

DRAFT

**MARYLAND'S COASTAL ZONE
ENHANCEMENT PLAN**



COASTAL ZONE MANAGEMENT ACT §309

ASSESSMENT AND STRATEGY

2021-2025

PREPARED BY THE MARYLAND CHESAPEAKE & COASTAL SERVICE
FOR FEDERAL CZMA §309 PROGRAM ENHANCEMENT FUNDING
OFFICE OF OCEAN AND COASTAL RESOURCES MANAGEMENT, NATIONAL
OCEANIC & ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF
COMMERCE

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LIST OF ACRONYMS

ARWG	Adaptation Response Working Group
CBNERR-MD	Chesapeake Bay National Estuarine Research Reserve
CCS	Chesapeake and Coastal Service
CMP	Coastal Management Program
CRS	Community Rating System
CZMA	Coastal Zone Management Act
DIPP	Deal Island Peninsula Project
FEMA	Federal Emergency Management Agency
GBWC	Greater Baltimore Wilderness Coalition
MACO	Maryland Association of Counties
MARCO	Mid-Atlantic Regional Ocean Council
MCCC	Maryland Commission on Climate Change
MDA	Maryland Department of Agriculture
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MDP	Maryland Department of Planning
MDOT	Maryland Department of Transportation
MEMA	Maryland Emergency Management Agency
Mid-A RPB	Mid-Atlantic Regional Planning Body
MORE	Maryland Outdoor Recreation Economic Commission
NMS	National Marine Sanctuary
NOAA	National Oceanic and Atmospheric Administration
POS	Program Open Space
SHA	State Highway Administration
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WIF	Waterway Improvement Fund

1. INTRODUCTION

The Maryland Chesapeake & Coastal Service aspires to make communities, economies and ecosystems stronger, healthier and able to recover from and adapt to the stresses of climate change.

From the Chesapeake Bay to the Atlantic Ocean, Maryland's extraordinary coastal resources contribute to its economy, environment and quality of life. With these remarkable resources comes an obligation of stewardship. Coastal resources must be protected and conserved, yet communities must be able to thrive economically. A balance is needed between the human demands and the conservation of the resources that makes Maryland such a unique place to live, work and play. Maryland's Coastal Zone Management Program – the Chesapeake & Coastal Service – works to achieve that balance.

In 1972 Congress responded to the rapid deterioration of coastal areas throughout the nation by passing the Coastal Zone Management Act, or CZMA. The main objectives of CZMA, administered by the National Oceanic and Atmospheric Administration's (NOAA) Office for Coastal Management (OCM), are to "preserve, protect, develop, and where possible, restore or enhance the resources of the nation's coastal zone." The key feature of the Act was the creation of a partnership among federal, state, and local governments and providing funds to coastal states to develop and administer coastal zone management programs.

HOW THE MARYLAND CHESAPEAKE AND COASTAL SERVICE IS ORGANIZED

Maryland's Coastal Zone Management Program (CMP) was federally approved in 1978 and exists within the Maryland Department of Natural Resources (DNR). In 2007, the State of Maryland consolidated the administrative and management functions of the CMP, the Environmental Protection Agency (EPA) Section 117 Awards as well as State's Chesapeake and Atlantic Coastal Bays Trust Fund to a single program. Since then, Maryland's CMP has been known as the Chesapeake and Coastal Service (CCS). In 2016, CCS was strengthened again when the State of Maryland transitioned the Clean Marina and Waterway Improvement Programs and portions of the Integrated Policy and Review Unit to within the CCS. This new alignment brought new opportunities for CCS to implement locally-relevant coastal public access projects, address emerging coastal waterway management needs such as beneficial use, and bridge issues like public access and coastal resilience. Through these alignments, CCS has been better able to leverage core competencies from different programs, avoid duplicate efforts, and leverage and efficiently prioritize resources to advance the goals of the CZMA.

In addition to internal cross-functional collaboration, CCS has partnerships with local, regional and state agencies, private, nonprofit, and academic institutions to achieve success. Through this networked approach, no one agency or department is responsible for Maryland's entire coast. Rather, all partners help to ensure its proper management. The other agencies that comprise the original networked program include: Maryland Department of the Environment (MDE), Maryland Department of Planning (MDP), Maryland Department of Agriculture (MDA), Maryland Department of Transportation (MDOT), and the Department of Housing and Community Development (formerly DECD). Since 1978, additional partnerships have been formed with Maryland Environmental Trust (MET), Maryland Emergency Management Agency (MEMA), Maryland Historical Trust (MHT), Maryland Energy Administration (MEA), Maryland Geological Survey (MGS), University of Maryland

Center for Environmental Sciences (UMCES), Towson University Center for GIS (TUGIS), Critical Area Commission, Maryland Coastal Bays Program, and University of Maryland Sea Grant Extension.

As noted above, CCS houses the state CZMA programs including the CMP and the Chesapeake Bay National Estuarine Research Reserve in Maryland (CBNERR-MD). These two programs have aligned themselves more closely since the last assessment on a variety of issues related to coastal hazards, public access, and beneficial use of dredged material. The CMP and Reserve programs are now organized within CCS as the Office for Ocean and Coastal Management. These programs work cooperatively to support land conservation efforts in the coastal zone and apply science, stewardship and innovative technologies to site management practices at Reserve sites. Together, the State's CZMA programs deliver a high level of support and training for local partners via the Community Resiliency and Resiliency through Restoration Programs; long-term coastal habitat change monitoring; evaluating and building capacity for restoration and conservation practices throughout coastal watersheds; and, training the next generation of coastal stewards.

THE CHESAPEAKE AND COASTAL SERVICE AT WORK

The CMP celebrated 40 years in 2018. Over the last four decades, Maryland's CMP has played a dynamic role in helping Maryland advance some of the most pressing coastal issues of its time. Successes include laying the groundwork for the historic Chesapeake Bay Agreement and the creation of Maryland's nationally-recognized Critical Area Program; establishing one of the first state-level Climate Adaptation Plans; forming increased partnerships to address ocean management needs; and, securing support and funding for the Chesapeake and Atlantic Coastal Bays Trust Fund and the Resiliency through Restoration Initiative to advance water quality and resilience goals, respectively.

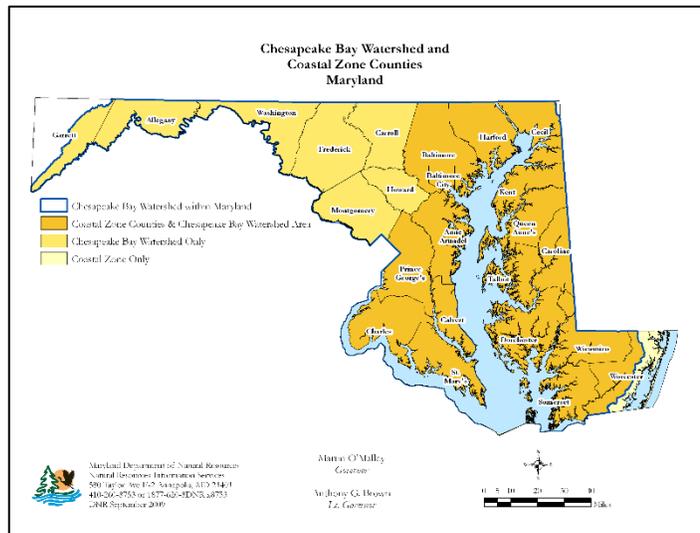
The networked foundation of CCS has helped Maryland work to reduce the environmental impacts of coastal development, resolve significant conflicts between competing coastal uses and provide critical assistance to local governments in coastal planning and resource protection. CCS conducts research, provides technical services and distributes federal and state funds to enable on-the-ground projects that benefit Maryland's coastal communities. Whether it's helping communities prepare for climate change, restore local waterways, protect habitats, foster clean coastal industries, or encouraging citizens to become caring stewards, CCS constantly seeks ways to improve coastal management.

The Maryland coastal zone is comprised of the land, water and subaqueous land between the territorial limits of Maryland in the Chesapeake Bay, Atlantic Coastal Bays and the Atlantic Ocean, as well as the towns, cities and counties that contain and help govern the thousands of miles of Maryland shoreline. The Maryland coastal zone extends from three miles out in the Atlantic Ocean to the inland boundaries of the 16 counties and Baltimore City that border the Atlantic Ocean,

Chesapeake Bay and the Potomac River up to the District of Columbia. This area encompasses two-thirds of the State's land area and is home to almost 70% of Maryland's residents.

CZMA SECTION 309 ASSESSMENT AND STRATEGY PROCESS

Section 309 of the CZMA is known as the Coastal Zone Enhancement Program. Established with reauthorization of the CZMA in 1990, Section 309 is a voluntary grant program in which federal funds are made available to coastal states with federally approved coastal management programs. To receive funds, the programs must assess nine specified areas of coastal zone management as they relate to the state and identify which are of highest priority. The nine priority enhancement areas are: Wetlands, Coastal Hazards, Public Access, Marine Debris, Cumulative and Secondary Impacts, Special Area Management Planning (SAMP), Ocean/Great Lakes Resources, Energy and Government Facility Siting and Aquaculture.



Every five years, Section 309 offers states the opportunity to enhance their current CMP by conducting a needs assessment of the nine coastal policy enhancement areas and considering improvements to core law authorities, creating new programs, and designing new funding sources. This is the sixth Assessment and Strategy that the Maryland Program has submitted under CZMA Section 309.

SUMMARY OF THE 2021-2025 ASSESSMENT AND STRATEGY

Maryland's 2021-2025 Coastal Zone Enhancement Plan includes assessment of progress in the nine enhancement areas over the period January 1, 2015 through December 31, 2019. State priorities have been developed and the strategies outlined in this document will guide our program enhancement efforts over the next five years, from 2021-2025.

As a key partner in Atlantic Ocean coordination and Chesapeake Bay restoration, much of Maryland's work in these nine enhancement areas is regional in scope. Therefore, in each of nine assessments we not only characterized efforts that enhance Maryland, but also those efforts in which we participate that enhance a multi-jurisdictional region.

The content that follows the introductory materials is divided into nine sections corresponding to the nine priority enhancement areas: Wetlands, Coastal Hazards, Public Access, Marine Debris, Cumulative and Secondary Impacts, Special Area Management Planning (SAMP), Ocean/Great Lakes Resources, Energy and Government Facility Siting and Aquaculture. Each of these nine sections contains the Assessment followed by the Strategies. There are more activities included in this document than there is funding available through Section 309 and not all components proposed in Maryland's Coastal Zone Enhancement Plan are eligible for this source of NOAA funding. Projects will be chosen from the Plan annually as part of federal grant applications and leveraged with efforts in Section 306 and other funding sources. We pledge to fully draw upon all state and federal

resources available to us to complete these projects, and to explore additional funding sources through grants, and other arrangements.

PRIORITIZATION OF ENHANCEMENT AREAS

Enhancement Area	2020 Priority	2015 Priority	2010 Priority	2005 Priority	2000 Priority	1997 Priority
Wetlands	Medium	Medium	Medium	Medium	Medium	High
Coastal Hazards	High	High	High	High	High	High
Public Access	Medium	Medium	Medium	Medium	Medium	High
Marine Debris	Medium	Low	Low	Low	Low	Low
Cumulative and Secondary Impacts	Medium	Medium	High	High	High	High
Special Area Management Planning	Low	Low	Low	Medium	Medium	Medium
Ocean Resources	High	High	High	High	Medium	Medium
Energy and Government Facility Siting	Medium	Medium	Medium	Low	Low	Low
Aquaculture	Low	Medium	Medium	Medium	Medium	Medium

JUSTIFICATION FOR PRIORITIES

Priority rankings have been assigned to coastal management enhancement areas by considering: 1) the results of assessments developed for each coastal enhancement area; 2) opportunities for development of new or enhanced management approaches considered eligible for and best suited for CZMA Section 309 funding; 3) the contribution to the overall priorities of the program; 4) whether the issue is more appropriately addressed through existing management programs; and 5) the track record of addressing the topic in previous enhancement efforts.

DESCRIPTION OF THE 309 ASSESSMENT & STRATEGY DEVELOPMENT PROCESS

Beginning in November 2019, CCS staff initiated the Assessment and Strategy development by engaging the appropriate State and Local partners. Draft assessments were completed in January 2020. In addition to the needs and gaps identified in the draft assessments and feedback received from partners, CCS staff consulted a number of additional resources outlining coastal management needs and program recommendations to identify strategy connections.

Maryland’s Coastal Zone Enhancement Plan was developed with the guidance provided by Maryland’s NOAA OCM Coastal Program Specialist. Concurrent with NOAA review, the CCS plans to solicit further review from the following agencies, institutions and programs:

- Maryland Department of the Environment
- Maryland Department of Planning
- Maryland Energy Administration
- Maryland Department of Transportation
- Maryland’s Emergency Management Agency
- The State’s Office of the Attorney General
- Maryland Geological Survey
- Critical Area Program
- Maryland DNR Fishing & Boating Service
- Maryland DNR Forestry Service
- Maryland DNR Land Acquisition & Planning Programs

- The National Aquarium
- The Maryland Coastal Bays Program
- Mid-Atlantic Regional Council on the Ocean

PUBLIC COMMENTS

Upon submitting Maryland’s Coastal Zone Enhancement Plan as a draft to NOAA Office of Coastal Management (OCM) on October 16, 2020, the CMP plans to coordinate public review and comment through the CCS website (<http://dnr.maryland.gov/ccs/>) and the Program’s *In The Zone* electronic newsletter.

2. SUMMARY OF RECENT 309 ACHIEVEMENTS

Maryland’s CMP has worked over the past five years to support coastal management through the 2015-2020 309 Assessment and Strategy. Significant accomplishments and program changes are listed below by Strategy: Enhancing Resilience to Coastal Hazards and Climate Change, Coastal and Ocean Resources and Uses, and Data to Decision Making.

ENHANCING RESILIENCE TO COASTAL HAZARDS AND CLIMATE CHANGE

Community Resilience Grants: In 2015 the CMP worked across divisions to expand the scope of its Coast Smart Communities grants to include a more watershed level approach to address climate impacts and leverage funds to do so. The addition of water-quantity projects in this grant program greatly expanded the CMPs’ work supporting local resilience challenges. These newly termed Community Resilience Grants funded 28 projects in 16 jurisdictions over the past 5 years. The type of projects that were funded during this time included: Supporting communities through the FEMA’s Community Rating System; developing long range plans that assess current and future conditions and potential adaptation strategies; and enabling communities to enact updated zoning and ordinances to meet current regulations.

These projects provide examples of how the CMP is able to effectively connect local, state and federal expertise, programs and resources. Some projects examples include: Calvert County: Flood Mitigation Small Area plans for five unincorporated communities and three municipalities that addressed current and future flood risk; supporting three counties and three municipalities in their application into the Community Rating System in partnership with MDE; and, supporting small municipalities and low capacity counties to update their Critical Area and Zoning Ordinances to enable local governments to be prepared, progressive and responsive to development requests that balance the impacts of development and preserve natural resources functions.

Sea Level Rise Inundation and Coastal Flooding - Construction, Adaptation, and Mitigation (HB1350/SB1006 (2018) and HB1427 (2019): This legislation strengthened the Maryland Coast Smart siting and design legislation (HB 615) of 2014 to better manage and address coastal adaptation efforts. Additions in this legislation included requirements to more fully integrate highway facilities, develop a saltwater intrusion plan, establish criteria for use of state funds for hazard mitigation as it pertains to the use of state funds for sea level rise and

coastal flooding, and require local governments to address nuisance flooding. As a result of this legislation, the CMP is working with the Coast Smart Council to update its siting and design guidelines and facilitate work and discussions about the saltwater intrusion plans. The CMP directly led inter-agency efforts to develop and issue [nuisance flood plan guidance](#) and host training events on the issue and plan requirements. Continuing on this, CMP is directly providing technical and financial support to local partners to assist in developing their nuisance flood plans and develop geospatial event-reporting tools.

Deal Island Peninsula Partnership: The CMP worked in collaboration with the Chesapeake Bay National Estuarine Research Reserve and the University of Maryland to establish the Deal Island Peninsula Partnership. This partnership is a community initiative focused on increasing the resilience of local communities to coastal flooding, erosion and sea level change. As a part of this initiative there were a variety of outreach and communication mechanisms utilized including stakeholder workshops; creation of vulnerability maps; community conversations on topics identified at the stakeholder workshop; development of the integrated coastal resilience assessment; website and brochure development and field and site visits throughout the community. The intent was to bring together the stakeholders and local community to understand the vulnerabilities and then develop solutions to enhance resilience.

Climate Leadership Academy: Established in 2018 by the State of Maryland in partnership with the Association of Climate Change Officers, the Maryland Climate Leadership Academy advances the capacity of state and local government agencies, infrastructure organizations and businesses to develop and implement sound climate change initiatives thus ensuring current and future public health, security and economic prosperity. Maryland's Climate Leadership Academy supports the work of the Maryland Climate Change Commission, providing important continuing education and executive training to state and local governments, infrastructure organizations and the private sector. This highlights the CMP efforts to integrate climate considerations in all levels of decision making to build resilience.

COASTAL AND OCEAN RESOURCES AND USES

Mallows Bay National Marine Sanctuary. On September 3, 2019, five years after the State of Maryland submitted a community-based nomination to NOAA, designation occurred for the Mallows Bay – Potomac River National Marine Sanctuary. Located along an 18-square mile stretch of Potomac River coast in Charles County, Maryland, the new sanctuary boasts a collection of historic shipwrecks dating back to the Civil War, as well as archaeological artifacts nearly 12,000 years old. Its culturally rich landscape also includes sites that represent the history of Native American communities in the area, the once-booming Potomac River fishing industry and the Civil War. As described above, the Maryland CMP worked closely with Charles County, the Maryland Historical Trust, NOAA and countless other partners to advance the nomination and conduct programming and other work at the site. The CMP played a leadership role with these other partners to draft and revise an Environmental Impact Statement and Alternatives Analysis, a Management Plan, establish a water trail and map land trails, conduct aerial videography for interpretive materials, launch a water quality buoy, engage students at schools and hold community and school events on site.

Ocean Studies and Coordination. As ocean uses continue to change and intensify, Maryland engaged with many partners in the Mid-Atlantic on programmatic, management and funding

issues to address ocean coordination and environmental study needs. Over the past five years, the CMP was an active partner in helping to develop, adopt and work to implement an Ocean Action Plan. During this same period, the CMP carried out work to secure, leverage and manage nearly \$5M of state, CZM and other federal funding to advance five critical ocean environmental studies related to marine mammals, sea turtles, birds, black sea bass and benthic habitats. At the end of 2019, the CMP began work to fund and leverage an additional \$2M worth of projects to advance technology and understanding about marine mammal acoustic detection, including one project aimed at detection of the critically-endangered North Atlantic Right Whale. The Program's ability to secure and leverage funding to carry out these environmental studies is a demonstrable example of the CMP's ability to position itself to effectively connect coastal and ocean management issues to the science and data necessary to inform decisions

Working Waterfronts Program: In 2014, the CMP initiated a new Working Waterfronts Program in order to assist local communities with the preservation of existing and historic working waterfronts in Maryland. The Working Waterfronts Program engaged partners throughout the state to define working waterfront lands, infrastructure and activities; identify community needs; and offer technical and financial assistance to ensure public access and support for water-dependent businesses and industries. In 2015-2017 the CMP worked with the Virginia Institute of Marine Science to develop a GIS based working waterfronts inventory that includes state-wide water access points, marinas, and maritime businesses. The inventory is publically available on the Coastal Atlas. In 2015, CCS started offering competitive Working Waterfronts Enhancement Grants, which provided financial and technical support to preserve and protect existing and historic waterfront communities in Maryland. Nine projects were funded, providing financial assistance to local governments in support of waterfront planning and program development focused on traditional uses, public access, maritime heritage, tourism and business, recreation, natural resources conservation/restoration, and coastal hazards.

DATA TO DECISION MAKING

Coastal resiliency data and integration into POS Targeted Ecological Areas and Scorecard:

The CMP completed work on Maryland's Coastal Resiliency Assessment in 2016. This is a landscape-level spatial analysis that identifies where natural features provide the greatest potential risk reduction for coastal communities. Following release of the Coastal Resiliency Assessment, the CMP worked with MDNR Land Acquisition & Planning to update the Program Open Space (POS) Stateside Scorecard to include coastal resiliency data. The POS Stateside Scorecard evaluates ecological value, public access and recreational opportunities for parcels that are being considered for acquisition by the state. The Scorecard update ensured that parcels are now being evaluated for coastal resiliency benefits. This work was further expanded upon the completion of a CCS-led [parcel evaluation tool](#) that allows real-time data return about the habitat and other key resources located on parcels under consideration for protection.

Resiliency through Restoration: In 2017, DNR launched a new [Resiliency through Restoration](#) Initiative to demonstrate how nature can help protect communities from climate change impacts. Between July 2017 and September 2019, CMP staff initiated design of 16 restoration projects in the Coastal Zone. Projects include shoreline restoration, beneficial use of dredged material, tidal marsh restoration, dune restoration, landscape-level green infrastructure, and other nature-based practices that provide community and ecosystem benefits. While the Initiative focused initially on living shoreline projects that address coastal flooding, erosion and sea level rise, the program scope was later expanded to also address

inland and urban flooding due to heavy precipitation.

CMP staff manage this new program and work with restoration practitioners to directly support on-the-ground implementation. The Initiative provides financial and technical assistance for design, construction and adaptive management of nature-based resiliency practices. CMP staff also provide assistance with project targeting, monitoring, community outreach and education. In 2019, staff developed a Communications Plan for the Initiative and began working with two grantees to develop local communication plans. Additionally, CMP staff is working with Reserve staff to coordinate monitoring of resiliency projects. This effort is being piloted through June 2022, with plans to extend the program based on lessons learned and community needs.

Beneficial Use: Identifying Locations for Dredge (BUILD): Dredged material is a sediment, and therefore a resource. The department is capitalizing on dredged material as fill in restoration projects by aligning restoration and dredging projects. Doing so allows planners to save on costs that would otherwise be incurred to transport dredged material to upland placement sites or to bring fill material to restoration sites. Further, placement of dredged material in restoration projects is increasingly enhancing environmental habitats, providing resilience to coastal communities, and preserving upland placement capacity for future dredging projects. Because dredge and restoration projects must be aligned in space, time, and quality, such alignment can require a minimum of 1-2 years of advanced planning. To achieve alignment and to proactively identify beneficial use opportunities for habitat and dredging benefits, the BUILD effort completed in 2019 following the completion of a Coastal Management Fellowship project. It is expected to result in many future opportunities to enhance coastal habitat, attain cost savings and maintain navigable waterways.

DNR Lands Resilience Planning Pilots: In 2017, the CMP worked with the University of Maryland Center for Disaster Resilience to complete an assessment of watershed issues driving inland flooding events and developed a subsequent approach to reducing impacts at Patapsco Valley State Park. Patapsco Valley is a river valley park where the Patapsco River meanders through the park's 16,000 acres, with numerous smaller tributaries draining the watersheds around the park. As Maryland experiences changes in the frequency, flashiness and intensity of precipitation events, the park is witnessing resource and infrastructure management challenges due to the significant flooding issues that are associated with these types of events. This project cemented an approach between the CMP and Maryland Park Service for addressing resilience on state lands, and spurred the development of a State Lands Climate Assessment. This accomplishment has allowed the CMP to bridge its habitat and coastal hazards expertise with MDNR land management needs.

State Lands Climate Assessment: In 2018-2019 the CMP worked with Salisbury University's Eastern Shore Regional GIS Cooperative to develop a GIS based vulnerability assessment of state recreational lands, including State Parks, State Forests, Wildlife Management Areas, and Fishery Management Areas. This assessment utilized climate change related GIS data, infrastructure data, and ecological data to identify and understand vulnerabilities and impacts to state lands, including long-term impacts to recreational use, water access, infrastructure, and ecosystem management. This work marked a shift in work to integrate climate risk into MDNR land planning that has expanded CCS' ability to assist MDNR in leading by example. To continue this work the CMP submitted an application for a NOAA Coastal Management Fellow, starting in 2020, to assist in a second phase of the project, focused on developing Resilience Action Plans for three different MDNR land units. The project will result in new technical guidance and best practices

on climate adaptation for the management of public lands that can serve as a model for state and local land managers.

CBNERR-MD Resilience Planning: In 2018, the CMP and CBNERR-MD worked with the University of Maryland School of Architecture to develop a graduate level design studio to develop climate-resilient design concepts for a field station at the Monie Bay component of the Reserve. The challenge for the students was that the structure needed to: fit the National Estuarine Research Reserve standards for dorms, lab and meeting spaces; achieve energy efficiency with a goal towards net-zero; and, adhere to the state’s Coast Smart Construction guidelines that were developed by Maryland’s CMP through its leadership on the Coast Smart Council. The result was 17 individual concepts and a report of efforts as summarized in [Charting a Way Forward: Research at Monie Bay](#) that tested design strategies for a net-zero energy, resource efficient, low-impact field station located in the critical area of the Chesapeake Bay watershed.

3. PHASE I ENHANCEMENT AREA ASSESSMENTS

The Section 309 Assessment and Strategy includes an assessment for each of the nine enhancement areas – wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, oceans and Great Lakes resources, energy and government facility siting, and aquaculture. The assessment process is comprised of two phases to enable CMPs to more easily target their assessments to high priority enhancement areas for the program – Phase I (high-level) Assessments and Phase II (in-depth) Assessments.

Phase I (High-Level) Assessments

The Maryland CMP utilized the templates provided by NOAA to complete the Phase I (or high-level) Assessments for each of the nine enhancement areas. Based upon the responses to the questions in the Phase I Assessment template, key stakeholder input, and staff’s extensive knowledge of the issues, each enhancement area was ranked as high, medium, or low priority for the state’s coastal management program. The Phase I Assessments for each of the nine enhancement areas follow.

Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are “those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” [33 CFR 328.3(b)]. See also pg. 174 of the CZMA Performance Measurement Guidance¹ for a more in-depth discussion of what should be considered a wetland.

¹ <https://coast.noaa.gov/czm/media/czmapmsguide2018.pdf>

Phase I (High-Level) Assessment: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. *Using provided reports from NOAA’s Land Cover Atlas,² please indicate the extent, status, and trends of wetlands in the state’s coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Instead, Puerto Rico should just report current land use cover for all wetlands and each wetlands type.*

As of January 2020, NOAA’s Land Cover Atlas data had not been updated with 2016 C-CAP data. NOAA guidance sent in December 2019 indicated the CMP could proceed with a narrative characterization and/or our own methodology to conduct the analysis. CCS elected to use our own methodology to conduct the analysis for the table below based on the National Land Cover Database 2016 data.

We used the Multi-Resolution Land Characteristics (MRLC) Consortium of federal agencies National Land Cover Database (NLCD) to calculate wetland area and trends. This is the dataset that is used by NOAA’s Land Cover Atlas and was chosen to maintain consistency with prior reports and to present change over time. While the analysis shows an increase in freshwater wetlands from 2011-2016 this is not consistent with our understanding of trends in the state, and we attribute to error in detecting woody wetlands. The NLCD likely overestimates woody wetlands; the total for the Maryland Coastal Zone was 626,000 acres using NLCD compared to 415,000 acres using the National Wetland Inventory (NWI) data from 2016. The NWI estimate is more consistent with prior state level analysis. Totals for estuarine wetlands are much more similar across assessments- 196,000 using NLCD and 216,000 using NWI. Overall, NLCD likely overestimates wetland area in the Coastal Zone of Maryland, at 822,527 acres compared to 639,805 total acres using NWI and 624,967 total wetland acres using the Chesapeake Conservancy’s high resolution LU/LC data product that is based on 2014 LiDAR data. The trends observed from 2001 to 2016 are consistent with state observations in loss of wetlands, primarily due to development or sea level rise, but would suggest that the slight increase in woody wetlands over that period is more likely due to error or change in methodological approach rather than actual increase in freshwater wetland area.

Current state of wetlands in 2016 (acres): _____822,527_____

² <https://coast.noaa.gov/digitalcoast/tools/lca.html>. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state’s coastal county data. The reports will be available after all of the 2016 data is available.

