

# 2023 Work Plan

JANUARY 2023

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# Introduction

This document provides an overview of work to be conducted by members of the Mid-Atlantic Ocean Data Portal development team (Portal Team) in 2023 under the direction of the Mid-Atlantic Regional Council on the Ocean (MARCO) and its Ocean Mapping & Data Team (OMDT). The plan covers a broad range of priorities including map data additions, tool and site enhancements, GIS database management and stakeholder engagement activities.

Last year saw the completion of many long-awaited improvements that have positioned the Portal to accommodate new and more intensive uses in 2023. The debut of the Shapes tool has enabled users to upload their own GIS data for the first time, rather than downloading data for use on their own desktop software; Groups administrators were given greater control over the types of data shared within them and who can access it; the Map Layer Input tool was expanded to allow for a wider range of services to be imported and bookmarked. With greater and more stable funding sources than ever before lined up for 2023 – including from the bipartisan federal infrastructure law and the Bureau of Ocean Energy Management (BOEM) – the Portal will once again take important steps forward in improving the technical capabilities that will make its Marine Planner application more versatile and easier to operate.

The Portal continued its growth last year as a go-to resource for stakeholders to learn about and participate in the Mid-Atlantic's major ocean planning issues. That will certainly continue in 2023 with the advance of offshore wind energy developments in the New York Bight and Central Atlantic, Coast Guard port access route studies, and the proposed designation of the Hudson Canyon as a marine sanctuary, among others. Likewise, a new Mid-Atlantic Committee (MACO) on the Ocean work conservation group and transmission subcommittee have been formed, and state-led ocean planning efforts have launched, all of which will carry their own data needs.

While this document provides a roadmap for 2022 based on the best information available at the time of this writing, a project of this kind requires ample flexibility to account for unforeseen developments including regulatory decisions (e.g., the advance of wind farm proposals), changes in funding availability, and regional data requests with high urgency that can alter schedules or the team's workflow. The team has limited capacity, but will work to meet these challenges to the best of its ability. The OMDT membership list is available [here](#). The Portal Team currently consists of:

- John Bognar, Rutgers U. Center for Remote Sensing & Spatial Analysis (CRSSA)
- Avalon Bristow, Mid-Atlantic Regional Council on the Ocean (MARCO)
- Corrie Curtice, Duke University Marine Geospatial Ecology Lab (marine life data manager)
- Jeff Herter, New York Department of State
- Ryan Hodges, Ecotrust (developer)
- Richard Lathrop, Rutgers University CRSSA
- Tony MacDonald, Monmouth University Urban Coast Institute (UCI)
- Nick Napoli, MARCO (Portal Team lead)
- Jay Odell, Monmouth University UCI
- Jim Trimble, Rutgers University CRSSA
- Karl Vilacoba, Monmouth University UCI (project manager)

# Part I: Data Priorities

Outlook for 2023: Following a major expansion of the Portal's fish models last year, 2023 will see significant improvements in its avian and marine mammal data. The Portal's monthly maps showing distributions of the critically endangered North Atlantic right whale were doubled in resolution by the Duke University-led Marine Life Data Team (MDAT) from 10KM to 5 KM cells last year. That work will be duplicated for all cetacean species and group models in the coming months. The MDAT seabird models, which currently show distributions by season, will be replaced with maps showing monthly distributions. In addition, the Portal's sea turtle maps, among the oldest data on the Portal, will be retired and replaced by more current models. The Portal Team will consult with the Northeast Regional Fish Habitat Assessment team to determine which of its maps modeling habitat use by commercially and ecologically important fish species will be added to the Portal. The work of the recently formed Regional Wildlife Science Entity may also yield additional map data.

The Portal Team will also continue its progress in expanding and reorganizing its commercial fishing data in response to input from the industry. A partnership between MARCO, the Northeast Regional Ocean Council (NROC) and the Responsible Offshore Development Alliance (RODA) gathered feedback from industry stakeholders on a number of existing and proposed fisheries data products to understand what new products were needed to better represent fishing activity. Among the outcomes of these discussions, the Portal Team plans to add a series of VTR-derived "fishing footprint" maps produced by NOAA and may work with the originator of the Communities at Sea methodology to create maps that extend the datasets to 2016-20.

Finally, the Recreation theme will see some of its most significant additions in several years. The Portal Team commenced work with the states to gather and synthesize data to create region-scale maps showing public boat launch locations and coastal water trails, and expect to do the same with SCUBA diving locations. A collection of maps illustrating the sites of coastal parks, public beaches and other types of preserved lands will also be added.

The following is an overview of planned data additions and enhancements in the year ahead. "External Dependencies/Sources" refer to data providers and other outside organizations whose collaboration is essential for developing products. "Update Frequency" is a suggested maintenance schedule for data, provided here as an indication of potential data needs/work focus beyond this annual plan period. Further explanation of individual data items follows the table.

The table initially presents a list of map layers for each Marine Planner theme that may advance under anticipated funding levels. For some themes, a secondary "Also Possible" list is provided with items that may advance if additional funding is available, or if scoping determines data is readily available.

