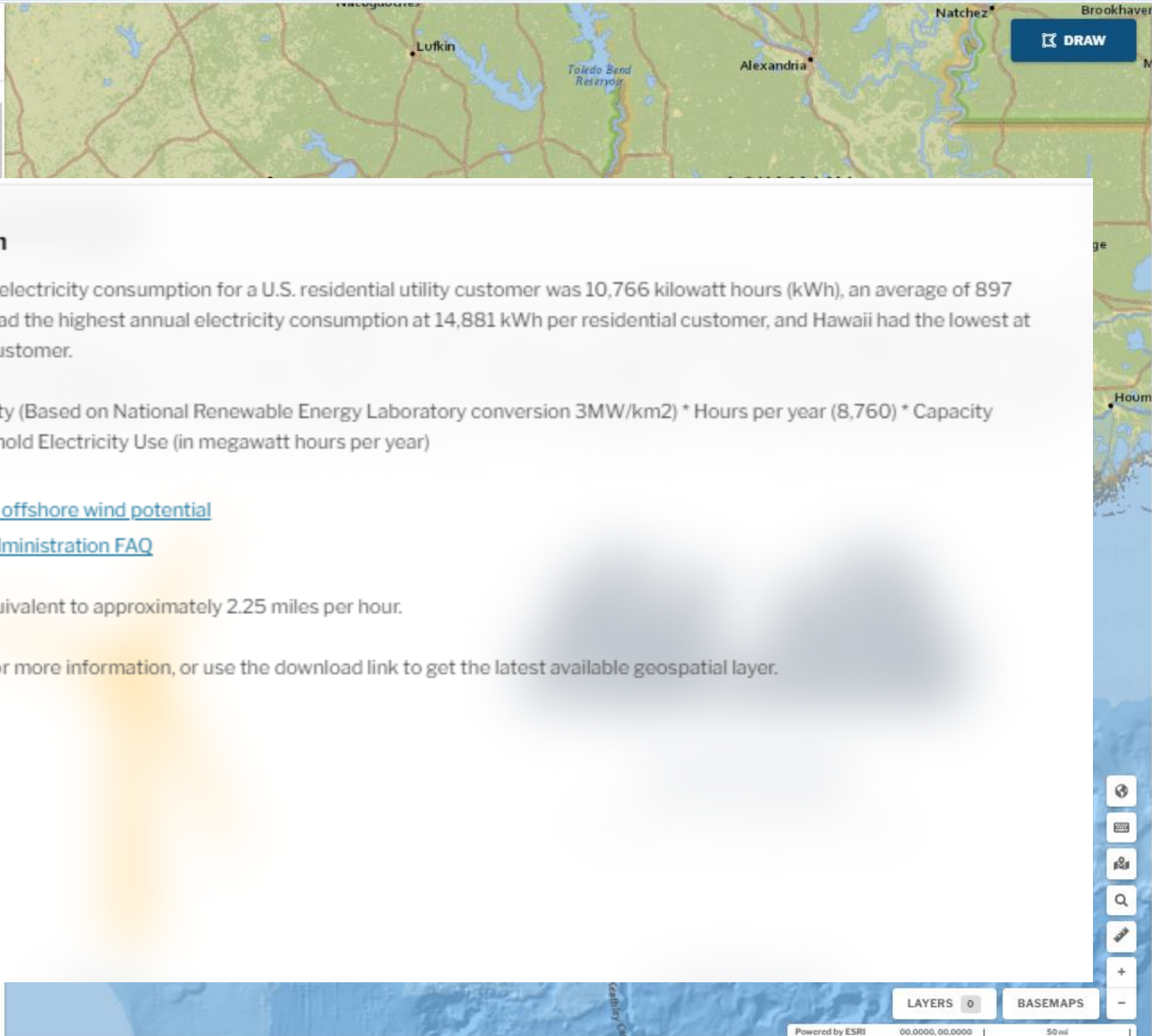
Superb (8.5)

Excellent (8.0)

Good (7.5)

Fair (7.0)

Unsuitable (< 7.0)



DRAW

Layers: 0








Basemaps

Powered by ESRI

00.0000, 00.0000


50 mi

Slide 14





Custom Area 21.68 nautical miles from ...

