

MARYLAND COAST SMART COUNCIL

2017 ANNUAL REPORT

Prepared for the members of the
Maryland Coast Smart Council

Larry Hogan, Governor
Mark J. Belton, Secretary



TABLE OF CONTENTS

MAKING MARYLAND RESILIENT: A SUMMARY OF FISCAL YEAR 2017 ACTIONS TO REDUCE RISK	3
INTRODUCTION	4
SECTION I: INSTITUTIONALIZING COAST SMART SITING AND DESIGN CRITERIA INTO STATE PROGRAMS	6
SECTION II. STATE AGENCY PROJECTS AND GRANTS AND LOANS ADMINISTERED BY STATE AGENCIES	8
SECTION III. CATEGORICAL EXCEPTIONS AND CRITERIA WAIVERS	9
SECTION IV. STATE AGENCY ACTIONS AND INITIATIVES	11
SECTION V. RECOMMENDATIONS FOR FISCAL YEAR 2018	12
SECTION VI. APPENDICES	13

Chesapeake and Coastal Service

Maryland Department of Natural Resources
580 Taylor Ave., E-2 | Annapolis, Maryland 21401
Phone: 410-260-8732 | Fax: 410-260-8739
Toll free in Maryland: 877-620-8367
Out of state call: 410-260-8732 (TTY Users call via the MD Relay)
Website: dnr.maryland.gov/ccs

The Maryland Coast Smart Council is chaired by the secretary of the Maryland Department of Natural Resources and supported by department staff through funding from the National Oceanic and Atmospheric Administration. Other state agencies represented on the council include the Maryland departments of Budget and Management, Commerce, Environment, Legislative Services, Planning, and Transportation, the Maryland Emergency Management Administration, the Critical Areas Commission, and the University System of Maryland.



Financial assistance provided by the Coastal Zone Management Act of 1972, as amended, administered by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration (NOAA). A publication (or report) of the Maryland Coastal Zone Management Program, Department of Natural Resources pursuant to NOAA Award No. NA17NOS4190153.

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin or physical or mental disability. This document is available in alternative format upon request from a qualified individual with disability.

MAKING MARYLAND RESILIENT

A Summary of Fiscal Year 2017 Actions to Reduce Risk

- The Maryland departments of Natural Resources and the Environment, Maryland Emergency Management Agency, Maryland Environmental Service and the Maryland Historical Trust and are working together through the Maryland Resiliency Partnership to leverage funding, personnel and projects to integrate floodplain management (preventive and corrective measures to reduce the risk of current and future flooding), hazard mitigation and coastal resiliency efforts.
- The Maryland Emergency Management Agency administers the federal Hazard Mitigation Assistance program, offering three grant programs that are available to eligible applicants throughout the state: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program and Flood Mitigation Assistance.
- The Coast Smart Council created a Coast Smart Assessment and Certificate to help Maryland state agency personnel and others understand and apply the Coast Smart Construction Program guidelines for various phases of their project to prevent or minimize the future impacts of coastal and riverine flooding, storm surge and sea level rise.
- The Maryland Department of the Environment has embraced the Coast Smart Assessment and Certificate approach and is now discussing how best to incorporate this approach into its application package under its existing Waterway Construction Regulations.
- In fiscal year 2017, there were no state-owned projects located in climate impact areas. However, 13 local projects receiving state funding were flagged in the capital budget using the state's climate change impact area overlays. Appendix C provides a summary table describing these projects, their vulnerability and the actions taken to comply with the Coast Smart Construction Program.
- The Maryland Department of Natural Resources' Chesapeake and Coastal Service launched a new initiative in July 2017 to support natural and nature-based adaptation strategies. The Resiliency through Restoration Initiative, funded through the state capital budget, provides technical and financial assistance to restore, enhance and create coastal habitat with the goal of protecting Maryland communities and public resources from climate hazards.
- On November 16, 2017, the Greater Baltimore Wilderness Coalition held the Nature Cities Forum: Addressing Climate Change and Supporting Vibrant Communities through Green Infrastructure. This one-day workshop in central Maryland shared best practices, data, and inspiration to support existing and new programs and collaborations that help communities become more resilient to climate change impacts; support more equitable opportunities for residents to access green space; engage in cutting edge green infrastructure design; and increase children's daily connection to nature-based activities.
- The Maryland Coastal Bays Program conducted a climate change vulnerability assessment to understand how risks from climate change stressors (warmer water, sea level rise, etc.) might affect the Program's ability to reach the goals of the 2015-2025 Comprehensive Conservation & Management Plan.

INTRODUCTION

Chapter 415 of the 2014 Laws of Maryland (HB 615) established the Coast Smart Council (the council) in the Department of Natural Resources (DNR). One of the primary tasks of the council, staffed by DNR and comprised of private sector and state agency membership, was to establish Coast Smart Siting and Design Criteria (criteria) to address sea level rise and coastal flood impacts on state funded capital projects planned and built by units of state government.

The 2014 legislation also required state capital projects that include the construction of a new structure or the reconstruction of a structure with substantial damage to be constructed or reconstructed in compliance with the criteria approved by the council. The criteria, summarized below provides guidelines and directives applicable to the preliminary planning and construction of a proposed capital project, requires the lowest floor elevation of each structure located within a Special Flood Hazard Area (SFHA) is built at an elevation of at least 2 feet above the base flood elevation, and establishes a process to allow a unit of state government to obtain a waiver from complying with the requirements.

COAST SMART CONSTRUCTION PROGRAM	
<i>Siting Guidelines</i>	<i>Design Guidelines</i>
New state structures, the reconstruction of substantially damaged state structures and other new major infrastructure projects shall be avoided within areas likely to be inundated by sea level rise within the next 50 years.	New state structures, the reconstruction of substantially damaged state structures, and new major infrastructure projects shall be designed to avoid or minimize future impacts over the anticipated design life of a project.
New state “critical or essential facilities” shall not be located within SFHA designated under the National Flood Insurance Program (NFIP) and should be protected from damage and loss of access as a result of a 500-year flood.	New state structures and the reconstruction or rehabilitation of substantially damaged state structures located in SFHA shall be constructed with a minimum of two feet of freeboard above the 100-year base flood elevation defined by the NFIP.
Ecological features that may serve to buffer a project from the impacts of future sea level rise, coastal flooding or storm surge or that support general climate adaptation practices shall be identified, protected and maintained.	State structures serving transportation purposes that are not water dependent or dependent on integral infrastructure shall be constructed with a minimum of two feet of freeboard above the 100-year base flood elevation, as defined by NFIP.
<i>Exceptions to these guidelines may be considered, provided that is can be demonstrated that projects have been designed to increase resiliency to future impacts.</i>	Flooding potential shall be considered when choosing building materials for all structural projects, including minor improvements or maintenance and repair.
	Structures and infrastructure proposed within the Limit of Moderate Wave Action boundary as mapped under the NFIP shall be designed in compliance with construction standards applicable to areas subject to inundation by the one percent annual flood event and storm-induced waves, called V Zones.
	<i>Exceptions to these guidelines may be warranted based on consideration of certain factors established by the council.</i>