## 2023 DATA PRIORITIES AT A GLANCE

Theme	Layers	External Dependencies/Sources	Update Frequency
<b>Administrative</b>	<ol style="list-style-type: none"> <li>1. Hudson Canyon sanctuary proposal(s)</li> <li>2. NERR system boundaries</li> <li>3. Congressional districts</li> <li>4. EPA RTOC Regions</li> <li>5. Data resulting from engagement with Tribes</li> <li>6. Review of federal data providers for new and useful options</li> </ol>	<ol style="list-style-type: none"> <li>1. NOAA</li> <li>2. Marine Cadastre (MC)</li> <li>3. TBD</li> <li>4. BIA</li> <li>5. TBD</li> <li>6. MC/BOEM/others TBD</li> </ol>	<ol style="list-style-type: none"> <li>1. TBD</li> <li>2/ Auto updates via service</li> <li>3. TBD</li> <li>4. 1-2 years</li> <li>5. TBD</li> <li>6. TBD</li> </ol>
<b>Fishing</b>	<ol style="list-style-type: none"> <li>1. NOAA recreational and commercial fishing footprint</li> <li>2. Potential reorganization of all data by fishery</li> <li>3. Management areas and closures</li> <li>4. Aquaculture</li> </ol> <p style="text-align: center;"><b>Also Possible</b></p> <ol style="list-style-type: none"> <li>1. 2016-20 updates or total refresh of Communities at Sea data</li> <li>2. Recreational fishing (for hire and party/charter boat)</li> </ol>	<ol style="list-style-type: none"> <li>1. NOAA/NEFSC</li> <li>2. None</li> <li>3. NOAA/NMFS</li> <li>4. MARCO states/others TBD</li> </ol>	<ol style="list-style-type: none"> <li>1. At least every two years</li> <li>2. Ongoing</li> <li>3. Ongoing</li> <li>4. TBD</li> </ol>
<b>Marine Life</b>	<ol style="list-style-type: none"> <li>1. Sea turtle strandings</li> <li>2. MDAT cetacean, avian and sea turtle models</li> <li>3. Northeast Regional Fish Habitat Assessment products</li> <li>4. Deep sea coral data feature service</li> <li>5. RWSC Products</li> </ol> <p style="text-align: center;"><b>Also Possible</b></p> <ol style="list-style-type: none"> <li>1. Innovation/development of new products based on MDAT data (change over time for various taxa, distribution/abundance at different scales or analysis windows)</li> </ol>	<ol style="list-style-type: none"> <li>1. NOAA/state stranding centers</li> <li>2. Duke/MDAT</li> <li>3. MAFMC/NEFMC</li> <li>4. NOAA</li> <li>5. RWSC/TBD</li> </ol>	<ol style="list-style-type: none"> <li>1. 3-5 years</li> <li>2. 3-5 years</li> <li>3. TBD</li> <li>4. Auto updates via service</li> <li>5. TBD</li> </ol>

<p><b>Maritime</b></p>	<ol style="list-style-type: none"> <li>1. AIS data (2022)</li> <li>2. USCG proposed areas and studies</li> <li>3. New submarine cable infrastructure and proposed actions</li> <li>4. Extended shipwreck density map</li> <li>5. Aids to Navigation update</li> <li>6. Coast Guard incidents</li> <li>7. Anchorages</li> <li>8. Ocean Disposal Sites</li> </ol> <p><b>Also possible</b></p> <ol style="list-style-type: none"> <li>1. Ports: Addition of offshore wind ports, evaluation of Port Facilities maps</li> </ol>	<ol style="list-style-type: none"> <li>1. USCG, MC</li> <li>2. USCG</li> <li>3. Data from developers, MC</li> <li>4. None</li> <li>5. MC</li> <li>6. USCG</li> <li>7. MC, USCG</li> <li>8. MC, EPA</li> </ol>	<ol style="list-style-type: none"> <li>1. 1-2 years</li> <li>2. Ongoing</li> <li>3. Ongoing</li> <li>4. 3-5 years</li> <li>5. Auto update via service</li> <li>6. TBD</li> <li>7. Auto update via service</li> <li>8. Auto update via service</li> </ol>
<p><b>Oceanography</b></p>	<ol style="list-style-type: none"> <li>1. MARACOOS oceanography layers</li> <li>2. Seasonal net primary productivity</li> <li>3. Fronts – long-term seasonal averages</li> <li>4. Atlantic wave climate</li> </ol>	<ol style="list-style-type: none"> <li>1. MARACOOS</li> <li>2. NOAA CoastWatch</li> <li>3. None</li> <li>4. MC</li> </ol>	<ol style="list-style-type: none"> <li>1. TBD</li> <li>2. 1-2 years</li> <li>3. 3-5 years</li> <li>4. Auto updates via service</li> </ol>
<p><b>Recreation</b></p>	<ol style="list-style-type: none"> <li>1. Boat launches</li> <li>2. Coastal water trails</li> <li>3. Protected coastal lands</li> <li>4. SCUBA diving areas</li> </ol> <p><b>Also Possible</b></p> <ol style="list-style-type: none"> <li>1. Marinas</li> </ol>	<ol style="list-style-type: none"> <li>1. MARCO states, Sea Grant, various</li> <li>2. MARCO states, NPS, various</li> <li>3. USGS, TNC</li> <li>4. Industry representatives, TBD</li> </ol>	<ol style="list-style-type: none"> <li>1. 3-5 years</li> <li>2. 3-5 years</li> <li>3. Auto updates via services/TBD</li> <li>4. 3-5 years</li> </ol>
<p><b>Renewable Energy</b></p>	<ol style="list-style-type: none"> <li>1. Updated federal and state offshore wind lease and wind energy area boundaries</li> <li>2. New layers to reflect advancement of projects (proposed or installed turbine locations, substations, cable routes, etc.)</li> <li>3. Data gathered and made available by wind developers</li> </ol>	<ol style="list-style-type: none"> <li>1. BOEM/MC and state partners</li> <li>2. BOEM</li> <li>3. Industry</li> </ol>	<ol style="list-style-type: none"> <li>1. Ongoing</li> <li>2. Ongoing</li> <li>3. TBD</li> </ol>
<p><b>Seafloor Habitat</b></p>	<ol style="list-style-type: none"> <li>1. Artificial reefs</li> <li>2. OWRC transmission subcommittee priorities: Contaminated sediment areas, sensitive habitats, etc.</li> </ol>	<ol style="list-style-type: none"> <li>1. MARCO states</li> <li>2. TBD</li> <li>3. MARCO states, TBD</li> </ol>	<ol style="list-style-type: none"> <li>1. 1-2 years</li> <li>2. TBD</li> <li>3. TBD</li> </ol>

	3. Data to support Delaware Ocean and Bay Plan and other state priorities		
<b>Security</b>	1. Maintenance of existing layers, additions and deletions in consultation with Navy and NOAA 2. Munitions and explosives	1. Navy/MC 2. MC	1. Ongoing 2. Auto updates via service
<b>Socioeconomic</b>	1. Seasonal tourism employment by county 2. eNow map updates	1. Middlebury Institute 2. NOAA	1. TBD 2. TBD
<b>Water Quality</b>	1. Ocean acidification monitoring sites 2. Ocean conservation work group priorities 3. Marine debris  <b>Also Possible</b> 1. Harmful algal blooms	1. MACAN 2. MARCO 3. MARCO states/VDEQ	1. Ongoing 2. TBD 3. Annually

## Administrative

- **Hudson Canyon Sanctuary Proposal(s):** The Portal Team will add any data (such as zone boundaries) that arises from the pending proposal to designate the Hudson Canyon as a marine sanctuary.
- **NERR Boundaries:** The Marine Cadastre has made available a new map showing National Estuarine Research Reserve System boundaries throughout the U.S.
- **Congressional Districts:** The Portal's current map will need to be updated/replaced based on recent elections and the redrawing of districts.
- **EPA RTOC Regions:** The Portal's map must be reviewed to ensure the Regional Tribal Operations Committee representatives and contact info are up to date.
- **Tribal Engagement Data:** MARCO's proposal for federal infrastructure funding included engagements and trainings with Tribal nations throughout the region. Data additions will be scoped based on input gathered through this process.
- **Federal data options:** A sweep of prominent federal map data providers (e.g. Marine Cadastre, BOEM MMIS, NOAA OceanReports Tool) will be conducted to seek new and useful layers. This is a step taken early each year. Data gathered may not be limited to the Administrative theme.

