

# BOEM

Bureau of Ocean Energy  
Management

## **Collaboration and Decision Making with Ocean Mapping and Reporting Tools**

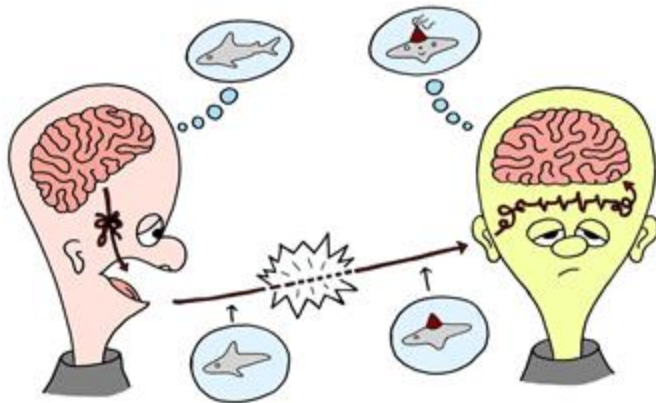
Christine Taylor (BOEM)

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

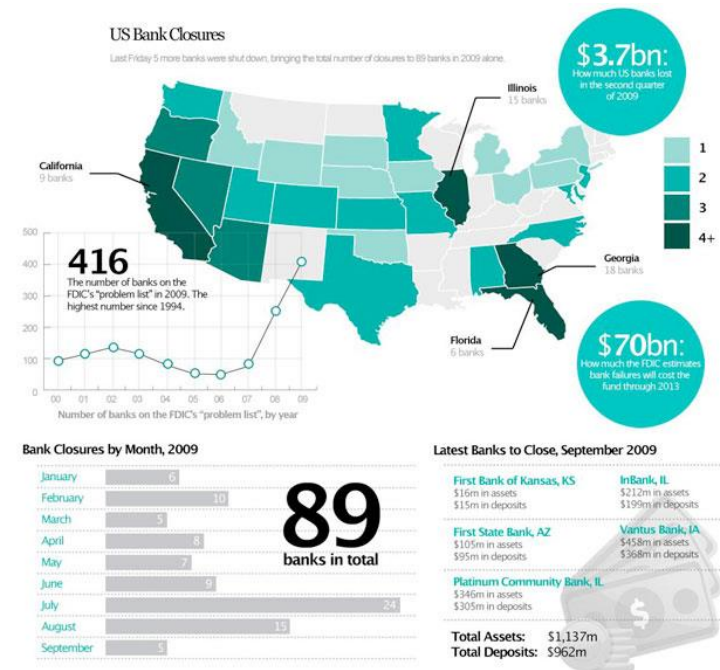


# Maps...

- 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





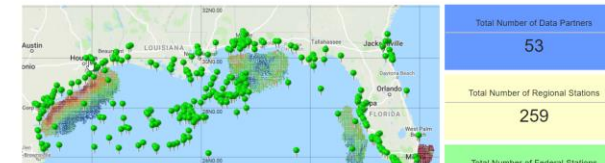
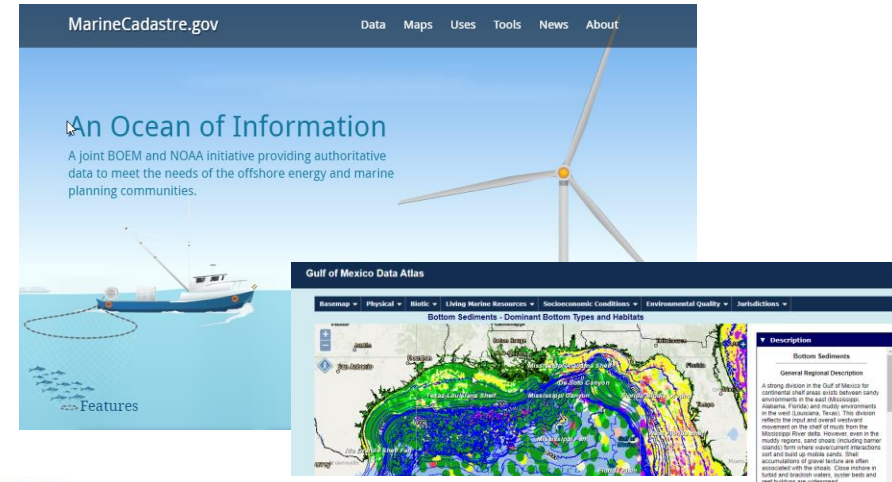
# Decision Tools

- 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



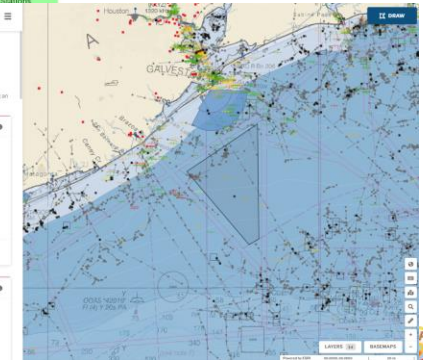
# Maps & Decision Tools

- **MarineCadastr.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 MarineCadastr.gov
  - A MarineCadastr.gov Tool



The screenshot shows a web interface for a "BSEE Notice to Lessees and Open Data Repository and Registry" tool. It includes a "Custom Area 21.68 nautical miles from Galveston, TX" section with a "Report Area" table:

915	691	2,371	585,826
Miles <sup>2</sup>	Nautical Miles <sup>2</sup>	Kilometers <sup>2</sup>	Acres