Coastal Wetlands Status and Trends

Change in Wetlands	from 2001-2016	from 2011-2016
Percent net change in total wetlands (% gained or lost)*	-0.26%	3.63%
Percent net change in freshwater (palustrine wetlands) (% gained or lost)*	2.80%	9.52%
Percent net change in saltwater (estuarine) wetlands (% gained or lost)*	-8.89%	-11.52%

How Wetlands Are Changing*

Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 2001-2016 (Sq. Miles)
Development	2.54
Agriculture	0.16
Forest	0.11
Barren Land	0.02
Water	3.95

** Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in wetlands for the time period for which data are available. Puerto Rico does not report.*

- If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national data sets.*

The National Land Cover Database is updated every five years and offers the ability to compare land cover changes over different time scales, and therefore was the tool used to complete the tables above. In addition to this national dataset, Maryland has several state- and regionally-specific spatial data and mapping tools that are used to inform a number of different planning and management decisions related to coastal wetlands. Those include:

Maryland Coastal Resiliency Assessment

The CMP completed work on [Maryland's Coastal Resiliency Assessment](#) in 2016. This landscape-level spatial analysis identifies where natural features (e.g. coastal wetlands) provide the greatest potential risk reduction for coastal communities. The Resiliency Assessment produced multiple data products for use in resiliency and adaptation planning, including the Shoreline Hazard Index, Habitat Role in Hazard Reduction, Coastal Community Flood Risk Areas, Priority Shoreline Areas, and a Marsh Protection Potential Index (see more in the Coastal Hazards assessment). Maryland's tidal marshes are some of the most effective buffers against wave damage and storm surge, but some marshes are better equipped or situated to perform these functions than others. The assessment ranked Maryland marshes based on marsh size, proximity to hazards, proximity to people, proximity to other protective habitats, and how a marsh is expected to adapt to changing environmental conditions.

Chesapeake Bay High-Resolution Land Cover Project

In 2016, the Chesapeake Conservancy's Conservation Innovation Center (CIC) completed the [Chesapeake Bay High-Resolution Land Cover Project](#) for the Chesapeake Bay Program (CBP). This

project produced one-meter resolution land cover data for approximately 100,000 square miles of land in and surrounding the Chesapeake Bay watershed, including Maryland. This one-meter resolution data identified wetlands with 80% accuracy. The data is downloadable and viewable via a [web mapper](#). In 2018, the CIC entered into a 6-year cooperative agreement with EPA to provide continued geospatial support to the CBP that will inform the management of the Chesapeake Bay TMDL, so it is possible these data will be used in future assessments to show wetland change since the 2016 baseline.

Maryland iMap Wetland Data Products

Prior to the dataset above, the State of Maryland has made available several different wetland data products via the [Maryland iMap Data Catalog](#) and the [Maryland Coastal Atlas](#). These include the [National Wetlands Inventory](#) data service, a [wetland polygons](#) data service managed by MDNR, and the [Maryland Sea Level Rise Wetland Adaptation Areas](#) data product. While these data have been used for a number of coastal management planning applications, they were not used to complete the tables above because they do not as readily allow year-to-year comparisons as NOAA’s Land Cover Atlas.

Management Characterization:

1. *Indicate if there have been any significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.*

Significant Changes in Wetland Management

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Y

2. *For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:*
 - a. *Describe the significance of the changes;*
 - b. *Specify if they were 309 or other CZM-driven changes; and*
 - c. *Characterize the outcomes or likely future outcomes of the changes.*

Since the last assessment, the State of Maryland has continued to move forward a series of planning and policy initiatives to preserve, protect, prioritize, and restore wetlands areas. These changes were largely CCS-driven, facilitated by the following policies and initiatives. Several of these items are cross-listed in the Coastal Hazards assessment.

Coast Smart Construction Program

The [Coast Smart Construction Program](#) requires that if a State capital project includes the construction of a structure or reconstruction of a structure with substantial damage, the structure shall be constructed or reconstructed in compliance with the siting and design criteria established by the Coast Smart Council. Siting criteria expressly supporting the resilience of coastal habitats include: natural and nature based features that may serve to

buffer the project from the impacts of future sea level rise, coastal flooding or storm surge (e.g., vegetated or forested buffers, dunes, wetland adaptation areas) or that support general climate adaptation practices (e.g., habitat adaptation areas), shall be identified and should be protected and maintained to the maximum extent practicable; and, whenever possible, onsite mitigation measures should enhance, restore or create natural and nature based features to provide additional protection against future sea level rise and coastal storm impacts.

Amendments to Critical Area Regulations

Maryland's Critical Area includes all land within 1,000 feet of Maryland's tidal waters and tidal wetlands. The Critical Area Commission (CAC) was first created within the DNR in 1984 (Chapter 794, Acts of 1984) to safeguard the Chesapeake Bay from the negative impacts of intense development. The CAC is responsible for reviewing and approving proposed changes to local critical area plans; proposals by a State or local government agency that might lead to major development within a critical area; and, State projects on State-owned land within a critical area. The CAC meets approximately bimonthly and a CZM staff represents MDNR. New Critical Area regulations (COMAR 27.02.05.03) went into effect in December 2014 pertaining to sea level rise and wetland migration areas. These regulations require that when a State agency proposes development on State-owned land in the Critical Area, the agency shall, to the maximum extent practicable (a) Incorporate and maintain a wildlife corridor system, including all habitat protection areas near the development project, so as to connect the largest, most vegetated tracts of land within, adjacent to, or near the development project and provide continuity of existing wildlife and plant habitat with other off-site habitat areas; (b) Preserve, protect, and maintain a potential wetland migration area: (i) Within the area of the development project; and (ii) Adjacent to the area of the development project, if the agency owns the adjacent land or the adjacent land is within the agency's legally enforceable right-of-way.

Maryland's Coastal Resiliency Assessment

As mentioned above, between 2015-2016 the CMP partnered with The Nature Conservancy to complete the Coastal Resiliency Assessment. This landscape-level spatial analysis and modeling effort identified where natural habitats, such as wetlands, provide the greatest potential risk reduction for coastal communities. CMP staff worked with state, local, federal, and non-profit stakeholders to identify existing natural infrastructure with resiliency benefits for coastal communities impacted by climate change. The assessment results include a Natural Features Analysis, Community Flood Risk Analysis, Marsh Protection Potential Index, and the identification of Priority Shoreline Areas for conservation or restoration actions. Following release of the Coastal Resiliency Assessment, the CMP worked with MDNR Land Acquisition & Planning to update the Program Open Space (POS) Stateside Scorecard to include coastal resiliency data. The POS Stateside Scorecard evaluates ecological value, public access and recreational opportunities for parcels that are being considered for acquisition by the state. The Scorecard update ensured that parcels are now being evaluated for coastal resiliency benefits. This work was further expanded upon the completion of a CCS-led parcel evaluation tool that allows real-time data return about the habitat and other key resources located on parcels under consideration for protection.

Resiliency through Restoration Initiative

In 2016, the State of Maryland launched a new program, entitled Resiliency through Restoration, which is managed by the CMP. The Resiliency through Restoration Initiative directly supports on-the-ground implementation of nature-based projects, including wetland enhancement projects. Over the short term, the Initiative will demonstrate how nature can help protect communities from climate change impacts. Over the long term, the Initiative will reduce Maryland's vulnerabilities and enhance resiliency of local communities, economies, and natural resources. These goals will be

reached through the implementation and tracking of pilot projects that will demonstrate how nature can build community resilience to climate change. Projects include tidal marsh restoration and other nature-based practices that provide community and ecosystem benefits. Projects are selected based on the vulnerability of the habitat and community, targeted resiliency areas, level of community engagement, project readiness and status, and broader ecosystem services. Maryland's Coastal Resiliency Assessment is used to screen and prioritize projects.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High ___
Medium x
Low ___

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Wetlands can reduce erosion and flooding impacts for nearby coastal communities, especially when they exist in concert with forests, dunes, oyster reefs and underwater grasses. These habitats buffer communities from the full impacts of tides and storms and their dynamic nature allows for natural recovery following coastal hazard events. Due to shoreline hardening, roads, and development along much of Maryland's coastline, some areas in Maryland have lost their protective natural features. This is especially true in low-lying rural and urban communities.

Where possible, CCS pursues conservation and restoration projects to protect and enhance existing habitats that will better prepare coastal communities for tide, storm, and climate impacts. Acknowledging the role nature plays in building community resiliency, CCS collaborated with The Nature Conservancy in 2015-2016 to evaluate where habitats can best protect Maryland residents, resulting in the Coastal Resiliency Assessment. This assessment greatly informed which coastal habitats, including wetlands, have the greatest potential to reduce community risk, and laid the groundwork for CCS to invest in protecting and restoring those areas through the Resiliency through Restoration Initiative.

Given the critical role wetlands play in enhancing the resiliency of coastal habitats and communities and buffering the impacts of coastal hazards, the CMP will combine the Wetlands and Coastal Hazards enhancements areas into a comprehensive *Enhancing Resilience Strategy*.

Coastal Hazards

Section 309 Enhancement Objective: Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.

Phase I (High-Level) Assessment: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. *In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazards. Your state may also have other state-specific resources and tools to consult. Additional information and links to these resources can be found in the “Resources” section at the end of the Coastal Hazards Phase I Assessment Template:*

- *The state’s multi-hazard mitigation plan.*
- *Coastal County Snapshots: Flood Exposure*
- *Coastal Flood Exposure Mapper*
- *Sea Level Rise Viewer/Great Lakes Lake Level Change Viewer*
- *National Climate Assessment*

General Level of Hazard Risk in the Coastal Zone

Type of Hazard	General Level of Risk³ (H, M, L)
Flooding (riverine, stormwater)	High
Coastal storms (including storm surge)	High
Geological hazards (e.g., tsunamis, earthquakes)	Low
Shoreline erosion	High
Sea level rise	High
Great Lakes level change	N/A
Land subsidence	Med-High
Saltwater intrusion	High
Other: winter storm	High
Other: tornado	Med-High
Other: wind	Med-High
Other: thunderstorm	Med-High
Other: wildfire	Medium
Other: drought	Med-High

2. *If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state’s*

³ Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

multi-hazard mitigation plan or climate change risk assessment or plan may be a good resource to help respond to this question.

The responses above were determined through a combination of information from the following state and regional assessments/plans.

State of Maryland 2016 Hazard Mitigation Plan

Governor Hogan approved the [State of Maryland Hazard Mitigation Plan](#) in August 2016. The Plan summarizes completed risk assessments and details steps the state will take to plan for and respond to the following hazards: coastal (including tropical storms, hurricanes, Nor'easters, sea level rise and shoreline erosion), flood (including flash, riverine, and coastal), winter storm (including snow, freezing rain, sleet and extreme cold), tornados, wind, thunderstorms, wildfire, and drought. Flooding, coastal hazards, and winter storms pose the greatest overall risk to Maryland. More information about the 2016 Hazard Mitigation Plan is throughout this assessment.

Sea Level Rise Projections for Maryland 2018

The [Sea-Level Rise Projections for Maryland 2018](#) report provides updated projections of the amount of sea-level rise relative to Maryland coastal lands that is expected into the next century. The likely range (66% probability) of the relative rise of mean sea level expected in Maryland between 2000 and 2050 is 0.8 to 1.6 feet, with about a 1-in-20 chance it could exceed 2.0 feet and about a one-in-one hundred chance it could exceed 2.3 feet. After 2050, rates of sea-level rise depend increasingly on the future pathway of global emissions of greenhouse gases during the next sixty years. If emissions continue to grow well into the second half of the 21st century, the likely range of sea-level rise experienced in Maryland is 2.0 to 4.2 feet toward the end of this century, two to four times the relative sea-level rise experienced during the 20th century. The report states that sea-level rise will increase both high and low tide levels and storm surges. Tidal heights will depend on the degree to which shorelines are protected by bulkheads, rip-rap and other armoring. It also states that more severe tropical storms are likely to reach the Mid-Atlantic region as Earth continues to warm, with the wetlands and rural landscapes of Maryland's Eastern Shore to see an increase in the extent and depth of storm surge inundation. Finally, the report addresses nuisance flooding and states that such flooding events that recently occur less than 10 days per year are likely to occur 30 days per year by 2040 and nearly 100 days per year by 2050.

MDOT SHA Climate Change Vulnerability Mapper

During this last assessment period, the Maryland Department of Transportation State Highway Administration (MDOT SHA), in collaboration with Salisbury University & the Eastern Shore Regional GIS Cooperative, worked together to produce geospatial datasets showcasing sea level changes to Maryland's 3,930 miles of coastline. The [MDOT SHA Climate Change Vulnerability](#) ArcGIS Online web application highlights sea level change and the potential impacts on Maryland's roadways, including roadway assets & infrastructure. The purpose of this application is to support MDOT SHA senior management, leadership & planning as they make efforts to avert and mitigate potential impacts of sea level rise that result from global climate change. This forecasted intelligence is for the years 2015, 2050, & 2100 scenarios, helping to mitigate and protect Maryland's long-term investments.

Mainstreaming Sea Level Rise Preparedness in Local Planning and Policy on Maryland's Eastern Shore

The Eastern Shore Climate Adaptation Partnership (ESCAP) is a network of local and state government staff, academic institutions, and non-for-profit partners planning for the impacts of

climate change upon our region. In 2018, the Eastern Shore Land Conservancy prepared a report on behalf of the ESCAP titled Mainstreaming Sea Level Rise Preparedness in Local Planning and Policy on Maryland's Eastern Shore. This sea level rise report provides detailed, locally-relevant information for residents and community leaders about the projected impacts that sea level rise will have on the Eastern Shore and identifies strategies for adapting to these impacts.

Maryland's Plan to Adapt to Saltwater Intrusion and Salinization

In December 2019, the Maryland Department of Planning released Maryland's Plan to Adapt to Saltwater Intrusion and Salinization. The Plan states that climate change and subsidence will increase saltwater intrusion and salinization within Maryland's coastal areas through both long term and episodic events. Sea level rise will steadily bring more brackish water from Maryland's estuaries, tidal tributaries, and the ocean on to the land, farther upstream, and farther inland underground into surficial groundwater aquifers. Tides and storms will also periodically bring brackish water from Maryland's estuaries, tidal tributaries, and the ocean onto the land and farther upstream. Also, as sea level rises, low-lying land will become more difficult to drain due to higher groundwater levels in relation to coastal waters. The reduced drainage results in less removal of accumulated salt from the land over time. These impacts are mitigated or worsened by heavier precipitation or drought, respectively, both of which are occurring more often due to climate change. Other factors, such as the use of groundwater, the application of road salt, and the use of engineering controls, also affect salinity in Maryland's waters. Collectively, the increased salinity has already made some of Maryland's coastal farmland unusable, and is altering the ecological landscape of Maryland's wetlands and coastal forests. Those who depend upon Maryland's coastal groundwater and surface waters for agricultural irrigation or drinking water will need to remain vigilant of increased salinity.

Management Characterization:

1. *In the tables below, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk since the last assessment.*

Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Elimination of development/redevelopment in high-hazard areas ⁴	N	N	Y – Coast Smart Council & Critical Area Regulations
Management of development/redevelopment in other hazard areas	Y	Y	Y – Coast Smart Council & Critical Area Regulations
climate change impacts, including sea level rise or Great Lakes level change	Y	Y	Y – Maryland Climate Change Commission

⁴ Use state's definition of high-hazard areas.

Significant Changes in Hazards Planning Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Hazard mitigation	Y	Y	Y – 2016 Hazard Mitigation Plan CCS Community Resilience Grants
Climate change impacts, including sea level rise or Great Lakes level change	Y	Y	Y – RtR Initiative ESLC Sea Level Rise Planning

Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Sea level rise or Great Lakes level change	Y	Y	Y – Coastal Resiliency Assessment
Other hazards	N	N	N

2. Briefly state how “high-hazard areas” are defined in your coastal zone.

According to the State of Maryland 2016 Hazard Mitigation Plan, between 1962 and 2016 Maryland has had thirty-one major disaster declarations. The five hazards that consistently resulted in widespread impacts across Maryland and include: coastal hazards; flood; winter storm; tornado; and, wind. Following review and discussion, the Mitigation Advisory Council (MAC) recommended that these five most common hazards be included in the 2016 State Hazard Mitigation Plan. In addition, these five hazards were recommended as a minimum standard for inclusion in all local hazard mitigation plans within the State of Maryland Local Hazard Mitigation Plan Guidance, May 2015.

Coastal hazards in Maryland take many forms ranging from storm systems such as tropical storms, hurricanes, and Nor’easters, that may cause storm surge inundation, heavy precipitation, that may lead to flash flooding and exacerbation of shoreline erosion to longer term hazards such as sea level rise. The State of Maryland 2016 Hazard Mitigation Plan defines coastal hazards as tropical storms, hurricanes, Nor’easters, sea level rise and shoreline erosion. The local jurisdictions with the highest risk to coastal hazards include: Anne Arundel, Baltimore, Calvert, Charles, Dorchester, Kent, Queen Anne’s, St. Mary’s, Somerset, and Worcester counties, as well as, the City of Baltimore – 11 of Maryland’s 20 coastal zone jurisdictions. The majority of local jurisdictions rated as having a “high risk” to coastal hazards in the state’s risk assessment also rated coastal hazards as a high risk within their local plans. The three exceptions were Charles, Queen Anne’s, and the City of Baltimore; all three rated coastal hazards as “medium-high risk” within their local hazard mitigation plans.

It is important to note that while the updated mitigation risk assessment was under development, so too was Maryland's Coastal Resiliency Assessment (see below and the Wetlands assessment). In order to assist with plan integration and inform both the hazard mitigation plan development and the MDNR coastal resiliency risk assessment, members of both planning committees included many of the same people. The Coastal Resiliency Assessment produced multiple data products, including a Shoreline Hazard Index that identifies high, moderate, and low hazard shorelines, and Coastal Community Flood Risk Areas that rank residential areas from very low to very high risk based on probability of exposure to a flood event, population density, and social demographics (age, income, and language proficiency).

3. *For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:*
 - a. *Describe the significance of the changes;*
 - b. *Specify if they were 309 or other CZM-driven changes; and*
 - c. *Characterize the outcomes or likely future outcomes of the changes.*

Updated Flood Insurance Rate Maps

The State of Maryland (led by the Maryland Department of the Environment) in conjunction with the Federal Emergency Management Agency (FEMA) has been systematically updating Flood Insurance Rate Maps (FIRMs) for communities over the past several years. [Maryland's Flood Map](#) website allows users to select their location on the map and aids in determining their current flood risk based on Digital FIRMs (DFIRMs). The application also prompts users to launch a Flood Risk Guide, which helps users determine whether flood insurance is required or recommended for their property. Additionally, information on the benefits of having flood insurance and how to obtain insurance is highlighted. Using the schedule for map production in 2017, the average age of the DFIRM products in the Maryland is 4 years with 75% of the State at 3 years or less. The Maryland Department of the Environment offers floodplain management technical assistance to local jurisdictions and encourages local participation in the Community Rating System (CRS).

Coastal Resiliency Assessment

In 2016, the CMP completed work on [Maryland's Coastal Resiliency Assessment](#). This landscape-level spatial analysis identifies where natural features provide the greatest potential risk reduction for coastal communities. The Coastal Resiliency Assessment produced multiple data products for use in resiliency and adaptation planning, including the Shoreline Hazard Index, Habitat Role in Hazard Reduction, Coastal Community Flood Risk Areas, Priority Shoreline Areas, and a Marsh Protection Potential Index. Following release of the Coastal Resiliency Assessment, CMP staff worked with MDNR Land Acquisition & Planning to update the Program Open Space (POS) Stateside Scorecard to include coastal resiliency data. The POS Stateside Scorecard evaluates ecological value, public access and recreational opportunities for parcels that are being considered for acquisition by the state. The Scorecard update ensured that parcels are now being evaluated for coastal resiliency benefits. This work was further expanded upon the completion of a CCS-led [parcel evaluation tool](#) that allows real-time data return about the habitat and other key resources located on parcels under consideration for protection.

Resiliency through Restoration Initiative

CCS' leadership on state climate adaptation and bay and habitat restoration - paired with its support for community resilience planning and the completion of the Coastal Resiliency

Assessment - allowed the program to secure state funding to launch the Resiliency through Restoration initiative in 2017. In FY18, the State of Maryland began efforts to invest in long-term on-the-ground restoration projects that provide coastal resiliency benefits to coastal communities and natural resources. The first round of state capital investments in the work supported project design for six projects around Maryland's coastal zone that were identified through Maryland's Coastal Resiliency Assessment. As of January 2020, CCS has provided financial and technical assistance to local government and non-profit partners to implement 16 priority restoration projects across the state. Projects include shoreline restoration, beneficial use of dredged material, tidal marsh restoration, dune restoration, landscape-level green infrastructure, and other nature-based practices that provide community and ecosystem benefits. Projects are selected based on the vulnerability of the habitat and community, targeted resiliency areas, level of community engagement, project readiness and status, and broader ecosystem services. Investments in data-driven assessments and community partnerships are allowing the CMP to accelerate the understanding of risk and support implementation of projects to reduce future risk. CMP staff manage the Initiative and funding. CMP staff are also working with MD-CBNERR staff to develop and implement monitoring protocols at priority restoration sites to inform adaptive management and best management practices.

Climate Leadership Academy

Established in 2018 by the State of Maryland (driven by CCS) in partnership with the Association of Climate Change Officers, the Maryland Climate Leadership Academy advances the capacity of state and local government agencies, infrastructure organizations and businesses to develop and implement sound climate change initiatives thus ensuring current and future public health, security and economic prosperity. Maryland's Climate Leadership Academy supports the work of the Maryland Climate Change Commission, providing important continuing education and executive training to state and local governments, infrastructure organizations and the private sector. The training curriculum was piloted among CCS staff in 2018, during which CMP staff advised and guided modifications to ensure accuracy and relevance to state partners. CMP staff have also presented state-specific data and information during each of the training cohorts.

Maryland Coast Smart Council

The Maryland Coast Smart Council (managed by CCS), was established by law (HB 615) in 2014 for the purposes of adopting siting and design criteria to address impacts associated with sea level rise and coastal flooding on future capital projects. Siting and design guidelines were developed in January 2014 and the Council's Coast Smart Construction Program was approved in June 2015. The Coast Smart Construction Program is for the use of all State of Maryland agencies that design and build facilities or prepare programs and budgets for the design and construction of facilities. It is intended specifically for the use of project managers, capital planners, and the professionals who will design and operate State-owned facilities. The Program is reviewed annually by the Council and revised as necessary to address issues which may occur as the building of State facilities and knowledge of Coast Smart building practices evolves. In 2018, the Coast Smart Council created the Coast Smart Assessment & Certificate to help Maryland state agency personnel and others understand and apply the Coast Smart Construction Program guidelines for various phases of their capital project to prevent or minimize the future impacts of coastal and riverine flooding, storm surge and sea level rise.

The Sea Level Rise Inundation and Coastal Flooding - Construction, Adaptation, and Mitigation Act

In addition to making changes to the structure of the Maryland Coast Smart Council, this 2018 legislation (HB1350/SB1006) strengthened the Coast Smart siting and design legislation of 2014 to

better manage and address coastal adaptation efforts. In 2019, [HB 1427](#) amended the 2018 legislation to update definitions. Additions in this legislation included requirements to more fully integrate highway facilities, develop a saltwater intrusion plan, establish criteria for use of state funds for hazard mitigation as it pertains to the use of state funds for sea level rise and coastal flooding, and require local governments to address nuisance flooding. As a result of this legislation, during this assessment period CMP staff: worked with the Coast Smart Council to update its siting and design guidelines; assisted in the development of [Maryland's Plan to Adapt to Saltwater Intrusion and Salinization](#); and directly led inter-agency efforts develop and issue [nuisance flood plan guidance](#) and host training events on the issue and plan requirements. Continuing on the latter, the CMP is directly providing technical and financial support to local partners to assist in developing their nuisance flood plans and develop geospatial event-reporting tools. CCS will review all plans submitted in October 2020.

Adaptation and Resiliency Work Group

The [Adaptation and Resiliency Work Group](#) (ARWG) is one of four Maryland Commission on Climate Change (MCCC) working groups and it is chaired by the DNR Secretary and staffed by CCS. Since the 2007 Executive Order that established the MCCC, Maryland has been a national leader in advancing climate change adaptation. The ARWG developed comprehensive Phase I and II adaptation strategies in 2008 and 2011 for advancing resilience across sectors. These documents remain foundational documents for prioritizing resilience action, but after a decade of strategy implementation and as the state learned more about how risks are evolving and ways to build resilience, the ARWG began evaluating progress in 2018 and worked throughout 2019 to define future adaptation actions and opportunities. Into 2020 and beyond, CCS will continue to lead the ARWG in developing and implementing new climate change adaptation priorities.

Sea Level Rise Projections for Maryland 2018

In fulfillment of requirements of the Maryland Commission on Climate Change Act of 2015, [Sea-Level Rise Projections for Maryland 2018](#) provides updated projections of the amount of sea-level rise relative to Maryland coastal lands that is expected into the next century. These projections represent the consensus of an expert group drawn from the Mid-Atlantic region – including the CMP – and are meant to be used in planning and regulation, infrastructure siting and design, estimation of changes in tidal range and storm surge, developing inundation mapping tools, and adaptation strategies for high-tide flooding and saltwater intrusion. The framework for these projections is tied to the projections of global sea-level rise included in the Intergovernmental Panel on Climate Change Fifth Assessment (2014) and incorporates regional factors such as subsidence, distance from melting glaciers and polar ice sheets, and ocean currents.

Amendments to Critical Area Regulations

The Critical Area Commission was first created within the DNR in 1984 (Chapter 794, Acts of 1984). Sixteen counties, Baltimore City, and forty-seven municipalities now have land within the Critical Area. Today, the Commission is responsible for reviewing and approving proposed changes to local critical area plans; proposals by a State or local government agency which might lead to major development within a critical area; and, State projects on State-owned land within a critical area. New regulations, effective December 22, 2014, state that when a State agency proposes development on State-owned land in the Critical Area, the agency shall, to the maximum extent practicable (a) Incorporate and maintain a wildlife corridor system, including all habitat protection areas near the development project, so as to connect the largest, most vegetated tracts of land within, adjacent to, or near the development project and provide continuity of existing wildlife and plant habitat with other off-site habitat areas; (b) Preserve, protect, and maintain a potential wetland migration area: (i) Within the area of the development project; and (ii) Adjacent to the area

of the development project, if the agency owns the adjacent land or the adjacent land is within the agency’s legally enforceable right-of-way.

Community Resilience Program

For more than a decade, the foundation of Maryland’s CMP service delivery approach with local communities to address hazards was direct technical and financial assistance. At the beginning of the current assessment period, in 2015, CMP staff worked across CCS programs to expand the scope of its Community Resilience Grants to include a more watershed level approach to address climate impacts (increased precipitation) and leverage funds to do so. Since 2015, 28 projects in 16 jurisdiction were completed. The key topic areas that the projects focused on have been: supporting communities through the FEMA’s Community Rating System; developing long range plans that assess current and future conditions and potential adaptation strategies; and enabling communities to enact updated zoning and ordinances to meet current regulations. Through this program the CMP significantly supported hazard mitigation and the expansion of the Community Rating System in Maryland by: enhancing training in partnership with FEMA Region III, providing financial assistance directly to communities to prepare an application for entry into CRS, and providing ongoing support to communities already in CRS to improve their rating.

Maryland’s Chesapeake and Coastal Grants Gateway

In March 2019, CCS combined all external grant programs into a single streamlined grant application process called the Chesapeake and Coastal Grants Gateway (Grants Gateway). Grants Gateway provides a one-stop location for partners seeking technical and financial support for projects that foster healthy ecosystems, communities, and economies that are resilient in the face of change. Grants are made possible with funding through the Chesapeake and Atlantic Coastal Bays Trust Fund, the Waterway Improvement Fund, the Resiliency through Restoration Initiative, the National Oceanic and Atmospheric Administration (Community Resilience Program) and the Environmental Protection Agency’s Chesapeake Bay Program. The integration of these funds has allowed CCS to include water-quantity projects in this grant program, which has greatly expanded CCS’ work supporting local resilience challenges (e.g. non-tidal/stormwater flooding). The integration of these funds has also allowed CCS to support adaptation across project phases, from understanding and planning to implementation.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High X
Medium
Low

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Maryland, with 3,100 miles of tidal shoreline from the Chesapeake Bay and its tributaries to the Atlantic Ocean and coastal bays, is highly vulnerable to coastal hazards. Sea level rise is exacerbating tidal flooding of low-lying areas and its effects are already apparent, manifesting as shoreline erosion, deterioration of tidal wetlands, and saline contamination of low-lying farm fields. “Nuisance” tidal flooding (also referred to as high tide flooding) that occurred just a very few days

per year in Annapolis in the 1950s now occurs 40 or more days per year. Storm surges from tropical storms or Nor'easters also spread farther and higher, riding on the higher sea level.