## Fishing

- **Fishing Footprint Areas:** Feedback from fishing stakeholders led to the recommendation that the Portal incorporate VTR-based recreational and commercial fishing footprint data [posted online by NOAA](#). In partnership with the Northeast Portal, products from this extensive data collection will be added to the MARCO Portal.

- **Reorganization of Theme by Fishery:** The team will explore a suggestion by industry stakeholders that the Portal's fishing theme be reorganized by fishery rather than data type. For example, a Scallop or Squid dropdown could be created with all VMS and management areas maps pertaining to that fishery.
- **Management areas and Closures:** The team will consult the NMFS regional office, fishery management councils and others to ensure the current layers are up to date and replace/retire them as needed. The recently completed project with RODA provided recommendations for publishing and maintaining fishing management areas on the Portal.
- **Aquaculture:** The team will work with the MARCO states to develop options for adding aquaculture data on the Portal. Possibilities include creating a single regional map or a set of state-by-state maps depicting areas with aquaculture activities in collaboration with each state.

## Marine Life

- **Sea Turtle Strandings:** The Portal Team acquired two decades of sea turtle stranding data from NOAA in 2022 and will create a series of products consistent with last year's marine mammal layers. They will likely include maps showing points where stranding were reported by seasons, by species/groups, and by county from Maine through Virginia from 2000-2020.
- **MDAT Marine Mammal and Fish Model Updates:** The Duke University-led Marine Life Data and Analysis Team (MDAT) has begun work to produce new versions of its cetacean and pinniped species and group models that will increase their spatial resolution to 5KM from 10KM (as done with the North Atlantic right whale models in 2022). The Portal's avian species and group models will also be reconfigured in a format that shows them in lower resolution (10KM from 5KM) but at a higher temporal range (monthly – are currently seasonal). New sea turtle models will be created based on NOAA and Navy data, and the Portal's old TNC-created maps will be retired.
- **Northeast Regional Fish Habitat Assessment:** A team with researchers from NOAA Fisheries, NEFMC, the MAFMC, Monmouth University and others are completed a project in 2022 that developed habitat use models for commercially and ecologically important fish species across the Northeast and Mid-Atlantic continental shelf. The Portal Team will work with the researchers to incorporate map products from this project in 2023.
- **Observed Corals:** Upgrades to the Portal's technology stack will be completed to make it possible to directly ingest this feature service, which has been hosted locally and updated in recent years.
- **Regional Wildlife Science Collaboration (RWSC) Products:** The Portal Team will work with this entity, comprised of representatives from MARCO, NROC and CSSF, to incorporate data products that are produced through its efforts. This includes data and maps characterizing:
  - Historical and ongoing marine life monitoring efforts, such as through acoustics, telemetry, photography, and aerial surveys
  - Areas that are under surveyed
  - Proposals for future marine life monitoring
  - Ongoing deliberations about where future effort should be allocated



## Maritime

- **2022 AIS:** Among the most frequently used data layers on the Portal, the AIS vessel transit count maps should be updated on an annual or semi-annual basis. The team will work with the Marine Cadastre, Northeast Portal and federal agencies to create 2022 annual and monthly maps presented with the Portal's slider/animation feature.
- **New Submarine Cable Infrastructure and Proposed Actions:** The Portal Team works with private sector developers to create maps showing the alignments of submarine telecom and power cables. New data will be added as it becomes available. It is anticipated that the Marine Cadastre's Submarine Cables Areas service will be updated to include data currently available in the Portal's Recent Telecom Cables layer.
- **Shipwreck Data:** The Shipwreck Density layer will be expanded to cover state waters, including major bays and rivers. The map will be based on data presented in the Wrecks and Obstructions layer/AWOIS database.
- **USCG Proposed Studies and Areas:** The Portal Team partnered with the Coast Guard to produce several maps in 2022 showing routing measures recommended by multiple Port Access Route Study (PARS) reports. Associated maps will be added and replaced as needed to support public outreach and analysis by users.
- **Aids to Navigation:** Bug fixes will be made to Marine Planner to ingest and properly display the Marine Cadastre's new Aids to Navigation map, which was converted to a new feature service format.
- **Coast Guard Incidents:** The Coast Guard is considering the development of maps for its own GIS site that contain information about incidents such as emergency calls, spills and rescues. The Portal team will monitor for updates and will confer with the OMDT about adding any such data.
- **Anchorage:** The Marine Cadastre's Anchorage Areas service will be updated and replace the current service on the Portal. The Portal team will retire its Cape Fear Approaches and Lower Chesapeake Bay anchorage layers once they're represented in the updated MC service.
- **Ocean Disposal Sites:** The Marine Cadastre will complete a nationwide update of its Ocean Disposal Sites service in 2023 which will replace the current one on the Portal. EPA data for sites off Norfolk is being summarized and could also be available midyear.

## Oceanography

- **MARACOOS Oceanography:** The Portal Team and MARACOOS will convene this year to discuss new possibilities for long-term data products on the Portal based on the OceansMap's real-time data. Products currently being scoped include more precise wind models and dissolved oxygen levels in the ocean.
- **NPP:** The Portal houses a collection of seasonal Net Primary Productivity maps spanning from 2010 through 2022. These maps will be updated to reflect the most recent seasons available.
- **Fronts:** The Portal houses a collection of seasonal Front Probability maps spanning from 2010-17. The data in these maps will be used to create a set of four layers that show typical patterns for each season across the years.
- **Atlantic Wave Climate:** The Marine Cadastre plans to release new map data in 2023 modeling annual and monthly average wave heights along the Atlantic coast, areas with significant wave heights, wave directions, peak periods and more.