# MarineCadastr.gov Data Registry

The screenshot displays the MarineCadastr.gov Data Registry interface. At the top, the navigation bar includes 'Data', 'Maps', 'Uses', 'Tools', 'News', and 'About'. The main header shows 'Currently displaying 191 Datasets'. A search bar contains the text 'traffic'. A modal window is open in the center, titled 'MarineCadastr.gov (Remove Layer)', listing several layers: 'Anchorage Areas', 'Artificial Reefs', and 'Atlantic Seafloor Sediment (CONMAP)'. Each layer entry includes a warning message: 'Layers do not draw at all scales. Please zoom in or out to view layers'. The modal also features buttons for 'Open in ArcGIS.com', 'Open in National Viewer', and 'Clear Layers'. On the left side of the interface, there is a sidebar with 'Currently displaying 310 Datasets' and a 'Clear Filters' button. Below this, there are sections for 'Theme', 'Region', and 'Provider'. The main content area on the right lists various datasets, such as '2009 - 2020 National AIS at 1 Minute Intervals', '2009-2010 Commercial Vessel Density (October - AIS)', and '2011 Vessel Density'. Each dataset entry includes a title, a provider name, and an 'Add to Map' button.



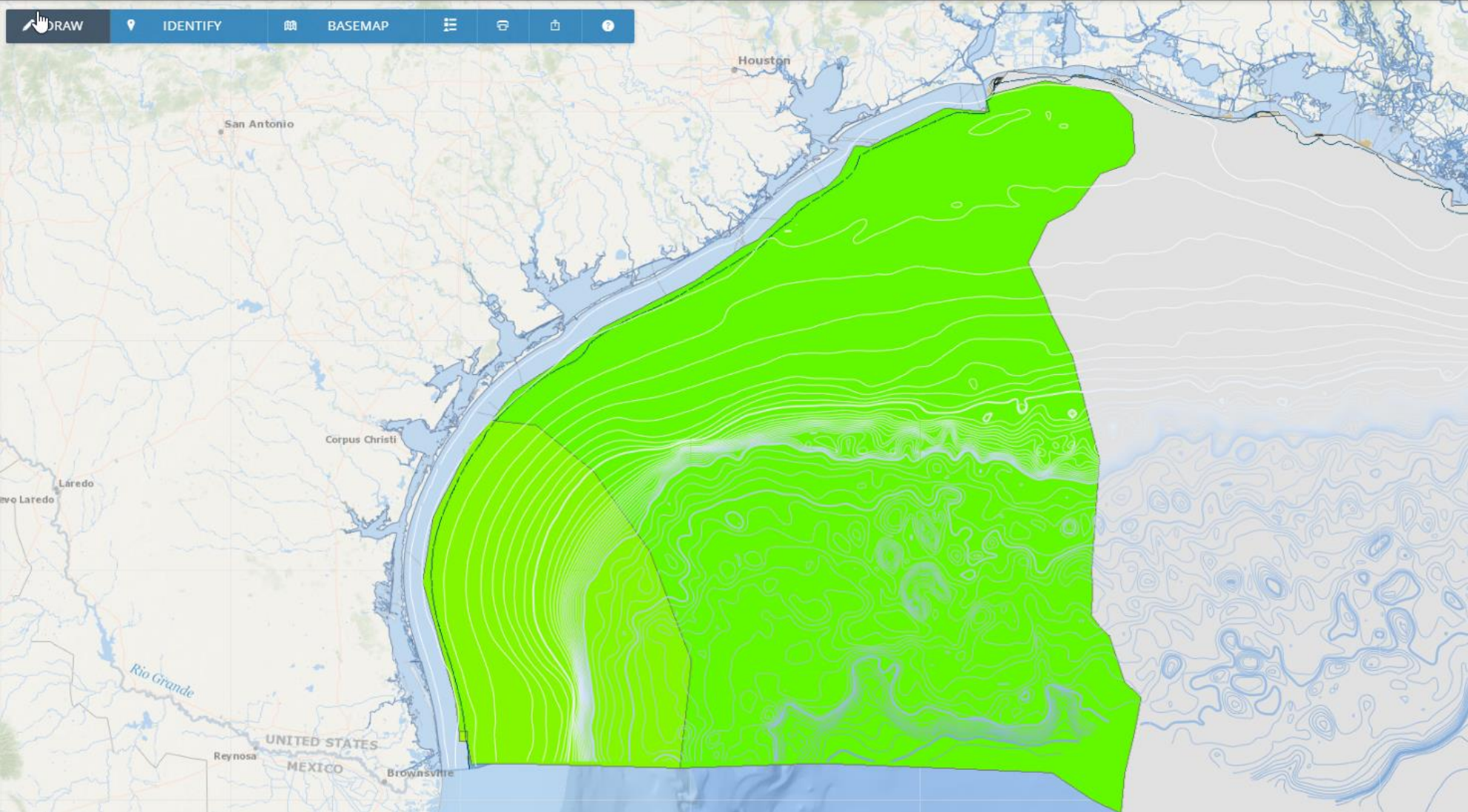


# MarineCadastre.gov – Map Viewer

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

**HIDE LAYERS**

ALL LAYERS ACTIVE LAYERS

- US Historical Lighthouses
- Shipping Lanes and Regulations
- Principal Ports
- Coastal Energy Facilities
- Gulf of Mexico Outer Continental Shelf Blocks with Significant Sand Resources
- Oil and Natural Gas Wells
- Selected Pipelines
- Seismic Water Bottom Anomalies
- AIS Vessel Transit Counts 2018
- Gulf of Mexico Offshore Wind Resource Potential





# MarineCadastre.gov – Map Viewer

ArcGIS My Map

Open in new Map Viewer New Map Christine

Details Add Basemap Save Share Print Measure Bookmarks Find address or place

About Content Legend

Contents

- BOEM Seismic Water Bottom Anom
- MMC Layers - OCS O
- BOEM OCS Areas W
- MMC Layers - OCS D
- Planning and Administ Blocks with Significan
- Marine Transportation Regulations
- MMC Layers - Submerged Lands Act Boundary
- GOM Deepwater Bathymetry Contours - Depth Contours - BOEM 100 ft
- 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

### Add Layer from File

Locate the file you want to import.