NATURAL RESOURCES AND CONSERVATION



Deep-Sea Coral Habitat Suitability





Deep-sea corals, also known as cold-water corals, create complex communities that provide habitat for grouper, snapper, and sea bass. The map legend indicates the likelihood of deep-sea coral habitat occurrence characteristics and on observational data for individual hard and soft coral species. Verification is needed in areas identified as suitable habitat.

Medium

Stony Coral

Showing average suitability value inside the report area.

Historical Lighthouses





Historical lighthouses along our coasts have strong cultural significance. Many of these structures still stand, and a few are operational. Many lighthouses are protected and serve as tourist attractions. Some offer the experience of ascending to the top to look over the seascape. Planners might want to consider the view from historical buildings when considering development of structures within sight of the top of a lighthouse.


Name	Height (ft)	Distance (mi)
Bolivar Point Lighthouse Use	117	27.66

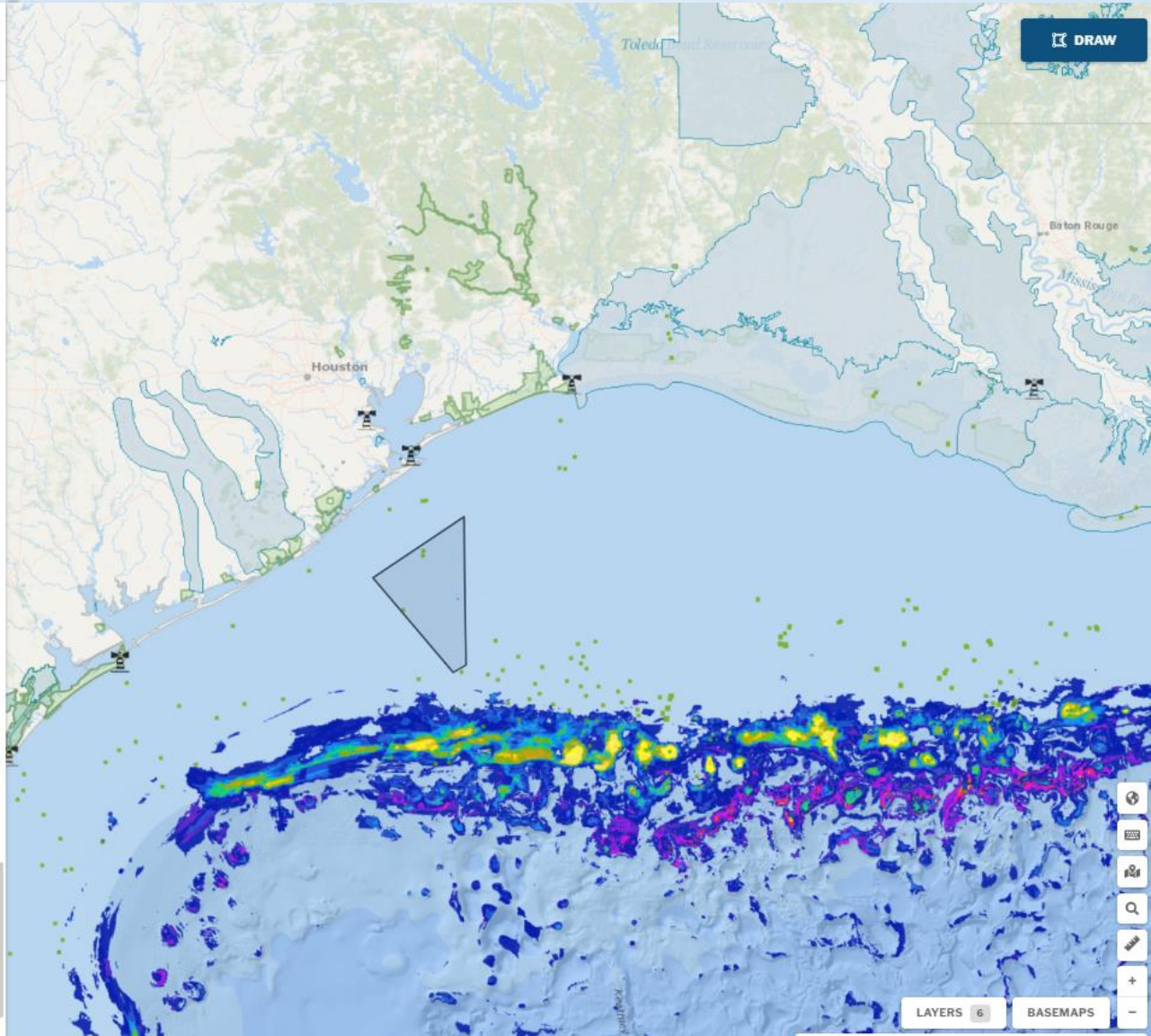
Showing the names and heights of historic lighthouses inside the report area and within 30 nautical miles.