## Recreation

- **Boat Launches:** A regionwide map showing the locations, ownership, and other details for boat launches throughout the Mid-Atlantic will be created, drawing on data gathered by the states, Sea Grant, and other entities.
- **Coastal Water Trails:** A regionwide map showing the routes of coastal water trails in the Mid-Atlantic will be created, drawing on data gathered by the states, National Park service, and other entities.
- **Protected Coastal Lands:** The Portal Team is examining options for a series of map layers showing lands along the coast that are preserved as parks, passive open space, rights of ways, and other features. A combination of maps produced by the USGS's PAD-US database and the Nature Conservancy will be evaluated.
- **SCUBA Diving Areas:** In an effort similar to the whale/dolphin watch mapping effort, the team will engage SCUBA industry stakeholders and the states, and study existing data sources to create a map showing important areas for divers off the Mid-Atlantic Coast.

## Renewable Energy

- **Wind Areas:** The team will work with BOEM and the states to update the Portal with new and updated federal/state wind lease and planning area boundaries expeditiously to help inform the public on pending issues. BOEM also plans to release simplified layers showing the outlines of lease and planning areas without OCS lease blocks/aliquots.
- **Project Advancement Information:** BOEM plans to release a series of layers showing proposed or installed project phase areas, turbines, inter-array cables, export cable locations, export cable corridors, substations, cable landing locations, interconnection locations.
- **Data from Wind Developers:** Offshore wind companies with interests in the Mid-Atlantic have been conducting intensive research on the ocean floor, ocean conditions, marine life and more within potential wind farm areas. The Portal Team will stay engaged with these users and partner with them to load relevant data on the site when available and in consultation with the OMDT.

## Seafloor Habitat

- **Artificial Reefs:** The Portal's Artificial Reefs layer is periodically updated with input from MARCO state staff and the OMDT. Updates are needed to reflect expanded reef footprints off the New Jersey coast and possibly other areas.
- **OWRC Transmission Subcommittee Priorities:** MACO's offshore wind work group formed a subcommittee in 2022 that compiled a list of data priorities to improve the process for siting offshore wind power cables (e.g. contaminated sediment areas, sensitive habitats). The list is included as Appendix A of this work plan. The Portal Team will work with the OWRC to identify, locate and add datasets that respond to their needs (which are not limited to the Seafloor Habitat theme).
- **State Ocean Planning Priorities:** The Portal Team will respond as needed to add and furnish data to support the drafting of the Delaware Ocean and Bay Plan and similar projects being carried out by MARCO states. Data may not be limited to the Seafloor Habitat theme.

## Security

- **Munitions and Explosives:** The Marine Cadastre team is preparing to replace the Unexploded Ordnance Areas and Unexploded Ordnance Sites layers with a consolidated layer that incorporates recent discoveries. The more accurate Munitions and Explosives terminology will now be used in place of “unexploded ordnances.”
- **Security Data:** The team will continue to maintain and update its security map layers as needed in consultation with the Navy/Department of Defense and Marine Cadastre.

## Socioeconomic

- **Seasonal Tourism Employment:** A report released by MARCO in the fall of 2022 included economic data characterizing the extent of ocean-related summer employment for the region’s coastal counties.
- **eNow:** The NOAA eNOW-based Ocean Economics GDP map on the Portal may be updated in the near future to include the latest Census data.

## Water Quality

- **Acidification Data:** MACAN is in the process of gathering new data showing acidification monitoring efforts throughout the region. The team will work with MACAN to update or replace its current map products on the Portal.
- **Ocean Conservation Work Group Priorities:** MACO formed a new work group focused on ocean conservation in the fall of 2022. The Portal team will work with the group to respond to its data needs, including the possible addition of a new conservation-related theme in Marine Planner.
- **Marine Debris:** The Balloon and Other Debris layers will be updated with information gathered during 2021 and 2022 beach surveys. The team will also explore the availability of other marine debris products of value for ocean planning.

# Part II: IT Support and Application Development

## Tech Support and Maintenance

The Portal's maintenance and software management needs are handled by Ecotrust, of Portland, Oregon. Ecotrust participates in the Portal Technical Team's bi-weekly calls and other meetings as necessary to keep the team up to date with project status, plan and discuss strategies, lend expertise when appropriate, and stay informed of issues identified by both the team and users. Ecotrust is on call throughout the week as the first line of defense in the event of site outages; problems with the site's Open Layers, Django and Wagtail software; or other technical issues that arise. This work includes dealing with identified priority bugs, shortcomings in the user interface or user experience for both general users and administrators, performance issues, and site uptime.

Ecotrust is also the lead for planned system upgrades and maintenance. Taking advantage of its West Coast location, the staff often handles significant system work at times that are after hours in the Mid-Atlantic, ensuring the least level of disruption to users. As the developer for the West Coast Ocean Data Portal, Ecotrust also fosters collaboration between the two teams, including the sharing of coding and best practices that can enhance each site and yield significant cost savings.

## Upgraded Tools and Capabilities

An overhaul of the Portal's data management system is expected to open the door to long-contemplated changes in Marine Planner's data arrangement. Among them are the previously non-feasible option of embedding dropdowns within dropdowns – a move that could, for example, enable various fishing data collections to be moved within dropdowns representing catch types. It may also pave the way for a new solution to replace the search widgets used to view the Marine Life Library species maps and Communities at Sea maps for individual ports. In concert with work taking place on the West Coast Portal, the Portal's Data Catalog system will be replaced with the more flexible and intuitive CKAN used by many government agencies.

The Portal Team has conducted numerous training sessions with state and federal agency staff, consultants, educators, NGOs and others in recent years and solicited the participants' input on improvements/changes they'd like to see made to the site. Team members also spend a significant amount of time presenting at conferences, responding to inquiries, and engaging stakeholders in the identification of data or functionality needs. Based on these trainings and discussions, as well as consultations with Ecotrust, we have compiled the following list of enhancements to be considered in 2023. The list includes "Planned Improvements" that the team anticipates can be implemented at current funding levels and "Additional Improvements" which may be possible in the event new funding and/or staff time becomes available. As is the case with the data priorities in Section 1, these targets may change based on the needs that arise over the course of the year.

## **PLANNED IMPROVEMENTS**

### ***Marine Planner Mobile App***

A team of Monmouth University computer science and engineering students is working with the Portal Team to prepare a lite version of Marine Planner for mobile visitors.

### ***Improved Mobile Friendliness***

Upgrades and redesign work to make the site's non-Marine Planner editorial sections (e.g. blog posts, calendar items) more accessible for mobile viewers.