Annual Reporting to the Council

The Coast Smart Construction Program (program), which became effective July 1, 2015, sets out the siting and design guidelines developed by the council and establishes the procedures and priorities for all state agencies that plan, budget, design or build facilities in areas vulnerable to coastal flooding and sea level rise.

Beginning on October 1, 2016, and for every year thereafter, all units of state government are to report to the council on individual state agency actions that were undertaken within the previous fiscal year and related to the implementation of the program, including categorical exceptions and waiver determinations.

It is intended that the council will review the program on an annual or “as necessary” basis to address issues which may occur as the building of state facilities and knowledge of Coast Smart building practices evolve. The Annual Report (report) helps the council evaluate the program and supports further development or refinement of criteria, categorical exceptions and general standards and procedures for applying and obtaining a waiver.

SECTION I. INSTITUTIONALIZING COAST SMART SITING AND DESIGN CRITERIA INTO STATE PROGRAMS

Since July 1, 2015 state agencies have been working to incorporate the siting and design guidelines into appropriate planning, design and construction processes as a means to institutionalize the Coast Smart practices approved by the council.

Coast Smart Assessment and Certificate

After meeting with Treasurer Nancy Kopp regarding the work of the council, staff from DNR began developing the idea of a checklist to demonstrate that projects coming to the Board of Public Works (BPW) have complied with the Coast Smart guidelines. After coordinating with the council and the BPW staff, the proposed product evolved into the Coast Smart Assessment and Certificate. This document, which built upon pre-existing 2015 council documents (including the Glossary and Coast Smart Project Screening Checklist to the Coast Smart Construction Program), is intended to help Maryland state agency personnel and others understand and apply the Coast Smart Construction Program guidelines for various phases of their project to prevent or minimize the future impacts of coastal and riverine flooding, storm surge and sea level rise. It consists of three parts: I. Glossary and Useful Web-based Resources; II. Project Screening Checklist; and III. Coast Smart Construction Program Certificate. The last two pages of the document, the Coast Smart Construction Program Certificate, includes three stages of evaluation and certification: Initial Siting/Property Acquisition, Siting, and Design of Structure (Both New and Major Reconstruction) and Pre-Construction Certification. The document was approved with modifications on December 11, 2018 by the council (Appendix B).

Incorporation of Coast Smart Guidelines into Waterway Construction Regulations

The Waterway Construction Regulatory Program assures that activities in a nontidal waterway or its 100-year floodplain do not create flooding on upstream or downstream property, maintain fish habitat and migration and protect waterways from erosion. If a proposed project changes the course, current or cross-section of a waterway, including its 100-year floodplain, it is regulated by the Maryland Department of the Environment (MDE). Consequently, this existing regulatory program fulfills the council's desire to ensure that riverine activities proposed by state agencies consider

the Coast Smart guidelines in their project planning, design and construction.

The regulation development process used by MDE began with a review of its authority to promulgate regulations to support the Coast Smart construction program. First MDE reviewed Executive Order 01.01.2014.14, entitled Strengthening Climate Action in Maryland, that directed all state agencies to identify and recommend specific policy, planning, regulatory and fiscal changes for existing programs that did not support the state's greenhouse gas reduction efforts or address climate change impacts. Next, working with the Office of the Attorney General, MDE reviewed its authority under Title 5, Subtitle 5 of the Environment Article. Combining the directive in the Executive Order with MDE's existing statutory authority, MDE's consideration of new regulations was of reasonable action.

Confident that it had the legal authority to incorporate the Coast Smart construction program into its regulatory framework, MDE drafted regulations similar to those promulgated by the Critical Area Commission. Concurrent with the development of MDE's draft regulations, the Coast Smart Council was developing the Coast Smart Assessment and Certificate to facilitate the implementation of the program established under the Coast Smart statute. While internal discussions on the draft regulations continued at MDE, discussions at council meetings suggested a different approach. The goal was not to dictate to state agencies through directives or regulations, but to allow for agency autonomy and transparency in the process of determining if and how projects are coast smart. Furthermore, this new approach would be documented through the Coast Smart Assessment and Certificate. MDE has embraced this approach, set aside its draft regulations, and is now discussing how best to incorporate the Coast Smart Assessment and Certificate into its application package under its existing regulatory framework.

SECTION II. STATE AGENCY PROJECTS AND GRANTS AND LOANS ADMINISTERED BY STATE AGENCIES

The Department of Budget and Management annually produces the capital budget of the State of Maryland. The capital budget consists of state-owned capital projects and grant and loan programs administered by state agencies to support local government capital projects. State capital projects are required to be constructed or renovated in compliance with Coast Smart siting and design criteria, which address sea level rise and coastal flood impacts on projects. In the event that a state-owned project is located in an area that is vulnerable to coastal flooding and sea level rise, the Office of Capital Budgeting (OCB), with the expertise of the Department of Planning (MDP) and DNR, verifies that Coast Smart siting and design criteria have been incorporated in project descriptions and facility program documents.

In order to comply with the Coast Smart siting and design requirements, OCB ascertains which projects are located in state-designated climate change impact Areas and works with MDP and DNR to verify that the criteria have been incorporated into each project. In Fiscal year 2017, there were no state-owned projects located in climate impact areas. However, 13 local projects receiving state funding were flagged in the capital budget using the climate change impact area overlay.

Appendix C provides a summary table describing these projects, their vulnerability and the actions taken to comply with the Coast Smart Construction Program.



Ellicott City Main Street flooding damage from 2018.
Photo credit: Maryland Historic Trust.

SECTION III. CATEGORICAL EXCEPTIONS AND CRITERIA WAIVERS

The Coast Smart Construction Program includes provisions for state agencies to apply for categorical exceptions for certain project types and uses as well as to request waivers from one or more of the specific siting and design criteria.