Coastal Barrier Resource Areas



The Coastal Barrier Resources Act supports the conservation of hurricane-prone, biologically rich coastal barriers by restricting federal expenditures that encourage development, such as federal flood insurance. Relatively undeveloped coastal barriers along the Atlantic and Gulf coasts make up the John H. Chafee Coastal Barrier Resources System. Areas within this system can be developed if private developers or other nonfederal parties bear the full cost.





LAYERS 6

BASEMAPS

Powered by ESRI 00.0000, 00.0000 50 mi

Slide 15



Custom Area 21.68 nautical miles from ...

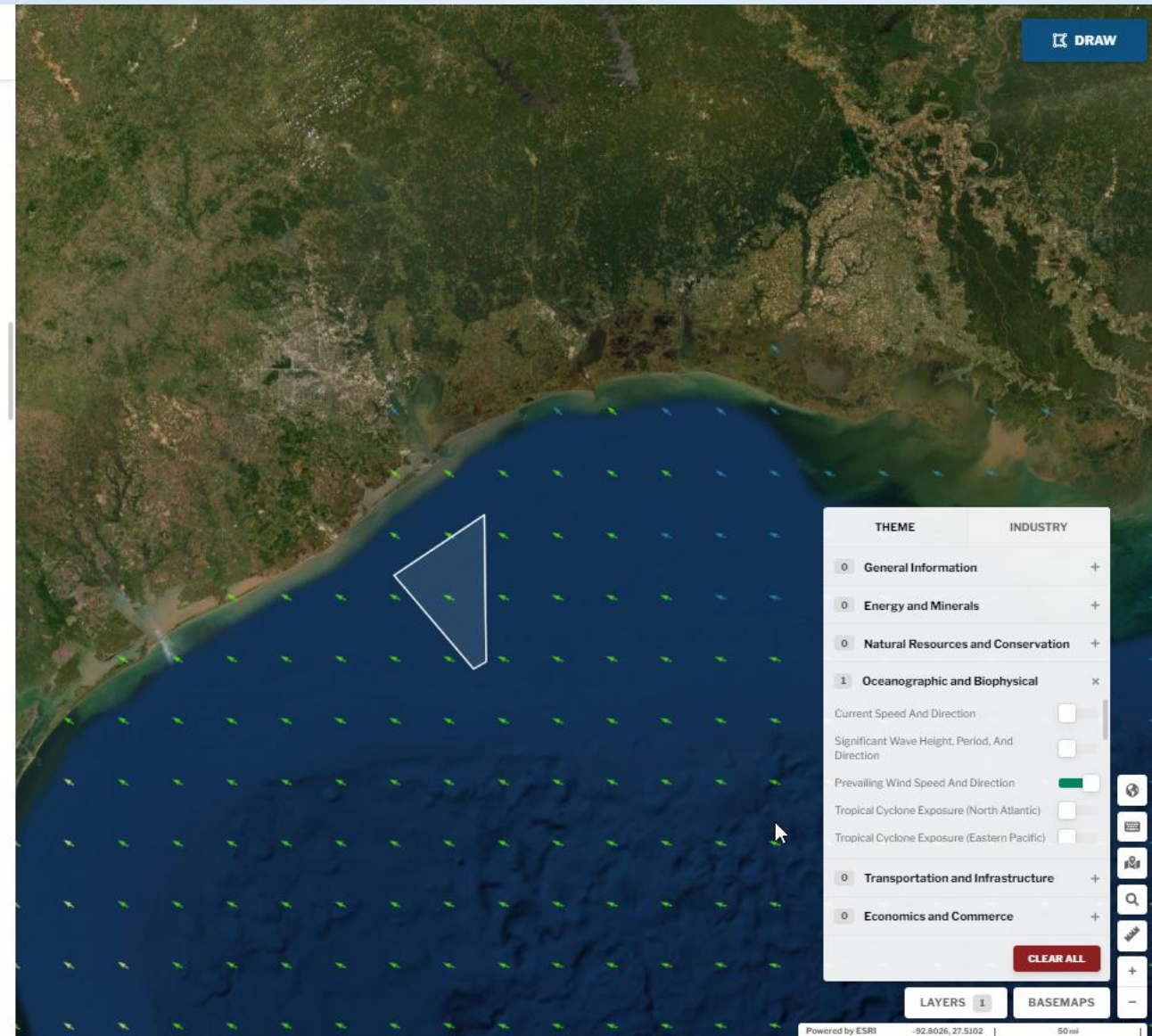