### ***Shapes: KML import, user-colors, legend***

Additional options for the new Shapes tool, including the ability to upload KML files, change the colors of shapes, and create legends.

### ***Data Manager Overhaul***

Marine Planner's data management system will be made more flexible to support "dropdowns within dropdowns" and other smart data arrangements.

### ***Google Analytics 4***

Replace current Google Analytics version with the latest and begin tracking new interactions, including clicks on basemaps, tool buttons and tabs.

### ***Label Duplication***

Improved logic for ingesting feature services will provide more control over how labels display on map layers, including the elimination of unsightly duplications.

### ***Migrate Catalog to CKAN***

In concert with changes being made to the West Coast Portal, the Data Catalog's management system will be replaced with the open source CKAN used by the U.S. government for data.gov, among others. Completion of this task is dependent on completion of proposed updates to the West Coast Portal.

### ***Improved Search Tool***

The Portal's current search tool logic, not updated since the site's relaunch in 2015, will be enhanced to generate more thorough results, including from the Data Catalog pages.

### ***Replace MDAT/CAS Search Widget***

Develop a new solution for accessing Marine Life Library species maps and Communities at Sea ports data than the current search widget. Solutions that enable these datasets to be rolled into the Marine Life and Fishing themes may come as part of data manager overhaul outlined above.

### ***New Ocean Story Layout Options***

Identify upgrades to create more dynamic/compelling Ocean Stories. This may include switching to a vertical map split, control over how much of the screen is occupied by the map, and offering

new widgets for inserting content, data, and other media. Additional upgrades may include Active Tab buttons that link map layers to related Ocean Stories.

#### ***View Story Button/Tag/Checkbox***

Clickable option for connecting map layers to editorial content or other features on the Portal.

#### ***Selected Feature/Pop-Up Window Upgrades***

Improved control over attributes displayed in pop-up windows upon clicking maps.

#### ***Easier Transfer of Layers Between Databases***

Single-click solution for transferring data between Sandbox, Staging and Production Portal sites.

#### ***Smooth Cache Updates***

Bug fix to reduce display problems caused when cached data in browsers conflicts with significant changes made to Marine Planner.

### **ADDITIONAL IMPROVEMENTS**

#### ***Feature Service Overrides***

Improve upon existing tools to grant significant cartographical control to site administrators over vector and vector tile layers, such as Esri feature services. This should not only improve upon what aspects of styling can be controlled and manipulated, but also both on ease of management and performance of custom styles on the map.

#### ***Edit Bookmarks***

Users can currently edit saved Drawings but not bookmarked maps.

#### ***Organize Shared MyPlanner Contents by Group***

Bookmarks and Drawings currently list in alphabetical order in Groups and MyPlanner. Registered users would be able to view their contents organized under the group(s) they belong to.

#### ***Improved Slider Performance***

Improved speed and reduced load when activating data-intense sliders/animations.

#### ***Improved Slider Admin Form***

Simplified and faster input process for administrators creating sliders/animations

#### ***Layers Appear in Data Catalog Alongside their “Companions”***

Currently companion layers are not available via the Data Catalog unless they also serve as independent layers, associated with a visible category. This upgrade would allow “companion-only” layers to appear beside their associated layers under those layers’ categories. This will Include a checkbox for administrators to choose if they want this behavior on any given layer.

#### ***Tutorial Tab Tool***

A button on the bottom of the Marine Planner screen would launch a window that provides users a quick start guide for key capabilities.

### ***Password Blocked Layers***

Enable administrators to block draft map layers on Portal servers with passwords.

### ***Server Password Bypass***

Enable the Staging and Sandbox sites to ingest password-blocked layers from test servers (for example, MDAT or Northeast Portal).

### ***Realtime Data Support***

Implement capacity to display live data from buoys, vessels, etc. as needed

### ***Analysis/Reporting from Live Data Sources***

Add the ability for a few basic GIS analysis tools to be applied to select data layers to generate on-the-fly reporting. Once implemented this paves the way to base report data on considerations of custom-added user shapes.

### ***Layer Load Status***

For layers that have long load times (such as data sliders), Marine Planner would display the load status percentage. (Currently shows spinning wheel)

### ***Zoom Limit Warning***

Automated advisory when user's zoom is not within layer limits.

### ***Quality Assurance/Control***

When map layers or Portal contents are edited by administrators, keep detailed records on what was changed, when, and by whom. Allow changes to be previewed and reviewed by other administrators prior to being published on the portal.

### ***Design Updates***

Overhaul of look/feel of Portal styles/layouts, including to make more mobile friendly.

### ***User-Styled OSM Base Layer***

Enable users to have some cartographic control over the Open Street Map base layer for printing or sharing custom maps.

# Part III: Data Production and Systems Administration

The Grant F. Walton Center for Remote Sensing and Spatial Analysis (CRSSA), Rutgers University, has been on the Portal Team since its inception, and continues to provide support for the site's operations through data development/management, IT/web services/server management, technical operations and advisory roles. The following outlines CRSSA's roles and responsibilities during 2022 and projected for the 2023 time period.

## Data Production and Management

CRSSA's geographic information systems (GIS) database development and management for the Portal, can be categorized into the following: 1) in-house data production; 2) management of in-house published web services and their source GIS data; 3) external/existing web service preparation for Portal integration, 4) publishing data layers to the Portal viewer and data catalog, and 5) enhanced visualization/slider.

### In-House Data Production

CRSSA actively participates on the Technical Team, working in coordination with team members to develop data development actions to meet Portal goals as identified by the OMDT and approved by MARCO. When these targeted data sets are not available through existing authoritative sources or in web service format from the data originator, CRSSA has developed, processed, and published these data sets in-house in coordination with the Technical Team and data sources.

Examples of in-house data development and web service publishing activities in 2022 include Wastewater Outfall Discharge Flow data compiled by the Portal utilizing Marine Cadastre outfall GIS point data and EPA's publicly available pollutant information; Commercial Whale and Dolphin Watch Areas data generated and delineated for the Mid-Atlantic region in cooperation with participating whale watch operators and merged with Northeast Portal watch areas data; and a revision of the Recent Telecom Cables (2016-) layer with the addition of the Dunant Line, a Google-owned high-speed fiber optic submarine cable that runs across the Atlantic Ocean. These layers are also published with data documentation available in the Portal Data Catalog as data description text and metadata PDFs and/or html-formatted documents. Also, the Portal continued its coordination with the U.S. Coast Guard by publishing USCG-supplied GIS data of Proposed Anchorage Areas and Port Access Route Studies (PARS) in support of public comment periods for Federal Register announcements. CRSSA will continue to publish these types of data in 2023 in coordination with Portal partners for various Portal themes and efforts.