- 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)
- GeoJSON (open standard format for simple geographical features)

File:  No file chosen





# ceanReports

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

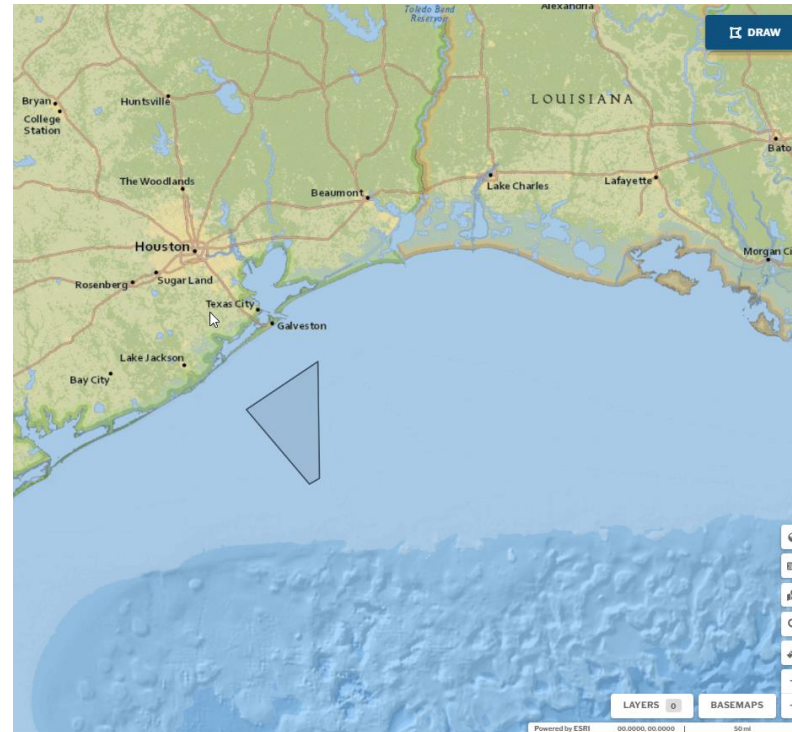
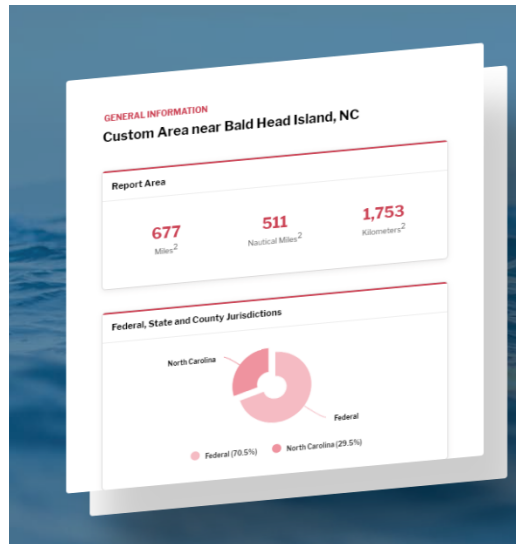
Draw a custom area anywhere in U.S. waters or pick from a predefined list of locations to get instant custom reports. Reports include descriptive infographics and supporting data that can be used for offshore planning, permitting, environmental review, public relations, and more. New features allow printing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