Coastal hazards is a high priority enhancement area because of the high level of risk these events pose to Maryland's coastal communities, and the magnified level of risk brought by climate change. The CMP is a critical nexus in a state agency network committed to helping Maryland build capacity and resilience at the local level, where coastal hazards are most dramatically experienced. In terms of coastal hazard risk and impact susceptibility, the lower socio-economic households, counties, and municipalities are at a greater vulnerability due to hazard impacts for several reasons. Lower income families typically cannot afford additional insurance protection and are less likely to recover from hazard impacts based on financial considerations. Additionally, their risk may be compounded by the fact that the only affordable housing options at their income level are located in higher risk hazard areas. The CMP is increasingly being challenged to design and offer technical and financial assistance in an equitable way, and will continue to push to ensure vulnerable frontline communities are getting the resources they need to prepare, adapt, and respond to coastal hazard and climate change impacts.

The CMP routinely participates in a number of stakeholder engagement efforts related to coastal hazards, including the [Maryland Resiliency Partnership](#) and the [Maryland Silver Jackets](#). Through one-on-one conversations, work group meetings, and facilitated community workshops, CMP staff routinely hear community concerns related to coastal hazards. Local planners also regularly ask for information on how to plan for and visualize sea level rise, nuisance flooding, storm surge, stormwater issues, and other hazards. The CMP has been hearing from stakeholders an ever-increasing need to address these events in not only the context of floodplain management, but also cultural and historic resources and environmental justice. CMP staff receive technical assistance requests for both long-term strategic planning and for information on how to impact day-to-day decision making and permitting activities. Coastal areas will only become more vulnerable as populations change and grow in coastal urban areas and as climate change impacts are felt with increasing regularity.

Coastal hazards is a high priority because of the increasing frequency in which we not only see coastal hazards impacting Maryland communities, but also because of the increasing frequency in which CMP staff are asked for technical and financial assistance to address these impacts. Dedication of CMP resources and staff to these issues will only become increasingly important for the resiliency and preparedness of Maryland's people, property, heritage, and habitats.

Public Access

Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

Phase I (High-Level) Assessment: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of

Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Use the table below to provide data on public access availability within the coastal zone.

Public Access Status and Trends

Type of Access	Current number ⁵	Changes or Trends Since Last Assessment ⁶ (↑, ↓, -, unkwn)	Cite data source
Beach access sites	Beach access sites are not specifically tracked but they are captured under recreational amenities on the Maryland Park Service website	Unchanged	Maryland Park Service Recreational Amenities https://dnr.maryland.gov/publiclands/Pages/activities.aspx?activity=Swimming
Shoreline (other than beach) access sites	The State of Maryland does not maintain a comprehensive list of shoreline access sites (other than beach) since these sites are generally captured under data related to recreational boating access and/or fishing access.	Unknown	Maryland Park Service Maryland DNR Public Access, Water Trails, and Recreation Planning Program Maryland DNR Fishing & Boating Services
Recreational boat (power or non-motorized) access sites	There are 407 public water access sites for recreational boating in Maryland’s coastal zone.	Increased	Maryland DNR Public Access, Water Trails and Recreation Planning Program https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx
Number of designated scenic vistas or overlook points	There are 13 designated scenic byways in Maryland’s coastal zone, which provide access to scenic vistas.	Unhanged	State Highway Administration Maryland Scenic Byways https://www.roads.maryland.gov/Index.aspx?PageId=97
Number of fishing access points (i.e. piers, jetties)	There are 81 fishing access points in the coastal zone. This number does not include sites already counted as recreational boating access sites.	Unknown	Maryland DNR Fishing & Boating Services Angler Access guide http://gisapps.dnr.state.md.us/PublicFishingAccess/index.html

⁵ Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note “more than” before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

⁶ If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), - (unchanged). If the trend is completely unknown, simply put “unkwn.”

<p>Coastal trails/ boardwalks (Please indicate number of trails/boardwalks and mileage)</p>	<p>Maryland has approximately 641 miles of water trails in the coastal zone.</p> <p>Maryland has approximately 850 miles of land trails in the coastal zone.</p> <p>Boardwalks and waterfront promenades can be found throughout Maryland but the state does not track the number of “boardwalks” because they are considered trail components and are captured under the state’s recreational land trails data.</p>	<p>Increased number of water trail miles</p> <p>Unknown land trail miles</p>	<p>Maryland DNR Public Access, Water Trails, and Recreation Planning Program https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx</p> <p>Maryland Park Service</p> <p>Maryland DNR Land Acquisition and Planning</p>
<p>Number of acres parkland/open space</p>	<p>The Maryland Department of Planning maintains a Protected Lands database and dashboard. As of November 2019, there are 1,401,246 acres of protected land in Maryland’s coastal zone.</p>	<p>Increase</p>	<p>Maryland Protected Lands Dashboard https://maryland.maps.arcgis.com/apps/opsdashboard/index.html#/0f3ffd3350b24b17bd3b8e1705af3df5</p>
<p>Access sites that are Americans with Disabilities Act (ADA) compliant⁷</p>	<p>Maryland is making a special effort to ensure that all DNR facilities and programs are accessible to visitors with disabilities. The cited webpage provides a link to an alphabetical listing of state public lands that provide accessible amenities, as well as links to accessible outdoor recreational opportunities on public lands, listed by activity.</p>	<p>Increase</p>	<p>DNR Advisory Council on Disability Issues Access for All website https://dnr.maryland.gov/Publiclands/Pages/accessforall.aspx</p>
<p>Other (please specify)</p>			

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the *Statewide Comprehensive Outdoor Recreation Plan*,⁸ the *National Survey on Fishing, Hunting, and Wildlife Associated Recreation*,⁹ and your state’s tourism office.

⁷ For more information on ADA see www.ada.gov.

⁸ Most states routinely develop “Statewide Comprehensive Outdoor Recreation Plans”, or SCORPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCORPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCORPs at www.recpro.org/scorp-library.

⁹ The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes

Since the early 2000's there has been a marked increase in demand for public water access in Maryland. The *Maryland Recreational Boating and Infrastructure Plan (2005)* created a baseline of public access data and identified the areas in the state where additional access was needed. Additional studies in 2011 and 2013 further analyzed needs and opportunities related to boating access in Maryland. The Maryland Public Access, Water Trails and Recreation Planning Program maintains a detailed database to track existing and potential public water access projects throughout the state. In addition, the *Chesapeake Bay Watershed Agreement (2014)* reaffirmed the need for and benefits of providing citizen's access to the water and included a goal of achieving 300 new public access sites by 2025 among its goals. The *Chesapeake Bay Watershed Public Access Plan* was developed to outline and provide guidance for reaching the public access goal. The plan was prepared by the National Park Service (NPS) and the Public Access Action Team, which includes people involved in public access planning and implementation in each of the watershed states and the District of Columbia. The plan, prepared with extensive public involvement, inventories existing public access, assesses barriers to expanding access and identifies specific opportunities for new access sites. The Public Access Action Team carries out annual processes for tracking progress in implementing the plan and identifying new potential access sites. The *Chesapeake Bay Public Access Management Strategy*, developed in 2015, draws on information prepared for and set out in the Public Access Plan.

Maryland's Land Preservation and Recreation Plan (LPRP), The Department of Natural Resources recently completed *Maryland's Land Preservation and Recreation Plan for 2019-2023*. The Plan, prepared every five years, represents a vision and strategy that has been developed by the Department, with state, federal, and local organizations, to provide public outdoor recreation opportunities in Maryland. The State Land Preservation and Recreation Plan incorporates public input gathered through surveys, stakeholder meetings and a thorough analysis of national, state and local issues impacting recreation and natural resource conservation. Information from the local LPPRPs guides land conservation, and parks and recreation planning, and decision making within each county, City of Baltimore and the Maryland Department of Natural Resources, and is important to the work of the Maryland Department of Planning. The preparation and/or regular update of an LPPRP is a prerequisite for county participation in Maryland's Program Open Space Localside program [per Section 5-905(b) (2) of the Natural Resources Article – Annotated Code of Maryland], which provides annual grants for the acquisition of land for conservation and park purposes as well as for the development of public recreation facilities.

Maryland has an estimated population of 6.08 million people, with approximately 4.25 million living in the coastal portions of the state. Since 2010, Maryland's population has grown by over 5%. It is one of the most densely populated states in the whole country and its 2020 growth projection is .67%.

3. *If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.*

DNR Public Access, Water Trails and Recreation Planning Program

Since the last assessment, DNR's Public Access, Water Trails and Recreation Planning Program provided technical and design assistance to project partners which resulted in the development of 25 new public water access sites and the enhancement of 10 existing public water access sites. The

fishing, and some coastal wildlife viewing that may be informative and compares 2016 data to 2011, 2006 and 2001 information to understand how usage has changed. See www.wsfprprograms.fws.gov/subpages/nationalsurvey/national_survey.htm

Program also provided technical and design assistance to local governments and project partners, which resulted in approximately 133 miles of State-designated water trails and the production of 8 new water trail maps and guides. The Program also developed an improved water access site database and continues to make updates and improvements to the [Maryland Online Water Access Guide](#) web application.

Maryland Park Service Activities & Amenities Website

In 2018, the Maryland Park Service managed 75 State Parks on 140,761 acres of land. More than 13.4 million visitors enjoyed adventures exploring history, hiking, biking trails or horseback riding on trails, canoeing or kayaking in our lakes, rivers and the Chesapeake Bay, swimming in our beach Parks and attending nature-based staff led programs. The Maryland Park Service maintains a [clickable website](#) of outdoor activity amenities managed by DNR.

Working Waterfronts Inventory

In 2014, the CMP initiated the [Working Waterfronts Program](#) in order to assist local communities with the preservation of existing and historic working waterfronts in Maryland. The WWP engages partners throughout the state to define working waterfront lands, infrastructure and activities; identify community needs; and offer technical and financial assistance to ensure public access and support for water-dependent businesses and industries. In 2015-2017 the CMP worked with the Virginia Institute of Marine Science to develop a GIS based working waterfronts inventory that includes state-wide water access points, marinas, and maritime businesses. The inventory is publically available on the [Maryland Coastal Atlas](#), but the final phase, including the north-central region of the state, is still under development.

Mid-Atlantic Non-Consumptive Recreation Work Group

In 2017, four workshops were convened by the Mid-Atlantic Regional Council on the Ocean (MARCO) and Surfrider Foundation throughout the Mid-Atlantic region to implement the Non-Consumptive Recreational Use actions of the [Mid-Atlantic Regional Ocean Action Plan](#). A [summary report](#) from the workshops is available on the MARCO website. Also available on the MARCO website is a [recorded webinar](#) of the results from the online survey conducted by Rutgers University prior to the workshop series. The Non-Consumptive Recreational Work Group activity stalled following [Executive Order 13840](#) (see Ocean and Coastal Resources assessment) but the work group is likely to resume work soon under the leadership of MARCO.

Management Characterization:

1. *Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.*

Significant Changes in Public Access Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
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Statutes, regulations, policies, or case law interpreting these	Y	Y	Y – Beneficial Use Policy
Operation/maintenance of existing facilities	Y	Y	Y – CCS Reorganization
Acquisition/enhancement programs	Y	Y	Y- MORE Commission, State Lands Climate Assessment, Mallows Bay, Es Mi Parque

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
- Describe the significance of the changes;
 - Specify if they were 309 or other CZM-driven changes; and
 - Characterize the outcomes or likely future outcomes of the changes.

Chesapeake & Coastal Service Reorganization

Since the last assessment, the CMP was strengthened by aligning multiple water quality, aquatic education, restoration and coastal planning programs. In 2016, DNR transitioned the state Clean Marina and Waterway Improvement Programs and portions of the Integrated Policy and Review Unit to within the CCS. Since its inception in 1966, the Waterway Improvement Fund has provided more than \$300 million for 4,500 projects at more than 300 public boating access sites. This new alignment brought new opportunities for CCS to implement locally-relevant coastal public access projects, address emerging coastal waterway management needs such as beneficial use, and bridge issues like public access and coastal resilience.

2017-2019 NOAA Coastal Management Fellowship – Beneficial Use Policy & Guidance

In October 2016, Maryland’s CMP and Chesapeake Bay National Estuarine Research Reserve (CBNERR-MD) submitted a proposal for a NOAA Coastal Management Fellow to develop a departmental policy to promote beneficial use of dredged material to improve coastal resilience and cost efficiency. Concurrently, CBNERR-MD was one of 8 reserves that submitted for a Science Collaborative grant to investigate application rates of sediment in marsh enhancement projects, known as thin layer placement. Both proposals were selected/funded and, given that, CMP and CBNERR-MD staff acted as co-mentors. The Coastal Management Fellow, through the facilitation of intra-agency efforts, was able to draft a DNR-wide policy and develop a decision-making tool and guidance to promote the use of dredged material in a beneficial application. The results of her work can be seen on the [webpage](#) created to house this information.

Maryland Outdoor Recreation Economic Commission

In October 2017, Maryland’s Governor signed Executive Order 01.01.2017.24 forming the [Maryland Outdoor Recreation Economic Commission](#). The two-year Commission was tasked with developing recommendations to grow the state’s outdoor recreation and heritage tourism economy through increased outdoor recreation business development, job creation and workforce development, marketing and branding, stewardship, and development of world class experiences. The Commission’s final report and recommendations were submitted to the Governor in December 2019.

State Lands Climate Assessment

In 2018/2019 The CMP worked with Salisbury University’s Eastern Shore Regional GIS Cooperative to develop a GIS based vulnerability assessment of state recreational lands, including State Parks, State Forests, Wildlife Management Areas, and Fishery Management Areas. This assessment utilized climate change related GIS data, infrastructure data, and ecological data to identify and understand vulnerabilities and impacts to state lands, including long-term impacts to recreational use, water access, infrastructure, and ecosystem management. In 2019, the CMP submitted an application and was selected for a 2020-2022 NOAA Coastal Management Fellow. From 2020-2022, the Fellow will assist in a second phase of the project, focused on developing Resilience Action Plans for three different land units managed by DNR. The project will result in new technical guidance and best practices on climate adaptation for the management of public lands that can serve as a model for state and local land managers.

Mallows Bay National Marine Sanctuary designation

During this assessment period, the CMP contributed significantly to the Mallows Bay-Potomac River National Marine Sanctuary Final Environmental Impact Statement and Management Plan, published in the Federal Register in September 2019. In 2019, Maryland signed and adopted a Joint Management MOU with NOAA and Charles County. A number of public access goals are laid out in the Management Plan, and the CMP anticipates continued involvement in enhancing public access at the site throughout the next five years.

Es Mi Parque

The DNR Maryland Park Service launched the Es Mi Parque program in 2016 as a pilot project to improve customer service and reduce access barriers for the Hispanic community at state parks. By reaching children through environmental education programming and outreach activities, the DNR helped bridge a gap in communicating with parents and other adults, all while showing the Hispanic community that careers in the natural resources fields are available across the state. Further, the program showcased the diverse fishing opportunities offered throughout the state and educated the public about the water safety and recreational fishing regulations. Through partnerships with other state agencies, friends groups, bilingual volunteers, and outdoor industry partners, the DNR connected with families through fish identification games, trash and marine debris reduction activities, and hands-on fishing demonstrations and lessons.

- 3. Indicate if your state or territory has a publically available public access guide. How current is the publication and how frequently it is updated?¹⁰

Publically Available Access Guide

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	Y	Y
Web address (if applicable)		Maryland Online Public Water Access Guide	Maryland Online Public Water Access Guide

¹⁰ Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. You may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

		https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx Recreation Atlas https://geodata.md.gov/recreationatlas/ Trail Atlas https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=242debcc18ae4057827834b78ddb83a	https://dnr.maryland.gov/Boating/Pages/water-access/boatramps.aspx
Date of last update		The Maryland Online Public Water Access Guide - March 2020 Recreation Atlas - Unknown Trail Atlas - Unknown	The Maryland Online Public Water Access Guide - March 2020 Recreation Atlas - Unknown Trail Atlas - Unknown
Frequency of update		The Maryland Online Public Water Access Guide is updated daily/weekly Recreation Atlas - Unknown Trail Atlas - Unknown	The Maryland Online Public Water Access Guide is updated daily/weekly Recreation Atlas - Unknown Trail Atlas - Unknown

Enhancement Area Prioritization:

1. *What level of priority is the enhancement area for the coastal management program?*

- High**
- Medium**
- Low**

2. *Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.*

Promoting public access to the shoreline and expanding opportunities for outdoor recreation is a CCS goal. While public access is a high priority in Maryland, there are a number of robust programs that address this enhancement area. Ongoing activities within DNR include projects with the Waterway Improvement Program, Fishing & Boating Services, Land Acquisition & Planning, and the Chesapeake Bay National Estuarine Research Reserve. CCS also works with the Chesapeake Bay Program, Maryland Coastal Bays Program, National Park Service, NOAA Office of National Marine Sanctuaries, and local governments to create public access opportunities through land acquisition and water trail development, and to enhance public access for boating and fishing access and through CZMA Section 306A construction and acquisition projects.

The CMP will continue to partner with many of these groups to identify opportunities to increase or enhance public access opportunities, support communication efforts, and incorporate public access priorities in decision making. The CMP will also continue to support public access stewardship and creation opportunities each year through a limited number of CZMA Section 306A projects.

CCS is cognizant of the dual threat coastal hazards and climate change pose to the resilience of many public access projects, especially those along the coast. The CMP is being increasingly challenged to design waterfront public access with sea level rise, storm surge, and other factors in mind. While a strategy will not be developed solely for this enhancement area, enhancing public access remains a key component of CCS's work. As a result, the CMP will include public access as a component of an overarching *Enhancing Access* strategy to further identify and coordinate resilient public access projects and work to maintain water-dependent use access.

Marine Debris

Section 309 Enhancement Objective: Reducing marine debris entering the nation’s coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

Phase I (High-Level) Assessment: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, characterize the existing status and trends of marine debris in the state’s coastal zone based on the best-available data.

Existing Status and Trends of Marine Debris in Coastal Zone

Source of Marine Debris	Significance of Source (H, M, L, unknown)	Type of Impact ¹¹ (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment
Beach/shore litter	M	Aesthetic, habitat and wildlife impacts	data via ICC, KIBCU, TMDLs
Land-based dumping	Unknown	Aesthetic, habitat and wildlife impacts	Unknown (potential slight decrease)
Storm drains and runoff	H	Aesthetic, habitat and wildlife impacts	Increase

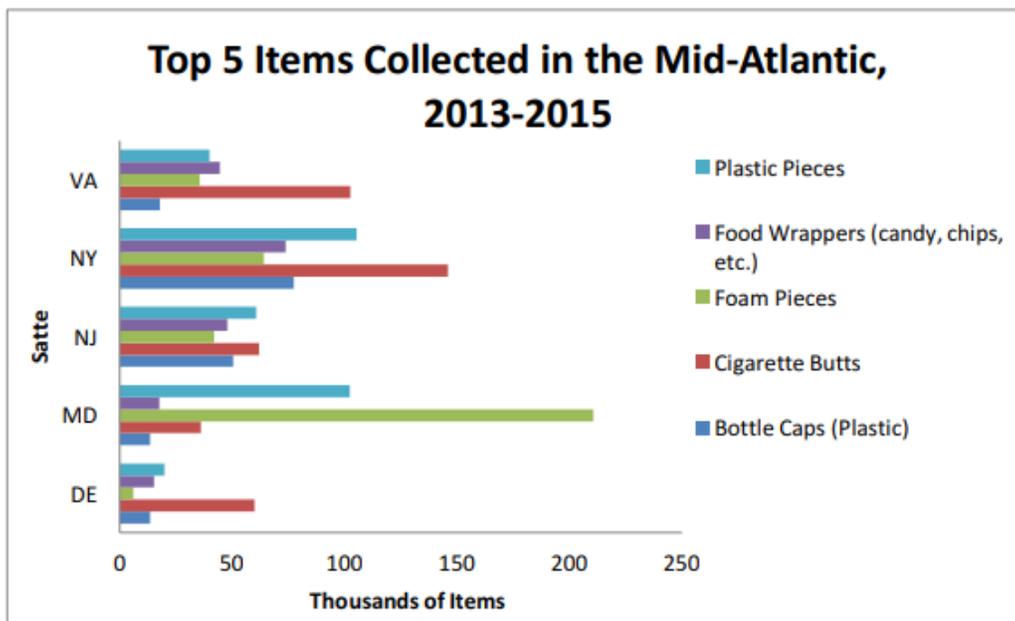
¹¹ You can select more than one, if applicable.

Land-based fishing (e.g., fishing line, gear)	L	Aesthetic, habitat and wildlife impacts	Unknown
Ocean/Great Lakes-based fishing (e.g., derelict fishing gear)	H	Resource damage, user conflicts, habitat and wildlife impacts	Unknown
Derelict vessels	M	Resource damage, user conflicts	Increase
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	H	Resource damage, user conflicts, habitat and wildlife impacts	Increase
Hurricane/Storm	M	Resource damage, user conflicts, habitat and wildlife impacts	Increase
Tsunami	L	Resource damage, user conflicts, habitat and wildlife impacts	Same
Other (please specify) Conowingo Dam	H	Resource damage, user conflicts, habitat and wildlife impacts	Increase

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

Assessment of Marine Debris in the Mid-Atlantic

In December 2016, the Mid-Atlantic Regional Council on the Ocean (MARCO) completed the Assessment of Marine Debris in the Mid-Atlantic. This report is an initial assessment of marine debris in the five state MARCO region and a compilation of highlights from the NOAA Marine Debris Reduction Workshop for Delaware, D.C., Maryland and Virginia held in June 2015. In the exerted graph below of the top five items collected in each state, Maryland's greatest number of items were foam and plastic pieces. The report is consistent with more recent International Coastal Cleanup data, which is described below.

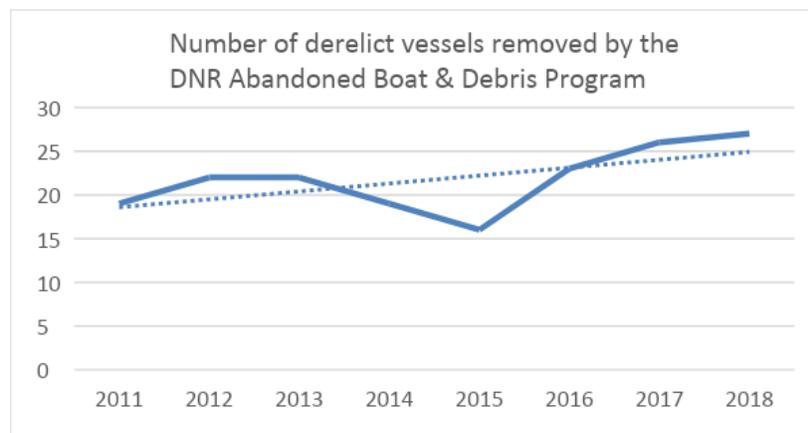


International Coastal Cleanup Maryland Data Reports

According to the International Coastal Cleanup annual TIDES reports, in Maryland a reported 313,250 items (92,630 pounds) were collected by during clean ups between January 2015 and December 2019. Maryland's top ten items include foam pieces (24.58% of total), plastic pieces (14.55%), plastic beverage bottles (10.77%), plastic bottle caps (6.57%), cigarette butts (6.37%), straws/stirrers (4.96%), food wrappers (4.87%), glass pieces (2.10%), plastic grocery bags (2.08%), and beverage cans (2.06%).

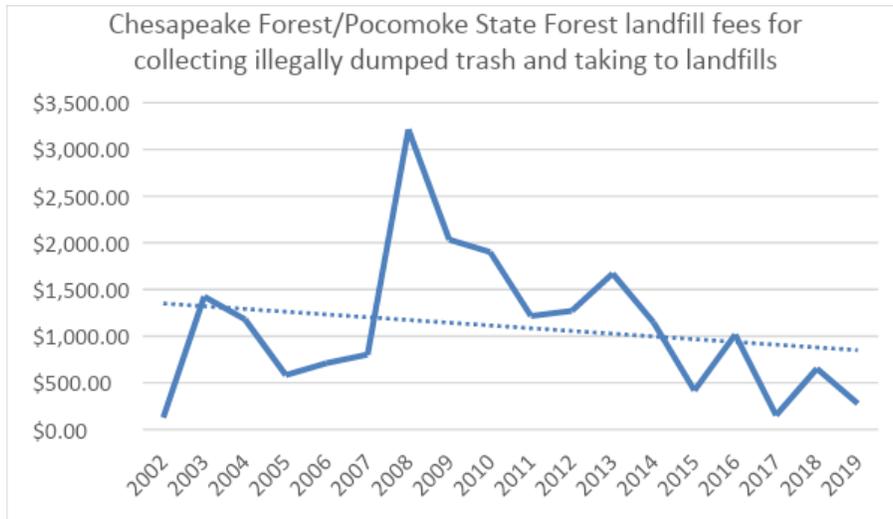
DNR Abandoned Boat and Debris Program

As part of its commitment to clean, safe and enjoyable recreational boating on Maryland waterways, the Abandoned Boat and Debris Program within the DNR Fishing & Boating Service provides reimbursable grants and expertise to assist public agencies in the removal of abandoned boats and debris from state waters. Funds for the program come from the state Waterway Improvement Fund, which is generated from the one-time 5% excise tax paid to the State when a boat is purchased and titled in Maryland. Based on data obtained from the program manager (see graph below) there has been a slight increase in the number of derelict vessels removed since the last assessment.



Maryland State Forest/Park Trash Removal

According to conversations the CMP had with the Maryland Forest Service, illegal dumping of trash requires constant management on state forest/park lands. When asked about the issue, Green Ridge State Forest said, "We get dumped on all the time. Our staff picks stuff up as they find it and as time and resources allow. There is no line item or designated budget for this. What cleanup we can do is funded within our operational budget. Tires and appliances are a big problem and often times asphalt roofing. I'm guessing this is because they are items that are costly for residents to get rid of at the county landfill so they decide to dump it on the state forest instead." According to Chesapeake Forest/Pocomoke State Forest below are their records for trash taken to landfills. Some household trash or individual things that do not need to be immediately hauled to the landfill are put into a dumpster they rent for \$1800/year. Between their 6 contractual and permanent field staff, on average the total amount of time we spend per year dealing with trash-related issues is approximately 3500 hours. Assuming the data for Chesapeake Forest/Pocomoke State Forest (in the coastal zone) can be extrapolated for the entire coastal zone, there may be a slight decrease in the amount of land-based dumping, but the actual amount is untracked and therefore unknown.



Port of Baltimore

The Maryland Department of Transportation Maryland Port Administration oversees the Port of Baltimore. The most recent foreign commerce statistical report indicated that in 2018 the Port of Baltimore experienced a record year in foreign cargo tons, with total imports and exports of nearly 43 million tons. The increase in vessel traffic in and out of the Port of Baltimore (at the northern end of the Chesapeake Bay) indicates a potential for an increased amount of vessel-based marine debris.

Microplastics in the Chesapeake Bay and its Watershed

In October 2019, the Chesapeake Bay Program Scientific and Technical Advisory Committee (STAC) released the report entitled, Microplastics in the Chesapeake Bay and its Watershed: State of the Knowledge, Data Gaps, and Relationship to Management Goals. This report provides a summary of the proceedings of a STAC-sponsored workshop on the state of the research, data needs, methodologies, and management needs for microplastics in the Bay and its watershed. This report also outlines specific recommendations identified by participants at the two-day workshop convened April 24-25, 2019. CZM staff participated on the workshop-planning steering committee and participated in the workshop. Workshop participants concluded that microplastics are ubiquitous throughout the Chesapeake Bay and pose a potential serious risk to successful restoration of the Chesapeake Bay watershed.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

Significant Changes in Marine Debris Management

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
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Marine debris statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Marine debris removal programs	Y	Y	Y

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes and likely future outcomes of the changes.