The above geospatial datasets are developed and prepared for visualization through cartographic representation in geographic information systems software (Esri ArcGIS is utilized by the CRSSA team). Other production tasks include the composition and/or assembly of data layer descriptions and metadata documentation, reviewed by the source organization for completeness and presentation.



## **Management of In-house Published Web Services and GIS data**

These in-house produced data are then published to web services utilizing ESRI's ArcServer application so the data can be ingested into the Portal. Web services published to the Portal server, along with their associated GIS data, are managed, maintained and updated by CRSSA. From the source data to the published services, these data are inventoried for the purpose of both an active or longer term/legacy database, as well as primarily to revise in-house published data when necessary as identified by the Technical Team. In 2023, this inventory will continue with planned data activities.

## **External/Existing Web Service Preparation for Integration**

In addition to in-house produced and hosted data, external web services are a vital data source for the Portal. CRSSA works with the Technical Team in evaluating these services for integration and display as needed. There are a variety of external web services sources visualized on the Portal, primarily, as of 2023, from federal (e.g. NOAA and BOEM), university (e.g. Duke University), and from the Northeast Ocean Data Portal. As with in-house data production, ancillary information such as data layer descriptions, metadata documentation, and data source links are assembled.

For bulk imports of large sets of external web services (e.g. Marine Life), Ecotrust has developed codes/scripts to facilitate this import process. CRSSA and the Technical Team works with Ecotrust during this process to assist as needed. An example of previous efforts is the import of Duke University's Marine Life Library and vessel automatic identification systems (AIS) data, and subsequent updates into the Portal in recent years.

## **Publishing Data Layers to the Portal Viewer and Data Catalog**

For both in-house and external web services to be integrated into the Portal viewer and data catalog, the data layers must be prepared for visualization on the Portal platform. As of 2023, CRSSA is primarily responsible for this role utilizing the web interface administrative tool developed and actively maintained by Ecotrust. Entries to be populated include the web service links, data descriptions, source/originator links, and other associated text. All work is currently performed on the Portal 'Staging' or 'Sandbox' working sites for data review before being pushed to the public Portal application. Staging is the primary and final location for data review. Once approved, these data and metadata appear in the Portal viewer and data catalog, respectively.

## **Sliders and Animations**

The Portal's slider and animation tool is a feature that enables the user to easily click, follow, activate, and control layers in the Viewer's Active tab. The team will continue to apply this capability to temporal datasets in 2023, including the AIS 2022 Monthly Transit Count maps for each vessel class (All Vessels, Cargo, Passenger, Tanker, Tug/Tow, Pleasure Craft/Sailing, Fishing, and Other). CRSSA activities in 2022 included the creation of the AIS 2021 Monthly Transit Counts for all vessel classes.

## **Systems Administration/Server**

CRSSA maintains an ESRI ArcGIS Server on the Rutgers University network for in-house published web services and GIS data. The web services are published using ArcGIS Server's

map service capabilities, which allows maps, features, and attribute data to be available inside many types of client applications.

There has been a trend to make GIS data available as feature services, which allow for editing of GIS data and the ability to manipulate layer symbology and attributes. Some federal and state agencies have begun to publish select data in this format, including the NOAA/BOEM Marine Cadastre's efforts to transition from map services to feature services. To utilize those data, in 2021, Ecotrust added the capability for the Portal to ingest feature services for display and use. In 2022, the Portal was able to display various new Marine Cadastre feature services; there still remains some work in coordination with the Marine Cadastre to provide feedback about services display performance, issues, and symbology interpretation in the Portal viewer. This is an on-going process documented by CRSSA for Ecotrust, and is communicated with the Marine Cadastre in the Mid-Atlantic/Northeast/Marine Cadastre coordination meetings. This work will continue in 2023 where applicable.

CRSSA collaborates with Ecotrust to continually improve the capabilities of both the front- and back-end of the Portal application. For their part, Ecotrust actively responds and acts to improve the Portal's administrative tool under their scope of work for the Portal Project, as well as other customized and rapid tool fixes as needed.

## **Coordination/Planning Calls**

Much of the work described throughout this document is coordinated through bi-weekly Portal Technical Team calls, as well as regular interaction via email and calls as needed. The team also helps MARCO's Ocean Mapping Data Team (OMDT) chair coordinate quarterly calls with state and federal partner members of the OMDT. Members of the Portal Team also hold a monthly call with their counterparts from the Northeast Portal and the Marine Cadastre to discuss matters of shared interest. Portal team members collaborate in producing the agendas, notes and minutes for the Tech Team and OMDT calls, and expect to continue these interactions in 2023.

## Part IV: Communications and Outreach

The wane of the COVID-19 pandemic cleared the way in the second half of last year to conduct in-person trainings and demonstrations for the first time since 2019. We look forward to a robust mix of in-person and virtual Portal demos in 2023, and the calendar is already filling up with engagements. The feedback generated through the use of the Portal in these settings will continue to play an important role in guiding data development and releases this year and beyond. The Portal team will work with partners at the federal, regional, and state level to communicate and engage with the stakeholders and communities across the Mid-Atlantic.

Of note, MARCO is preparing to hire its first staff member dedicated to communications and engagement in over five years in the first quarter of 2023. The Portal Team's communications lead will work with this staff member to ensure that the Portal's and MARCO's broader communications plans are aligned and to identify new means for cross-promotion.

### **Agency Actions Section**

The Portal recently debuted a [Current Agency Actions & Public Comment Opportunities page](#) listing informational resources for current and recent government actions related to ocean planning in the region. The page is meant to offer a snapshot of activities that are most closely connected to MARCO's priorities and work or are likely to be of interest to the Portal's community of users. Information shared include Federal Register notices, public comment due dates, press releases and, when available, relevant maps on the Portal.

The Portal Team will update this section regularly with the latest developments on topics like offshore wind, Coast Guard studies and Army Corps of Engineers projects. With an eye toward growing this service, MARCO/MACO member agencies will be encouraged to provide material that they'd like to see publicized. The section format will continue to evolve based on user and stakeholder input.

### **Trainings, Webinars and Demonstrations**

The Portal's training sessions have been effective both in building a community of practitioners and collecting feedback/observations that help the team plan and prioritize improvements. The team will continue to accommodate these requests, whether online or in person, as time, resources and safety considerations permit.