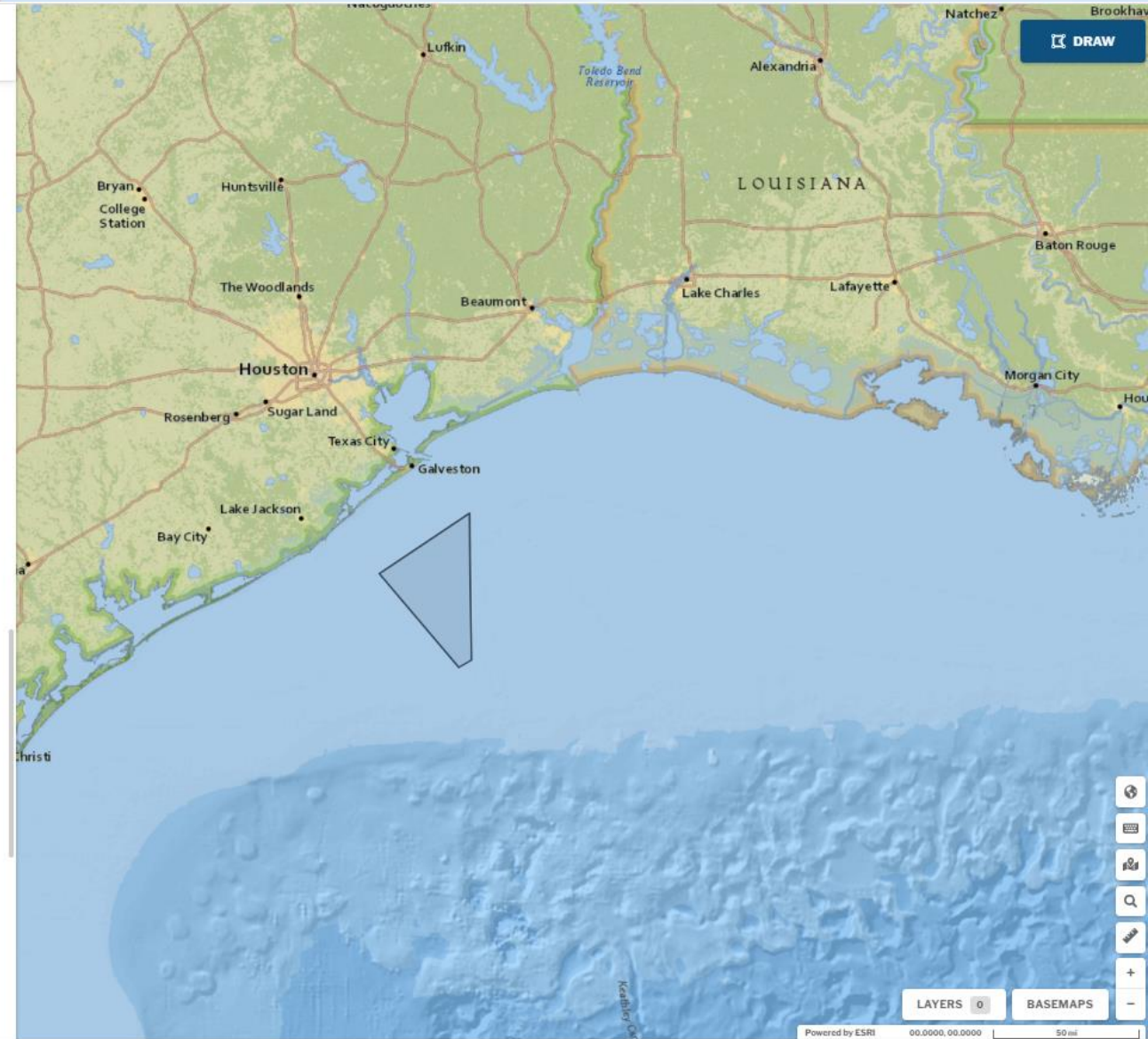


Federal statutes cover a broad variety of legal restrictions and permitted activities within state and U.S. federal waters. It is important to know these statutes and where they are applicable before planning for any activities in these waters. Those listed below apply within the area of interest outlined 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



LAYERS 0 BASEMAPS

Powered by ESRI 00,0000, 00,0000 50 mi



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.



DRAW

### 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 10 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 greatest wind capacity, expanding this potential.



7.50

Weighted Average (m/s)

- Outstanding (9.0+)
- Superb (8.5)
- Excellent (8.0)
- Good (7.5)
- Fair (7.0)
- Unsuitable (< 7.0)



2,314,8

Potential Houses Supported

2,370.7

Area with suitable wind resources

### 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/km<sup>2</sup>) \* Hours per year (8,760) \* Capacity Factor (.4)) / Average Household Electricity Use (in megawatt hours per year)

<sup>1</sup> [U.S. Department of Energy offshore wind potential](#)

<sup>2</sup> [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)

LAYERS 0

BASEMAPS

Powered by ESRI 00.0000.00.0000 50 mi





## 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.

# Med

fish chara area

DISPLAY STONY LAYER

DISPLAY SOFT LAYER

### 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.

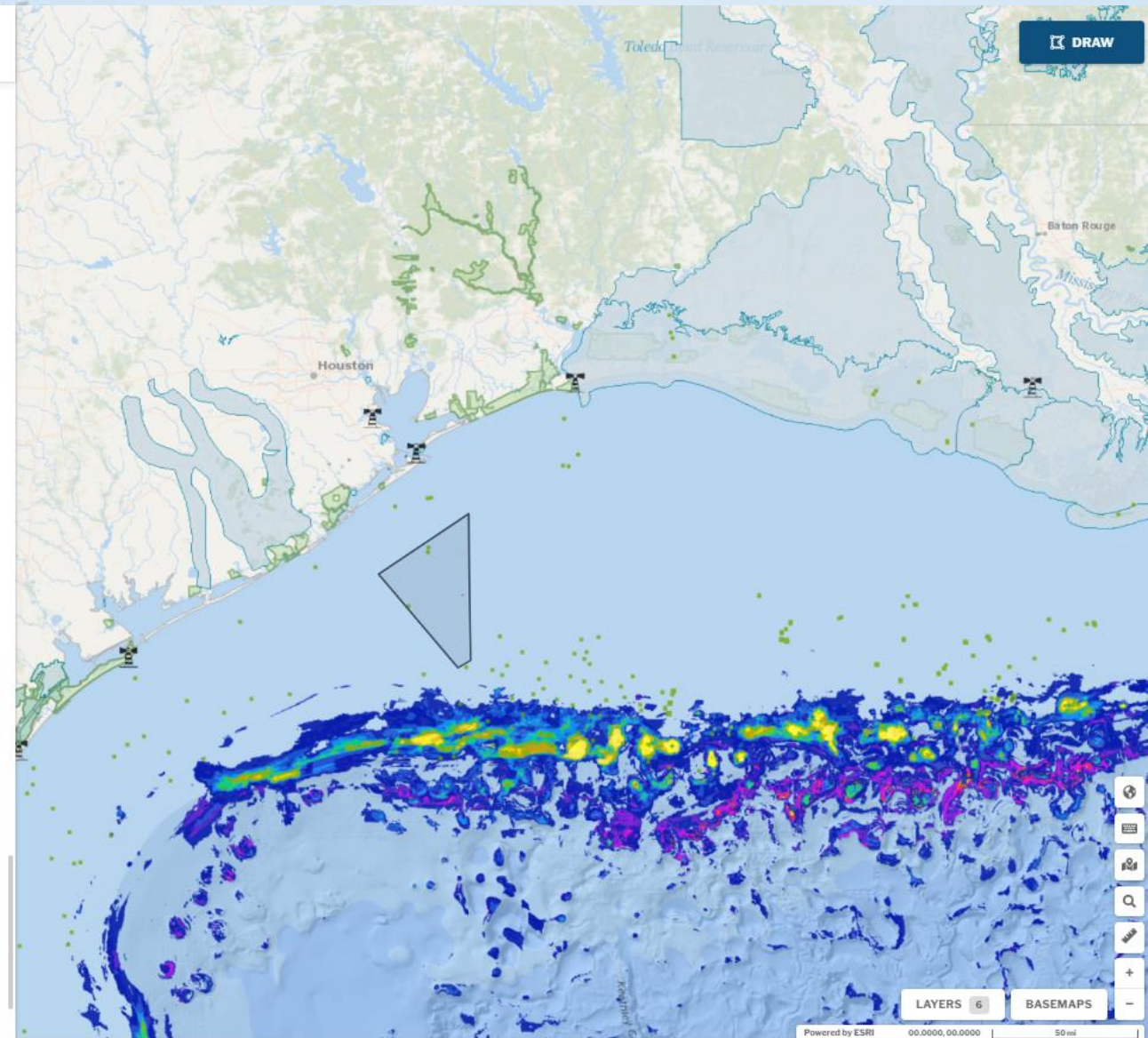
Name	Height (ft)	Distance (mi)
Bolivar Point Lighthouse Use	117	27.66