Mid-Atlantic Ocean Action Plan / Mid-Atlantic Marine Debris Work Group

The Ocean and Coastal Resources assessment contains a detailed summary of the Mid-Atlantic Ocean Action Plan. The Plan lists 40 agreed upon actions, one of which is to develop a regionally appropriate strategy for marine debris reduction to support a healthy ocean ecosystem. In support of this action, in September 2016 a coalition of regional partners gathered to initiate the Mid-Atlantic Marine Debris Work Group, on which CZM staff participate. In 2017, CZM staff contributed to the work group’s Mid-Atlantic Marine Debris Collaborative Portal to facilitate marine debris collaboration across the region. In 2018, MARCO received an FY18 NOAA Marine Debris Prevention Grant to complete a project to expand a Virginia CZM’s community based social marketing campaign to reduce mass balloon releases. CZM staff are the lead implementers of this project in Maryland. In 2020 and beyond, the work group will contribute to developing a Mid-Atlantic Marine Debris Action Plan, facilitated by the NOAA Marine Debris Program (see below).

CZM Section 309 Marine Debris Grants

From April 2018 to September 2019, the CMP funded the “PlasticWatch” project led by the University of Maryland Center for Environmental Science (UMCES). PlasticWatch is a campaign to reduce plastic use on Solomons Island, MD. With the PlasticWatch project, UMCES scientists worked with three restaurants to “make the switch” from common, single-use petroleum-based plastics, such as straws and take-out containers, to compostable and biodegradable products in an effort to keep harmful plastics out of waterways. All three restaurants followed through with continuing to purchase and use biodegradable paper straws after their pilot supply ran out, which demonstrates a commitment to making changes that will be sustainable beyond the project period. Building off the successful Solomons Island pilot, similar CZM-funded contracts were executed with the City of Annapolis and Town of Ocean City for projects in the summer of 2019. Both jurisdictions collaborated with area nonprofits and restaurants to implement plastic waste reduction campaign during the summer tourism season.

Debris Management Plan for Maryland’s Waterways & Public Lands

In 2017, the DNR Abandoned Boat & Debris Program completed the first Debris Management Plan for Maryland’s Waterways & Public Lands for internal agency use. The purpose of the Plan is to guide DNR response to instances of debris management for routine day-to-day operations and for the aftermath of a natural or manmade disaster effecting Maryland’s public lands and waterways.

Maryland Marine Debris Emergency Response Guide: Comprehensive Guidance Document

In the fall of 2018, CZM staff participated in a workshop hosted by the NOAA Marine Debris Program to develop the first Maryland Marine Debris Emergency Response Guide (completed in 2019). Building off the Debris Management Plan mentioned above, the intention of the guide is to

improve preparedness for an incident (e.g. hurricane or dam release) that generates marine debris in coastal Maryland. The guidance document includes an agreed upon decision-support flowchart and agency roles; permitting and compliance process and requirements; documented points of contact for waterway debris response; and a jurisdictional response map. The accompanying Field Reference Guide includes the most pertinent information for quick reference in the field and during emergency response operations.

Maryland Clean Marina Initiative

Since 2016, the Clean Marina Program, housed with CCS, has been increasing the amount of marine debris prevention-related materials shared with program participants. A notable program achievement was plastic shrink-wrap recycling program was pilot tested in 2019. In Maryland, a large number of boaters use plastic shrink-wrap to protect their boats overwinter. With approximately 178,000 recreational boats registered in Maryland, an immense amount of single-use plastic wrap is being used yearly as a result of this common practice. In 2019, the Clean Marina Program partnered with Chesapeake Materials and the Marine Trades Association of Maryland to pilot a shrink-wrap recycling program. Twenty-nine marinas participated, prompting the recycling of shrink-wrap from over 850 boats and keeping an estimated 30,000 pounds of plastic from the landfill. The Clean Marina Program plans to repeat and expand the recycling program in 2020.

Microbead Ban

In May 2015 Governor Larry Hogan signed into law HB 216, banning plastic microbeads as an ingredient in personal care products in Maryland. The law required manufacturers to phase out the use of plastic microbeads in 2018 and banned the sale of products containing them at the end of 2019. Maryland passed this law just before the federal Microbead-Free Waters Act of 2015.

Foam Bans

In April 2019, the Maryland General Assembly approved a bill making Maryland the first state in the country to ban polystyrene foam food containers and cups. This followed similar bans in Montgomery County (January 2016) and Prince George's County (July 2016).

Plastic Bag Bans/Fees

Montgomery County passed legislation effective January 2012 that places a five-cent charge on each paper or plastic carryout bag provided by retail establishments in the County to customers at the point of sale, pickup or delivery. The cities of Chestertown, Takoma Park and Westminster approved bans of plastic bags at retail establishments effective January 2012, December 2016 and July 2020, respectively. As of November 2019, the City of Baltimore is in the process of approving a bill forbidding retailers from giving out plastic bags, and requiring them to charge five cents for any other bag they supply to shoppers, including paper bags.

Balloon Release Bans

In August 2019, the Queen Anne's County commissioners unanimously passed an ordinance that prohibits the release of nonbiodegradable helium balloons into the air. Those who deliberately violate the ordinance can be fined up to \$250. Statewide legislation is expected to be considered in the Maryland General Assembly in 2020.

Conowingo Dam Settlement Agreement

Following record rainfall in 2018, the Conowingo Dam floodgates were opened multiple times, letting tons of anthropogenic and woody debris to flow into the Chesapeake Bay, prompting emergency debris removal efforts across the state. In October 2019, Governor Larry Hogan announced a comprehensive agreement between the Maryland Department of the Environment

(MDE) and Exelon Generation Company, LLC, to invest more than \$200 million in environmental projects and operational enhancements to improve water quality in the Lower Susquehanna River and the Chesapeake Bay. The agreement includes \$41 million to increase efforts to remove trash and debris flowing down the Susquehanna River and entrapping behind the Conowingo Dam.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	<input type="checkbox"/>
Medium	<input checked="" type="checkbox"/>
Low	<input type="checkbox"/>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Led by the CMP, work on marine debris prevention in Maryland grew significantly during this assessment period. In response to the growing concerns related to marine debris impacts on the coastal zone, in July 2018 CCS created a new webpage - Marine Debris Issues in Maryland and Beyond - for the DNR/CCS website. Staff also created a marine debris fact sheet, in both English and Spanish, which is accessible via the website. Also in July 2018, CCS launched a series of lunchtime “Trash Talks” focused on marine debris problems and solutions. Trash Talks are open to the public and advertised throughout the DNR building and on DNR’s social media. CCS has hosted 15 Trash Talks since July 2018, with an average of 20 attendees per talk. Each talk included a presentation by a guest speaker with robust discussion afterward. Based on feedback received during these talks, there is a need for a statewide entity, such as CCS, to track and coordinate disparate marine debris prevention initiatives to share resources and avoid duplicity.

Microplastics in the Chesapeake Bay and its Watershed

As mentioned earlier, in October 2019 the Chesapeake Bay Program (CBP) Scientific and Technical Advisory Committee (STAC) released the report entitled, Microplastics in the Chesapeake Bay and its Watershed: State of the Knowledge, Data Gaps, and Relationship to Management Goals. This report outlines specific recommendations identified by participants at the two-day workshop convened April 24-25, 2019, in which CMP staff participated. The conclusion was that microplastics pose a potential serious risk to successful restoration of the Chesapeake Bay watershed. Among the recommendations presented to the CBP was that the CBP should create a Plastic Pollution Action Team to address the growing threat of plastic pollution to the bay and watershed. CMP staff have been asked to participate on the Plastic Pollution Action Team, and there is opportunity for CCS to play a role in connecting this effort to other regional efforts in the coming years.

CZM Marine Debris Collaboration Team

Following 2018 conversations with Trash Free Maryland, the National Aquarium, and the Maryland Coastal Bays Program, the CMP realized a need to bring together partners to achieve greater marine debris prevention results. In response, in July 2019 the CMP initiated a Marine Debris Collaboration Team to identify marine debris-related partnerships, projects, and outcomes that could be achieved between 2021 and 2025 in Maryland, with the to inform this CZM Section 309 2021-2025 Assessment & Strategy. After two workshop-style meetings where the team discussed and ranked opportunities, the following top three areas were identified as "high impact" and "low cost/effort": 1) preventing mass balloon releases; 2A) efforts to reduce smoking/vaping related litter; and 2B)

state supported research and improved markets to reduce top litter items found in Maryland (bottles, cans, bags, etc.).

Mid-Atlantic Marine Debris Action Plan (led by the NOAA Marine Debris Program)

In late 2019, the NOAA Marine Debris Program initiated efforts to establish a Mid-Atlantic Marine Debris Action Plan for the DC, Maryland, and Virginia region. The action plan will strengthen Mid-Atlantic regional effectiveness by bringing marine debris communities together to develop a regional marine debris action plan that addresses current marine debris issues in the region and to create a road map for the future. CCS staff worked closely with staff from the NOAA Marine Debris Program on the coordination of the CZM Marine Debris Collaboration Team to ensure the Mid-Atlantic Marine Debris Action Plan align with Maryland’s marine debris priorities as well as the Mid-Atlantic Marine Debris Work Group priorities, and vice versa. CCS expects to be involved in the creation and implementation of the Mid-Atlantic Marine Debris Action Plan in 2020 and beyond.

Between continued efforts of the Mid-Atlantic Marine Debris Work Group, the development of a Mid-Atlantic Marine Debris Action Plan, the new Chesapeake Bay Program Plastic Pollution Action Team, and the increasing number of ordinances and legislation banning single-use plastics, there is great opportunity to capitalize on this momentum and address marine debris in the Maryland coastal zone. CCS is poised to be a connector of these various efforts by serving as a coordinating partner. Incorporating marine debris reduction strategies into existing CCS programs and activities will improve Maryland’s ability to restore and protect habitat and to enhance recreational experiences.

Cumulative and Secondary Impacts

Section 309 Enhancement Objective: Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

Phase I (High-Level) Assessment: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. *Using National Ocean Economics Program Data on population and housing,¹² please indicate the change in population and housing units in the state’s coastal counties between 2012 and 2017.*

¹² www.oceaneconomics.org/Demographics/PHresults.aspx. Enter “Population and Housing” section and select “Data Search” (near the top of the left sidebar). From the drop-down boxes, select your state, and “all counties.” Select the year (2012) and the year to compare it to (2017). Then select “coastal zone counties.”

You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five-year period data is available (2012-2017) to approximate current assessment period.

Trends in Coastal Population and Housing Units

	2012	2017	Percent Change (2012-2017)
Number of people	3,922,396	3,987,759	1.67%
Number of housing units	1,637,009	1,664,267	1.67%

2. Using provided reports from NOAA's Land Cover Atlas,¹³ please indicate the status and trends for various land uses in the state's coastal counties between 1996 and 2016. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period that the data represent. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Instead, Puerto Rico should just report current land use cover for developed areas and impervious surfaces.

As of January 2020, NOAA's Land Cover Atlas data had not been updated with 2016 C-CAP data. NOAA guidance sent in December 2019 indicated the CMP could proceed with a narrative characterization and/or our own methodology to conduct the analysis. CCS elected to use our own methodology to conduct the analysis for the table below based on the National Land Cover Database 2016 data.

Distribution of Land Cover Types in Coastal Counties

Land Cover Type	Land Area Coverage in 2016 (Acres)	Gain/Loss Since 2001 (Acres)
Developed, High Intensity	45,419	6,402
Developed, Low Intensity	109,796	17,591
Developed, Open Space	45,419	12,332
Grassland	385,755	8,060
Scrub/Shrub	15,588	1,256
Barren Land	29,873	-12,345
Open Water	14,378	-169
Agriculture	1,621,652	370
Forested	193,606	-18,426
Woody Wetland	1,032,195	-2,970
Emergent Wetland	1,168,034	-9,979

¹³ www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

3. Using provided reports from NOAA's Land Cover Atlas,¹⁴ please indicate the status and trends for developed areas in the state's coastal counties between 1996 and 2016 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Unless Puerto Rico has similar trend data to report on changes in land use type, it should just report current land use cover for developed areas and impervious surfaces.

As of January 2020, NOAA's Land Cover Atlas data had not been updated with 2016 C-CAP data. NOAA guidance sent in December 2019 indicated the CMP could proceed with a narrative characterization and/or our own methodology to conduct the analysis. CCS elected to use our own methodology to conduct the analysis for the tables below based on the National Land Cover Database 2016 data. The accompanying narrative below is based off a combination of data from the 2010 Census, the Maryland Department of Planning, the NOAA Office for Coastal Management, and the World Population Review.

Development Status and Trends for Coastal Counties

	2010	2016	Percent Net Change
Percent land area developed	17.8% 720,582 acres	18.9% 764,968 acres	6.16%
Percent impervious surface area	4.6% 187,496 acres	5.2% 209,381 acres	11.68%

* Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in development and impervious surface area for the time period for which data are available. Puerto Rico does not need to report trend data.

How Land Use Is Changing in Coastal Counties

Land Cover Type	Areas Lost to Development Between 2001-2016 (Acres)
Barren Land	707
Emergent Wetland	237
Woody Wetland	1,389
Open Water	519
Agriculture	15,808
Scrub/Shrub	908
Grassland	1,762
Forested	23,054

* Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in land use for the time period for which high-resolution C-CAP data are available. Puerto Rico and the Northern Mariana Islands do not report.

According to 2010 Census data compiled by the Maryland Department of Planning, Maryland is the fifth-most densely populated state in the nation, with its 2010 population of 5,773,552 people living on 6.2 million acres of land. Now in 2020, the World Population Review estimates the total Maryland population to be 6,083,116, and the NOAA Office for Coastal Management estimates approximately 4.25 million of those people live in Maryland's coastal zone. According to the World

¹⁴ www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

Population Review, 15 of the 20 coastal counties have experienced population grown since 2010 (see table below).

Coastal County	2020 estimated population	% growth since 2010
Anne Arundel	576,031	6.82
Baltimore City	602,495	-2.98
Baltimore	828,431	2.71
Calvert	92,003	3.39
Caroline	33,304	0.76
Carroll	168,429	0.73
Cecil	102,826	1.64
Charles	161,503	9.75
Dorchester	31,998	-2.11
Harford	253,956	3.56
Howard	323,196	11.98
Kent	19,383	-4.10
Montgomery	1,052,567	7.81
Prince George's	909,308	5.03
Queen Anne's	50,251	5.11
Somerset	25,675	-2.98
St. Mary's	112,664	6.53
Talbot	36,968	-2.39
Wicomico	103,195	4.27
Worcester	51,823	0.63

4. *Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data that may be available from permitting databases or other resources about changes in shoreline structures.*

According to the Chesapeake Bay Program, the entire Chesapeake Bay watershed loses about 70 acres per day to development. A [2010 Land Use/Land Cover Report](#) by the Maryland Department of Planning reported that between 1973 and 2010 Maryland's total acreage of developed land grew by 154 percent from 654,000 to 1.6 million acres. The study estimated Maryland's population would continue to grow nearly 16 percent over the next 25 years (through 2025), increasing development pressures. Maryland has been challenged to accommodate this growth in a way that does not impact existing land uses, natural resources, communities, air and water quality, and overall quality of life. The report stated an average of 27,630 acres of agriculture and forest lands annually between 1973 and 2010 have been lost, primarily to development. The loss in resource lands along with the proliferation of large lot development in Maryland has had a significant impact on the viability of our rural resource-based economies, as these lands are becoming increasingly fragmented and are no longer viable for farming or forestry. Observing land-use change from 2001 to 2016 in Coastal Zone counties, developed area increased by over 6%, equating to 44,000 acres and impervious area increased by nearly 22,000 acres, an increase of nearly 12%. According to our

analysis a majority of lands converted to development were prior forest land (52%), followed by prior agricultural lands (35.6%). A little over 3% of the conversions were estimated to be from woody wetlands.

Large areas of forests and wetlands that are connected to each other through wildlife corridors are critical for maintaining high quality wildlife habitats. The [Maryland Green Infrastructure Assessment](#) identifies a statewide network of large block of forests and wetlands (hubs) and connecting corridors. Hubs are becoming rare, as development fragments these large expanses of habitat into smaller and smaller pieces. As habitats are diminished, many species that require large forested areas will decline or be lost altogether. Connectivity between hubs is provided by corridors, which act like habitat highways, and are critical for plants and animals to disperse from one habitat to another. The Green Infrastructure Assessment is incorporated in the Targeting System and the Rural Legacy Grant Review System. Although the Green Infrastructure is not the only factor, it is certainly very significant in the DNR's efforts to best use its limited land protection funds.

Land conservation and growth management has long been recognized as a Chesapeake Bay pollution prevention strategy, particularly if those lands are forested, exist as wetlands, or are maintained in agriculture under state of the art best management practices for nutrient and sediment pollution reduction. However, until recently, the regional Chesapeake Bay Program has not been able to develop a way to credit actions that maintain lands that provide a pollution prevention benefit. The [Chesapeake Bay Program's Land Change Model](#) is now used to project land uses changes that are likely to occur by 2025, which is when the Bay jurisdictions have agreed to meet their Total Maximum Daily Load obligations. These projections are used to generate additional nutrient and sediment loads that must also be offset by a best management practice. The new "Conservation Plus Best Management Practice" allows the jurisdictions to project how much and where they anticipate land conservation will occur and to also define growth management policies and regulations that may limit growth in certain areas. These Best Management Practices can be modeled against the projected land use changes. If a change in the spatial pattern and density of growth can be demonstrated, then a pollution reduction credit could be quantified. Maryland is in the early stages of developing its Conservation Plus Best Management Practice scenarios and sees this as a great opportunity to recognize the beneficial water quality benefits of land conservation.

In terms of structural shoreline changes, the DNR Waterway Improvement Fund, administered by CCS, funds and tracks shoreline structure improvement projects, such as renovations to groins, bulkheads, docks, piers, and other structures. However, typically CCS is only involved in funding replacement or renovation of structures that already exist, not new development. While CCS does not directly track shoreline development, the Maryland Department of Environment (MDE) Wetlands and Waterways Program's tracks all applications and issued permits for projects that may impact regulated tidal or nontidal wetlands and waterways. Examples of activities that require tidal wetlands permits from the Wetlands and Waterways Program, Tidal Wetlands Division, include building a new pier, adding a platform or boatlift to an existing pier, dredging a boat slip, putting in a bulkhead or constructing a living shoreline. The number of permits and permit modifications issued by the Tidal Wetlands Division from January 1, 2015 to December 31, 2019 in the Coastal Zone is 5,784. The BUILD tool (developed with CZM support) on the Maryland Coastal Atlas makes available the MDE Wetland & Waterways Program Permitting layer, which spatially shows pending applications and permitted projects in the coastal zone.

5. *Briefly summarize the results of any additional state- or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment.*

In addition to the routine updates to the programs mentioned above, the following are additional data that have been developed since the last assessment.

Chesapeake Bay High-Resolution Land Cover Project

In 2016, the Chesapeake Conservancy’s Conservation Innovation Center (CIC) completed the Chesapeake Bay High-Resolution Land Cover Project for the Chesapeake Bay Program (CBP). This project produced one-meter resolution land cover data for approximately 100,000 square miles of land in and surrounding the Chesapeake Bay watershed, providing 900 times the amount of information as conventional 30-meter resolution land cover data. In 2018, the CIC entered into a 6-year cooperative agreement with EPA to provide continued geospatial support to the CBP that will inform the management of the Chesapeake Bay TMDL. During the six-year period, the CIC will produce datasets and frameworks that will be made widely and freely available for all CBP partners and practitioners throughout the watershed to utilize for restoration and conservation planning and implementation.

Shoreline Rates of Change

Since the last assessment, the Maryland Geological Survey (MGS) developed an ArGIS Online shoreline feature class as part of a project to calculate updated shoreline rate of change information for Anne Arundel, Baltimore, Harford and Prince George’s Counties. This shoreline data set spans the time period 1932-2010, and was used as input to the U.S. Geological Survey (USGS) Digital Shoreline Analysis System (DSAS) v4.3 program to calculate long-term and short-term rates of change (erosion and accretion). Two Projects of Special Merit (CZM # 14-14-1868 CZM 143 and CZM # 14-15-2005 CZM 143) provided funding for this data, which is now available via the Maryland Coastal Atlas.

Management Characterization:

1. *Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.*

Significant Changes in Management of Cumulative and Secondary Impacts of Development

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y - Critical Area Regulations
Guidance documents	Y	Y	Y - Sustainable Growth Commission

Management plans (including SAMPs)	Y	Y	Y - all plans below
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2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
- a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Amendments to Critical Area Regulations

The Critical Area Commission was first created within the DNR in 1984 (Chapter 794, Acts of 1984). Sixteen counties, Baltimore City, and forty-seven municipalities now have land within the Critical Area. Today, the Commission is responsible for reviewing and approving proposed changes to local critical area plans; proposals by a State or local government agency which might lead to major development within a critical area; and, State projects on State-owned land within a critical area. New regulations, effective December 22, 2014, state that when a State agency proposes development on State-owned land in the Critical Area, the agency shall, to the maximum extent practicable (a) Incorporate and maintain a wildlife corridor system, including all habitat protection areas near the development project, so as to connect the largest, most vegetated tracts of land within, adjacent to, or near the development project and provide continuity of existing wildlife and plant habitat with other off-site habitat areas; (b) Preserve, protect, and maintain a potential wetland migration area: (i) Within the area of the development project; and (ii) Adjacent to the area of the development project, if the agency owns the adjacent land or the adjacent land is within the agency's legally enforceable right-of-way.

Maryland Sustainable Growth Commission / Reinvest Maryland (2019)

Established by the Maryland General Assembly in 2010, the Sustainable Growth Commission makes recommendations on growth and development issues and celebrates smart growth achievements with an annual awards program. Commission members, who represent local and state government, business and nonprofit organization sectors, consider ways to help implement laws and regulations concerning Maryland's growth and development. By studying current land use policies and their impact on growth, the Commission: identifies regional growth and development issues for the Governor's Smart Growth Subcabinet, recommends ways to collaborate on planning between state agencies and local governments and coordinate growth and development among jurisdictions, reviews statewide efforts to implement the state growth plan and the state plans for transportation and housing, advises on the local impacts of state policies and laws, such as the 2012 Septic Law, the Chesapeake Bay TMDL Watershed Implementation Plan (WIP), and stormwater management requirements. CMP staff serves as a member of the Commission and provides input to Commission workgroup recommendations and questions. During 2017-2019, the Commission worked to release the Reinvest Maryland report. This report, led by the Maryland Sustainable Growth Commission, examines redevelopment in Maryland and focuses on tools, case studies, and best practices to support greater infill, redevelopment, and community revitalization across Maryland. This document will be used by the Commission as a blueprint for the ongoing work plan.

A Better Maryland (2019)

Since the last assessment, the Maryland Department of Planning led the development of A Better Maryland, a plan that provides a framework to support a thriving economy and environmental stewardship. CMP staff advised on the development on the plan. While the plan does not explicitly discuss cumulative and secondary impacts of coastal growth and development, the plan states

“Maryland’s landscapes, water quality and clean air are our most vital resources, and A Better Maryland puts sustainability of these resources at the forefront of its vision for the state.” The 12 Planning Visions, established in 2009 under Section 5-7A-01 of the State Finance and Procurement Article as state policy, are cited in the plan as well and include three visions to guide coastal growth and development:

- Environmental Protection: Land and water resources, including the Chesapeake and coastal bays, are carefully managed to restore and maintain healthy air and water, natural systems and living resources.
- Resource Conservation: Waterways, forests, agricultural areas, open space, natural systems and scenic areas are conserved.
- Stewardship: Government, business entities and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection.

Maryland Phase III Watershed Implementation Plan (2019)

Maryland submitted the Phase III Watershed Implementation Plan (WIP) to the EPA in August 2019 after extensive public comment and stakeholder input. CMP staff participated in work groups to develop several sections of the Phase III WIP, including stormwater, natural filters, and climate change. This is the third phase of the EPA requirement to develop statewide WIPs, or road maps and accountability frameworks that will lead to the restoration of the Chesapeake Bay and clean local streams. Maryland’s Phase I WIP (2010) allocated allowable loads of nitrogen, phosphorus and sediment among different sources and identifies statewide strategies for reducing the levels of these pollutants that are impairing the Chesapeake Bay. Phase II (2011) provided more geographic detail to the implementation. The Phase III WIP provides information and strategies that local partners proposed to meet Bay restoration targets between 2018 and 2025. EPA will provide evaluations of the final Phase III WIPs for each jurisdiction to consider when developing their 2020-2021 milestones.

Land Preservation and Recreation Plan 2019-2023

The Land Preservation and Recreation Plan is prepared by DNR every five years to identify essential and contemporary issues impacting outdoor recreation and natural resource protection in Maryland. The latest Plan was developed for 2019-2023 using public input gathered through surveys, stakeholder meetings and thorough analysis of national, state and local issues impacting recreation and natural resource conservation. The Land Preservation and Recreation Plan 2019-2023 will help guide land conservation and development of outdoor recreation opportunities over the next five years and addresses critical issues identified in the planning process. CMP staff assisted in advising on the Plan, which includes acknowledgement that the benefits of outdoor recreation and land conservation are far-reaching and have positive impacts on public health, the environment, and the economy.

2040 Maryland Transportation Plan

Every five years, the Maryland Department of Transportation (MDOT) develops a 20-year mission for transportation in the state known as the Maryland Transportation Plan (MTP). The 2040 MTP outlines the State’s overarching transportation priorities and helps create a larger context for transportation decision-making. An objective in the 2040 MTP is to protect and enhance the natural, historic and cultural environment through avoidance, minimization and mitigation of adverse impacts related to transportation infrastructure, including support for broader efforts to improve the health of the Chesapeake Bay. While CMP staff did not assist in drafting this plan, the CMP is aware that coastal growth and development, especially in the transportation sector, may result in adverse cumulative and secondary impacts on water quality and habitat.

Mid-Atlantic Ocean Action Plan (2016)

The Mid-Atlantic Ocean Action Plan, released November 2016, considered cumulative and secondary impacts of multiple ocean uses. The Plan was the result of over three years of collaborative effort by many contributors, partners, and stakeholders, and is intended to foster transparent ocean data and information sharing, improved coordination in decision making, and collaboration around specific actions that support ocean ecosystem health and sustainable ocean uses. The Plan acknowledges the potential cumulative effects and secondary impacts of ocean projects on coastal communities, and encourages project proponents to identify and seek to engage coastal communities and incorporate relevant data and information in project materials to avoid adverse impact.

Working Waterfronts Program

In 2014, the CMP initiated the Working Waterfronts Program (WWP) at DNR in order to assist local communities with the preservation of existing and historic working waterfronts in Maryland. The WWP engages partners throughout the state to define working waterfront lands, infrastructure and activities; identify community needs; and offer technical and financial assistance to ensure public access and support for water-dependent businesses and industries. In 2015-2017 the CMP worked with the Virginia Institute of Marine Science to develop a GIS based working waterfronts inventory that includes state-wide water access points, marinas, and maritime businesses. The inventory is publically available on the Coastal Atlas, but the final phase, including the north-central region of the state, is still under development. In 2015, CCS started offering competitive Working Waterfronts Enhancement Grants, which provided financial and technical support to preserve and protect existing and historic waterfront communities in Maryland. Nine projects have been funded, providing financial assistance to local governments in support of waterfront planning and program development focused on traditional uses, public access, maritime heritage, tourism and business, recreation, natural resources conservation/restoration, and coastal hazards.