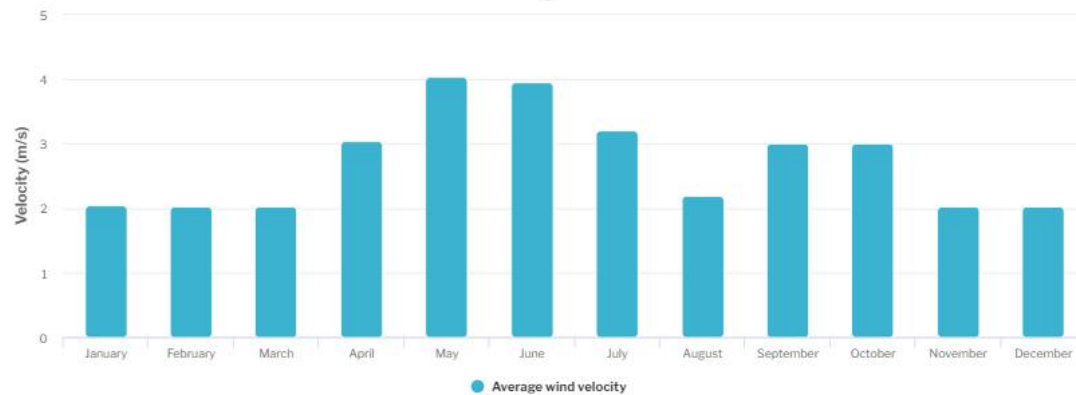
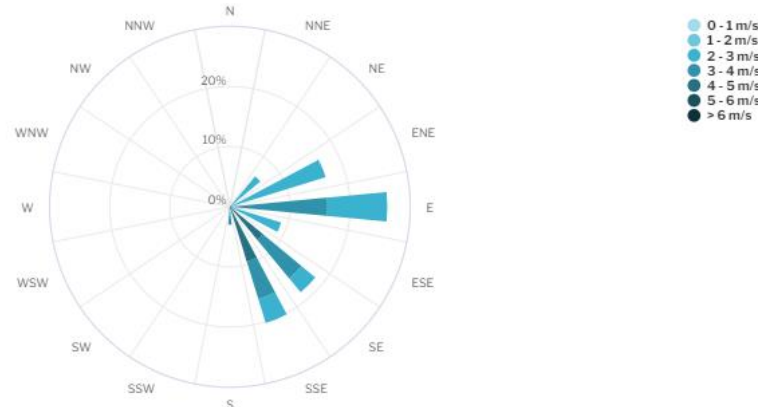
OCEANOGRAPHIC AND BIOPHYSICAL



Prevailing Wind Speed and Direction



Wind speed is presented in meters per second of wind at the surface of the ocean. Wind direction is reported by the direction from which it originates (e.g., a northerly wind blows from north to south). Knowledge of local wind conditions are important in determining vessel accessibility to a location as well as compatible areas for the design of in-water infrastructure. The wind rose and mapped wind vectors indicates the direction that wind is coming from (arrowheads on the map indicate the direction that wind is moving towards).