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.







Custom Area 21.68 nautical miles from ...

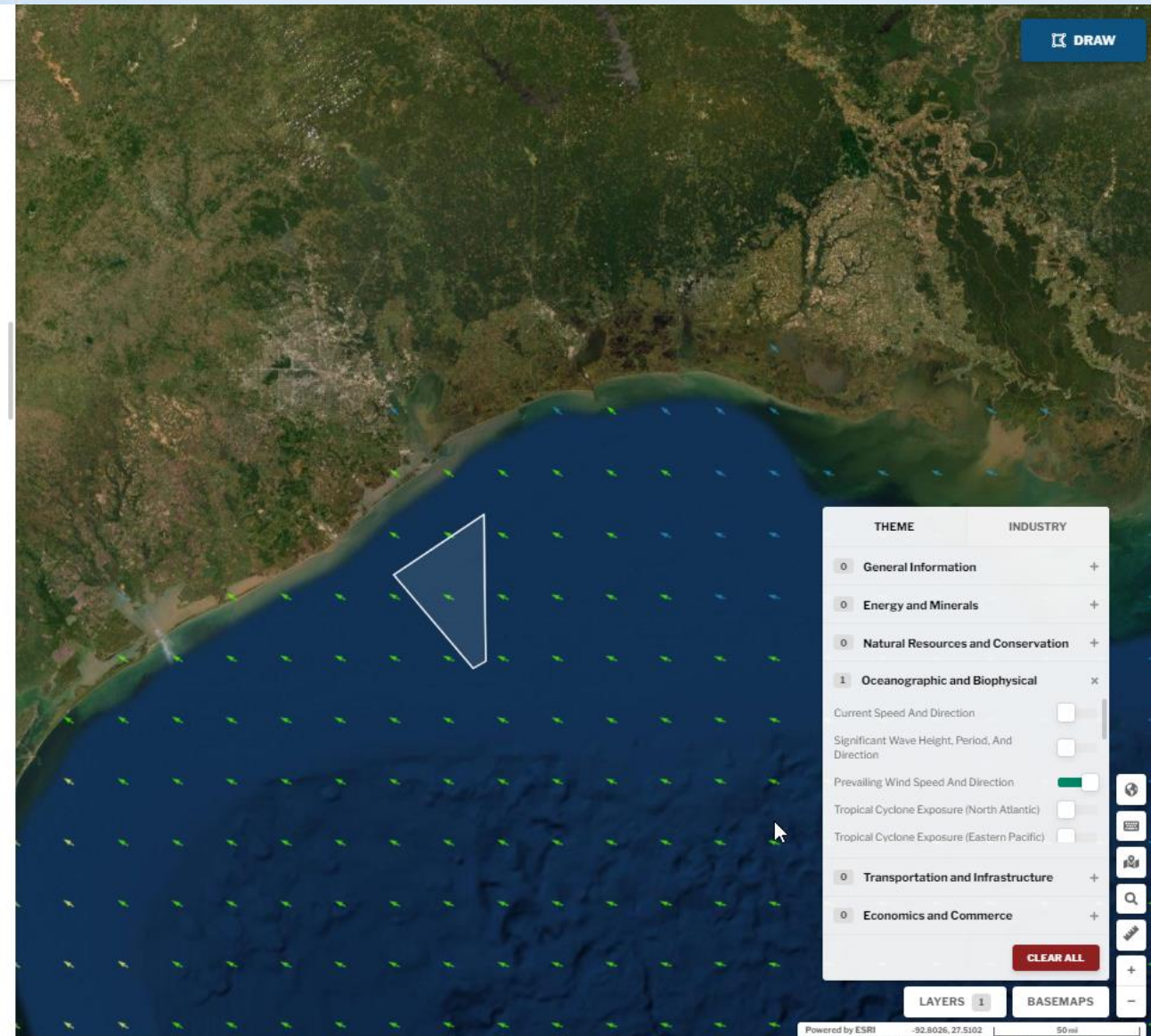
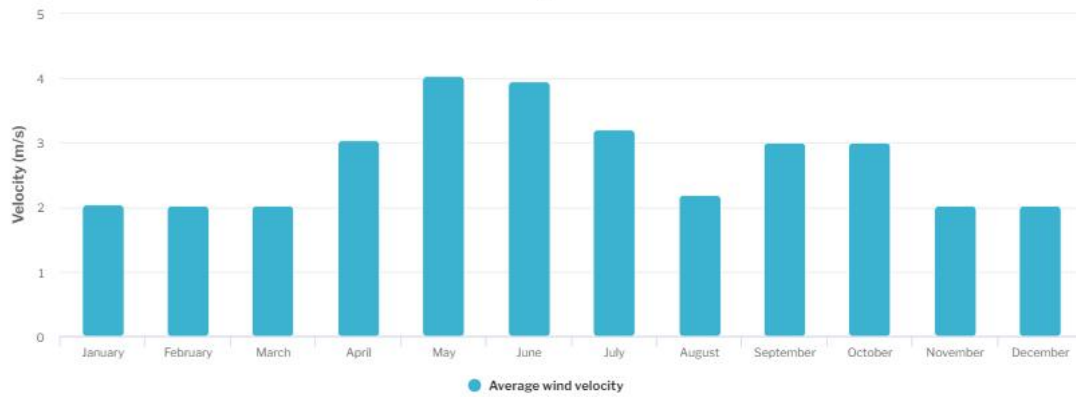
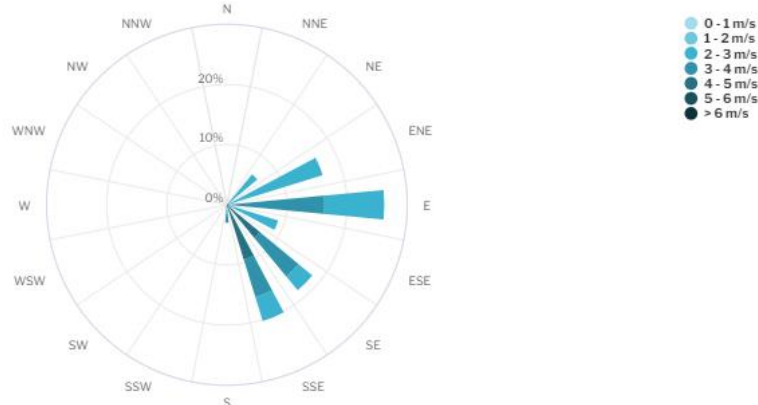
OCEANOGRAPHIC AND BIOPHYSICAL