Categorical Exceptions:

Under the categorical exception provision, agencies may determine certain projects and uses to be exempt from strict application of Coast Smart Construction Program criteria, provided that it can be demonstrated that those projects have been designed to increase resiliency to future impacts. Categorical exceptions currently include the following project types and uses:

- **Water dependent uses.** Projects that require continued direct access to the water as an integral part of their use, or facilities that directly support water dependent uses;
- **Existing transportation assets.** Projects that support the continued function of existing transportation systems assets;
- **Passive public access.** Projects that provide either recreational or scenic access to water bodies or shoreline areas which need to be within a flood zone for their purpose;
- **Historic structures.** The necessity of continued investment of state resources in properties individually listed or determined eligible for listing in the National Register of Historic Places or a contributing resource within a historic district listed or determined eligible for listing in the National Register;
- **Temporary structures or uses.** Structures intended to be in place for less than 180 consecutive days in any given calendar year or will be removed at the end of a construction project;
- **Stabilization projects.** Actions to secure and maintain assets, structures, and natural and cultural resources to prevent additional damage and to prevent future resource/facility damage; efforts to mitigate a safety or environmental hazard; mold remediation; facility weatherization; silt fencing and minor repairs and restorations; and
- **Emergency uses.** Structures essential to save lives and protect property, public health and safety.

While projects with categorical exceptions are exempt from strict application of Coast Smart Construction Program criteria, they are required to employ Coast Smart principles and practices, wherever practicable. Agencies using a categorical exemption are also required to submit documentation and reporting materials on an annual basis. Reporting documents will be used by the council for the purposes of further development and/or refinement of coast smart siting and design criteria, categorical exceptions, or general standards and procedures for applying and obtaining a waiver.

If needed, agencies may request a formal consultation with the council for the purposes of reviewing a proposed project or seek a determination of compliance with the categorical exception provision listed above.

In fiscal year 2017, no agencies reported project types or uses as categorical exceptions. In addition, no agencies have requested formal consultation with the council for projects funded in fiscal year 2017.

Coast Smart Criteria Waivers:

Any unit of state government may request a waiver from one or more of the specific Coast Smart siting or design criteria. Waiver requests are reviewed and approved by the Smart Growth Coordinating Committee (SGCC) in consultation with the council. Agencies seeking criteria waivers submit the waiver request and supporting information to the SGCC. On an annual basis, the waiver requests will be included in the Smart Growth Subcabinet report in a section documenting any coordinating committee decision regarding Coast Smart Construction Program policy. Similarly, waiver requests and decisions will be reported annually to the council in this report. No projects applied for consideration in fiscal year 2017.



SECTION IV. STATE AGENCY ACTIONS AND INITIATIVES

In addition to implementing Coast Smart guidelines for the construction of new state structures, or the reconstruction or rehabilitation of substantially damaged state structures, state agencies provide multiple technical and financial assistance programs to help communities assess their vulnerability to coastal flood hazards, identify natural and nature-based features that improve coastal resiliency, and adopt Coast Smart practices into project planning and infrastructure improvements to mitigate coastal flooding, storm surge and sea level rise.

Resiliency through Restoration Initiative

Over the past 10 years, Maryland has experienced seven weather-related events warranting Presidential Disaster declarations, including five coastal flood events totaling approximately \$103 million in economic damage. Recognizing that coastal habitats help buffer communities from these climate-related impacts, the DNR Chesapeake and Coastal Service (CCS) launched a new initiative in July 2017 to support natural and nature-based adaptation strategies. The Resiliency through Restoration Initiative, funded through the state capital budget, provides technical and financial assistance to restore, enhance and create coastal habitat with the goal of protecting Maryland communities and public resources from climate hazards. Year one of the initiative will lead to the design of six innovative and climate resilient living shoreline and coastal restoration projects in five jurisdictions to demonstrate how natural and nature-based features can reduce risk at different scales.



Photo credit: Rebecca Swerida

Above: The Conquest Beach Park shoreline is severely eroded and undercut by wind driven waves and boat wakes. Below: Restored shoreline using shingle beach living shoreline design, which mimics natural shorelines and improves resiliency.

Construction of these resiliency projects is expected in years 2 and 3 of the initiative. Staff will conduct monitoring to track the overall performance of demonstration projects and undertake adaptive management techniques to ensure project success over the long term. Staff will also support communication and education activities to share best practices and successes with practitioners and the general public.

A second year of Resiliency through Restoration design projects will be solicited through the Community Resilience Grant Program. This program previously combined the Coast Smart Communities funding made available from the National Oceanic and Atmospheric Administration (NOAA) and the Green Infrastructure Resiliency Grant funding made available from the Environmental Protection Agency (EPA). Adding the Resiliency through Restoration funding to this program will better support Maryland communities in addressing the impacts of climate-related hazards. The solicitation encourages proposals that address coastal, riparian, and/or floodplain hazards and can support activities ranging from initial vulnerability assessments through the development of plans and policies to address climate hazards and the design of resilience projects. Encouraging projects that take a holistic, watershed-scale planning approach to address both water quantity and quality, this grant program helps to address the damages and impacts resulting from flood events that threaten communities, infrastructure, and natural resources throughout the state.

Greater Baltimore Wilderness Coalition

The Greater Baltimore Wilderness Coalition (GBWC) is a partnership of public, private and nonprofit organizations working through a collective impact model to connect people to green spaces through its four pillars of equity, discovery, biodiversity and resilience. GBWC's mission is to improve the quality of life by identifying, restoring, enhancing and protecting an interconnected network of land and water supporting healthy ecosystems and communities to benefit the people and wildlife of central Maryland. As a backbone organization for efforts in the greater Baltimore region, GBWC supports collaborative projects, initiatives, and strategic planning that will help each partner increase value to their work.

In order to improve the region’s capacity to achieve lasting economic vitality, GBWC’s partners seek to mitigate impacts of climate change including sea level rise, flooding, stronger coastal storms, warmer temperatures, and drought through a protected regional green infrastructure network including forests, wetlands, parks, rain gardens and urban tree canopy. This network will absorb rainfall, store water, reduce flooding and provide additional community benefits, such as cleaner air, space for recreation, and relief from urban heat.

In addition to supporting many on-the-ground demonstration projects that include the Druid Heights community greening Peace Park initiative, Harford County green infrastructure plan, Urban Bird Treaty City program and Baltimore: Rivers to Harbor Urban Wildlife Refuge Partnership, GBWC also sponsors workshops to convene practitioners for collective learning and meaningful and effective dialogue.