THEME	INDUSTRY
0 General Information	+
0 Energy and Minerals	+
0 Natural Resources and Conservation	+
1 Oceanographic and Biophysical	x
Current Speed And Direction	
Significant Wave Height, Period, And Direction	
Prevailing Wind Speed And Direction	
Tropical Cyclone Exposure (North Atlantic)	
Tropical Cyclone Exposure (Eastern Pacific)	
0 Transportation and Infrastructure	+
0 Economics and Commerce	+
CLEAR ALL	

LAYERS 1

BASEMAPS

Powered by ESRI -92.8026, 27.5102 50 mi



Custom Area 21.68 nautical miles from ...
TRANSPORTATION AND INFRASTRUCTURE

Showing the number of deepwater ports inside the report area and within one nautical mile.

Oil and Gas Platforms

Oil platforms are structures or ships that are used for oil and gas exploration, drilling, extraction, storage, and processing before delivering it via pipeline or ship to a port or processing facility. Platforms are often temporary structures that are in place only as long as drilling is active. Once oil is flowing, the well pipes are extended and routed to the nearest pipeline and the platform is removed. Therefore, platforms are an indication of active oil and gas exploration. Additional consultation with Bureau of Safety and Environmental Enforcement is recommended when considering other activities in federal waters containing oil and gas platforms. States should be consulted if activities are considered in state waters containing oil and gas platforms.

Count	Status	Type
2	Active	Unknown
1	Inactive	Unknown

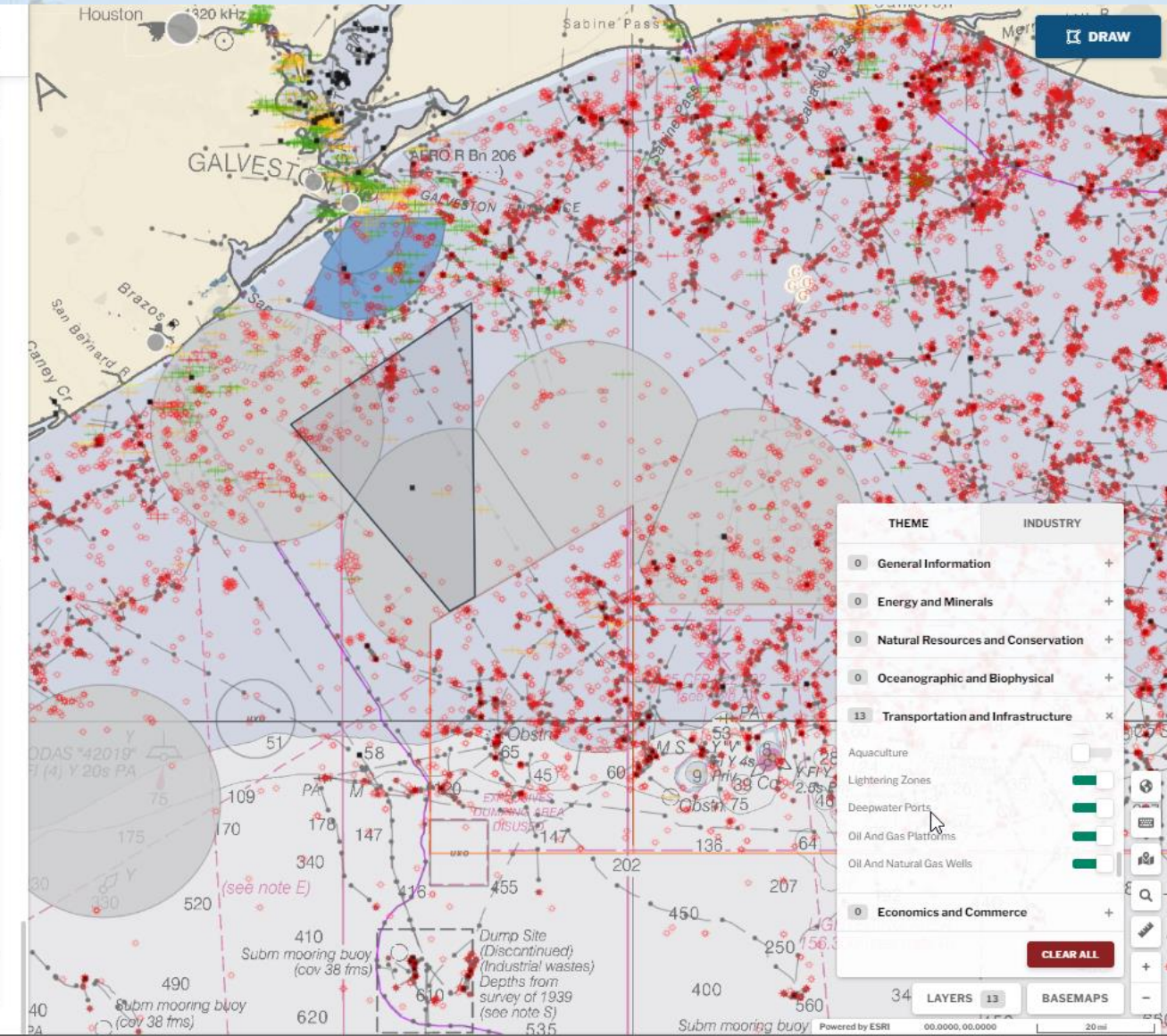
Showing the number of oil and gas platforms by status and type inside the report area and within 5 nautical miles.