Chesapeake and Atlantic Coastal Bays Trust Fund

Managed by DNR on behalf of the State of Maryland, the Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) issues an annual Request for Proposals seeking cost-efficient and effective non-point source pollution reduction projects in geographically targeted areas of the state. This funding opportunity allocates an average of \$20 M each year (dependent on annual revenue) to local implementation projects. Projects funded through this solicitation can include natural filters best management practices, such as tree planting, wetland restoration, riparian buffers, living shorelines and stream restoration, and may be implemented on state owned or other public lands as well as on private land. Trust Fund proposals are reviewed and selected based on multiple criteria, including cost per pound of nutrient and sediment reductions to be achieved, geographic targeting and readiness and ability to proceed. The most competitive proposals include projects that will yield cumulative water quality benefits (as opposed to annual reductions), are able to be credited and reported for annual progress implementation, achieve multiple co-benefits (such as climate resilience), and apply natural and nature-based design approaches that also provide habitat and ecological uplift.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	___
Medium	<u> x </u>
Low	___

2. *Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.*

The need to address cumulative and secondary impacts of coastal population growth and development on coastal resources is ever increasing in Maryland, especially as climate change stands to exacerbate already existing pressures from growth and development. There are a number of scientific examinations of cumulative impacts to ecosystems at a range of scales, but there are no integrated cumulative impact studies specific to Maryland. More work is needed to develop accurate and efficient ways of determining cumulative impacts that are most critical for decision-making. CCS recognizes the need, but has been challenged by staff capacity and the willingness and ability of resource-limited partners to address these concerns. That said, CCS has been and will continue to work to advance consideration of cumulative and secondary impacts in land use and recreation decisions, as well as in coastal and ocean resource decisions. While increasing growth and development throughout Maryland's coastal zone are of concern, there are a number of other partners, such as the Chesapeake Bay Program and the Maryland Department of Planning, that already working to address these concerns. CCS is working to address some of the related concerns through other enhancement strategies, such as wetlands and coastal hazards. Therefore this enhancement area is ranked medium

Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

Phase I (High-Level) Assessment: *(Must be completed by all states and territories.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. *In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.*

Geographic Area	Opportunities for New or Updated Special Area Management Plans Major conflicts/issues
Mallows Bay National Marine Sanctuary	Since designated in September 2019, the State of Maryland, Charles County, and NOAA have transitioned into configuring the details of sanctuary joint management and implementing the management plan. Having been a key partner in the designation, the CMP anticipates a continued role in inter- and intra-agency coordination, as well as data collection in the Potomac River in order to avoid use conflicts.
Maryland Wind Energy Area / Atlantic Ocean	Since the last assessment, the landscape of organizations coordinating various ocean use activities greatly evolved and challenged the way the CMP engaged and coordinated ocean partnerships and priorities. As offshore wind progresses along the Atlantic coast, there are an increasing number of groups organizing to address wildlife, habitat, fishing, and other ocean use issues. The CMP could play a role in better understanding how this new industry will affect existing ocean/coastal uses (e.g. tourism, fishing, and shipping) and ocean/coastal resources (e.g. marine mammals, birds, and canyons).
Maryland Coastal Bays	With a large seasonable population and extensive development in a relatively small geographic area, there is risk to the ecological integrity of Maryland's coastal bays. That said the Maryland Coastal Bays Program already has a comprehensive management plan with resource management and coordination actions, but the CMP could assist in implementing the actions in that plan.
Maryland's Lower Eastern Shore	Already plagued by subsidence, nuisance flooding, and saltwater intrusion, the lower eastern shore is at risk of seeing more frequent and severe impacts to its habitats, communities, and economies as sea levels rise and the climate changes. Several communities, in Dorchester County in particular, are already considering options for retreat and relocation. This need will become more apparent in the coming years as rates of sea level rise are projected to increase. The CMP is likely to receive increasing requests for technical and financial assistance to facilitate and ease this transition.

2. *If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.*

Since the last assessment, the CMP did not start, continue or complete any SAMPs. The CMP did, however, undertake work that was mentioned in the previous SAMP assessment (for 2011-2015). This included comprehensive coastal hazards planning (Coastal Resiliency Assessment, Resiliency through Restoration) that is described in more detail in the Coastal Hazards assessment, as well as the following:

Mallows Bay-Potomac River National Marine Sanctuary

On September 3, 2019, five years after the State of Maryland submitted a community-based nomination to NOAA, designation occurred for the Mallows Bay-Potomac River National Marine Sanctuary. CMP staff worked in partnership with NOAA's Office of National Marine Sanctuaries, Maryland Historic Trust, Charles County, and numerous community partners throughout the process of nomination and designation process. CMP staff acted as the main point of contact for the MDNR, which owns the adjoining park property and bottomlands of the Potomac River. The CMP played a leadership role with these other partners to draft and revise an Environmental Impact Statement and Alternatives Analysis, a Management Plan, establish a water trail and map land trails, conduct aerial videography for interpretive materials, launch a water quality buoy, engage students at schools and hold community and school events on site. The CMP anticipates a continued role in implementing the goals of the management plan that align with CMP goals, including increasing recreational water access, supporting educational programs, conserving coastal habitats, and collecting coastal change data.

Mid-Atlantic Ocean Action Plan

From 2013-2018, CMP staff participated on the Mid-Atlantic Regional Planning Body (Mid-A RPB), which undertook a regional ocean planning initiative for the region. The Mid-A RPB included state and federal representatives, tribal entities and the Mid-Atlantic Fishery Management Council. The purpose of the RPB was to: improve the understanding of how the ocean waters and resources of the Mid-Atlantic region are being used, managed, and conserved; provide a forum for identifying coordinated actions to address regionally-important ocean management challenges and opportunities; and engage stakeholders and regional partners to ensure that the full breadth of perspectives is accounted for in ocean planning. The White House certified the Mid-Atlantic Regional Ocean Action Plan (OAP) in December 2016. However, a July 2018 Executive Order 13840 (the Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States) replaced RPBs with state-led planning efforts that address ocean-related matters that may require interagency or intergovernmental solutions. Through MARCO (see Ocean Resources section), the states invited former Mid-A RPB member organizations to continue to collaborate on shared priorities and established the Mid-Atlantic Committee on the Ocean (MACO) in 2019, on which CMP staff participate.

Deal Island Peninsula

Since the last assessment, the CMP supported several projects on the Deal Island Peninsula. One is an ongoing collaboration with the Chesapeake Bay National Estuarine Research Reserve in Maryland (CBNERR-MD) and the University of Maryland on the Deal Island Peninsula Partnership. This partnership includes the Deal Island Peninsula communities, researchers, and governmental agencies and non-governmental organizations at local, state, and regional levels with the goal to increase the resilience of local environments and communities to coastal flooding, erosion, and other social and environmental changes. Through the partnership an Integrated Coastal Resilience Assessment was conducted that included the generation of vulnerability maps for 2015, 2020, 2030, 2040 and 2050 to parcels, structures and roadways. The integrated assessment allowed for community knowledge to be incorporated into ongoing understanding of current and future vulnerabilities and for identification of possible adaptation options that are locally feasible. The assessment then led to a more comprehensive evaluation of the on and off road ditch structures and how to mitigate localized flood impacts as a result of this aging infrastructure. The assessment was supported by CMP through the Community Resilience Grant Program. The second project was supported through the NERRS a Science Collaborative competitive grant program and investigated application rates of sediment in marsh enhancement projects, known as thin layer placement. CBNERR-MD was one of 8 Reserves participating in this project. The Maryland

Coastal Resiliency Assessment aided in identifying Deal Island as an appropriate project site given the vulnerability of the shoreline to coastal hazards and the need for that shoreline to provide protective benefits to nearby communities. The third project was identified through the Partnership and funded through the Resiliency through Restoration Initiative. The proposed project will put natural features back on the landscape to build resilience to protect a saltmarsh that provides a buffer between Tangier Sound and community such as roads and residences.

Maryland's Coastal Bays

Along Maryland's Atlantic Coast lies a series of embayments known as the Atlantic Coastal Bays, located behind a barrier island system. The Maryland Coastal Bays Program is a National Estuary Program and works with the EPA to advance goals that are complementary to the CMP and focused on this geographic area. CCS staff participate on the MCBP board and cooperate with MCBP staff to address resilience, restoration and planning goals, including providing technical expertise during a 2015 update of their [Comprehensive Conservation and Management Plan](#). The 2015 update specifically included new strategies to address the impacts of climate change on the Coastal Bays, including a recommendation to pursue the designation of the Coastal Bays as an EPA Climate Ready Estuary and incorporate strategies in all planning activities and projects. In 2017, MCBP began the first five steps of EPA's "Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans." This Climate Change Vulnerability Assessment was conducted to learn about and prepare for the ways climate change stressors might affect MCBP's ability to reach the 14 goals of the 2015-2025 Comprehensive Conservation & Management Plan. The outcome of this assessment was the identification and prioritization of 168 risks that could limit MCBP's ability to reach those goals. Chief among the priorities to address are the impacts climate change will have on the Water Quality goals and Fish and Wildlife goals of the CCMP. Also during this assessment period, the MCBP partnered with Ocean City Green Team and several organizations in the summers of 2018 and 2019 to reduce plastic pollution in the Coastal Bays. In 2018, their "Strawless Summer" initiative became an overwhelmingly successful campaign (70 restaurants and 500 individuals have signed the pledge) focused on reducing plastic straw consumption by pledging to not use plastic straws. In 2019, the CMP supported MCBP to build upon the "Strawless Summer" success by funding the "Protect Our Sand & Sea" campaign – an elective and eco-friendly program that promotes greener choices for business owners.

Envision the Choptank

CCS staff have been working with [Envision the Choptank](#) to coordinate localized water based environmental work since its inception in 2016. In the early stages, this has included outreach workshops, stakeholder polling, and strategic planning, resulting in a detailed Common Agenda laying out mission, goals, and a strategic plan. More recently, the group has been working to put into practice these strategies including establishment of 5 project teams: Easton Stream Restoration Project Team, Accelerating Water Quality Improvements Project Team, Bay 100 Expanded Project Team, Engaging Underserved Communities Project Team, and Local Governments Project Team. While much of the initial work has been to establish a cohesive support network between partners and stakeholders, there has been a concerted effort to simultaneously get projects in the ground. Facilitated by several grants, Envision has put in place 20 rain gardens, 15 native plantings, and 50 rain barrels; and completed 98 soil tests, 147.26 acres of agricultural BMPs, and 40 trees plantings. CCS will continue to work with Envision the Choptank to carry out their efforts.

Management Characterization:

1. *Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.*

Significant Changes in Special Area Management Planning

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	N	N	N
SAMP plans	N	N	N

2. *For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:*
 - Describe the significance of the changes;*
 - Specify if they were 309 or other CZM-driven changes; and*
 - Characterize the outcomes or likely future outcomes of the changes.*

Maryland has not pursued new federally-designated SAMPs in the last few assessments and there have not been any significant changes that would help prepare and implement SAMPs in Maryland's coastal zone.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High ___
Medium ___
Low __x__

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

While SAMPs can be an effective tool to address use conflicts, the need for regulatory support, spatial planning, data collection, and resource monitoring are widespread throughout the coastal zone as opposed to a specific geographic area. Therefore, CCS does not plan to develop a strategy for this enhancement area.

Ocean and Coastal Resources

Section 309 Enhancement Objective: Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

Phase I (High-Level) Assessment: *(Must be completed by all states and territories.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),¹⁵ indicate the status of the ocean and Great Lakes economy as of 2015 (the most recent data) in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

Status of Ocean and Great Lakes Economy for Coastal Counties (2015)

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	97,536	1,191	1,383	448	25,392	562	69,187
Establishments (# of Establishments)	4,658	156	119	32	318	59	3,974
Wages (Millions of Dollars)	\$3,700	\$36.9	\$85.0	\$23.4	\$2.1	\$32.4	\$1,400
GDP (Millions of Dollars)	\$7,500	\$103.6	\$155.1	\$42.3	\$3.9	\$164.3	\$3,100

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2015)¹⁶

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral	Tourism &
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¹⁵ www.coast.noaa.gov/digitalcoast/tools/enow.html. If you select any coastal county for your state, you are directed to various data displays for that county. In the upper left of the screen, click the "State" box, to the left of the county box so that the state name will be highlighted. Now the data will reflect statewide data for all of the state's coastal counties. Make sure "2015" is selected for the year (top right corner). You can then click through the sector types by selecting the icons along the top and the type of economic data (employment, wages, GDP, etc), by clicking through the icons on the left.

¹⁶ The trend data is available at the bottom of the page for each sector and type of economic data. Mouse over the data points for 2005 and 2015 to obtain the actual values and determine the change by subtracting 2005 data from 2015.

						Extractio n	Recreatio n
Employment (# of Jobs)	+13,015	-964	-177	-746	+6,840	-11	+8,072
Establishment S (# of Establishments)	+466	-30	-41	-24	+70	-8	+499
Wages (Millions of Dollars)	+\$1,232	-\$19	+\$27	-\$16	+\$870	+\$3	+\$367
GDP (Millions of Dollars)	+\$3,137	-\$44	+\$49	-\$30	+2,039	+\$74	+\$1,049

- Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports¹⁷, indicate the number of uses within ocean or Great Lakes waters off of your state. For energy uses (including pipelines and cables, see the “Energy and Government Facility Siting” template following). Add additional lines, as needed, to include additional uses that are important to highlight for your state. Note: The Ocean Reports tool does not include data for the Great Lakes states. Great Lakes states should fill in the table as best they can using other data sources.

Uses within Ocean or Great Lakes Waters

Type of Use	Number of Sites
Federal sand and gravel leases (Completed)	3
Federal sand and gravel leases (Active)	0
Federal sand and gravel leases (Expired)	0
Federal sand and gravel leases (Proposed)	0
Beach Nourishment Projects	13
Ocean Disposal Sites	66
Principle Ports (Number and Total Tonnage)	1 – 38,837,979 tons
Coastal Maintained Channels	190
Designated Anchorage Areas	19
Danger Zones and Restricted Areas	5
Other (please specify)	N/A

- In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state’s or territory’s coastal zone have changed since the last assessment.

¹⁷ www.coast.noaa.gov/digitalcoast/tools/ort.html. Go to “Quick Reports” and select the “state waters” option for your state or territory. Some larger states may have the “Quick Reports” for their state waters broken into several different reports. Use the icons on the left hand side to select different categories: general information, energy and minerals, natural resources and conservation, oceanographic and biophysical, transportation and infrastructure, and economics and commerce. Then scroll through each category to find the data to complete the table.

Significant Changes¹⁸ to Ocean and Great Lakes Resources and Uses

Resource/Use	Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, -, unkwn)
Benthic habitat (including coral reefs)	Increase
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	Increase
Sand/gravel	Increase
Cultural/historic	Unchanged
Other (please specify)	N/A
Transportation/navigation	Increase
Offshore development ¹⁹	Unchanged
Energy production	Increase
Fishing (commercial and recreational)	Increase
Recreation/tourism	Increase
Sand/gravel extraction	Unchanged
Dredge disposal	Unchanged
Aquaculture	Unchanged
Other (please specify)	N/A

4. For the ocean and Great Lakes resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state’s or territory’s coastal zone since the last assessment, characterize the major contributors to that increase. Place an “X” in the column if the use or phenomenon is a major contributor to the increase.

Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources

	L a n d - b a s e d d e v e l o p m e n t	O f f s h o r e d e v e l o p m e n t	P o l l u t e d r u n o f f	I n v a s i v e s p e c i e s	F i s h i n g (C o m m a n d R e c)	A q u a c u l t u r e	R e c r e a t i o n	M a r i n e T r a n s p o r t a t i o n	D r e d g i n g	S a n d / M i n e r a l E x t r a c t i o n	O c e a n A c i d i f i c a t i o n	O t h e r (E n e r g y P r o d u c t i o n)	O t h e r (C l i m a t e C h a n g e T h r e a t)

¹⁸ In past assessments, due to the significance of the Chesapeake Bay and coastal bay estuarine environments, Maryland has elected to define ocean resources as both bay and ocean resources. The changes indicated below include both bay and ocean resources and uses.

¹⁹ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the “energy production” category.

														t s)
Benthic habitat		X	X	X	X				X	X	X	X		
Living marine resources	X	X	X	X				X			X	X	X	
Sand/gravel							X		X	X				X
Transportation/navigation												X		
Energy production					X		X	X		X				
Fishing (commercial/recreational)				X							X	X		X
Recreation/tourism	X		X							X				

5. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

The Mid-Atlantic Regional Council on the Ocean (MARCO) was established by a Governor’s Agreement in 2009 and is a partnership of Delaware, Maryland, New Jersey, New York, and Virginia to enhance the vitality of the region’s ocean ecosystem and economy. CMP staff sit on the MARCO Management Board and multiple working groups to advance regional ocean priorities of climate change adaptation, marine habitats, renewable energy, and water quality, as well as guide data development on the Mid-Atlantic Ocean Data Portal. Through MARCO, CCS is positioned to stay up-to-date on ocean resource and use issues throughout the Mid-Atlantic, which facilitates the avoidance of use conflicts and enables more efficient and effective management of our shared resources. Through this and other regional partnerships, there are several ocean-specific data and report resources that have been made available since the last assessment. These include:

1. **Mid-Atlantic Ocean Data Portal.** In 2010 MARCO launched the Mid-Atlantic Ocean Data Portal, an online toolkit and resource center that consolidates available regional data and enables state, federal and local users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites, among others. Since the last assessment, the Portal has exponentially increased the amount and quality of spatial data served to more than 3,000+ data layers. This includes the monumental Marine Life Data & Analysis Team work to characterize and map marine life in the Mid-Atlantic region. Living resource data from the Portal used to inform this assessment included benthic habitats, birds, deep-sea corals, essential fish habitats, wetlands, fish, marine mammals, seagrasses, sea scallops, and sea turtles.
2. **Mid-Atlantic Ocean Action Plan.** From 2013-2018, CZM staff participated on the Mid-Atlantic Regional Planning Body (Mid-A RPB), which undertook a regional ocean planning initiative for the region. The Mid-A RPB included state and federal representatives, tribal entities and the Mid-Atlantic Fishery Management Council. The purpose of the RPB was to: improve our understanding of how the ocean waters and resources of the Mid-Atlantic region are being used, managed, and conserved; provide a forum for identifying coordinated

actions to address regionally-important ocean management challenges and opportunities; and engage stakeholders and regional partners to ensure that the full breadth of perspectives is accounted for in ocean planning. In December 2016, the White House certified the Mid-Atlantic Regional Ocean Action Plan (OAP), which guides efforts to sustain a health ocean ecosystem and promote sustainability ocean uses. CZM staff assisted with OAP implementation until June 2018 (see next section).

- 3. Regional Ocean Assessment.** To inform the development of the Mid-Atlantic Ocean Action Plan, MARCO funded – and CMP staff advised on – the development of the Mid-Atlantic Regional Ocean Assessment (ROA), which was completed in 2016. The ROA is an online information resource developed to support the Mid-Atlantic regional ocean planning process. It provides an engaging and reader-friendly distillation of key information on selected topics in ocean planning for decision-makers, stakeholders, and the broader public. The ROA brings together and summarizes best available information on the ocean ecosystem and ocean uses from New York to Virginia, and it serves as a gateway to more in-depth information sources. It specifically characterizes the status, trends, and linkages between the ocean uses and the ocean ecosystem. The ROA acknowledges an increase in ocean uses and expresses a need for more analysis on the cumulative impacts of these uses to ocean ecosystems.
- 4. Mid-Atlantic Baseline Studies & Wildlife Studies Offshore Maryland.** Beginning in 2013, the CMP supported work to begin studying and documenting the distribution, abundance and behaviors of various wildlife off the state’s Atlantic coast. One project undertaken was a Maryland-focused effort as part of a larger Mid-Atlantic Baseline Studies Project, which focused on understanding the potential exposure of birds, marine mammals, sea turtles, and other wildlife to future offshore wind energy development. The Wildlife Studies Offshore of Maryland report was published in 2015 and represents an overview of results from the final technical report for the Maryland-focused study, and features survey results and case studies on marine mammals, sea turtles, and wintering seabirds. Waters offshore of Maryland’s Atlantic coast are important for many species year-round, including breeding, nonbreeding, and migration periods. Baseline knowledge of wildlife distributions and habitat use is key to understanding conservation and management needs and Maryland has invested .
- 5. Maryland Environmental Studies.** As ocean uses continue to change and intensify, Maryland engaged with many partners in the Mid-Atlantic on programmatic, management and funding issues to address ocean coordination and environmental study needs. The CMP carried out work to secure, leverage and manage nearly \$5M of state, CZM and other federal funding to advance five critical ocean environmental studies related to marine mammals, sea turtles, birds, black sea bass and benthic habitats. At the end of 2019, the CMP began work to fund and leverage an additional \$2M worth of projects to advance technology and understanding about marine mammal acoustic detection, including one project aimed at detection of the critically-endangered North Atlantic Right Whale. The Program’s ability to secure and leverage funding to carry out these environmental studies is a demonstrable example of the CMP’s ability to position itself to effectively connect coastal and ocean management issues to the science and data necessary to inform decisions.
- 6. Climate Change Vulnerabilities in the Coastal Mid-Atlantic Region.** Through the MARCO Climate Change Action Team, in 2017-2018 CMP staff guided a project to identify and document Climate Change Vulnerabilities in the Coastal Mid-Atlantic Region. The project

was a collaboration of MARCO and the Monmouth University Urban Coast Institute (UCI) as part of “Mid-Atlantic Regional Resilience: Linking Coastal Ocean Information to Enhance Economic, Social and Ecological Resilience” funded by NOAA through a Regional Coastal Resilience Grant (Award No. NA16NOS4730014).

7. **Fishery Management Plans.** The Maryland DNR manages fisheries in the state’s jurisdictional waters (see below). The Mid-Atlantic Fishery Management Council (MAFMC) is responsible for the conservation and management of fish stocks from the state 3-mile limit out to the federal 200-mile limit of the Mid-Atlantic region. The MAFMC has a number of species-specific management plans and in October 2019, the Mid-Atlantic Fishery Management Council approved a Draft 2020-2024 Strategic Plan for public review and comment.
8. **Offshore Wind Energy.** In November 2016, the Maryland Public Service Commission (PSC) began reviewing two proposed offshore wind projects submitted by Skipjack Offshore Energy, LLC (Deepwater Wind, LLC) and US Wind Inc. amounting to 368 MW of total capacity. In May 2017, the PSC announced that both projects were approved (with conditions) to receive ORECs. These projects are estimated to create 9,700 full time equivalent jobs and result in more than \$2 Billion of economic activity in Maryland, including \$120 million of investments in port infrastructure and steel fabrication facilities. See Energy & Government Facility Siting assessment for more information.
9. **Deep-water Coral and Fish of US Mid-Atlantic Canyons.** In 2014, the FSV Henry Bigelow set out to survey the richness and abundance of the Mid-Atlantic’s seven deep-sea canyon marine life. Scientists towed an underwater camera at about 0.25 knots (0.28 mph), taking photos every 10 seconds at depths between 1 and 6 meters off the seafloor. In 2019, MARCO funded the development of an Executive Summary of expedition findings. The Executive Summary includes data from Washington, Accomac, and Leonard canyons offshore Maryland, as well as from five other Mid-Atlantic canyons. Deep-water corals were found in all of the canyons, between ~700 and 1850m with the greatest diversity and abundance between 800m and 1600m.

Related to information about Chesapeake and Atlantic Coastal Bays resources or threats to those resources since the last assessment, there have been several reports completed, including:

1. **Maryland Ocean Acidification Task Force Final Report.** The task force released a final report in January 2015 that analyzed the best available science regarding ocean acidification and the potential effects of acidification on the ecology of State waters and on State fisheries, and made recommendations regarding potential strategies to mitigate the effects of acidification on State waters and on State fisheries. CMP staff served as advisors to the task force.
2. **Maryland Phase III Watershed Implementation Plan.** In accordance with requirements set forth by the EPA, throughout 2018 and 2019 CCS helped develop Maryland’s Phase III Watershed Implementation Plan to Restore Chesapeake Bay by 2025 (Phase III WIP), which was published in August 2019. The Phase III WIP documents the steps, measures, and practices Maryland and its local jurisdictions will take and implement to achieve and maintain the final Chesapeake Bay TMDL by the year 2025. See Cumulative and Secondary Impacts assessment for more information.

3. **Maryland Port Administration Strategic Plan 2019.** Maryland Department of Transportation's Maryland Port Administration (MDOT MPA) is the State agency responsible for increasing waterborne commerce through Maryland ports for the benefit of the citizens of the State. The MDOT MPA routinely prepares and updates its strategic goals and objectives for cargo to remain competitive among East Coast ports. The prior Strategic Plan was published in 2015 and planned for the period of 2015-2020. Several major industry changes have occurred since the 2015 plan, including shipping consolidation, shifts in global supply chains, changes in cargo demand, and growth in containerized cargo. Recognizing these changes and the resulting need to redefine a future path for the agency, MDOT MPA management and staff analyzed the 2015 plan and identified several strategies to be updated. Strategic Plan 2019 includes those updates and charts a course for growth in the marine transportation sector through 2025.
4. **Fishery Management Plans.** Fishery Management Plans (FMPs) serve as a framework for conserving and wisely using fishery resources. An FMP provides a format for undertaking management measures throughout Maryland state waters and allows the DNR to specifically address issues that are unique to Maryland resources. Tidal water fisheries management encompasses all Maryland tidal waters of the Chesapeake Bay and tributaries (excluding the main stem Potomac River which is managed by the Potomac River Fisheries Commission in cooperation with Maryland DNR and Virginia Marine Resources Commission), Maryland coastal bays, and Maryland coastal waters out to 3 miles offshore. The DNR Fishing & Boating Service has developed several species-specific [Fishery Management Plans](#) to ensure the conservation and sustainability of the species. In recognition of complex interactions among species and the environment, Maryland Sea Grant is facilitating a new initiative among Chesapeake Bay jurisdictions to develop ecosystem-based fishery management plans.
5. **Innovative Reuse and Beneficial Use of Dredged Material Guidance.** On an annual basis, approximately 5 million cubic yards of sediments are dredged in Maryland's portion of Chesapeake Bay to enhance shipping and navigational channels. Finding environmentally responsible solutions for managing this material is a priority for the State of Maryland. In 2017 the Maryland Department of Environment published guidance with public involvement to facilitate dredged material reuse in a manner protective of public health and the environment. An update to the [Innovative Reuse and Beneficial Use of Dredged Material Guidance Document](#) was published in December 2019. DNR further invested in promoting beneficial use opportunities through the work of a 2017-2019 NOAA Coastal Management Fellow. The Fellow facilitated an intra-agency committee to develop a departmental policy to promote beneficial use of dredged material to improve coastal resilience and cost efficiency. The results of this work, including a decision-support tool and guidance documents, are available on CCS' [Beneficial Use of Dredged Material webpage](#).

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if any significant state- or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

Significant Changes to Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Regional comprehensive ocean/Great Lakes management plans	Y	Y	Y
State comprehensive ocean/Great Lakes management plans	N	N	Y
Single-sector management plans	Y	N	Y

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

In addition to the several reports listed above, the following represent additional significant changes in ocean and estuarine/bay resource management since the last assessment.

Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States

The CMP continued participation on the RPB and implementation of the OAP until June 2018, when President Trump signed [Executive Order 13840](#) (the Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States), which replaced RPBs with state-led regional ocean partnerships (i.e. MARCO). CMP staff assisted MARCO in strategic planning and prioritization setting to position MARCO to assume this role for the Mid-Atlantic region. At the end of 2018, MARCO established the Mid-Atlantic Committee on the Ocean (MACO) to continue interjurisdictional coordination on shared priorities. MARCO invited all former RPB member organizations – including CCS – and several key stakeholders to participate in MACO and the first [Mid-Atlantic Ocean Forum](#) took place in March 2019.

Offshore Drilling Opposition

In December 2018, DNR, represented by Maryland Attorney General Brian Frosh, joined a multi-state legal action against the NOAA National Marine Fisheries Service over its November 2018 authorization of seismic testing in the Atlantic Ocean. This follows a bill passed earlier in 2018, the Offshore Drilling Liability Act (HB1456), which established offshore drilling activity as an ultrahazardous and abnormally dangerous activity. The bill states that a person that causes a spill of “oil” or “gas” while engaged in an offshore drilling activity is strictly liable for damages for any injury, death, or loss to person or property that is caused by the spill. In official letters from Governor Hogan and DNR, Maryland has repeatedly expressed concern to the federal government about the individual and cumulative impacts to marine species and habitats that may result from seismic testing in the Atlantic, and has consistently expressed opposition to offshore oil and gas development and exploration.

3. Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	N	Y - 2016
Under development (Y/N)	N	N
Web address (if available)	N/A	https://www.boem.gov/sites/default/files/environmental-stewardship/Mid-Atlantic-Regional-Planning-Body/Mid-Atlantic-Regional-Ocean-Action-Plan.pdf
Area covered by plan	N/A	Mid-Atlantic (VA, MD, DE, NJ, NY)

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

- High**
- Medium**
- Low**

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

This enhancement area is a high priority given the rapidly changing landscape of ocean and coastal uses, and the increasing level of concern over climate change impacts on ocean and coastal resources.

The table below is from the report [Climate Change Vulnerabilities in the Coastal Mid-Atlantic Region](#) and indicates trends in several Mid-Atlantic ocean uses. Based on routine interactions with stakeholders and CMP analysis, the trends for the Mid-Atlantic are consistent with the trends in Maryland. The CMP hopes that through continued coordination with other Mid-Atlantic states – through MARCO, MACO, the Chesapeake Bay Program, and other collaborative efforts – Maryland will be prepared to take proactive measures to ensure the continued health of Maryland’s ocean resources and minimize use conflicts.

Endpoints	Trends
Navigation	Region's channel deepening projects now complete; larger tankers and container ships
Pipelines and cables	No apparent trend
Coastal tourism (beach visits, boating)	Increasing with increased coastal populations
Flood and erosion control	Increased need for living shorelines, hard structures due to sea-level rise, storms
Recreational fishing	Cyclical; currently in a trough
Commercial fishing	Cyclical; currently trending down
Marine wildlife viewing	Increasing with increased coastal populations
Sand and gravel production	Expect increased activity due to need for beach replenishment
Carbon sequestration	Declining with the loss of wetlands due to sea-level rise and increased development
Nitrogen & Phosphorous-assimilation	Loss of wetlands implies lower assimilation capacity
Aquaculture	Possible small upward trend in shellfish growing
Underwater cultural resources	No apparent trend
Renewable energy	Expect leased areas to begin to be developed over the next decade
Ocean science	Increased need for OOS; expansion depends upon public sponsorship

Table 6-2 Mid-Atlantic region ecosystem service endpoints and trends.

The CMP anticipates that one of the most pressing issues anticipated in the next five years is the increase in offshore energy development, especially offshore wind. According to a [presentation](#) at the Mid-Atlantic Ocean Forum in March 2019, there are an anticipated 12 offshore wind projects in development in the Atlantic Ocean, with anticipated operational timelines between 2020 and 2027. There are myriad concerns over cumulative and secondary impacts to ocean resources and uses that have yet to be understood or studied. How will this new infrastructure affect Maryland's need for offshore sand resources? How will it affect commercial and recreational fishing? How will it affect shipping? How will it affect recreation and tourism? Answers to these questions and more are what the CMP will be challenged to consider how this new development will affect existing ocean uses such as tourism, fishing, and shipping, and consider effects to ocean resources.

Since the last assessment, CCS has also seen an increasing demand for sand/sediment resources to replenish/renourish shorelines that have eroded as a result of coastal hazards. In the bay/estuarine environments, throughout this last assessment period CCS actively invested in the beneficial use of dredged material as a means to improve coastal resilience (see above and Public Access assessment). Through these efforts it has become evident that long-range planning is necessary for the effective use of this technique to protect our vulnerable coasts. CCS will continue to consider developing a regional sediment management plan to better understand and work with the sediment dynamics present in the Chesapeake Bay, and to better target coastal resilience projects that would benefit from dredged sediment. With regard to offshore sand resources, according to the Maryland Geological Survey, the Environmental Impact Statement for Maryland offshore shoals capped the size and volume that was allowed to be dredged from them and we will have reached that cap at the end of 2020. Maryland anticipates that state and federal agencies will have to move to shoals in the federal waters, resulting in significantly more expense to move the resource from federal waters for shoreline restoration.

The Maryland DNR leads Maryland in securing a sustainable future for our environment, society, and economy by preserving, protecting, restoring, and enhancing Maryland's natural resources. Climate change is having an increasingly apparent impact on our ocean and coastal resources and uses (e.g. spread of invasive species, ocean acidification, more polluted runoff due to stronger storms, and increased demand for sediment resources to replenish eroded shorelines). As a core unit of DNR, CCS has the unique position to participate in and influence both land-based and water-

based efforts to enhance ocean and coastal resources and limit use conflicts. As indicated above, since the last assessment, CMP staff directly participated in and influenced several ocean and coastal resource enhancement efforts, and we anticipate the CMP to play a continued leadership role in the future.

Energy and Government Facility Siting

Section 309 Enhancement Objective: Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)²⁰

Phase I (High-Level) Assessment: *(Must be completed by all states and territories.)*

Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. *In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best-available data. If available, identify the approximate number of facilities by type. For ocean-facing states and territories (not Great Lakes states), Ocean Reports²¹ includes existing data for many of these energy facilities and activities.*

In Maryland coal, natural gas, and petroleum are the fossil fuels utilized to produce electricity. Maryland's coal-fired power plants typically supply about half of the state's annual electric generation, while power from the state's only nuclear plant – the Calvert Cliffs Nuclear Power Plant – typically supplies about one-third of annual generation. Much of the remaining generation is supplied by natural gas, petroleum, and renewables. There are four main types of renewable energy resources in use in Maryland: wind, biomass, solar, and hydropower.

²⁰ CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

“The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program.” NOAA regulations at 15 C.F.R. § 923.52 further describe what states need to do regarding national interest and consideration of interests that are greater than local interests.

²¹ www.coast.noaa.gov/digitalcoast/tools/ort.html. Select “Quick Reports” and then enter your state. Select the Quick Reports for “coastal waters” off of your state. Depending on the size of the state, there may be more than one “coastal waters”. If so, you will need to add the data from all reports to complete the table. Click on the wind turbine icon on the left (“Energy and Minerals”) for information on energy facilities. While outside your coastal zone, you may also want to consider facilities/activities in “Federal Waters” that may have effects on your coastal zone.

To complete the table below, data was compiled from a combination of NOAA Ocean Reports, the Maryland Power Plan Research Program 2016 Cumulative Environmental Impact Report, the Maryland Greenhouse Gas Reduction Act 2019 Draft Plan, and local news articles.

Status and Trends in Energy Facilities and Activities in the Coastal Zone

Type of Energy Facility/Activity	Exists in Coastal Zone (# or Y/N)	Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)	Proposed in Coastal Zone (# or Y/N)	Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)
Pipelines	Y - 11	Increase	Y	Increase
Electrical grid (transmission cables)	Y - 154	Increase	Y	Increase
Ports	Y	Increase	N	Unchanged
Liquid natural gas (LNG)	Y - 1	Increase	Y	Increase
Oil and gas	Y - 57	Unchanged	Y	Increase
Coal	Y - 7	Unchanged	N	Unchanged
Nuclear	Y - 1	Unchanged	N	Unchanged
Wind	Y - 2	Increase	Y	Increase
Wave	N	Unchanged	N	Unchanged
Tidal	N	Unchanged	N	Unchanged
Current (ocean, lake, river)	N	Unchanged	N	Unchanged
Hydropower	Y - 3	Increase	N	Unchanged
Ocean thermal energy conversion	N	Unchanged	N	Unchanged
Solar	Y - 54	Increase	Y	Increase
Biomass	Y - 3	Unchanged	Y	Unchanged

2. *If available, briefly list and summarize the results of any additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.*

Maryland Power Plan Research Program Cumulative Environmental Impact Report (2016)

The Maryland Power Plant Research Program (PPRP) was established in 1971 within DNR to ensure demands for electric power are met while simultaneously protecting the state’s natural resources. PPRP coordinates the comprehensive [review of proposals](#) for the construction or modification of power generation and transmission facilities and by developing technically based licensing recommendations for submission to the Maryland Public Service Commission (PSC). In 2016, PPRP released a [Cumulative Environmental Impact Report](#) that thoroughly describes energy facilities throughout the state. According to this report, between January 2015 and December 2016 the PSC received 17 applications from developers of proposed new generating facilities – an unprecedented level of licensing activity. Between 2000-2016, the PSC received 52 applications for new generation, representing several thousand megawatts of potential generating capacity at existing facilities and at greenfield sites with several application reviews ongoing. Of the 52 applications, however, as of 2016 only 18 are in operation, with the remainder under construction or delayed or abandoned because of various financial or commercial reasons. Maryland has seen a sharp increase in utility-scale solar projects in recent years. Developers are proposing these solar

projects to capitalize on Maryland state tax incentives and support the Maryland Renewable Energy Portfolio Standard. All proposed, under construction, and operational solar and wind energy projects are listed on the [SmartDG+](#) online mapping portal.

Maryland Greenhouse Gas Reduction Act Draft Plan (2019)

In October 2019, the Maryland Department of Environment released the [Maryland Greenhouse Gas Reduction Act Draft Plan](#). The plan proposes a 40% reduction in greenhouse gas emissions statewide by 2030. The 2019 GGRA Draft Plan outlines Maryland's current energy consumption and sets forth a comprehensive set of measures to reduce energy usage and sequester greenhouse gases. The GGRA Draft Plan recommends investments in energy efficiency and clean and renewable energy solutions, widespread adoption of electric vehicles (EVs), and improved management of forests and farms to sequester more carbon in trees and soils. CCS advised on the development of the plan.

Governor's Task Force on Renewable Energy Development and Siting

Since the last assessment, Maryland has aggressively pursued renewable energy projects to achieve greenhouse gas reduction goals. In May 2019, Governor Hogan outlined a bold strategy to set Maryland on a path to 100% clean electricity by 2040. The governor's [Clean and Renewable Energy Standard \(CARES\)](#) includes pushing for and enacting clean air standards that are stronger than 48 other states, joining the U.S. Climate Alliance and serving as a leader in the Regional Greenhouse Gas Initiative. Then, in August 2019, Governor Hogan announced Executive Order 01.01.2019.09 establishing a "Governor's Task Force on Renewable Energy Development and Siting." The Task Force produced an [interim report](#) in December 2019, describing its initial work and making primary recommendations for legislation in the 2020 session of the Maryland General Assembly. The Task Force anticipates an energy demand of 61,750,000 megawatt-hours (MWH) by 2030. A simple model was developed to estimate the amount of new land that would be required in order to meet the solar carve out requirement of Maryland's current [Renewable Portfolio Standard \(RPS\)](#). Based on this model, 8,953,750 MWH of solar energy is required to meet the RPS, whereas as of September 19, 2019 only 1,140 MW of solar existed. The model anticipates a need for 29,276 acres of land required for new land based solar arrays to achieve the RPS goal, with an assumption that 90% of that land requirement (26,348 acres) will come from agricultural land.

3. *Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance²² in the state's coastal zone since the last assessment.*

Dominion Energy Cove Point Terminal

The Dominion Energy Cove Point Liquid Natural Gas (LNG) facility in Lusby, Maryland lies within the coastal zone. Import volumes at Cove Point declined 72 percent between 2010 and 2015. Cove Point is one of 12 LNG import facilities operating in the U.S. Plans for new or expanded LNG facilities in the U.S. have either been canceled or modified for operation as LNG export facilities, in response to high LNG export prices. On October 7, 2011, the U.S. Department of Energy (DOE) authorized Dominion Cove Point LNG, LP to enter into contracts to export LNG to countries that have free trade agreements with the U.S. On April 1, 2013, Dominion announced that it had entered into 20-year contracts for all of the export capacity at Cove Point. On September 29, 2014, the FERC issued an order authorizing Dominion Cove Point LNG to export LNG. The next month, construction

²² The CMP should make its own assessment of what Government facilities may be considered "greater than local significance" in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

began. Completed in 2018, the Cove Point Liquefaction Project allows Dominion Energy to liquefy natural gas onsite and transport it to tanker ships for export.

Conowingo Hydroelectric Generating Station

Conowingo Hydroelectric Generating Station, or Conowingo Dam, is a run-of-the-river hydroelectric power plant owned and operated by Exelon Power, a business unit of Exelon Generation. Located on the Susquehanna River in northern Maryland, the Conowingo Dam has been providing energy to the regional system since 1928. As noted in the last assessment, the license for the Conowingo Dam expired on September 1, 2014. In August 2012, Exelon filed an application with FERC for a new long-term license, which as of January 2020 has not yet been granted. The Conowingo Dam is currently operating on an annual license issued by FERC, which renews automatically while relicensing activities continue.

In 2016, the Lower Susquehanna River Watershed Assessment team released the results of its evaluation of sediment management options at the Conowingo Dam. It found that, since the reservoir behind the dam is essentially full, it is trapping smaller amounts of incoming sediment and, during large storms, sending more silt and attached nutrients over the dam and into the Chesapeake Bay more often. The report concluded that management and mitigation of nutrients and sediment upstream of the reservoir would be more beneficial to Bay health than attempting to manage sediment at the dam through dredging, bypassing or operational changes. The reduced capacity of the Conowingo reservoir to trap sediments and nutrients is considered a Bay-wide challenge to be shared among Bay watershed jurisdictions and the FERC licensee Exelon. To address this challenge, in 2018 the Chesapeake Bay Program partnership formed steering committee that would develop a collaborative strategy to address the increased pollution loads that have resulted from the Conowingo Dam reaching full capacity. The plan, known as the Conowingo Watershed Implementation Plan (WIP), will detail specific steps each of the seven Bay watershed jurisdictions—Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia and West Virginia—will take in order to offset nutrient and sediment pollution from the dam and restore the health of the Chesapeake Bay ecosystem. To achieve an equivalent sediment/nutrient reduction that was once provided by the reservoir, the Conowingo WIP is considering cost and effectiveness of best management practices across the Bay watershed as well as equitable sharing of responsibilities. A pilot study evaluating the dredging, removal and beneficial use of reservoir sediments is also underway to evaluate the feasibility and cost effectiveness of increasing sediment storage capacity of the Conowingo reservoir.

Offshore Wind

Since offshore renewable wind emerged as a new ocean industry a decade ago, the Maryland CMP has engaged stakeholders, resource managers, federal agencies, regional partners and scientists to compile and collect data and information on ocean resources and uses and understand priorities and concerns. In December 2014, BOEM's offshore renewable wind energy lease for an area offshore Maryland's coast went into effect with US Wind. In March 2018, BOEM approved US Wind's Site Assessment Plan (SAP) that details methods and procedures for how the company will collect and analyze meteorological and oceanographic data and other information about ocean conditions in the lease area. Plans call for installing 32 turbines in 20-30 meters of water, 17 miles off the coast of Ocean City. A substation will collect the energy from the turbines and transmit the electricity to the shore using underwater cables. The Maryland project is expected to produce approximately 270 MW of power, and is anticipated to come online in early 2023. One of the first steps was completing construction of a Meteorological Tower, which was installed in the summer of 2019. Also in the summer of 2019, Tradepoint Atlantic announced a partnership with Orsted, a global offshore wind farm developer, to create Maryland's first offshore wind energy staging center

in Baltimore County. There, workers will receive, assemble and ship out parts used to construct offshore wind turbines in Maryland, and other East Coast states.

Geological & Geophysical Surveys

On July 6, 2017 Maryland requested CZM review authority for two survey companies who applied for NOAA NMFS Incidental Harassment Authorizations (IHAs), but the requests were denied. In August 2018, BOEM alerted Maryland that TDI Brooks had applied for a permit for geological petroleum resource work off Maryland. DNR submitted a comment letter to BOEM and NOAA regarding this unlisted activity review geological petroleum resource permit activity (TDI Brooks). Maryland did not request review authority due to precedent of the lack of enforceable coastal policies. On November 30, 2018, NOAA announced they had issued IHAs to five of the 2014/2015 applicants, several of which had originally applied to conduct work off Maryland's coast.

Offshore Oil & Gas

On April 28, 2017, Presidential Executive Order 13795 was issued, outlining an America-First Offshore Energy Strategy, which prompted Secretary of the Interior Ryan Zinke to issue Secretarial Order 3350 directing BOEM to begin the process of developing a new 2019-2024 Outer Continental Shelf Oil and Gas Leasing Program to replace the 2017–2022 Draft Proposed Program (DPP). In August 2017, BOEM sought information about interest in offshore oil and gas in the federal register in advance of this DPP - Maryland responded that the State was opposed. On January 8, 2018, BOEM issued a Federal Register Notice (FRN) about the DPP and included waters offshore Maryland in the DPP.

Challenges with Solar – Impacts to Forests and Agricultural Lands

In the last year, CCS has received requests to provide technical support to the Maryland Department of the Environment's consideration of permits for projects that would clear forested land to make way for large solar arrays in the coastal zone. One such project, proposed by Georgetown University to be built in rural Charles County, would have razed 210 acres of trees. The project was denied a permit in August 2019 because of potential impacts to coastal resources (forests and wetlands). Another project still being considered (as of January 2020) is a proposed ground mounted solar array at the Federal Law Enforcement Training Center (FLETC) in Prince George's County. This proposed project would clear 13 acres of forested land in a DNR priority watershed (Piscataway Creek). The CMP has advised project proponents to consider installing the arrays on building rooftops and non-forested land areas (e.g. parking lots, median strips and open area). While projects proposing clear cutting forest to make room for solar arrays in Maryland have become news worthy, conversion of land uses to solar arrays has already been occurring at a large scale throughout the state, particularly on the eastern shore where agricultural lands are being converted to ground mounted solar arrays. Balancing the protection of coastal resources with the growing renewable energy industry is a challenge the CMP will continue to face as the state continues to push for 100% renewable energy sources to supply energy demand. An increase in desire for renewable energy has prompted the legislative and executive actions to direct renewable energy projects to more appropriate sites (see Governor's Task Forces on Renewable Energy Siting and Development). The CMP continues to assist in reviewing all proposals and permit requests for energy projects in the coastal zone.

Management Characterization:

1. *Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.*

Significant Changes in Energy and Government Facility Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
State comprehensive siting plans or procedures	Y	Y	Y

2. *For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:*
 - a. *Describe the significance of the changes;*
 - b. *Specify if they were 309 or other CZM-driven changes; and*
 - c. *Characterize the outcomes or likely future outcomes of the changes.*

Following the 2015 Session, Governor Larry Hogan signed the Maryland Commission on Climate Change (MCCC) Act of 2015 to codify the commission into law. The tasks and responsibilities assigned to the MCCC include the requirement to report to the Governor and General Assembly each year on the status of the state’s efforts to “mitigate the causes, prepare for and adapt to the consequences of climate change, including future plans and recommendations, if any, to be considered by the General Assembly.” Though not formally, in practice the deliberations of the MCCC guides and informs implementation efforts of the Maryland Greenhouse Gas Reduction Act (GGRA), which Governor Hogan amended in 2016. The GGRA of 2016 requires Maryland to reduce statewide greenhouse gas emissions by 40 percent from 2006 levels by 2030. The original GGRA of 2009 was created based on the recommendations of the MCCC’s 2008 Climate Action Plan, and required Maryland to achieve a 25 percent reduction in statewide greenhouse gas emissions from 2006 levels by 2020. The Maryland Department of the Environment’s 2015 GGRA Plan Update, showed that Maryland was on target to not only meet but exceed the emission reduction goal; and that this was being accomplished with an estimated economic benefit between \$2.5 and \$3.5 billion in increased economic output by 2020 as well as creation and maintenance of between 26,000 and 33,000 new jobs.

Recognizing the economic, environmental, fuel diversity, and security benefits of renewable energy resources, Maryland became one of the first states to adopt a Renewable Energy Portfolio Standard (RPS) in 2004. The Legislature intended the RPS law to establish support for the development of renewable electricity generation within Maryland and the Pennsylvania Jersey Maryland Interconnection, LLC region, by requiring that power providers procure Renewable Energy Credits from renewable sources. During the 2019 legislative session, the RPS was extended under the Clean Energy Jobs Act. This law requires Maryland electricity suppliers to obtain renewable energy credits (RECs) from qualified renewable energy generators for 50 percent of its electricity supply, as defined in the statute, by 2030, with a solar carve-out that requires that 14.5 percent of RECs be

obtained from solar energy generation tied to Maryland’s electric distribution grid by 2030. Energy suppliers are required to purchase RECs to demonstrate compliance with the RPS. The original RPS legislation was adopted in 2004 and has been amended a number of times, in 2007, 2008, 2010, 2011, 2012, 2017, and 2019.

The following are the laws and policies enacted during this assessment period that guide energy production in Maryland:

- In 2015, SB 398: Electricity - Community Solar Energy Generating System Program established a pilot program on community solar energy generating systems under the authority of the PSC.
- In 2016, the legislature passed the HB 1106 Clean Energy Jobs and SB 936 Maryland Clean Energy Incentive Act of 2016, which extended a specified credit against the State income tax for electricity-producing facilities using specified qualified energy resources and established the Maryland Clean Energy Incentive Tax Credit Reserve Fund.
- In 2017, the Governor announced support of a hydraulic fracturing prohibition, which was affirmed by the General Assembly in HB1325 – Oil and Natural Gas - Hydraulic Fracturing - Prohibition. Additionally that year, HB 1414 Renewable Energy Portfolio Standard required the Power Plant Research Program to conduct a study on the renewable energy portfolio standard and related matters. SB313/HB410 – Economic Development – Maryland Energy Innovation Institute, established the Maryland Energy Innovation Institute to collaborate with academic institutions on clean energy programs and to attract private investment to clean energy innovation and commercialization in the State.
- In 2018, HB1456 – Offshore Drilling Liability Act, established “offshore drilling activity” as an ultrahazardous and abnormally dangerous activity and that a person that causes a spill of “oil” or “gas” while engaged in an offshore drilling activity is strictly liable for damages for any injury, death, or loss to person or property that is caused by the spill.
- In April 2019, Maryland passed SB 516 – Clean Energy Jobs to increase the portion of electricity that utilities must source from renewable energy to 50% by 2030, including 14.5% from solar by 2028. In May Governor Hogan wrote “despite its name, this bill is not clean enough, nor smart enough, nor does it create the intended jobs within Maryland” and announced a bold energy strategy – the Clean and Renewable Energy Standard (CARES) – that aims to get Maryland to 100% clean electricity by 2040.

With regard to CZM-driven changes, Maryland’s current lack of enforceable coastal policies on ocean uses and resources limit CCS’ ability to more directly shape federal licenses and permits should waters offshore Maryland continue to be included in federal Programs. To potentially address these limitations the CMP funded a policy options and gaps analysis project with the Environmental Law Institute and the Maryland Office of Attorney General. CCS will continue to consider policies, legislation or regulations that would strengthen its ability to influence offshore oil and gas.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High ___
Medium x
Low ___

2. *Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.*

This enhancement area is a priority for CCS because of the importance of providing safe and reliable energy to our coastal residents while still protecting Maryland's natural resources. The CMP anticipates increasing interest in shifting from centralized, fossil-energy-based systems to smart, distributed, renewable-energy-based systems, and this shift will challenge CCS to consider use conflicts and impacts to coastal resources during the siting process. In light of anticipated increases in solar and offshore wind as energy sources and associated distribution facilities due to the demand for more renewable energy to satisfy the GGRA goal of 40% reduction in greenhouse gas emissions by 2030 and Governor Hogan's goal of 100% clean electricity by 2040, this assessment area is a priority for Maryland.

CCS has and continues to engage with energy developers to inform the process of siting facilities and addressing potential impacts to coastal resources. CMP staff evaluate state and regional issues associated with the development of energy and support studies that advance our understanding of natural resources in our jurisdiction. This has included reviewing proposed projects and supporting environmental studies requested by constituents (e.g. acoustic surveys for black sea bass and marine mammals). Into 2020 and beyond, the CMP will continue to work to ensure that the best available data and information to inform the energy siting and development process is available through mapping tools such as the [Maryland Coastal Atlas](#) and the [Mid-Atlantic Ocean Data Portal](#). The CMP will continue to work to safeguard the natural resources that fall within the coastal zone and work to find management solutions to those activities that may have reasonably foreseeable impacts on our coastal economy and resources.

Aquaculture

Section 309 Enhancement Objective: Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

Phase I (High-Level) Assessment: *(Must be completed by all states and territories.)*
Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best-available data. Your state Sea Grant Program may have information to help with this assessment.²³

Status and Trends of Aquaculture Facilities and Activities

Type of Facility/Activity	Number of Facilities ²⁴	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unkwn)
Commercial Shellfish Submerged Land Leases	2015: 306 2019: 353	The estimated total dockside value of oysters harvested from Maryland shellfish leases in 2015 was \$4,755,805 on 50,637 bushels, and in 2018 was \$4,755,808 on 57,543 bushels. 2019 oyster harvest data is not yet final.	Increase. Additional applications for new submerged land leases are pending.
Commercial Shellfish Water Column Leases	2015: 64 2019: 102	See above.	Increase. Additional applications for new water column leases are pending.
Shellfish Nursery Permits	In 2015, there were 60 facilities permitted to cultivate shellfish larvae, seed and spat-on shell. By 2019, the number of such facilities had increased to 69.	See above.	Increase. Additional applications for Shellfish Nursery Permits are pending.
Non-Shellfish Aquaculture Permits (includes freshwater, indoor facilities, structures in public waters, and state lands)	In 2015, there were 56 non-shellfish aquaculture facilities permitted for operation. In 2019, there were 39 such facilities permitted to raise turtles, shrimp, tilapia, barramundi, marine corals, rainbow and brown trout, aquatic plants, ornamental	See above.	Decrease. From 2015 to 2019, three of Maryland's largest RAS commercial fish and shrimp producers have ceased operations.

²³ While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (www.aqcensus.usda.gov/Publications/Census_of_Aquaculture/) may help in developing your aquaculture assessment. The census is conducted every 10 years and the last report was released in 2013. The report provides a variety of state-specific aquaculture data to understand current status and recent trends. .

²⁴ Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note "more than" or "approximately" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

	fish and various native fish species .		
Aquaculture Enterprise Zones (AEZs)	There were two AEZs of about 176 acres in 2015, but they were never utilized. Then, effective in February 2019, the AEZs were eliminated.	\$0	Maryland’s AEZs were initially established to address the restrictions on leasing that existed prior to the 2009 lease law updates. Since passage of the new laws, the need for AEZs has ceased.

2. *If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.*

In 2010, the Maryland DNR overhauled its regulations for the management of the oyster resource in the Maryland portion of Chesapeake Bay with the intent of advancing oyster restoration. The regulations expanded the scale of oyster sanctuaries, created new opportunities for oyster aquaculture, and designated areas to be maintained for the public fishery with the intent of advancing oyster restoration. These efforts to provide opportunities and incentives to attract private investment in Maryland’s commercial shellfish aquaculture industry are having a beneficial impact. Since the new leasing program was implemented in September 2010, leaseholders have been planting and harvesting millions of oysters on their leases. This trend is expected to continue as interest in obtaining new leases and expanding existing oyster aquaculture businesses remains strong and the number of oysters being planted and reaching market size continues to increase.

Five years after the major regulatory change, a report reviewing the effectiveness of the locations of sanctuaries, public shellfish fishery areas, and aquaculture areas was completed in July 2016. [The Oyster Management Review: 2010-2015](#) uses available information to describe the current status of oyster sanctuaries, Public Shellfish Fishery Areas (PSFAs), and Maryland’s aquaculture industry. This 2016 report declared that all 3 objectives for aquaculture had been met. These were to: 1) streamline the regulatory process for aquaculture; 2) open new areas to leasing to promote shellfish aquaculture industry growth; and 3) provide alternative economic opportunities for watermen.

According to the [Maryland Chesapeake Bay Oyster Management Plan 2019](#), as of December 2018 there were 427 shellfish aquaculture leases on 6,963.2 acres in active use within Maryland state waters. These leases are held by 258 distinct individuals or business entities and there are over 500 distinct individuals directly participating in the industry who hold either a Shellfish Aquaculture Harvester Permit or Registration Card issued by DNR authorizing them to engage in activity on a lease. Approximately 43 percent of distinct leaseholders who are individuals also report holding a Maryland Tidal Fish License. Oyster production by private growers continues to contribute to the overall increase in oyster biomass, ecological value and economic benefits to Chesapeake Bay. To date, Chesapeake Bay’s oyster aquaculture industry utilizes two very distinct culture methods on submerged land and water column leases, respectively.

Aquaculture continues to be permitted and managed by the Maryland DNR Fishing & Boating Service [Aquaculture and Industry Enhancement Division](#), in close coordination with the [Maryland](#)

Aquaculture Coordinating Council. Below are recent tools and resources developed to enhance and support aquaculture in Maryland.