November 16, 2017 GBWC held the Nature Cities Forum: Addressing Climate Change and Supporting Vibrant Communities through Green Infrastructure. This one day workshop in central Maryland shared best practices, data and inspiration to support existing and new programs and collaborations that:

- Help communities become more resilient to climate change impacts;
- Support more equitable opportunities for residents to access green space;
- Engage in cutting edge green infrastructure design; and
- Increase children’s daily connection to nature based activities.

Hazard Mitigation Assistance (HMA) ~ MEMA

The Maryland Emergency Management Agency administers the Federal Emergency Management Agency’s (FEMA’s) Hazard Mitigation Assistance (HMA). There are three grant programs associated with the HMA:

- Hazard Mitigation Grant Program (HMGP), which assists in implementing long term hazard mitigation measures following a

major declaration;

- Pre-Disaster Mitigation (PDM) Grant Program, which provides funds for hazard mitigation planning and projects on an annual basis; and
- Flood Mitigation Assistance (FMA), which provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the NFIP on an annual basis.

In 2017, eligible applicants throughout the state applied for HMGP, PDM and FMA grants. To date, FEMA has awarded HMGP grants for the 2016 Maryland Severe Winter Storm and Snowstorm (DR-4261) and the 2016 Maryland Severe Storm and Flooding in Ellicott City (DR-4279).

Beneficial Use of Dredge Material

In 2001, Maryland passed the Dredged Material Management Act and defined Maryland’s “Beneficial Uses” of dredged material, including habitat restoration, beach nourishment, shoreline stabilization and thin-layer placement. These beneficial uses increase coastal resiliency while dramatically reducing the financial costs of dredge disposal and coastal restoration projects. Though these beneficial uses have been defined and the benefits have been identified, there is still a need to optimize beneficial use opportunities in Maryland. DNR staff are pursuing opportunities to better align dredging and restoration projects to achieve the financial and environmental benefits. Staff are developing a mapping tool, “Beneficial Use: Identifying Locations for Dredge (BUILD)”, to enable quick identification of beneficial use opportunities. Further, staff are coordinating with programs within and external to DNR to evaluate the environmental impacts of the beneficial use of dredged material, to determine suitable applications of dredge type and to streamline project execution. Ultimately, these efforts will culminate in a department-wide policy and guidance to aid beneficial use practices in Maryland.

Healthy Soils

Governor Hogan signed legislation establishing the new Maryland Healthy Soils Program, House Bill 1063, which directs the Maryland Department of Agriculture to provide farmers with research, education, technical assistance, and, subject to available funding, financial assistance to improve soil health on Maryland farms. The bill went into effect on October 1, 2017.

A pilot program is being developed to promote the adoption of healthy soils practices on DNR agricultural leased land. The program will incentivize farmers to choose practices to improve soil health. DNR staff are reaching out to experts in this field to establish protocols for assessing soil improvements, developing a suite of options for farmers to choose from, and assessing an incentive program to ensure adoption by agricultural lease holders. This is part of an ongoing effort to promote healthy soils throughout the state. There are monthly meetings of the Healthy Soils Consortium that brings together stakeholders, including researchers, farmers, service providers, nonprofits and state agencies.



Maryland Coastal Bays Vulnerability Assessment

The Maryland Coastal Bays Program (MCBP) is conducting a climate change vulnerability assessment to understand how risks from climate change stressors (warmer water, sea level rise, etc.) might affect the program's ability to reach the goals of the 2015-2025 Comprehensive Conservation & Management Plan (CCMP). This assessment was launched because there is reason to believe that climate change impacts will affect what MCBP is able to accomplish. The purpose is to understand the risks that may occur as well as the likelihood and consequences of each risk. The outcome of the assessment is an understanding and ranking of likely climate change risks to the goals of the CCMP.

The climate change vulnerability assessment process was developed by the EPA. With funding from the EPA, MCBP hired Jennifer Dindinger of

the University of Maryland Sea Grant Extension Program to facilitate the assessment process, which was guided by one of EPA's Climate Ready Estuaries tools: "Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans." Steps one through five are the focus of the Assessment.

In January of 2017, MCBP convened an expert panel to brainstorm and identify possible risks to the CCMP based on the seven stressors identified by EPA in the Workbook. Small groups and MCBP staff then conducted a risk analysis and ranked each risk for its consequence, likelihood, spatial scale of impact, timeline for impact and the habitat type most likely to be affected. From these rankings, one consequences/probability matrix was created for each of the 14 CCMP goals. Each matrix separates the risks into low, medium, and high categories to help MCBP prioritize what risks need the most attention. Two public meetings were held in March 2017 to share preliminary rankings with and seek feedback from interested stakeholders.

The draft final version of the matrices were recently completed and will be available, along with a draft final report, for public review and comment on the MCBP website in February 2018.

SECTION V. RECOMMENDATIONS FOR FY 2018

- 1. Continue Research, Communication and Outreach Regarding Natural and Nature-based Features Integration, Implementation and Performance* ~ There is a need for continued research and transdisciplinary dialogue to better understand and communicate how natural and nature-based features (NNBF) individually and collectively contribute to climate adaptability and resilience. Further, there is a need to understand and share the full menu of the NNBF options available to project managers, funders and other stakeholders. Once research is completed, there is a need to communicate those findings to state agencies and others charged with designing and building structures and infrastructure in vulnerable areas. It is also recommended that pilot projects incorporate the integration of multiple natural and nature-based features and that ongoing monitoring programs monitor their overall performance and convey success stories and lessons learned in a manner that can be easily understood by the general public.
- 2. Better Harmonize and Communicate State and Local Climate Adaptation and Resilience Efforts* ~ The council is committed to leading by example through its guidelines and working with and learning from local government and the development community in helping Maryland become more adaptive and resilient to the challenges of climate change. Still, there are some ongoing challenges in implementing these goals, including: 1) How can we better communicate how the State Coast Smart Council relates to the Coast Smart Program, which is tailored for local governments? 2) How can each program support and improve the other? 3) What can local government learn from the council and what can the council learn from local government? 4) How might this exchange be facilitated? The council should consider how to address these and other issues to better harmonize state and local efforts with climate adaptation and resilience.
- 3. Consider Inclusion of Zone X (shaded) to Enhance Coastal Adaptation* ~ The NFIP currently requires all development in the Special Flood Hazard Area (SFHA) to receive a permit. The SFHA is an area designated on the Flood Insurance Rate Maps (FIRMs) as Zone A, Zone AE and Zone VE; areas of high flood risk. FEMA provides a statistic that approximately 25% of NFIP claims are paid to properties insured outside the SFHA, which suggests that either the FIRMs are wrong and/or the minimum standard currently required by the NFIP deficient. Zone X is further subdivided into two zones, Zone X (shaded) and Zone X (unshaded). A shaded Zone X is the 0.2% annual chance flood event, commonly referred to as the 500-year flood; an area of moderate flood risk. An unshaded Zone X is an area of low flood risk. Under the Maryland Coast Smart Construction Program, the only time a Zone X (shaded) would come into play under the existing State Executive Order and siting guidelines is for critical and essential facilities (ex. police, fire, wastewater treatment plants, water treatment plants, etc.). A broader inclusion of Zone X (shaded) would distinguish Maryland as a national leader. The council should consider broader inclusion of flood Zone X (shaded) to better protect Maryland communities and assets that are vulnerable coastal flooding, storm surge and sea-level rise and advance Maryland as a leader in coastal adaptation.