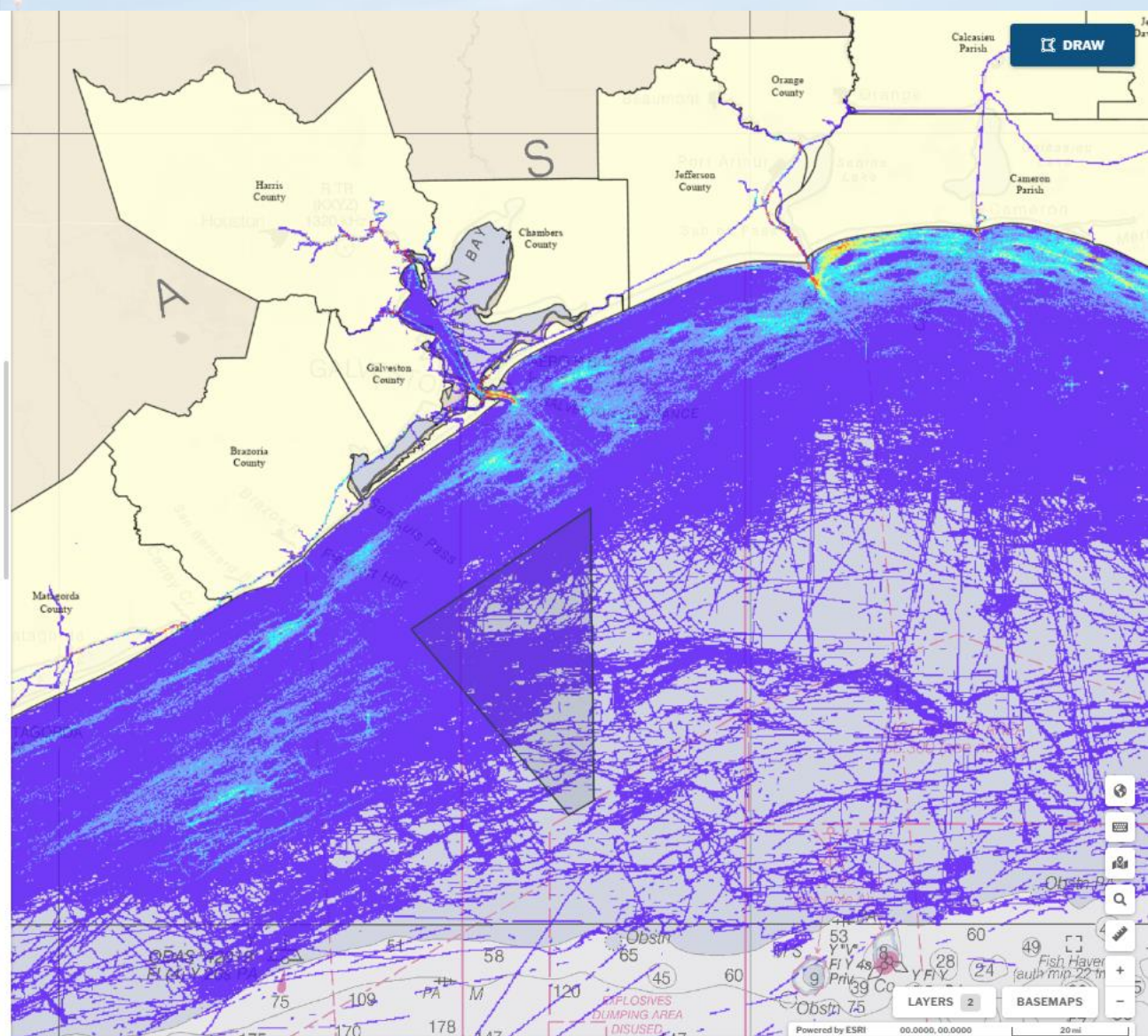