### 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).



DRAW

THEME	INDUSTRY
0	General Information +
0	Energy and Minerals +
0	Natural Resources and Conservation +
1	Oceanographic and Biophysical x
	Current Speed And Direction <input type="checkbox"/>
	Significant Wave Height, Period, And Direction <input type="checkbox"/>
	Prevailing Wind Speed And Direction <input checked="" type="checkbox"/>
	Tropical Cyclone Exposure (North Atlantic) <input type="checkbox"/>
	Tropical Cyclone Exposure (Eastern Pacific) <input type="checkbox"/>
0	Transportation and Infrastructure +
0	Economics and Commerce +

CLEAR ALL

LAYERS 1 BASEMAPS





**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.

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**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.

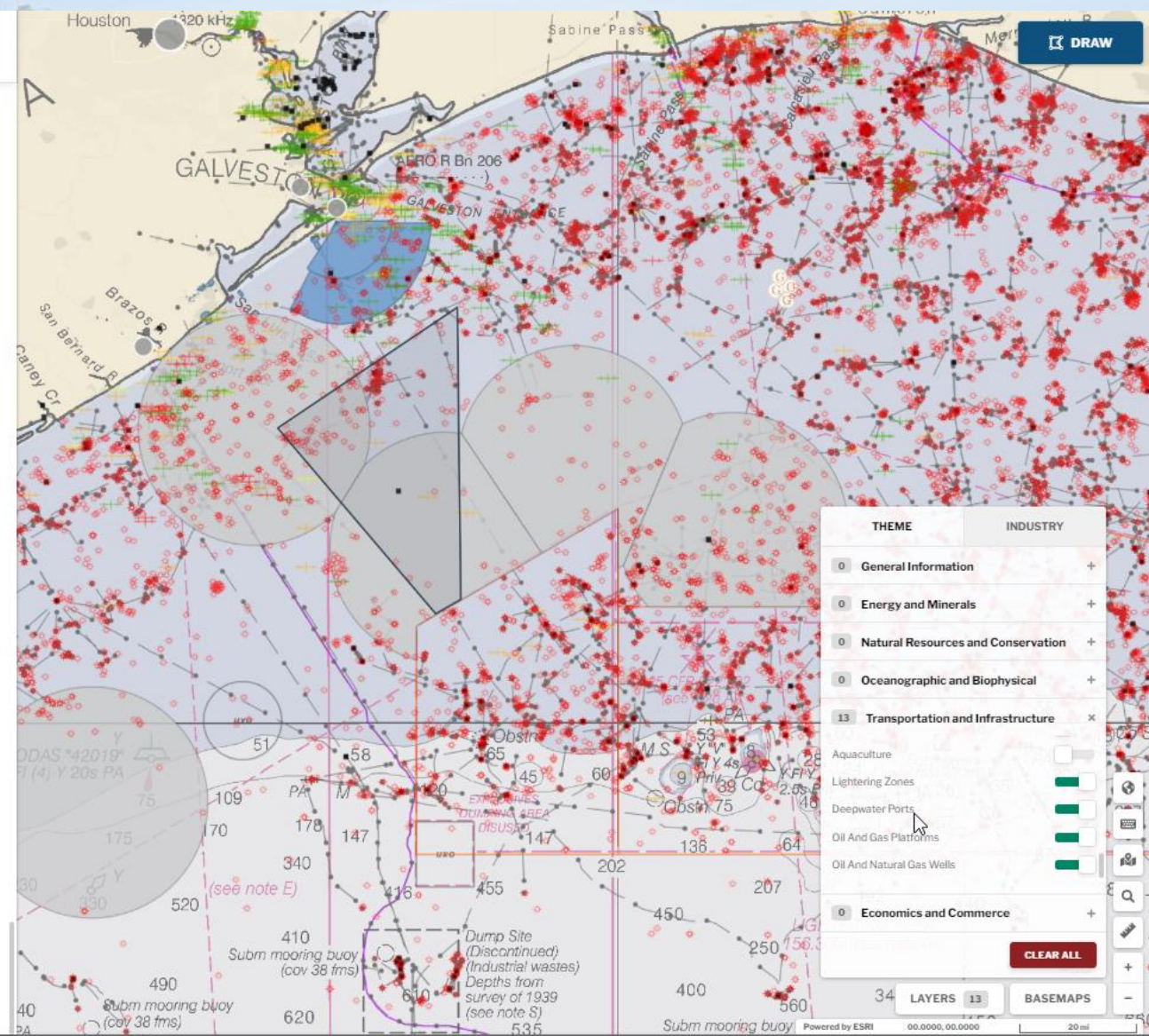
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**Oil and Natural Gas Wells**