Commercial Shellfish Closure Area Information Portal

In September 2017, the DNR Aquaculture and Industry Enhancement Division, in cooperation with the DNR Shellfish Division, launched the Commercial Shellfish Closure Area Information Portal. The portal was created primarily as a resource for commercial oyster harvesters as a compliment to the State of Maryland Shellfish Closure Areas book they receive each year in hard copy. In addition to displaying water quality closure area data and oyster sanctuary locations, the portal also displays all shellfish aquaculture leases in real-time and a running list of new leases as they are issued beginning each September.

Shellfish Aquaculture Lease Application Tracking Tool

In October 2018, the DNR launched a new set of online tools to help educate and engage the public on proposed aquaculture lease applications. The tools, which include an application tracking list and email notification system, will provide information on pending and proposed commercial shellfish lease applications when they are received by the department.

2019 Aquaculture Resource Guide

The 2019 Aquaculture Resource Guide was developed in collaboration between the University of Maryland Sea Grant Extension and the Chesapeake Bay Foundation. The guide provides Maryland shellfish growers with sources of seed, supplies, equipment, technical assistance, financing and other items needed to develop an aquaculture business. It provides a quick reference to access a range of products and services to aid aquaculture business formation and profitability.

Maryland Aquaculture Coordinating Council Annual Reports (2015-2018)

These reports summarize annual activities of the Maryland Aquaculture Coordinating Council and the State's aquaculture status. Recommendations for Maryland's aquaculture industry are developed for the General Assembly based on Council meetings and stakeholder input. Submission of the 2019 report is pending.

Maryland Shellfish Growers Network (2018)

The Maryland Shellfish Growers Network was launched in 2018 through a partnership between the Chesapeake Bay Foundation and University of Maryland Extension to provide resources, technical assistance and mentoring to new and veteran shellfish growers to help them apply best practices, share information and promote Maryland's aquaculture industry. Membership in the Network is free and also provides access to field days, workshops and conferences planned by the network. Support for the program was provided by NOAA and the Atlantic States Marine Fisheries Commission.

Maryland Shellfish Aquaculture Conference (2019)

Hosted by the Maryland Shellfish Growers Network in February 2019, the conference was designed to give current oyster farmers and individuals interested in starting their own businesses the latest information about government policies, marketing and aquaculture technology.

Maryland Ocean Acidification Task Force Final Report

The task force released a final report in January 2015 that analyzed the best available science regarding ocean acidification and the potential effects of acidification on the ecology of State waters and on State fisheries. The report concluded that little is known about the complex acidification processes in shallow estuarine environments like Maryland's Chesapeake and Coastal Bays, which

are highly sensitive to terrestrial inputs, and the potential impacts that may be posed to the aquaculture industry.

Management Characterization:

1. *Indicate if the approach is employed by the state or territory and if there have been any state- or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.*

Significant Changes in Aquaculture Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	Y	N	Y
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y	N	Y

2. *For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:*
 - a. *Describe the significance of the changes;*
 - b. *Specify if they were 309 or other CZM-driven changes; and*
 - c. *Characterize the outcomes or likely future outcomes of the changes.*

New lease laws that were passed in 2009 have helped to facilitate the growth of shellfish aquaculture by lifting county moratoriums on leasing, removing size limitations on leases, authorizing leases issued to corporations and requiring that leases be actively used for commercial shellfish aquaculture purposes. Since the new lease laws were passed, Maryland has established an infrastructure that supports the responsible development of this industry.

Below are the additional statutory changes that affect aquaculture leases that have occurred since the last assessment:

- **2015 – HB 287 – Natural Resources – Aquaculture – Liability for Trespass.** This bill established specified damages for which specified persons are liable for entering an area leased to another person for aquaculture purposes, without the written permission of the leaseholder, to harvest, damage, or transfer shellfish in any manner or to alter, damage, or remove any markings or equipment. It requires a person who enters an area leased to another person for aquaculture purposes and engages in specified acts to display the written permission of the leaseholder on the request of a law enforcement officer.
- **2017 – HB 1200/SB 964 Aquaculture - Leases - Submerged Aquatic Vegetation.** This bill requires the DNR in consultation with interested stakeholders to study the interactions between Submerged Aquatic Vegetation (SAV) and Shellfish Aquaculture Leases. It also authorizes the DNR to adopt regulations that establish standards and a process that provides the DNR with more flexibility in determining if a Shellfish Aquaculture Lease should be restricted from use by leaseholders due to the encroachment of SAV.

- **2019 – HB28/SB939.** This bill specifies that the term “Non-water dependent project” does not apply to the equipment used in shellfish nurseries and will exempt from the Maryland Department of Environment/Board of Public Works permitting processes, pumps, pipes, and other equipment attached to a pier and associated with a shellfish nursery operation that has been permitted under Natural Resources Article, Section 4-11A-23.
- **2019 – SB112.** This bill changed the due date for an aquaculture legislative report from June to September.
- **2019 – HB841.** This bill provides the department with the authority to grant permission to the holder of a shellfish aquaculture lease, where their aquaculture activities do not harm SAV, to continue planting and harvesting shellfish within the area of their lease where SAV exists.

In the Maryland Code of Regulations there is a specific chapter on aquaculture (Chapter 08.02.23. Shellfish Aquaculture and Leasing). Below are the changes to that regulation that have occurred since the last assessment:

- One action clarified that a person needs an authorization from the DNR prior to engaging in certain shellfish aquaculture activities in Maryland waters and to liberalize the Shellfish Aquaculture Harvester Permit registration requirement. These changes were discussed with and supported by the Aquaculture Coordinating Council.
- In Regulation .03, the action clarified that shellfish aquaculture activities may only be performed on a leased area or in a permitted area. An individual would come to the conclusion that a lease or permit is required by reading definitions, several statutes and regulations together, but adding the statement to regulation makes it completely clear. The action also reorganized and simplified some of the structure of the regulation to make it easier to read.
- In Regulation .04, the action removed the requirement for individuals working on a lease and under the supervision of a permittee, from having to obtain and possess a registration card. The action also added language to ensure that the permittee is responsible for those individuals and corrects effected references. Current regulations require every individual that is conducting aquaculture activities to have either a Shellfish Aquaculture Harvester Permit or Registration Card in order to participate in aquaculture activities on the lease. The industry requested that allowances be made for workers that are accompanying a permittee and requested that the DNR exempt them from the registration requirement. This change allows leaseholders to hire short-term laborers that will be supervised by the permittee while working on the lease.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High ___
Medium ___
Low _x__

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Maryland is committed to both oyster restoration and aquaculture development to address depleted populations, the ecosystems services they provide, and the economic benefit of an

aquaculture industry. The majority of aquaculture development in Maryland focuses on oysters. Aquaculture goals already exist and are articulated in plans such as the Maryland Chesapeake Bay Oyster Management Plan 2019, and are addressed by the DNR Fishing & Boating Service (FABS) Aquaculture Division. The FABS Aquaculture Division has daily interaction with stakeholders, including lease applicants, lease holders, and the Aquaculture Coordinating Council, and therefore CZM staff worked closely with FABS Aquaculture Division staff to complete this assessment.

Ever since implementation of the new leasing program in 2010, Maryland businesses have been investing heavily in increased aquaculture production. Moving forward, shell supply and enforcement are two major issues that will need to be addressed for aquaculture expansion and industry support. Submerged land leaseholders require access to shells for bottom planting and spat-on-shell setting. This resource is in high demand, costly, and difficult to obtain. DNR will need to find ways to augment shell supply and evaluate the use of alternate materials for bottom stabilization and cultch material. Furthermore, more attention is needed on enforcement and lease protection outside of the oyster sanctuary boundaries. While there is limited room for involvement by CCS in shell acquisition and enforcement, CCS can accelerate and support the growth of Maryland's shellfish aquaculture industry through activities related to coastal and marine spatial planning, use conflict resolution, water quality improvement, and working waterfront support.

Another challenge is ensuring healthy waters that support oyster reproduction and growth, and uncertainty over how climate change will influence water quality. Commercial aquaculture operations in particular may need to be increasingly aware of and respond to changing local or regional water quality conditions. Not only will operations need to consider impaired waters due to nutrient and sediment pollution from stormwater runoff, but also changes in water chemistry due to climate change. According to the Maryland Ocean Acidification Task Force Final Report, changes in carbonate chemistry may affect the ability of oysters to grow. Therefore, ocean (coastal) acidification may pose an additional threat to oyster aquaculture and will likely interact with these existing stressors to affect the productivity of aquaculture facilities.

While aquaculture is incredibly important for the state of Maryland, it is a low priority for the CMP due to the limited room for involvement by CCS in shell acquisition and enforcement. To date, CCS has supported oyster aquaculture expansion by collecting coastal and marine use data (i.e. recreational use areas); evaluating the use of oyster aquaculture as a best management practice to help Maryland meet its water quality goals; and exploring watermen's issues through a State Working Waterfronts Initiative. The CMP will continue exploring opportunities to integrate aquaculture into CCS efforts, especially as aquaculture relates to use conflicts, water quality, and climate change.

4. PHASE II ENHANCEMENT AREAS

For all enhancement areas ranked as a high priority in the Phase I Assessment, a Phase II (in-depth) Assessment must be conducted using the appropriate template provided by NOAA to further explore potential problems, opportunities for improvement, and specific needs.

Based upon the responses to the questions in the Phase II Assessment template, key stakeholder

input, and staff’s extensive knowledge of the issues, the CMP determined if a strategy should be developed for the enhancement area. As a result of the Phase I Assessment priority rankings, Phase II Assessments were completed for the Coastal Hazards and Ocean and Great Lakes Resources enhancement areas. The Phase II Assessments for each of these enhancement areas follow.

Coastal Hazards

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to improve the CMP’s ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1. *Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards²⁵ within your coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone, or are there specific areas most at risk?*

	Type of Hazard	Geographic Scope <small>(throughout coastal zone or specific areas most threatened)</small>
Hazard 1	Nuisance flooding	Throughout the coastal zone
Hazard 2	Coastal Storms	Throughout the coastal zone
Hazard 3	Sea level rise	Coastal Counties, including the Eastern Shore of Maryland, and Southern Maryland

2. *Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.*

This information is consistent with the Maryland State Hazard Mitigation Plan (2016). Floods and Coastal Storms (tropical storms, hurricanes, and Nor’easters) consistently impact the State according to Presidential Disaster Declarations. Nuisance flood impacts are also on the rise, prompting Maryland House Bill 1427 (2019). This Bill required local jurisdictions that experience “high tide flooding that causes a public inconvenience” to develop a plan to address nuisance flooding.

Sea level rise is a long-term hazard that exacerbates flooding, coastal storms, shoreline erosion, and saltwater intrusion. In 2018 and 2019, the State of Maryland released multiple reports: “Sea-level Rise: Projections for Maryland” and “Maryland’s Plan to Adapt to Saltwater Intrusion and Salinization.” According to 2018 projections, relative mean sea level is likely to rise 0.8 to 1.6 feet between 2000 and 2050, with about a one-in-twenty chance it could exceed 2.0 feet. Beyond 2050, relative mean sea level rise will depend largely on global emissions pathways and is more uncertain.

²⁵ See list of coastal hazards on pg. 24 of this assessment template.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Precipitation based flooding	Need additional data on changing precipitation patterns, especially at the local scale.
Habitat transition and migration	SLAMM updates are needed to utilize best available data and refine datasets used in decision-making. Limited data are available for understanding species shifts, habitat resilience and impacts to ecosystem services, including water quality.

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

Significant Changes in Coastal Hazards Statutes, Regulations, and Policies

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Shorefront setbacks/no build areas	Y	Y	N
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	Y	N
Hard shoreline protection structure restrictions	Y	Y	N
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	N
Repair/replacement of shore protection structure restrictions	Y	Y	N
Inlet management	N	N	N
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	Y
Repetitive flood loss policies (e.g., relocation, buyouts)	N	N	N
Freeboard requirements	Y	Y	N
Real estate sales disclosure requirements	N	N	N
Restrictions on publicly funded infrastructure	Y	Y	N

Infrastructure protection (e.g., considering hazards in siting and design)	Y	Y	Y
Other (please specify)			

Significant Changes to Coastal Hazard Management Planning Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Hazard mitigation plans	Y	Y	N
Sea level rise/Great Lake level change or climate change adaptation plans	Y	Y	N
Statewide requirement for local post-disaster recovery planning	N	N	N
Sediment management plans	Y	Y	Y
Beach nourishment plans	Y	Y	N
Special Area Management Plans (that address hazards issues)	N	N	N
Managed retreat plans	N	N	N
Other (please specify)			

Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
General hazards mapping or modeling	Y	Y	Y
Sea level rise mapping or modeling	Y	Y	N
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	Y	Y	N
Hazards education and outreach	Y	Y	N
Other (please specify)			

2. *Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state’s management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state’s management efforts?*

The best examples of the State’s ability to be effective in managing the effects of coastal hazards are listed in the accomplishments sections, and include:

Community Resilience Grants: This long-standing service delivery mechanism allows CCS to continue to accelerate and support local adaptation. Key topic areas that past projects focused on: supporting communities through the FEMA’s Community Rating System; developing long range

plans that assess current and future conditions and potential adaptation strategies; and enabling communities to enact updated zoning and ordinances to meet current regulations. These projects provide examples of how the CMP is able to effectively connect local, state and federal expertise, programs and resources. Some projects examples include: Calvert County: Flood Mitigation Small Area plans for five unincorporated communities and three municipalities that addressed current and future flood risk; supporting three counties and three municipalities in their application into the Community Rating System in partnership with MDE; and, supporting small municipalities and low capacity counties to update their Critical Area and Zoning Ordinances to enable local governments to be prepared, progressive and responsive to development requests that balance the impacts of development and preserve natural resources functions.

Resiliency Through Restoration. CCS' leadership on state climate adaptation and bay and habitat restoration - paired with its support for community resilience planning and the completion of a Coastal Resiliency Assessment - allowed the program to secure state funding to launch the 'Resiliency through Restoration' initiative in 2017. With the goal of using nature-based designs to help protect communities, economies and ecosystems from climate change impacts, CCS is providing financial and technical assistance to local government and non-profit partners to implement priority restoration projects across the state over a five year period. Projects include shoreline restoration, beneficial use of dredged material, tidal marsh restoration, dune restoration, landscape-level green infrastructure, and other nature-based practices that provide community and ecosystem benefits. Investments in data-driven assessments and community partnerships are allowing the CMP to accelerate the understanding of risk and support implementation of projects to reduce future risk.

Deal Island Peninsula Partnership - The CMP worked in collaboration with CBNERR and the University of Maryland to establish the Deal Island Peninsula Partnership. This partnership is a community initiative focused on increasing the resilience of local communities to coastal flooding, erosion and sea level change. As a part of this initiative there were a variety of outreach and communication mechanisms utilized including stakeholder workshops; creation of vulnerability maps; community conversations on topics identified at the stakeholder workshop; development of the integrated coastal resilience assessment; website and brochure development and field and site visits throughout the community. The intent was to bring together the stakeholders and local community to understand the vulnerabilities and then develop solutions to enhance resilience.

Identification of Priorities:

1. *Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. (Approximately 1-3 sentences per management priority.)*

Management Priority 1: Hazard Preparedness at the Local Level

Description: Strengthen partnerships and enhance collaborations with local governments to help initiate change in day-to-day decision making that will further incorporate hazard risk planning for both short and long term impacts.

Management Priority 2: Increase Ecosystem Resilience to Changing Conditions

Description: Sea level rise and coastal hazards impact ecosystems as well as people. Understanding shifts in Maryland’s coastal habitats is critical to pursue actions that will preserve and enhance their ability to adapt and continue providing ecosystem services.

Management Priority 3: State-Level Planning efforts to reduce development pressure and impacts to people and infrastructure.

Description: Sea level rise and coastal hazard events are threats when development and people are impacted. As the climate and development patterns change over time, it is critical to plan accordingly and keep people and investments as safe as possible

2. *Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.*

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Need a better scientific understanding of coastal environments to inform local risk assessments, risk reduction strategies, and natural resource management.
Mapping/GIS/modeling	Y	Need for downscaled precipitation data, fine scale inundation data and habitat migration data to assist local floodplain, land use, and emergency planners.
Data and information management	Y	New and updated hazards data will continually become available. Data will have to be carefully managed and integrated into existing platforms such as the MD Coastal Atlas and MD iMAP.
Training/Capacity building	Y	Training can be used as a way to increase the resiliency across the State by reaching local and state government staff and partners . Local capacity building is needed to support individual and community-level actions.
Decision-support tools	Y	Need visualizations to inform a wide range of stakeholders on hazard risk, vulnerability, and adaptation options.
Communication and outreach	Y	Need to effectively communicate the risks of hazards to coastal communities
Other (specify)		

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?
Yes x
No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will be developed for the coastal hazards enhancement area because of the ongoing threat hazard events pose to Maryland’s coastal communities. There is opportunity to engage at the local level to provide technical assistance in addressing coastal hazard impacts and adaptation responses. There is opportunity at the state level to provide strategic direction for the many state agencies involved in coastal hazard planning, including emergency management, natural resource management, and land use planning. Across both local and state levels there is opportunity to provide data, training and communications resources to better educate our stakeholders and provide consistent messaging.

Ocean and Great Lakes Resources

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to enhance the ability of state CMP to better address ocean and Great Lakes resources.

1. *What are the three most significant existing or emerging stressors or threats to ocean and Great Lakes resources within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone, or are specific areas most threatened? Stressors can be land-based development; offshore development (including pipelines, cables); offshore energy production; polluted runoff; invasive species; fishing (commercial and/or recreational); aquaculture; recreation; marine transportation; dredging; sand or mineral extraction; ocean acidification; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.*

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Dynamic coastal use changes	Throughout coastal zone
Stressor 2	Climate change	Throughout coastal zone
Stressor 3	Cumulative impacts to or losses of habitat and resources	Throughout coastal zone

2. *Briefly explain why these are currently the most significant stressors or threats to ocean and Great Lakes resources within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.*

Dynamic coastal use changes - especially in the Atlantic Ocean, there are a number of rapidly changing human uses that have the potential to alter the natural environment and resources. For example, the past five years have seen numerous proposals for offshore oil and gas exploration, advancements toward development of offshore wind energy, proposed changes to shipping fairways, post-Panamax shipping industry changes and other types of use changes. Collectively, all of these use changes create a very dynamic ocean environment that pose different stressors to different ocean and aquatic resources.

Climate change - the wide-ranging impacts of a changing climate will stress and impact all ocean and aquatic resources and ecosystems. Well-documented threats such as inundation, saltwater intrusion, ocean acidification and increased temperatures will affect resources that depend on the lands and waters across the coastal zone.

Cumulative impacts to or losses of habitat and resources - the cumulative effects to habitat and resources due to development or land and water use changes have the potential to result in significant impacts across the coastal zone. While some impacts may be localized, the overall cumulative effects of changes in impervious surface, habitat quality and human uses can result in degraded water quality or ocean and aquatic resources elsewhere.

3. *Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.*

Emerging Issue	Information Needed
Ocean Acidification	Water quality forecasting tools, development of a physical monitoring network for bay/estuarine/ocean environments
Microplastics	Prevalence and impacts to aquatic species and human health
Cumulative impacts to ocean resources from offshore energy development	Continued research, data collection and analysis
Climate impacts on habitats and living resources	Species shifts, wetland loss and migration, associated water quality impacts

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.

1. *For each of the additional ocean and Great Lakes resources management categories below that were not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment. F*

Significant Changes in Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Ocean and Great Lakes research, assessment, monitoring	Y	Y	Y
Ocean and Great Lakes GIS mapping/database	Y	N	N
Ocean and Great Lakes technical assistance, education, and outreach	Y	Y	N
Other (please specify)			

2. *For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.*
 - a. *Describe significant changes since the last assessment;*
 - b. *Specify if they were 309 or other CZM-driven changes; and*
 - c. *Characterize the outcomes or likely future outcomes of the changes.*

Ocean and Great Lakes research, assessment, monitoring -

(1) Resiliency through Restoration monitoring: One of the ways that the management of this category has changed since the last assessment is the establishment in 2017 of the new Resiliency through Restoration Initiative and the associated monitoring taking place that will contribute to adaptive management at the restoration sites. The Resiliency through Restoration Initiative directly supports on-the-ground implementation of nature-based projects that will demonstrate how nature can help protect communities from climate change impacts. Over the long term, the Initiative will reduce Maryland's vulnerabilities and enhance resiliency of local communities, economies, and natural resources. Monitoring at select sites will address coastal, stormwater and floodplain impacts. Through recent work to monitor sites the data and metrics collected will inform adaptive management of nature-based practices, work to field test monitoring protocols and support future community science training. This is a direct result of CZM-driven changes and a partnership with the Chesapeake Bay National Estuarine Research Reserve.

(2) Ocean studies: As noted in previous assessments and sections of this document, Maryland has invested significantly over the past five years in ocean studies and coordination to inform planning and decision making. This is a direct result of CZM-driven changes. The outcomes of this work include informed decision making, site and research plans; updates and changes to ocean policy recommendations; and, more informed siting of ocean projects. This work is expected to continue to evolve during the course of this assessment and strategy.

3. *Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in planning for the use of ocean and Great Lakes resources since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?*

The best examples of the State's ability to be effective in planning for the use of ocean and coastal resources are listed in the accomplishments sections.

Identification of Priorities:

1. *Considering changes in threats to ocean and Great Lakes resources and management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to effectively plan for the use of ocean and Great Lakes resources. (Approximately 1-3 sentences per management priority.)*

Management Priority 1: Enhanced ocean coordination

Description: Uses and coordination across the Mid-Atlantic ocean have increased dramatically and there is growing interest in coordinating across the region and Atlantic on research and science related to fisheries and wildlife. Enhanced integration and focus across state boundaries is needed to advance work on cumulative impacts, make continued investments in applied research and science and improve coordination.

Management Priority 2: Addressing coastal and ocean resources’ climate change vulnerabilities

Description: Since the last assessment, there has been a renewed and growing focus on how to address coastal and ocean resources’ vulnerability to a variety of climate impacts. To most effectively support resource resilience it is critical to identify strategies and carry out work to address issues such as ocean acidification, shifting species, habitat changes, water quality impacts and other priorities where climate and coastal and ocean resources are linked.

Management Priority 3: Sand and sediment, beneficial use

Maryland has made significant advancements in connecting dredging work with coastal restoration and sediment management goals. With a project pairing tool and new Departmental policy and workflow addressing beneficial use, the development and implementation of additional work at the state, local and ocean levels are needed to continue to support habitat, resilience and waterway use needs.

2. *Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.*

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	More information and research is always a need to support decision making.
Mapping/GIS	Y	CCS relies upon mapping and GIS to advance many of its priorities and this will remain a continuing need to advance applied science and data-informed management goals.
Data and information management	Y	As natural and nature-based feature restoration projects are built for resiliency across the nation, there would be benefits to better compiling and managing the data and information about project success and performance metrics.
Training/Capacity building	Y	Both training and capacity building is needed to ensure that not only CCS, but other entities responsible for coastal and ocean resource management, are well prepared for intensifying and emerging coastal and ocean uses
Decision-support tools	N	There are a number of decision-support tools that exist or that are being updated that will assist in meeting the needs identified above. No new tools are needed, rather, there will be work to enhance or utilize what exists.
Communication and outreach	Y	There is a need to continue and improve communication and outreach about coastal and ocean resources to build community engagement on the issue
Other (specify)		

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?

Yes x

No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

Maryland will develop a strategy to address the diverse management needs of our coastal and ocean resources and environments. Issues highlighted in this Phase II assessment such as changes in ocean uses, climate impacts and sediment management - along with related impacts outlined in the marine debris and coastal hazards assessment - highlight the need to focus time and resources on this management area. The strategy will help to (1) support needed partnerships, applied science and project implementation efforts to advance work addressing challenges facing our coastal and ocean resources and (2) help to transition partnerships, research and coordination efforts from planning and data collection phases to implementation and application outcomes.

5. STRATEGIES

The CMP utilized the Phase I and Phase II Assessments to develop three strategies that encompass those assessment areas that received high priority ranking and could effectively be addressed by the CMP over the next five years. These strategies represent a comprehensive, multi-year statement of goals to address high priority needs for improving coastal management in Maryland. These strategies are: Enhancing Resilience to Coastal Hazards and Climate Change, Ocean and Coastal Resources & Uses, and Enhancing Access.

ENHANCING RESILIENCE TO COASTAL HAZARDS AND CLIMATE CHANGE

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- | | |
|--|--|
| <input type="checkbox"/> Aquaculture | <input checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input checked="" type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |

Special Area Management Planning

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

A change to coastal zone boundaries;

X New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;

X New or revised local coastal programs and implementing ordinances;

X New or revised coastal land acquisition, management, and restoration programs;

New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,

X New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. Strategy Goal: Ensure that coastal hazards and community resilience are integrated in local and state planning processes and that equity and climate considerations are factored into decision making.

Maryland's goal for this strategy is to ensure that coastal hazards and community resilience are addressed in local and state planning processes. In addition, it is the goal that these policies and programs are administered in an equitable way that takes into account the many stakeholders, communities and diverse populations across the Coastal Zone .

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project, with the expectation that achieving the goal would eventually lead to a program change. For strategies that implement an existing program change, the goal should be a specific implementation milestone. For example, work with three communities to develop revised draft comprehensive plans that consider future sea level rise or, based on research and policy analysis, present proposed legislation on wetland buffers to state legislature for consideration. Rather than a lofty statement, the goal should be achievable within the time frame of the strategy.

C. Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

The Maryland Coastal Management Program (CMP) will build upon the previous work to enhance the resilience of natural and human-based systems to the impacts of climate change. To make these systems more resilient and protect public safety, vital coastal habitats, and public and private infrastructure, the CMP proposes to increase community

resilience and lessen the unequal burdens of a changing climate through the development of tools and resources, providing technical assistance and supporting long range planning efforts. In addition, the strategies will support the resilience of coastal habitats by further incorporating adaptation measures into our land conservation and restoration programs. Proposed program changes will include:

- Implementing and/or adopting new or revised authorities that enhance the State’s ability to meet coastal hazard, climate change, and sea level rise adaptation goals
- Integrating adaptation planning into local ordinances and comprehensive plans
- Enhancing land management and restoration programs to preserve and restore the protective functions of natural infrastructure features such as beaches, dunes, wetlands, and oyster reefs.
- Revising or adopting new State guidelines, coastal enforceable policies, legislation and procedures that address sea level rise and climate change risk and adaptation strategies

III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

The *Phase 1 Coastal Hazards Assessment* found that the CMP is a critical nexus in a state agency network committed to helping Maryland build capacity and resilience at the local level, where coastal hazards are most dramatically experienced. As we move into the next five years, the CMP expects a continuation of the recent trend of an increasing number of coastal communities beginning to experience or wishing to address more frequent and more significant flooding and climate impacts.

The *Phase II Coastal Hazards Assessment* found a major evolution that has challenged our work is a greater focus on sunny day flooding and riverine flooding, both of which require science, data and tools that aren’t necessarily as well developed as those for sea level rise. The CMP, the communities and the state will be pressed to allocate more capacity and resources toward addressing these impacts and fostering conversations. In addition, the CMP is increasingly being challenged to design and offer technical and financial assistance in an equitable way, and will continue to push to ensure vulnerable frontline communities are getting the resources they need to prepare, adapt, and respond to coastal hazard and climate change impacts.

The *Phase II Coastal Hazard Assessment* also found limited data are available for understanding species shifts, habitat resilience and impacts to ecosystem services. The proposed activities supporting targeted restoration and protection projects represents a significant adaptation strategy for both coastal communities and ecosystems. Proposed efforts undertaken during this strategy will ensure that state restoration, enhancement, and protection projects promote resiliency through increased data, design and implementation, monitoring, adaptive management, and capacity building.

IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

The following strategies will broaden efforts to build community resilience, reduce the impacts of climate change and flood impacts, and broaden the partnerships and voices engaged in community resilience planning in Maryland. The proposed efforts will enhance capacity for more communities to plan for and implement measures that increase resilience, enhance regional partnerships and strengthen local and state planning efforts to plan for increased on the ground climate stressors. There is significant cumulative benefit as a greater number of communities incorporate climate risk into their decision making.