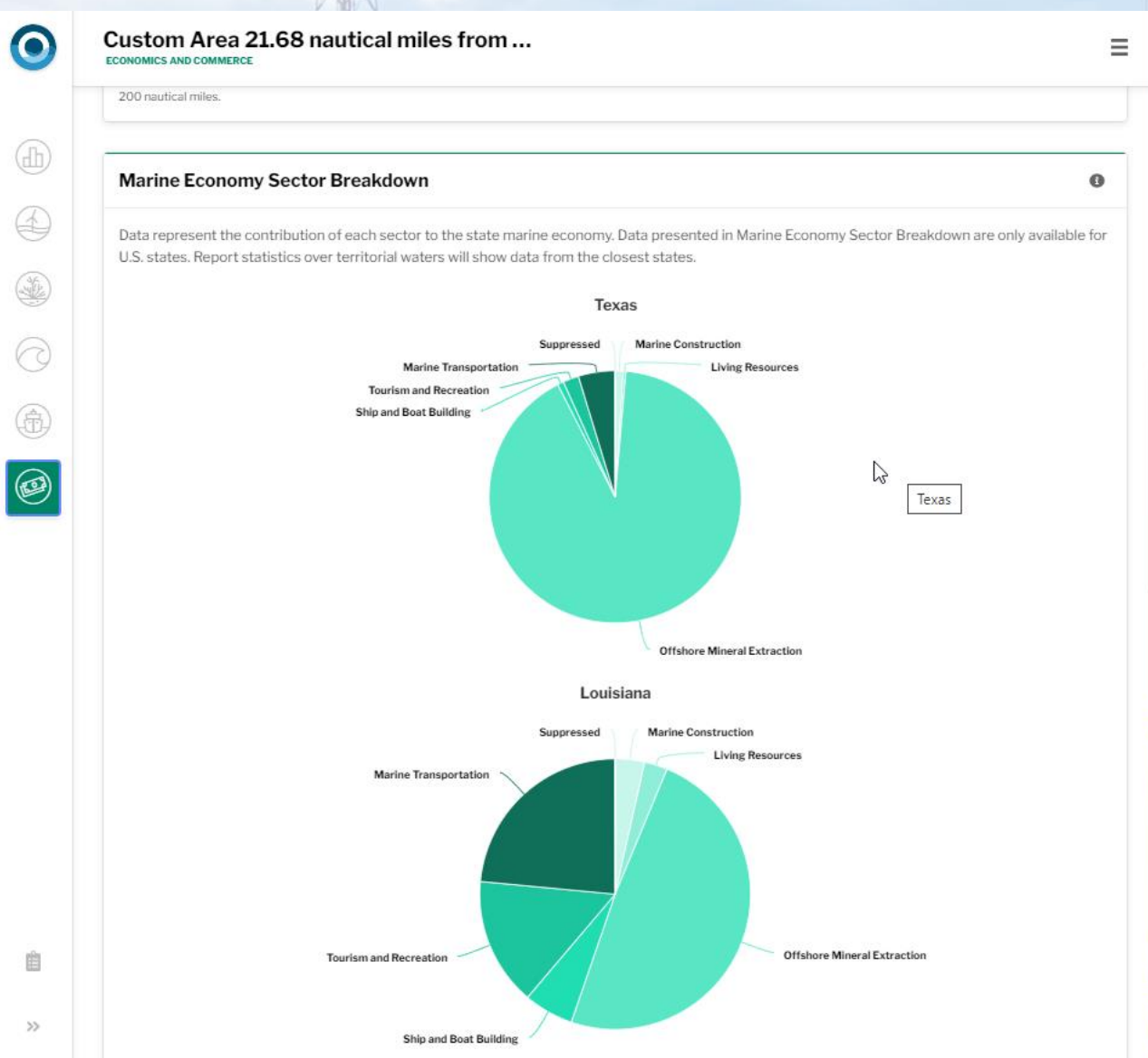
Oil and Natural Gas Wells