Portal Team members will work with the states, Ocean Mapping Data Team (OMDT), federal agency partners, and regional partners such as MARACOOS to identify opportunities to show the Portal at conferences and events. The team will seek to have a presence at state or agency meetings related to ongoing management or regulatory actions, especially those that are using the Portal. Finally, opportunities will be sought to place team members on panels that can reach strategically important new user groups and enter the Portal for notable awards.

The Portal’s “How Tuesday” series and topical webinars with partners have also been successful vehicles for instructing practitioners and engaging new users. These sessions can offer beginner-focused overviews of the site or specialized sessions about new features and products geared toward industry sectors, governments, and working groups. Recordings are posted to the Webinars page, Portal Blog and in some cases, the How to Use the Portal’s Tools page, where they serve as educational resources for those who couldn’t attend.

External engagement sessions planned for 2023 include, but are not limited to:

- Wildlife Conservation Society (WCS) Inspiring Marine Protection and Careers for Teens (IMPACT) training for NYC school teachers in January
- WCS-hosted Training for Staten Island School for Civic Leadership in January
- Coastal GeoTools conference tool expo, February in Charleston, S.C.
- The 2022 Mid-Atlantic Ocean Forum, to be held virtually in May
- N.J. Sea Grant Consortium’s Ocean Fun Days, held at Sandy Hook in June
- A “Portal 101” session for users of all levels on World Ocean Month (June)
- Delaware Coast Day, annually held in Lewes in the fall
- A How Tuesday providing a tutorial on the Portal’s advanced tools
- Webinars for other high-profile data updates and tool upgrades identified in this work plan

## **Portal Blog**

The News page ([portal.midatlanticocean.org/news/](https://portal.midatlanticocean.org/news/)), commonly known as the “Portal blog,” is a key tool for keeping audiences engaged and informed. Content produced in this section also significantly improves the site’s overall search engine visibility. As a matter of practice, all significant data additions, new/improved tools or other important developments are promptly reported in this section.

Typical topics include announcements and instructional guidance for new data and tools; MARCO news with Portal implications; a dedicated page with links to press releases from partner agencies (states, NOAA, BOEM, et al) related to ocean planning; recordings of How Tuesday webinars; links to news articles about Portal; stakeholder profiles and other articles relevant to audience.

## **Ocean Stories**

Part story map platform and part digital magazine, the Ocean Stories section is a unique public outreach tool for the Portal. The stories and their signature scrolling data map feature have been effective for reaching non-traditional users, such as K-12 students and professionals in the industries that are profiled.

The team will pursue story topics that introduce readers to new ocean users and industry sectors, highlight new data products, promote case studies showing people who have used the Portal to solve problems or aid decisions, and seek unique story angles that can provide human dimensions to map data. Stories that may be produced in 2023 include, but are not limited to:

- **Energy Transmission Mini-Series:** A two-part educational series on issues surrounding offshore wind energy transmission. Part I will cover transmission basics in federal waters; Part II will interview a Dominion Energy representative about challenges and lessons learned from constructing the CVOW power cable.
- **Hudson Canyon Feature:** A team member will ride along on a party boat trip to one of the East Coast's legendary fishing spots, interviewing the captain and passengers.
- **Historic Tribes of the Mid-Atlantic:** This story would provide a historic tour of the peoples who once lived in the coastal areas of the MARCO states. Information/interviews to be gathered during MARCO's planned outreach to state and federally recognized Tribes.
- **Mid-Atlantic Offshore Wind Update:** The Portal's existing state-by-state summary of offshore wind lease areas continues to attract traffic. This story will be updated to reflect the most current plans and map data.

Older Ocean Stories will be maintained and edited to include updated information and new layers that help tell the story as they become available.

### **Twitter and E-List Blasts**

The Portal's Twitter account is used to promote new features, upcoming webinars, events with Portal Team presence and respond to questions from users. The account is monitored daily and used strategically to tie messages to larger conversations through the use of trending hashtags.

The Portal's e-mail list is maintained within MARCO's Constant Contact account. The team produces quarterly electronic newsletters to registered users and other subscribers. These email blasts are one of the Portal's most effective means for sharing details about upcoming webinars, links to blog posts about new data, MARCO events and more. The communications lead will update the e-list, adding new registered Portal users from Django server and those who provide contact information (via sign-up sheets at Portal kiosks, etc.) on a rolling basis.

### **Page Improvements and Maintenance**

In addition to the activities outlined above, the communications lead will conduct general maintenance of the site's editorial content and pages via the Wagtail CMS. Typical tasks include:

- Regular additions to the Calendar page with Portal/MARCO events and other events relevant to the user community.
- Keep informational pages such as the Map Resources and Data Resources pages up to date.
- Periodically add content to Case Studies page, including fact sheets, Ocean Stories, etc. that demonstrate how the Portal has been used to assist work and solve problems.
- Evaluate needs for new pages and site organizational changes.

## Portal Instructional Resources

A frequent piece of feedback from in-person training sessions is how useful the [How to use the Portal's tools](#) page is for those who need a quick primer on performing a task or locating data. This page must be updated periodically with new instructional content about the latest data and tools and to account for old assets that become outdated.

The team will produce videos, written guidance, diagrams, fact sheets, and other appropriate resources geared toward instructing people to use the portal. An emphasis will be placed on making these materials simple enough for any user to follow.

## Other Miscellaneous Tasks

- Fielding questions from the public submitted through the Portal's online form and email account, [portal@midatlanticocean.org](mailto:portal@midatlanticocean.org).
- Troubleshooting calls and share-screen sessions with users as needed.
- Development and editing of content on the MARCO website related to the Portal and ocean planning.
- Staffing Portal kiosks at MARCO events and other conferences.

## Analytics

The Portal's traffic on Google Analytics will be monitored for trends and spikes in use that may inform the team's work. Beginning in 2023, the installation of Google Analytics 4 will allow interactions such as clicks on basemaps and tool buttons to be tracked and provide new insights on Portal use. For the one-year period running from Dec. 1, 2021, through Nov. 30, 2022, there were approximately 130,000 map layer clicks in Marine Planner. Below were the most activated layers of the year.