SECTION VI. APPENDICES

APPENDIX A – COAST SMART COUNCIL MEMBERS	xx
APPENDIX B – COAST SMART ASSESSMENT AND CERTIFICATE	xx
APPENDIX C – FY 2017 CAPITAL PROJECTS IN CLIMATE IMPACT AREAS	xx

APPENDIX A: COAST SMART COUNCIL MEMBERS

Chair

Mark J. Belton
Secretary
Maryland Department of Natural Resources
580 Taylor Ave., C4
Annapolis, MD 21401
Phone: 410-260-8104
mark.belton@maryland.gov
dnr.maryland.gov

Members

Michael Bayer, AICP
Manager, Infrastructure and Development
Maryland Dept. of Planning
301 West Preston Street, Suite 1101
Baltimore, MD 21201
Phone: 410-767-7179
Email: michael.bayer1@maryland.gov
planning.maryland.gov

Sepehr Baharlou, P.E.
Principal
BayLand Consultants & Designers, Inc.
7455 New Ridge Road, Suite T
Hanover, MD 21076
Phone: 410-694-9401
Email: sbaharlou@baylandinc.com
baylandinc.com

Dave Nemazie, Chief of Staff
University of Maryland
Center for Environmental Science
P.O. Box 775
Cambridge, MD 21613
Phone: 410-221-2001 Email: nemazie@umces.edu
umces.edu

Fiona Burns
Budget Analyst
Office of Capital Budgeting
Maryland Department of Budget and Management
301 W. Preston Street, Suite 1209
Baltimore, MD 21201
Phone: 410- 767-4526
Email: fiona.burns@maryland.gov
dbm.maryland.gov

Gary Setzer
Advisor for Office of the Secretary
Maryland Department of Environment
1800 Washington Blvd.
Baltimore, MD 21230
Phone: 410-537-3744
Email: gary.setzer@maryland.gov
mde.maryland.gov

Kevin Brown, Chief Building Official and Floodplain
Administrator
Planning & Community Development Department
Town of Ocean City
301 N. Baltimore Avenue, Ocean City, MD
Phone: 410-289-8798
Email: KBrown@oceancitymd.gov
oceancitymd.gov/oc

Gerald E. Galloway, Jr., PE, PhD
Glenn L. Martin Institute Professor of Engineering
University of Maryland, College Park
1173 Glenn L. Martin Hall
College Park, MD 20742
Phone: 301-405-1341
Email: gegallo@umd.edu
civil.umd.edu/cdr/capabilities

Chris Elcock, Associate Principal
GWWO Inc., Architects
800 Wyman Park Drive, Suite 30D Baltimore, MD 21211
Phone: 410-332-1009
Email: celcock@gwwoinc.com
gwwoinc.com

Sandy Hertz Assistant Director
Office of Environment
Maryland Department of Transportation 7201 Corporate
Center Drive
Hanover, Maryland 21076
Phone: 410-865-2780
Email: shertz@mdot.state.md.us
mdot.maryland.gov

Richard Higgins
Policy Planning & Inter-Agency Coordination Manager Office
of Policy, Research; and Government Affairs Maryland
Department of Commerce
401 E. Pratt Street, 17th. Floor Baltimore, Md. 21202
Phone: 410-767-6353
Email: richard.higgins@maryland.gov
choosemaryland.org

John Brush, P.E.
Capital Projects Manager
Department of General Services 301 West Preston Street
Baltimore, Maryland 21201
Phone: 410-767-4293
Email: john.brush@maryland.gov
dgs.maryland.gov

Chas Eby
Chief Strategy Officer & Director, Disaster Risk Reduction
Maryland Emergency Management Agency
5401 Rue Saint Lo Drive
Reisterstown, MD 21136
Phone: 410-517-3605
Email: chas.eby@maryland.gov
mema.maryland.gov

Thomas J. Lawton
County Planner Somerset County
11916 Somerset Ave.
Princess Anne, MD 21853
Phone: 410-651-1424
Email: tlawton@somersetmd.us
somersetmd.us

Kate Charbonneau Executive Director
Maryland Critical Area Commission Chesapeake and
Atlantic Coastal Bays 1804 West Street, Suite 100
Annapolis, MD 21401
Phone: 410-260-3460
Email: kate.charbonneau@maryland.gov
dnr.maryland.gov/criticalarea

Staff

Joe Abe
Coastal Policy Coordinator
Chesapeake and Coastal Service
Maryland Dept. of Natural Resources
580 Taylor Ave., E2
Annapolis, MD 21401
Phone: 410-260-8740
Email: joseph.abe@maryland.gov
dnr.maryland.gov/climateresilience



APPENDIX B: COAST SMART ASSESSMENT AND CERTIFICATE

APPENDIX B COAST SMART ASSESSMENT AND CERTIFICATE

This document is intended 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. It consists of three parts: I. Glossary and Useful Web-based Resources; II. Project Screening Checklist; and III. *Coast Smart* Construction Program Certificate. For those projects that have applied for and received a *Coast Smart* Criteria Waiver, please attach approvals to this document.

I. Glossary and Useful Web-Based Resources

The following glossary of terms and links to web-based resources are provided to help state agency personnel and others become familiar with concepts and terminology used in the questions in Part II. Project Screening Checklist.