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.



THEME	INDUSTRY
0	General Information +
0	Energy and Minerals +
0	Natural Resources and Conservation +
0	Oceanographic and Biophysical +
13	Transportation and Infrastructure x
	Aquaculture <input type="checkbox"/>
	Lightering Zones <input checked="" type="checkbox"/>
	Deepwater Ports <input checked="" type="checkbox"/>
	Oil And Gas Platforms <input checked="" type="checkbox"/>
	Oil And Natural Gas Wells <input checked="" type="checkbox"/>
0	Economics and Commerce +

CLEAR ALL

34 LAYERS 13 BASEMAPS



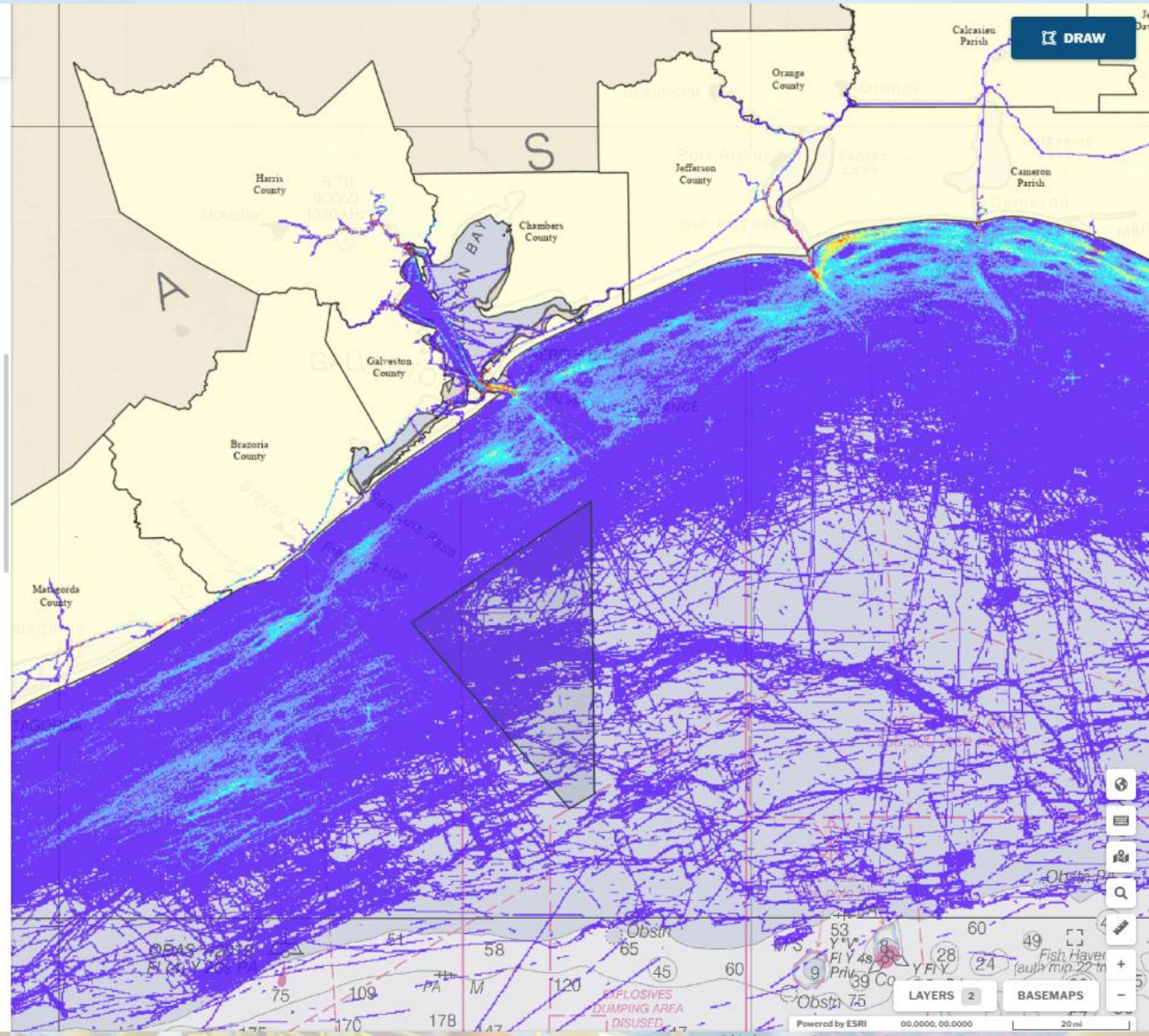
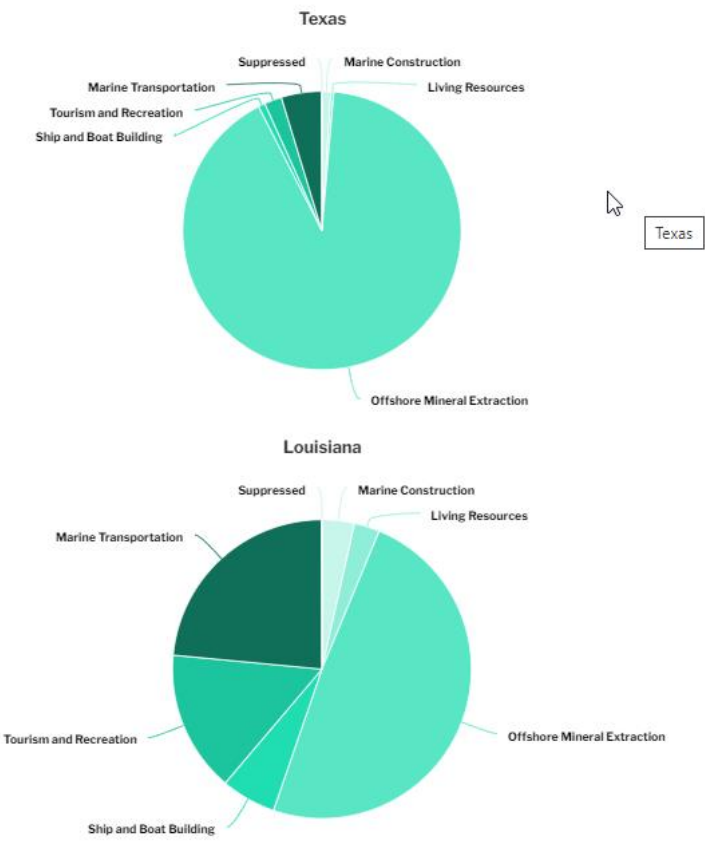