# Top Layers of 2022

December 1, 2021-November 30, 2022  
(Source: Google Analytics)

1.	<a href="#">BOEM Active Renewable Energy Leases</a>
2.	<a href="#">BOEM Wind Planning Areas</a>
3.	<a href="#">Artificial Reefs</a>
4.	<a href="#">BOEM Central Atlantic Call for Information and Nominations Area</a>
5.	<a href="#">Regional Bathymetry</a>
6.	<a href="#">Routing Measures</a>
7.	<a href="#">OCS-A 0483 Virginia Electric and Power Company</a>
8.	<a href="#">Recent Telecom Cables (2016-)</a>
9.	<a href="#">Fathom Lines</a>
10.	<a href="#">BOEM NY Bight Proposed Transit Corridors (2.44 nautical mile width)</a>
11.	<a href="#">Essential Fish Habitats</a>
12.	<a href="#">Unsurveyed area (avian, annual)</a>
13.	<a href="#">Danger Zones &amp; Restricted Areas</a>
14.	<a href="#">Submarine Canyons</a>
15.	<a href="#">Party/Charter 2011-2015</a>
16.	<a href="#">Virginia Research Lease Areas</a>
17.	<a href="#">OCS-A 0508 Avangrid Renewables LLC</a>
18.	<a href="#">BOEM Central Atlantic DRAFT Call for Information and Nominations Area</a>
19.	<a href="#">Party/Charter 2011-2015 Ports</a>
20.	<a href="#">BOEM NY Bight Proposed Wind Energy Areas for 2021 Lease Sale</a>
21.	<a href="#">NCEI Topographic and Bathymetric Mosaic</a>
22.	<a href="#">Historic Native Terrestrial Territories (Not Reservation Boundaries)</a>
23.	<a href="#">OCS-A 0498 Ocean Wind LLC</a>
24.	<a href="#">Wrecks and Obstructions</a>
25.	<a href="#">Offshore Wind Energy Technology Zones</a>

# APPENDIX A: MACO OWRC Transmission Subcommittee Data Priorities

(from the 2022 OWRC work group Activity 4 Progress Report)

## Ranking methodology

Ranking	High	Medium	Low
<b>Data Challenge Priority</b>	Resource/use should be avoided; Mitigation measures do not typically address significant impacts; Significant project viability impacts anticipated	Some resource/use impacts can be accepted; Minimization & mitigation measures do not fully address impacts; Some project viability challenges anticipated	Resource/use is resilient to impacts; Minimization & mitigation measures should address impacts; minimal project viability challenges anticipated
<b>Mid-A Portal Data Availability (as of Summer 2022)</b>	Specifically identifies challenging areas; Spatial coverage through entire study area	May require limited analysis to identify challenging areas; Several minor coverage gaps or 1 large gap in study area	No data exist; Extensive analyses required to identify challenging areas; Multiple large data gaps in study area



Challenge	Priority Level	Portal Dataset Availability
Sediment: contaminated sediment	high	low
USACE Placement Areas	high	low
Sensitive Habitat: corals	high	medium
Cultural Resources: wrecks	high	high
Geology: steep slopes	high	high
Geology: canyons	high	high
Sediment: sand borrow sites	high	high
Military Ship Shock Boxes within the Atlantic and Gulf of Mexico	high	high
Danger Zones and Restricted Areas	high	high
Unexploded Ordnance Locations (UXO)	high	high
Existing Obstructions: pipelines	high	high



Existing Obstructions: wrecks and obstructions	high	high
Ocean Disposal Sites	high	high
Sensitive Habitat: existing aquaculture areas	medium	low
EMF Sensitive Species Habitat	medium	medium
Cultural Resources: submerged landforms	medium	medium
Sensitive Habitat: fish spawning areas	medium	medium
Recreation: high use fishing (private and for hire)	medium	medium
Navigation: anchorage areas (designated & common practice)	medium	medium
Sediment: high seabed mobility	medium	medium
Navigation: existing & proposed fairways	medium	high
Navigation: vessel traffic (AIS)	medium	high
Navigation: traffic separation scheme (TSS)	medium	high
Sensitive Habitat: artificial reefs	medium	high
Commercial Fishing: mobile bottom gear	medium	high
Commercial Fishing: fixed bottom gear	medium	high
Existing obstructions: Subsea cables	medium	high
Sediment: presence of bedrock and boulders	medium	high
Recreation: wildlife viewing	low	high
Recreation: diving	low	high
Navigation: aids to navigation (buoys)	low	high
Protected Species Migration Routes	low	medium
Sediment: high organic matter	low	low

# APPENDIX B: Delaware Ocean and Bay Plan Background Information

## **Ocean and Bay Planning Area (see other attachment)**

- Includes state waters, including the Delaware Bay, and federal waters with a northern boundary of the state of Delaware line at the confluence of the Delaware Bay and Atlantic Ocean, extending eastward past the deepwater canyons along the outer continental shelf and slope. The southern boundary is at the Delaware/Maryland state border, extending eastward past the deepwater canyons along the outer continental shelf and slope.

## **Preliminary Goals**

1. Utilize the plan to better understand and manage ocean/bay resources and uses.
2. Inspire pride and stewardship in Delaware's ocean and bay through education and knowledge-sharing. Highlight how the public can get involved in acting as a steward of the ocean and bay.
3. Protect marine resources, ecological functions, and ocean/bay uses that provide long-term economic and social benefits for all Delawareans while recognizing and considering how current and emerging uses may impact the state.

## **Expected Outcomes**

1. Reference document for existing and potential new ocean and bay users with an identification and characterization of ocean and bay uses, as well as an inventory of ocean and bay resources.
2. Description of the impacts of each water-dependent activity on other uses and identified resources.
3. Recommendations for best practices for balancing ocean and bay activities with the conservation of marine resources through spatial planning.
4. Description of how climate change has impacted and will continue to impact ocean/bay uses and activities.
5. Identified gaps and needs in the regulatory and research spheres pertaining to ocean and bay resource management.
6. Visualization tool for ocean and bay users to visualize the water-dependent activities and marine resources occurring within the Planning Area, how those activities and resources interact with each other, and explore best practices for balancing ocean and bay activities with the conservation of marine resources while minimizing conflict.

## **Anticipated Timeline**

- Establish DNREC Ocean and Bay Plan Workgroup: completed
- Stakeholder Engagement: Fall 2022
- Draft Outline: Winter 2022/2023
- Focus Group Input: Winter 2022/2023
- Public Workshops: Spring 2023
- Draft Ocean and Bay Plan release: Summer 2023
- Stakeholder and Public Input: Fall 2023
- Final Ocean and Bay Plan release: Winter 2023/2024