Base Flood: A flood having a one-percent chance of being equaled or exceeded in any given year; the base flood also is referred to as the 1-percent annual chance (100-year) flood.

Base Flood Elevation: The water surface elevation of the 100-year base flood in relation to the datum specified on Flood Insurance Rate Maps. In areas of shallow flooding, the base flood elevation is the highest adjacent natural grade plus the depth number specified in feet on the Flood Insurance Rate Map, or at least four (4) feet if the depth number is not specified.

Capital Project: A capital project typically includes the construction of State buildings and infrastructure, such as prisons, State hospitals, public university buildings, and State office buildings. The key elements of defining a capital expenditure are that it is a tangible asset, that it has a useful life of at least 15 years, and that the cost is typically over \$100,000.

Climate Change: Any change in climate over time, whether due to natural variability or as a result of human activity. Climate refers to long-term trends in weather that extend multi-decadal periods.

Coast Smart: A construction practice in which preliminary planning, siting, design, construction, operation, maintenance, and repair of a structure avoids or, in the alternative, minimizes future impacts associated with coastal flooding and sea level rise. “*Coast Smart*” includes design criteria and siting guidelines that are applicable throughout the entire life cycle of a project.

Coastal Barrier Resources System (CBRS): The Coastal Barrier Resources Act (COBRA) of 1982 and later amendments, removed the Federal government from financial involvement associated with building and development in undeveloped portions of designated coastal barriers (including the Great Lakes). These areas were mapped and designated as Coastal Barrier Resources System units or "otherwise" protected areas. They are colloquially called COBRA zones. COBRA banned the sale of National Flood Insurance Program (NFIP) flood insurance for structures built or substantially improved on or after a specified date. For the initial COBRA designation, this date is October 1, 1983. For all subsequent designations, this date is the date the COBRA zone was identified. COBRA zones and their identification dates are shown on Flood Insurance Rate Maps (FIRMs). Communities may permit development in these areas even though no Federal assistance is available, provided that the development meets NFIP requirements.

Critical and Essential Facilities: Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquakes [Note: See

Maryland Building Performance Standards, Sec. 1602 and Table 1604.5]. Critical and essential facilities typically include hospitals, fire stations, police stations, storage of critical records, facilities that handle or store hazardous materials, drinking water and sewage treatment facilities, airports, transit and highway access and other essential transportation, and similar facilities.

Design Criteria: Structural specifications related to the shape, size, or form of a construction practice.

Design Life: The period of time during which, the structure is expected by its designers to work within its specified parameters; in other words, the life expectancy of the structure. It is the length of time between placement into service of a single structure and that structure's onset of wear-out, that is, where additional maintenance is no longer sufficient to prolong its life expectancy.

Enclosure Below the Lowest Floor: An unfinished or flood-resistant enclosure that is located below an elevated building, is surrounded by walls on all sides, and is usable solely for parking of vehicles, building access or storage, in an area other than a basement area, provided that such enclosure is built in accordance with the applicable design requirements specified in the *Coast Smart* Construction Program guidelines. Also see "Lowest Floor."

Erosion Vulnerability: The susceptibility of a given stretch of shoreline to future change in shoreline position due to erosion.

Flood or Flooding: A general and temporary condition of partial or complete inundation of normally dry land areas from: (1) the overflow of inland or tidal waters, and/or (2) the unusual and rapid accumulation or runoff of surface waters from any source.

Flood Insurance Rate Map (FIRM): An official map on which the Federal Emergency Management Agency has delineated special flood hazard areas to indicate the magnitude and nature of flood hazards, to designate applicable flood zones, and to delineate floodways, if applicable. FIRMs that have been prepared in digital format or converted to digital format are referred to as Digital FIRMs (DFIRM).

Flood Opening: A flood opening (non-engineered) is an opening that is used to meet the prescriptive requirement of 1 square inch of net open area for every square foot of enclosed area. An engineered flood opening is an opening that is designed and certified by a licensed professional engineer or licensed architect as meeting certain performance characteristics, including providing automatic entry and exit of floodwaters; this certification requirement may be satisfied by an individual certification for a specific structure or issuance of an Evaluation Report by the ICC Evaluation Service, Inc. [Note: See NFIP Technical Bulletin #1, "[Openings in Foundation Walls and Walls of Enclosures](#)."]]

Freeboard: A factor of safety that compensates for uncertainty in factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, obstructed bridge openings, debris and ice jams, climate change, and the hydrologic effect of urbanization in a watershed.

Habitat Adaptation Areas: Areas that may serve as wildlife habitat, wildlife corridors or support high priority aquatic and terrestrial living resources in the future. These include, but are not limited to areas with hydric soils suitable for future tidal wetland establishment and marsh-dependent breeding bird habitat, as well as species and habitat representation areas, ecosystem and habitat type replication areas, and refugia or relocation areas for climate-sensitive species.

Historic Structure: Any structure that is:

- 1) Individually listed in the National Register of Historic Places (a listing maintained by the U.S.

- Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listings on the National Register;
- 2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district; or
 - 3) Individually listed on the Maryland Register of Historic Places.

Infrastructure: Built infrastructure, including roads, bridges, sewer and water systems, drainage systems, and essential public utilities.

Inundation: The condition of formerly dry areas becoming permanently submerged, such as when the annual average elevation of Mean Lower Low Water (MLLW) rises relative to land¹.

Letter of Map Change (LOMC): Letter of Map Change (LOMC) is a general term used to refer to the several types of revisions and amendments to FEMA maps that can be accomplished by letter. They include Letter of Map Amendment (LOMA), Letter of Map Revision (LOMR), and Letter of Map Revision based on Fill (LOMR-F).

Limit of Moderate Wave Action (LiMWA): The LiMWA identifies areas that will be affected by waves with a 1.5 foot wave height or greater within the coastal A zone. While FEMA currently does not require special floodplain management standards or flood insurance purchase requirements based on LiMWA delineations, it is likely that properties and structures within the LiMWA will receive substantial damage from wave action during a one-percent-annual-chance flood event.

Lowest Floor: The lowest floor of the lowest enclosed area (including basement) of a building or structure; the floor of an enclosure below the lowest floor is not the lowest floor provided the enclosure is constructed with proper flood openings. The lowest floor of a manufactured home is the bottom of the lowest horizontal supporting member (longitudinal chassis frame beam).