In addition, these strategies enhance the resilience of our coastal ecosystems through the design and implementation of restorative practices and the development of tools and guidance to support community understanding and participation in resilient restoration projects.

V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change, as well as the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The likelihood of success for attaining the strategy goal and program change are high. The significant progress in coastal hazards and climate change adaptation achieved during the previous strategy timeframe, and outlined in section 2 of this document, provides for a strong likelihood for success. The CMP participates in a number of stakeholder engagement efforts related to coastal hazards, including the [Maryland Resiliency Partnership](#) and the [Maryland Silver Jackets](#). Through one-on-one conversations, work group meetings, and facilitated community workshops, CMP staff routinely hear community concerns related to coastal hazards, such as an ever-increasing need to address these events in not only the context of floodplain management, but also cultural and historic resources and environmental justice. The CMP will be addressing these concerns through long-term strategic planning, program development, and technical assistance outlined in the following strategies.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. For example, even if the final adoption of the program change is outside of the CMP's control, what steps will be included in the work plan so the CMP ensures the program change is considered, reviewed, and hopefully adopted by the outside entity? Who are the other stakeholders or elected officials that need to be engaged, and how and when during the strategy development process? What is the decision-making or voting process that is involved in the adoption of the program change, and how will the CMP interact with this process to ensure that the proposed program change is considered? If the state intends to fund implementation activities for the proposed

program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCM recognizes that they may change somewhat over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal 1: Provide financial and technical support to Local Communities and enhance partnerships.

Total Years: 5

Total Budget: \$1,220,000

Target Program Change 1: Adopt policies programs and procedures that build and enhance community resilience and reduce the impacts of changing conditions and climate change.

Year(s): 1-5

Description of activities: The Maryland Coastal Program will work with state and local partners to build community resilience across the coastal zone through technical and financial assistance. Work will include advancing the actions identified in the Adaptation 2030 framework, which provides state-wide strategies that reflects regional differences and needs. Collaborations will continue to be built to ensure the integration of state and local policies related to floodplain management, flood risk reduction and climate change adaptation.

Major Milestone(s):

1. Provide technical and financial assistance to up to three communities per year to enhance the capacity of local communities to understand and effectively plan to address flood risks associated with a changing climate
2. Continue to provide a consistent platform for use throughout the coastal zone to document flood impacts and utilize those reports to enhance flood risk reduction measures.
3. Provide direction, training and assistance to local communities to enhance and implement the legislatively mandated nuisance flood plans.
4. Update flood risk and sea level rise visualizations in alignment with Maryland sea level rise projections.
5. Provide technical assistance and support to local and state partners to continue community resilience planning through interagency and local planning efforts such as the Maryland Sustainable Community Program and Sustainable Maryland.
6. Engage internal and external partners to better align flood risk and adaptation actions that intersect with floodplain, critical area and wetland regulations.

Target Program Change 2: Strengthen existing and build new partnerships with Maryland's diverse population and constituents to prepare for and adapt to climate impacts.

Year(s): 1-5

Description of activities: The Maryland Coastal Program will work to establish and support regional partnerships, engage new partners and build capacity for communities to increase the strategic work of climate resilience. Work will include building capacity through tool development, training and innovative partnerships. Climate resiliency will be strengthened through convening regional partnerships to approach resiliency strategies as well as capacity building the new and under-represented partners in the coastal zone.

Major Milestone(s):

- Identify and build capacity with new partners by providing technical support and developing innovative climate resilience planning tools. This will be done through programs such as the Partners for Action and Learning Sustainability program, providing training and technical guidance materials.
- Establish and enhance regional and emerging partnerships. These partnerships may include inter-jurisdictional and/or multiple stakeholders on planning projects to enhance equity, community resilience and other climate-induced stressors such as public health. Examples include LEAD the Coast

Strategy Goal 2: Enhance ecosystem resilience in response to a changing climate

Total Years: 5

Total Budget: \$607,0000

Target Program Change 1: New or revised coastal land acquisition, management, and restoration programs.

Year(s): 1-5

Description of activities: Tools and guidance will be developed to holistically and strategically inform conservation, restoration and management of coastal habitats to address sea level rise and saltwater intrusion. Work will inform regional and parcel scale activities. Staff will support implementation of conservation, restoration and management programs to integrate climate change and coastal hazards into natural resource decision-making.

Major Milestone(s):

1. Update mapping for Maryland's marsh migration areas and priority wetland adaptation areas to incorporate the best available science, including elevation and sea level rise data.
2. Build capacity for climate-smart conservation. Staff will develop trainings, guidance, and consistent messaging for integration of resilience and climate change into land acquisition reviews. Staff will educate internal and external partners on the integration of resilience and climate change into land acquisition and restoration planning
3. Engage internal partners in the development of State Lands Assessment and Resilience Plans, and associated restoration or resilience projects. Partners may include Wildlife & Heritage Service, Maryland Forest Service and Maryland State Parks.

4. Develop and implement a Resiliency through Restoration Monitoring Program to track project progress, establish a framework for justifying site-level adaptive management needs, and inform best management practice implementation across the coastal zone.
5. Pilot community science monitoring to supplement the Resiliency through Restoration Monitoring Program.
6. Pursue recommendations outlined in the State's Saltwater Intrusion Plan (2019)

Target Program Change 2: Preserve and restore the protective functions of natural shoreline features such as beaches, dunes, and wetlands.

Year(s): 1-5

Description of activities: The Resiliency through Restoration Initiative will be implemented to build community resilience to climate change impacts. Staff will support project identification, design, implementation, monitoring, adaptive management, and capacity building.

Major Milestone(s):

1. Support design of restoration projects that integrate sea level rise and other climate change data.
2. Identify, build capacity for, and pursue equitable restoration and shoreline enhancement projects that provide risk reduction benefits to community assets and natural resources.
3. Coordinate with state and local partners to support competitive solicitations and large-scale implementation.
4. Develop design guidance and case studies to support natural and nature-based feature projects and best management practices across the coastal zone.

Year(s): 2-5 Years

Description of activities: Tools will be developed to quantify the protection benefits of marshes and other natural features and evaluate changes in ecosystem services as sea levels rise. Outreach and stakeholder engagement will support identification of management actions to preserve ecosystem services, including coastal protection, water quality, wildlife, and blue carbon.

Major Milestone(s):

1. Identify gaps and needs from Maryland's Ecological Effects of Sea Level Rise (EESLR) project.
2. Integrate ecosystem services data into state decision-making tools, such as the Maryland Coastal Resiliency Assessment and Ecosystem Services Framework.
3. Develop training, communication resources, and information exchange opportunities for stakeholders to build capacity for strategic restoration, conservation and management of wetlands, dunes and other natural resources.

4. Engage land managers, local governments, adjacent communities and other stakeholders to identify appropriate adaptation actions and incentivize similar actions throughout the coastal zone.

Strategy Goal 3: Strengthen state-level climate change adaptation planning

Total Years: 1-5

Budget: \$70,000

Description of activities: Following the completion of the Adaptation and Resiliency Work Group’s Adaptation Framework, CCS staff intend to lead development of state adaptation plan actions. These actions will help to outline annual actions and discussions based on the updated strategies and the work will improve coordination of planning and regulatory responsibilities and engage partners across the coastal zone. This work will support all eight sectors and focus areas that were developed through the Framework effort (Water Resources: Quantity and Quality; Natural Resources and Ecosystems; Local Government and State Service Delivery; Human Health; Protecting Critical Infrastructure; Natural and Working Lands; Diversity and Environmental Justice; Climate Jobs and Training) and will engage the Maryland Commission on Climate Change.

Major Milestone(s):

1. Identify strategy goals and annual actions based on concepts identified in the Adaptation Framework.
2. Development of the next step of the Adaptation Framework by framing a plan and associated goals. Align partners and resources to advance these goals through development of projects, policies and guidance to advance them.
3. Advance CCS-specific actions such as planning and restoration for wetland and habitat adaptation areas, legal and regulatory analyses, state planning coordination.

VII. Fiscal and Technical Needs

A. Fiscal Needs: *If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.*

CMP leadership on state climate adaptation and bay and habitat restoration - paired with its support for community resilience planning and the completion of a Coastal Resiliency Assessment - allowed the program to secure state funding to launch the ‘Resiliency through Restoration’ initiative in 2017. With the goal of using nature-based designs to help protect communities, economies and ecosystems from climate change impacts, CCS is providing financial and technical assistance to local government and non-profit partners to implement at least 16 priority restoration projects across the state over a five year period. Projects include shoreline restoration, beneficial use of dredged material, tidal marsh restoration, dune restoration, landscape-level green infrastructure, and other nature-based practices that provide community and ecosystem benefits. State funds are partially allocated for implementation activities that would not be eligible for 309 funds.

B. Technical Needs: *If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).*

The CMP anticipates that the technical needs for this strategy exist either through in-house technical abilities or through partnerships with other agencies and the CBNERR. However, there may be additional opportunities to partner with NOAA and the Office for Coastal Management to deliver necessary training, modeling or assessment needs.

VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. (Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above.) The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

5-Year Budget Summary by Strategy

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Provide financial and technical support to Local Communities and enhance partnerships	309	\$250,000	\$220,000	\$250,000	\$250,000	\$250,000	\$1,200,000
Enhance ecosystem resilience in response to a changing climate	309	\$121,000	\$121,000	\$121,000	\$126,000	\$118,000	\$607,000
Strengthen state level adaptation planning	309	20,000	25,000	0	25,000	0	\$70,000
Total Funding	309	\$391,000	\$366,000	\$371,000	\$401,000	\$368,000	\$1,897,000

OCEAN & COASTAL RESOURCES & USES

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- Aquaculture
- Energy and Government Facility Siting
- Coastal Hazards
- Ocean/Great Lakes Resources
- Special Area Management Planning
- Cumulative and Secondary Impacts
- Wetlands
- Marine Debris
- Public Access

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. **Strategy Goal: Enhance collaboration across partners to address shared resource management challenges such as shifting marine habitats and resources; sand and sediment; offshore energy; and marine debris. Maryland will utilize existing and support development of new data, tools and monitoring and assessment information to contribute to policy or management guidance, project implementation and partnership development addressing each of these coastal and ocean resource issues.**

C. *Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)*

Maryland's Ocean and Coastal Resources and Uses strategy will primarily focus on advancing work on shifting marine habitats and resources; sand and sediment; offshore energy; and marine debris. Work on each of these issues will entail a combination of (1) data collection, development, analysis and synthesis; (2) collaboration with partners; (3) and, policy and management guidance. Each strategy and how the approach will contribute to identified program changes is summarized below:

Shifting species and Ocean Acidification

During the previous strategy term, state climate adaptation framework discussions and work with the Mid-Atlantic Council on the Ocean (MARCO) identified that species shifts and ocean acidification were some of the emerging climate-related challenges for natural resources and ecosystems. Shifts are occurring both in the aquatic environment and across the terrestrial landscape. One of the challenges associated with addressing resource shifts on land is monitoring and mapping the changes and anticipating where new habitat and ranges might migrate to in the future. In the aquatic environment, a challenge is managing the species under the current regulatory framework when species ranges are shifting. A strategy around shifting species in Maryland will seek to outline approaches to address species and habitat shifts in the aquatic ecosystem and on land and to incorporate potential future habitat considerations into land conservation strategies. The CMP will work with partners such as MARCO and other ocean networks as well as land management units and fisheries managers on this strategy focus. The CMP will work with the Mid-Atlantic Coastal Acidification Network and Maryland Commission on Climate Change to address ocean acidification impacts.

Sand and Sediment

Coastal and ocean management of sand and sediment bridges multiple program focus areas including habitat and resource needs, offshore energy and coastal resilience. The CMP previously developed a Departmental beneficial use policy and project tool and intends to continue discussions about more routinely implementing these projects and advancing the science related to habitat and resilience benefits of this practice. Through work with the Research Reserve the program will continue to improve the state's data and understanding about habitat and surface elevation and will pursue opportunities to transfer knowledge between programs, including the Deal Island thin layer placement pilot project and Science Collaborative transfer. In the ocean, the CMP will work with MARCO states to advance mutually beneficial sand and sediment management goals in regional ocean collaborations.

Offshore Energy

During the strategy timeframe offshore wind energy and regional coordination around several related issues is expected to change dramatically. Maryland intends to address data and trend analysis and synthesis work on coastal habitats and resources; contribute to the identification and advancement of regional research priorities and projects; and, support state-specific offshore energy goals through work on coastal policies and federal consistency. The CMP will both work within the state and alongside regional partners such as MARCO, the Regional Wildlife Science Entity (RWSE), Responsible Offshore Science Alliance (ROSA) to advance this strategy.

Marine Debris

Reducing marine debris, including microplastic pollution, requires sustained efforts to bring public awareness to the impacts of marine debris and support efforts to change behavior. This strategy will support work with coastal communities and organizations to increase awareness, support behavior change and adopt programs and policies that address this management issue.

III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the

priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

As noted in the Phase I and II Assessments:

- Marine debris is an increasing problem in coastal and marine waters;
- Offshore energy is one of the most pressing issues anticipated in the next five years in the offshore environment;
- There has been an increasing demand for sand and sediment to replenish and renourish shorelines that is anticipated to continue to increase as efforts to restore habitats for resilience continue; and,
- Climate change is having an increasingly apparent impact on our ocean and coastal resources and uses.

Regarding marine debris, supporting local partners and businesses in building awareness about marine debris and fostering changes in debris sources will allow the program to continue to address the wide range of debris sources and create cross-jurisdictional messaging and transfer opportunities. Regarding offshore energy and climate change impacts on ocean resources, state and regional collaborations and data and research work will aid in addressing complex interjurisdictional issues, cumulative impacts and high priority data and research needs. For sand and sediment, continued opportunities for learning transfer and planning and project guidance and protocols will support the practice of beneficial use and informed use of limited sand and sediment resources.

IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

Marine debris and climate change are having an increasingly apparent impact on our ocean and coastal resources and uses (e.g. debris entanglement and microplastic impacts, spread of invasive species, ocean acidification, and increased demand for sediment resources to replenish eroded shorelines). Changes in ocean temperatures and chemistry are already affecting fisheries and noticeable changes are occurring in species ranges. The CMP is in a unique position to participate in and influence both land-based and water-based efforts to address marine debris; enhance ocean partnerships; advance offshore management goals, science and research; and balance sand and sediment uses with their intrinsic habitat value and relationship to marine commerce.

CMP investments in partnerships, policy and protocol development, research and science, and practice implementation will benefit resource managers, communities, project implementation partners, and restoration professionals across the state and region.

V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change, as well as the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

In recent years CCS has continued to invest in and focus its work on ocean studies and coordination, marine debris and sand and sediment to advance efforts that address hazards, ocean health and

energy, and marine debris. There is active interest in the state and Mid-Atlantic in continuing and expanding partnerships to achieve the priorities identified in this strategy. CCS will continue to identify ways to build and sustain sufficient staff capacity and partnerships to ensure the identified program changes can progress. Specific to marine debris - that is a new priority in this strategy - a number of communities and several local businesses have expressed interest in marine debris prevention partnerships and the annual investments to support some of their efforts are reasonable. Therefore, it is expected that the likelihood of success for a couple of marine debris partnerships and program changes are high.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. For example, even if the final adoption of the program change is outside of the CMP's control, what steps will be included in the work plan so the CMP ensures the program change is considered, reviewed, and hopefully adopted by the outside entity? Who are the other stakeholders or elected officials that need to be engaged, and how and when during the strategy development process? What is the decision-making or voting process that is involved in the adoption of the program change, and how will the CMP interact with this process to ensure that the proposed program change is considered? If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCM recognizes that they may change somewhat over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal 1: Ocean and Coastal Management: Shifting species and Ocean Acidification, Offshore Energy

Total Years: 5

Total Budget: \$43,000

Year(s): 1-5

Description of activities:

The CMP anticipates work with local, state, regional, and federal partners, as well as organizations like RWSE and ROSA, to develop or enhance mapping and data analyses related to habitat and natural resources for the Coastal Atlas and MARCO portals that support decision making. The program may work with partners to better understand ocean and coastal use trends and relationships with coastal economies. Work is expected to address species shifts analysis and policy/program guidance development for both land and aquatic environments.

Major Milestone(s):

1. *Ocean Energy:* The CMP will work with state and regional partners to advance habitat and resource data and science needs, economic analyses and support and implement state-specific offshore energy goals through coastal policy work.

2. *Ocean Acidification*: Between Years 1-3, working with the Maryland Commission on Climate Change to identify state ocean acidification goals for the Chesapeake and Atlantic Coastal Bays and Ocean advance implementation steps. The CMP will also work with the Mid-Atlantic to align state work on this topic with regional ocean priorities.

Strategy Goal 2: Sand and Sediment

Total Years: 5

Total Budget: \$80,000

Year(s): 1-5

Description of activities:

In the Chesapeake and Atlantic Coastal Bays environments, the CMP will update the BUILD tool and its datasets biennially to ensure that they are up to date and available to help advance beneficial use projects. The CMP will collaborate with the Research Reserve to review the thin layer beneficial use information from the Deal Island pilot project and work to update program and project guidance. In the ocean and through the Mid-Atlantic, the CMP intends to work with MARCO partners and other partners to discuss and identify priorities around sand and sediment. In addition, related to sand and sediment generally, the program anticipates working on project and practice guidance that outline and define goals and sites for beneficial use for resilience purposes.

Major Milestone(s):

1. BUILD tool updates and policy implementation updates
2. Thin layer placement project guidance
3. Beneficial use for resilience purposes - project and practice guidance
4. Ocean sand and sediment priorities

Strategy Goal 3: Community Marine Debris Partnerships

Total Years: 5

Total Budget: \$50,000

Year(s): 1-5

Description of activities:

The CMP anticipates annual partnerships with local government and/or community organizations to address projects on a variety of marine debris issues such as balloon litter, cigarette butts, plastic waste, takeout containers and personal protective equipment (e.g. masks and gloves). A one-time partnership with an education team may arise to support curriculum development around marine debris. This work could be institutionalized into K-12 or higher education education plans, potentially in partnership with Maryland's Chesapeake Bay National Estuarine Research Reserve and CCS education team.

Major Milestone(s):

1. Annual marine debris reduction campaigns, policies, local guidance
2. Marine debris curriculum incorporated into state education programs

VII. Fiscal and Technical Needs

A. Fiscal Needs: *If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.*

The CMP anticipates that there will be sufficient fiscal resources in this strategy to advance the partnership projects and various outlined studies. A lot of the work described in this strategy will be supported and/or led by core CMP or other CCS staff. One limitation is that vacancies related to sand and sediment and ocean work will somewhat constrain the program’s work and may require the program to support additional external partnerships that could be costlier.

B. Technical Needs: *If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).*

The CMP anticipates that the technical needs for this strategy exist either through in-house technical abilities or through partnerships with other local/state/federal agencies, regional organizations and the Research Reserve. However, as noted above, staff vacancies are expected to constrain some work in the first few years of the strategy.

VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. (Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above.) The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

5-Year Budget Summary by Strategy

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Ocean and Coastal Management	309	\$10,000		\$10,000		\$23,000	\$43,000
Sand and Sediment	309		\$40,000	\$40,000			\$80,000
Community Marine Debris Partnerships	309	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
Total Funding	309	\$20,000	\$50,000	\$60,000	\$10,000	\$33,000	\$173,000

ENHANCING COASTAL ACCESS

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- | | |
|---|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input checked="" type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input checked="" type="checkbox"/> Ocean/Great Lakes Resources | <input checked="" type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

B. **Strategy Goal: To enhance coastal access by incorporating resilience and ensuring equitable inclusion in state programs, planning, and infrastructure.**

C. *Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)*

This strategy will support the inclusion of DEIJ considerations into the technical and financial assistance programs provided by the Chesapeake and Coastal Service, and outreach and engagement strategies to DNR stakeholders. It will support the development of data and GIS mapping to show areas of access disparity, and best practices to address these disparities. This strategy will also address place-based planning opportunities to incorporate multiple use benefits and resilient infrastructure. Lastly, the strategy will support the implementation of the Mallows Bay National Marine Sanctuary management plan, a previously accomplished program change.

III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

The *Public Access Phase I Assessment* found there is a dual threat coastal hazards and climate change pose to the resilience of many public access projects, especially those along the coast. The CMP is being increasingly challenged to design waterfront public access with sea level rise, storm surge, and other factors in mind. This strategy seeks to employ place-based planning to further identify and coordinate resilient public access projects and work to maintain water-dependent use access. It also addresses the implementation and support of the Mallows-Bay National Marine Sanctuary, which has been a key federal/state/local planning partnership identified in previous 309 strategies. In addition, the disparity in access and engagement of our diverse stakeholders has emerged as an area of need. This strategy seeks to develop data and plans funded through a Project of Special Merit to assist the state in enhancing equitable access.

IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

Maryland has an estimated population of 6.08 million people, with approximately 4.25 million living in the coastal portions of the state. Since the 2000's, Maryland has seen a marked increase in demand for water access. Promoting equitable and resilient public access to the shoreline and expanding opportunities for outdoor recreation is a goal of the CMP and many of its partners. Ensuring that our historically disenfranchised communities and stakeholders are engaged in meaningful ways, and addressing disparities in access benefits not only our diverse communities, but also the successful management of our coastal areas.

V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change, as well as the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The likelihood of success for attaining the strategy goal and program change are high. The significant progress in place-based planning through the designation of the Mallows-Bay National Marine Sanctuary and public access and equity projects achieved during the previous strategy timeframe, and outlined in section 2 of this document, provides for a strong likelihood for success. The multitude of federal, local, and non-profit advocacy partnerships employed in this strategy including the Office of National Marine Sanctuaries, Maryland Historic Trust, Charles County, Chesapeake Conservancy, National Park Service, University of Maryland, Corazon Latino, Hispanic Access Foundation, and many others to ensure the support and commitment necessary to implementing these strategies and their associated program changes.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. For example, even if the final adoption of the program change is outside of the CMP's control, what steps will be included in the work plan so the CMP ensures the program change is considered, reviewed, and hopefully adopted by the outside entity? Who are the other stakeholders or elected officials that need to be engaged, and how and when during the strategy development process? What is the decision-making or voting process that is involved in the adoption of the program change, and how will the CMP interact with this process to ensure that the proposed program change is considered? If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCM recognizes that they may change somewhat over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal 1 : Promote Equity and inclusion in access to parks, natural and recreation areas in Maryland's coastal zone.

Total Years: 1-5

Total Budget: \$135,000

Target Program Changes: Adopt policies, programs and procedures that incorporate equity into decision making for coastal resource allocation, and outreach/engagement.

Year(s): 1-5

Description of activities: The Maryland Coastal Management Program will continue to refine tools that identify communities that are under-invested and lack access to coastal resources. Work will include analysis of access, historical resource allocation and funding structures. The program will work with partners to identify and adopt best practices and policies for promoting access. Work will include the establishment of innovative partnerships, expanding outreach and communication efforts and refinement to technical and funding resource allocation that promotes equity in public access.

Major Milestone(s):

1. The CMP will continue to refine and promote the use of the park Park Equity Analysis as well as develop and refine the public access and equity analysis. This analysis will be provided as a tool to local partners as well as be used and an internal tool for evaluation of historical and current resource allocation. Work will

- include the identification, promotion and implementation of best practices to increase equity and accessibility within state and local programs.
2. **Project of Special Merit:** The CMP will lead an effort to develop a multicultural outreach and engagement plan for the Department of Natural Resources. Staff will coordinate an Advisory Committee of internal and external partners to guide the plan and resulting communications and outreach materials.
 3. The CMP will continue work initiated by an internal Diversity, Equity and Inclusion Committee of the MD DNR Chesapeake and Coastal Service. Work will include an analysis of resource allocation as well as refinement to program structure, goals and policies that will increase equitable access to Maryland's coastal resources.

Strategy Goal 2 : Utilize place-based planning to enhance multiple use benefits and resilient public access

Total Years: 5

Total Budget: \$50,000

Target Program Changes: Implement the previously adopted Mallow's Bay-Potomac River NMS Management Plan, and support new outreach/engagement programs.

Year(s): 1-5

Description of activities: The Maryland Coastal Program will engage with local and regional partners to provide technical support for place-based planning. The CMP will continue to lead planning and outreach efforts for the Mallow's Bay-Potomac River National Marine Sanctuary. CMP will work to assess opportunities for building resilient coastal access and boating infrastructure, as well as the multi-use benefits for access and green infrastructure.

Major Milestone(s):

1. **Mallow's Bay:** The Maryland Coastal Program will work with Federal, State, and local partners to implement the Mallow's Bay National Marine Sanctuary Management Plan. This may include the collection of on-site ecological and water quality data, development of citizen science and educational programs, enhancement of interpretation and recreational opportunities, and community outreach activities.
2. **Multi-use coastal access planning:** The CMP will convene and provide technical assistance to local and regional partners to establish and promote the multi-use benefit for access, green infrastructure and resiliency planning projects within urban/suburban settings. The CMP will establish demonstration projects that illustrate the multi-use benefits of these planning efforts in redevelopment and spatially limited areas.
3. **Resilient Access Infrastructure -** The CMP will work to assess the vulnerability of boating and access infrastructure to coastal hazards, and provide guidance and technical assistance for the adoption of resilient infrastructure.

VII. Fiscal and Technical Needs

- A. Fiscal Needs:** *If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.*

The CMP is leveraging in-kind staff support from networked partners including the Maryland Park Service and Waterway Improvement Program. In addition, the CMP will leverage recently awarded Project of Special Merit Funding.

B. Technical Needs: *If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).*

The CMP anticipates that the technical needs for this strategy exist either through in-house technical abilities or through partnerships with other agencies, University of Maryland, and the CBNERR. However, there may be additional opportunities to partner with NOAA and the Office for Coastal Management to deliver necessary training, modeling or assessment needs.

VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. (Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above.) The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

There is a potential to build on the current Project of Special Merit award by implementing outreach and engagement activities identified through the multicultural outreach plan.

5-Year Budget Summary by Strategy

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Promote Equity and inclusion in access to parks, natural and recreation areas in Maryland’s coastal zone	309	\$30,000	\$25,000	\$10,000	\$30,000	\$40,000	\$135,000
Utilize place-based planning to enhance multiple use benefits and resilient public access	309	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$50,000
Total Funding	309	\$40,000	\$35,000	\$20,000	\$40,000	\$50,000	\$185,000

5-Year Overall Budget Summary by Strategy

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Enhancing Resilience to Coastal Hazards	309	\$391,000	\$366,000	\$371,000	\$401,000	\$368,000	\$1,897,000
Ocean & Coastal Uses	309	\$20,000	\$50,000	610,000	\$10,000	\$33,000	\$173,000
Enhancing Access	309	\$40,000	\$35,000	\$20,000	\$40,000	\$50,000	\$185,000
Total Funding	309	\$451,000	\$451,000	\$451,000	\$451,000	\$451,000	\$2,255,000

6. SUMMARY OF STAKEHOLDER AND PUBLIC COMMENT

STAKEHOLDER ENGAGEMENT

As part of the development of this document, the CMP has worked with a variety of partners and stakeholders to discuss enhancement areas, needs and gaps in coastal management and how the Program could help fill some of these needs in a way that is complementary to other work underway. Partners included:

- Maryland Department of the Environment
- Maryland Department of Planning
- Maryland Energy Administration
- Maryland Department of Transportation
- Maryland's Emergency Management Agency
- The State's Office of the Attorney General
- Maryland Geological Survey
- Critical Area Program
- Maryland DNR Fishing & Boating Service
- Maryland DNR Forestry Service
- Maryland DNR Land Acquisition & Planning Programs
- The National Aquarium
- The Maryland Coastal Bays Program
- Mid-Atlantic Regional Council on the Ocean

Feedback was collected through a variety of work groups and standing committees. Additionally, Maryland's 312 evaluation in July 2020 presented a timely opportunity to gather feedback about the Program's strengths, work and priorities. Feedback from these discussions was considered and is reflected in the document.

PUBLIC COMMENT

The CMP coordinated public review and comment through the CCS website (<http://dnr.maryland.gov/ccs/>) and the Program's *In The Zone* electronic newsletter. Comments received include... **TBD**