Oil and gas wells are the holes drilled deep into the seafloor for the purpose of locating and delivering oil or gas to the surface. Well locations show wells that are active, abandoned, or in transition. It is important to know what type of well is within the area of interest. Contact the Bureau of Safety and Environmental Enforcement before beginning a project in an area around a well location. Information obtained during drilling can provide additional information about the resources around the well path.

Count	Status	Type
80	Permanently abandoned	Development
4	Borehole sidetracked	Development
103	Permanently abandoned	Exploratory
12	Borehole sidetracked	Exploratory

Showing the number of oil and natural gas wells by status and type inside the report area and within 1 nautical mile.

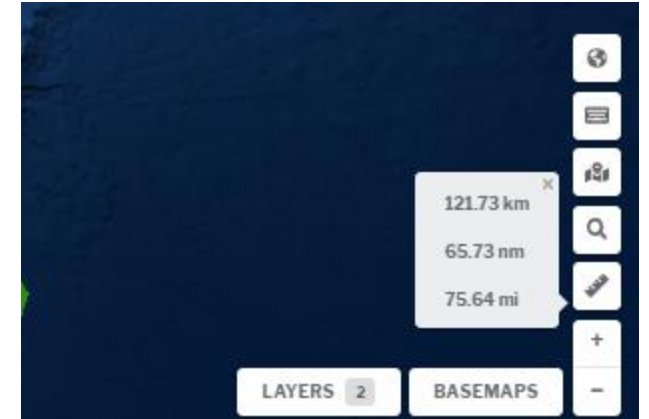




Available tools

- **Special Tools**

- Coordinate entry
- Return to original location on map
- Measure distances
- Change base maps
- Display map layers



Available tools



OceanReports
A BOEM/NOAA PARTNERSHIP

ECONOMICS AND COMMERCE

Custom Area 26.56 nautical miles from Winter Harbor, ME

- Print a pdf version
- Share with others/keep for later
- Investigate further (metadata, downloads)

OceanReports
A BOEM/NOAA PARTNERSHIP



Metadata/Data Downloads

This page provides information on the data used in this application. The listing below is broken down by theme and associated data layers. For each of the layers listed, the layer name is hyperlinked to the metadata record, and an associated data download link and the name of the data provider are provided.

General Information

Dataset Name	Provider	Download
Bathymetry DEM	NOAA National Centers for Coastal Ocean Science	Download
Bathymetry Contours	MarineCadastre.gov	Download
Coastal Populated Places	MarineCadastre.gov	Download
Federal and State Waters	MarineCadastre.gov	Download
Coastal States	U.S. Census Bureau	Download
Coastal Counties	U.S. Census Bureau	Download
US Congressional Districts	NOAA Office for Coastal Management	Download
State Legislative Districts: House	U.S. Census Bureau	Download
State Legislative Districts: Senate	U.S. Census Bureau	Download
Federal Statutes	NOAA Office for Coastal Management	Download
Indian Lands	Bureau of Indian Affairs	Download


Energy & Minerals

Dataset Name	Provider	Download
Offshore Wind Resource Potential (Atlantic)	Bureau of Ocean Energy Management	Download




○ Print Report

- Gives you all the infographics and links
- Allows you to choose to turn off infographics you don't need
- Or you can choose a preset grouping by industry

 **OceanReports**
A BOEM/NOAA PARTNERSHIP

<https://marinecadastre.gov/oceanreports>



Ocean Report for Custom Area
21.68 nautical miles from
Galveston, TX

June 1, 2021

Full

Oil/Gas

Renewable

Sand/Minerals

Aquaculture

Aquaculture

Aragonite

Artificial Reefs

Atlantic Mean Fishing Economic Value (2007-2012)

Audubon Important Bird Areas

Beach Nourishment Projects

BOEM Offshore Oil And Gas Resources

Census Statistics

Renewable

Report Type

47

Infographics

CANCEL

PRINT



Bureau of Ocean Energy
Management

BOEM.gov



Christine Taylor | Christine.taylor@boem.gov | 703-787-1606

MarineCadastre.gov

MarineCadastre.gov/OceanReports