Custom Area 21.68 nautical miles from ...

200 nautical miles.

Marine Economy Sector Breakdown

Data represent the contribution of each sector to the state marine economy. Data presented in Marine Economy Sector Breakdown are only available for U.S. states. Report statistics over territorial waters will show data from the closest states.

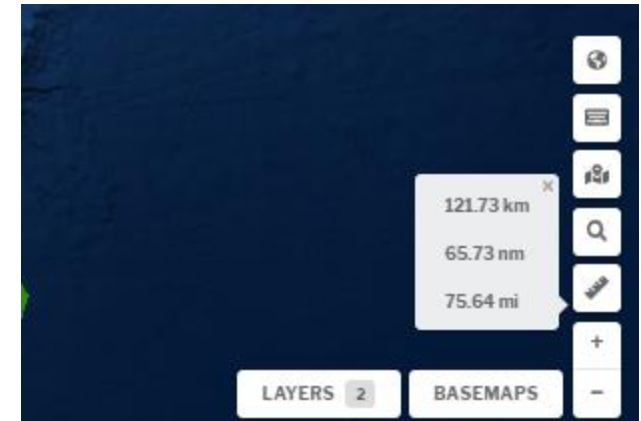




# Available tools

- **Special Tools**

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



# Available tools



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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)

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## 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
<a href="#">Bathymetry DEM</a>	NOAA National Centers for Coastal Ocean Science	<a href="#">Download</a>
<a href="#">Bathymetry Contours</a>	MarineCadastre.gov	<a href="#">Download</a>
<a href="#">Coastal Populated Places</a>	MarineCadastre.gov	<a href="#">Download</a>
<a href="#">Federal and State Waters</a>	MarineCadastre.gov	<a href="#">Download</a>
<a href="#">Coastal States</a>	U.S. Census Bureau	<a href="#">Download</a>
<a href="#">Coastal Counties</a>	U.S. Census Bureau	<a href="#">Download</a>
<a href="#">US Congressional Districts</a>	NOAA Office for Coastal Management	<a href="#">Download</a>
<a href="#">State Legislative Districts: House</a>	U.S. Census Bureau	<a href="#">Download</a>
<a href="#">State Legislative Districts: Senate</a>	U.S. Census Bureau	<a href="#">Download</a>
<a href="#">Federal Statutes</a>	NOAA Office for Coastal Management	<a href="#">Download</a>
<a href="#">Indian Lands</a>	Bureau of Indian Affairs	<a href="#">Download</a>

### Energy & Minerals

Dataset Name	Provider	Download
<a href="#">Offshore Wind Resource Potential (Atlantic)</a>	Bureau of Ocean Energy Management	<a href="#">Download</a>





## ○ 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**  
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<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

# BOEM

Bureau of Ocean Energy  
Management

BOEM.gov



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MarineCadastre.gov

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