Natural and Nature-Based Features: Natural Features are created and evolve over time through the actions of physical, biological, geologic, and chemical processes operating in nature. Natural coastal features take a variety of forms, including reefs (e.g., coral and oyster), barrier islands, dunes, beaches, wetlands, and maritime forests. The relationships and interactions among the natural and built features comprising the coastal system are important variables determining coastal vulnerability, reliability, risk, and resilience. Nature-Based Features are those that may mimic characteristics of natural features but are created by human design, engineering, and construction to provide specific services such as coastal risk reduction. The combination of both natural and nature-based features is referred to collectively as natural and nature-based features².

Otherwise Protected Area: Otherwise Protected Areas (OPAs) are a category of coastal barriers within the Coastal Barrier Resources System (CBRS). OPAs are undeveloped coastal areas established under Federal, State, or local law, or held by a qualified organization, primarily for wildlife refuge, sanctuary, recreational, for natural resource conservation purposes. Flood insurance is restricted in OPAs, though OPAs may receive other forms of Federal assistance. OPAs are identified on FEMA FIRMs.

Permanent Structure: A structure, as defined herein, installed, used, or erected for a period of greater than 180 days.

¹ Strategic Environmental Research and Development Program. 2013. Assessing Impacts of Climate Change on Coastal Military Installations: Policy Implications. U.S. Department of Defense.

² U.S. Army Corps of Engineers. 2015. [North Atlantic Coast Comprehensive Study: Resilient Adaptation to Increasing Risk](#). USACE, Baltimore District, Baltimore, Maryland.

Replacement Cost: The current replacement cost of property is the amount it would cost to replace the property today using materials of the same kind and quality, with no deduction for depreciation, and does not include the value of land. At the time of reconstruction, the cost of reconstructing a structure and its surrounding property to full use with materials of the same kind and quality as the original materials. Replacement cost does not include the value of the land on which a structure is located or for tax purposes, a deduction for depreciation.

Resilience: Capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment³.

Risk: Combination of the magnitude of the potential consequence(s) of climate change impact(s) and the likelihood that the consequences(s) will occur.³

Sea Level Rise Vulnerability: The susceptibility of a coastal area to seasonally high-tides or prolonged or permanent inundation or submergence due to a combination of land subsidence and future rise in water level.

Siting Criteria: Specifications related to the location of a structure or use on a lot or parcel or within a larger geographic area.

Special Flood Hazard Areas: Land in the floodplain subject to a one-percent or greater chance of flooding in any given year and are designated by the Federal Emergency Management Agency in Flood Insurance Studies and on Flood Insurance Rate Maps as Zones A, AE, AH, AO, A1-30, and A99, and Zones VE and V1-30.

Storm Surge: An abnormal and significant rise of water generated by a storm, over and above the predicted astronomical tides. Storm surge is produced by water being pushed toward the shore by the force of the winds moving cyclonically around the storm. The impact on surge of the low pressure associated with intense storms is minimal in comparison to the water being forced toward the shore by the wind.

State-Funded: Partially or fully funded with State of Maryland monies.

Stillwater: The 100-year floodplain elevation on a FIRM or DFIRM before wave heights and wave runups are added. Stillwater elevations should match the 100-year floodplain elevations in all coastal A-zones, but in areas where wave heights are included (LiMWA's and V-zones); stillwater elevations do not include wave heights. For regulatory purposes, the 100-year elevation must include wave heights.

Structure: That which, is built or constructed; specifically, a walled or roofed building, including a gas or liquid storage tank that is principally above ground, as well as a manufactured home. A structure, whether permanent or temporary, is not intended to include roads, bridges, rail tracks, dredge material containments facilities or other transportation infrastructure that are not roofed buildings.

State Structure and Infrastructure Projects: Structures and built infrastructure, including but not limited to roads, bridges, sewer and water systems, drainage systems, and essential public utilities, planned and built by Maryland State agencies, used primarily for State purposes.

³ National Research Council. 2011. Committee on America's Climate Choices. National Academies Press. Washington, District of Columbia.

Substantial Damage: Damage of any origin sustained by a structure whereby the cost of restoring the structure to before damaged condition would equal or exceed 50 percent of the replacement cost of the structure before the damage occurred.

Substantial Improvement: Any reconstruction, rehabilitation, addition, or other improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the building or structure before the start of construction of the improvement. The term includes structures which have incurred substantial damage, regardless of the actual repair work performed. The term does not, however, include either:

- 1) Any project for improvement of a building or structure to correct existing violations of State or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official prior to submission of an application for a permit and which are the minimum necessary to assure safe living conditions; or
- 2) Any alteration of a historic structure, provided that the alteration will not preclude the structure's continued designation as a historic structure.

Tax Map/Grid/Parcel or SDAT Account Number: Tax maps, also known as assessments, property or parcel maps, are a graphic representation of real property showing and defining individual property boundaries in relationship to contiguous real property. The primary purpose of these maps is to help State tax assessors locate properties for assessments and taxation purposes. Tax maps are also used by federal, State and local government agencies as well as private sector firms for a variety of analyses and decision making processes.

Temporary Structures: Structures or uses intended to be in place for 180 consecutive days or less in any given calendar year or will be removed at the end of a construction project.

Vulnerability Assessment: Practice of identifying and evaluating the effects of climate change and climate variability on natural and human systems, so as to understand system sensitivity, exposure, and adaptive capacity⁴.

Water Dependent Use: A use which, cannot perform its intended purpose unless it is located or carried out in close proximity to water; the term includes docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, but does not include long-term storage or related manufacturing facilities.

Wetland Migration: Long-term inland and upward movement of tidal wetlands, limited by human and geological barriers, in response to changes in sea level

⁴ Strategic Environmental Research and Development Program. 2013. Assessing Impacts of Climate Change on Coastal Military Installations: Policy Implications. U.S. Department of Defense.

II. Project Screening Checklist

1. General Project Information.

- a. Project name: _____
- b. Location (Address, [Community Name](#), Zip Code):

- c. Contact Name: _____
Email: _____ Phone: _____
- d. Brief project description: _____

- e. [Tax Map/Grid/Parcel or SDAT Account Number](#): _____
- f. [Flood Insurance Rate Map \(FIRM\) Panel No.](#): _____
- g. FIRM effective date: _____
- h. Is the project area revised by a [Letter of Map Change \(LOMC\)](#) from FEMA?
a. Yes b. No c. Not Sure
- i. If yes, include the FEMA Case No. and new Flood Zone and/or Base Flood Elevation _____
- j. Identify (circle) Flood Zone(s) present (Most restrictive to be used for design purposes):
Zone A, Zone AE, Zone AH, Zone AO, Zone AR, Zone A99, Zone V, Zone VE, Zone X (shaded or unshaded) or Zone D
- k. Is the project located in a [Coastal Barrier Resources System \(CBRS\) Area or Otherwise Protected Area \(OPA\)](#)? (Can be found on the FIRM)
a. Yes b. No
- l. If available, what is Base Flood Elevation (BFE)?: _____
- m. [Elevation datum](#) used? (ex. North American Vertical Datum of 1988, or NAVD 88): _____

If structures are involved, please attach a completed FEMA Elevation Certificate.

2. *Categorical Exceptions.* Does your project qualify for any of the approved Categorical Exceptions? If yes, please identify which exceptions apply below:

- Water-Dependent Use
- Existing Transportation System Asset
- Passive Public Access
- Temporary Structure or Use
- Stabilization Project

Maintenance, Repair, Renovation
Rehabilitation of Existing Structures
Emergency Use

Note: If your project qualifies for any of the above, you do not need to complete the rest of this section. However, if your project is vulnerable to coastal flooding, riverine flooding, storm surge and sea level rise, you are still required to include adaptation and resiliency features to prevent or mitigate damage to the maximum extent practicable. Please go to page A-11 and complete as appropriate.

3. *Project Design Life.* What is the timescale for project planning, design, construction, maintenance and operation? Select one.

- a. Short-term project (design life < 25 years)
- b. Medium-term project (design life between 25-50 years)
- c. Long-term project (design life between 50 – 100 years)
- d. Very long-term project (design life > 100 years)

4. *Project Vulnerability Assessment.* What are the proposed project’s vulnerabilities to sea level rise impacts (i.e., future inundation, flooding and storm surge) over the course of the project’s design life?

- a. Applying the above standard, is the proposed project within the projected 2050- or 2100- year sea level rise inundation zone?
a. 2050-year zone b. 2100-year zone c. Neither
- b. Is the project within a mapped Special Flood Hazard Area?
a. Yes b. No
- c. If available, what is the 100-year flood elevation for the project’s location? _____ feet
- d. How much freeboard does the first floor elevation of the structure have above 100-year Base Flood Elevation? _____ feet
- e. Is the project located within a Coast A Zone as defined by the Limit of Moderate Wave Action (LiMWA) line on the FIRM?
a. Yes b. No
- f. Is the project within a storm surge inundation zone (Category 1-4)?
a. Yes b. No
- g. Is the project a critical or essential facility?
a. Yes b. No
- h. Explain any additional risk of heightened storm surge due to future sea level rise:

Note: When planning new state structures and public infrastructure projects with a design life that is not expected to extend beyond 2100 (short- to medium-term projects) or where there is a relatively high risk tolerance limit (e.g., rare flooding is tolerable), assess vulnerability using current “medium range” or

“best estimate” relative sea level rise projections. When new state structures and public infrastructure projects with a design life that is expected to extend beyond 2100 (long- to very long-term projects) or where there is a very low acceptance of any flooding risk, apply current “high” end relative sea level rise scenarios or projections. Using Agencies should consult the latest guidance on sea level rise projections for the State of Maryland from the Maryland Commission on Climate Change, Scientific and Technical Working Group⁵.

5. *Ecosystem Resiliency*. Check all ecological features on site that may serve to buffer the project from the impacts of future sea level rise, coastal flooding or storm surge:

- a. Vegetated or forested buffers
- b. Dunes
- c. Beaches
- d. Wetland or marsh system
- e. Oyster beds or reefs
- f. Barrier island(s)
- g. Potential wetland migration on site
- h. Habitat adaptation areas on site
- i. Natural and nature-based features that could be enhanced, restored or created to provide additional protection against future sea level rise and coastal storm impacts

Explanation/Others:

6. *Resiliency Measures*. Identify *Coast Smart* Siting and Design Criteria incorporated into project siting, design, construction, maintenance and operational planning, or other measures included in state or local climate adaptation plans (e.g., flood gates) that are scientifically feasible and with a likelihood of construction within the needed timeframe. These may include:

- a. Is the project sited outside areas vulnerable to sea level rise within the project’s anticipated design life?
 - a. Yes
 - b. No, Explain:

- b. Does the project incorporate ecosystem resiliency measures?
 - a. Yes
 - b. No, Explain:

- c. Will there be any external electrical or mechanical systems servicing the building?
 - a. Yes
 - b. No

⁵ Boesch, D.F. et al. 2013. Updating Maryland’s Sea Level Rise Projections. Special Report of the Scientific and Technical Working Group to the Maryland Commission on Climate Change. University of Maryland Center for Environmental Sciences, Cambridge, Maryland.

d. If yes, will they be elevated?

- a. Yes b. No

e. Will there be external fuel tanks (ex. propane)?

- a. Yes b. No Describe type: _____

f. If yes, will they be anchored and/or elevated?

- a. Anchored? b. Elevated? c. Anchored and Elevated?

g. Will there be any enclosures below the lowest floor?

- a. Yes b. No

h. If yes, will the enclosure have flood openings?

- a. Yes b. No

i. Other siting considerations:

j. What building materials will be used to increase resiliency?

k. What type of construction will be used (e.g., relocatable, portable, expendable in the event of storm damage)?

l. Will there be any functional use restrictions placed on the project (e.g., temporary)?

m. Other design considerations:

n. Is there adequate shoreline protection at the proposed project's site?

7. *Cost/Benefit Analysis*. Assess anticipated benefits and costs of the proposed project with the following factors:

- a. *Risk v. Time*. What is the potential future financial and other losses associated with sea level rise, coastal flooding and storm surge over the project's anticipated design life? How does this cost compare to inaction?

- b. *Risk Tolerance*. What is the risk tolerance for the proposed project?

- i. Low
- ii. Medium
- iii. High

Explain:

- c. *Socio-economic Considerations*. What are the short and long term costs associated with the project?

- i. What costs are associated with the need for additional shoreline protection?

- ii. What types of emergency responses will there be during extreme events?

- iii. What is the possible need for the repair or rebuilding of damaged structures?

- d. *Environmental Impacts*. Are there increased impacts of the project to the environment due to the incorporation of resiliency measures (e.g., increasing the height of a bridge may necessitate need for larger bridge abutments with greater impact to waterway and nearby wetland areas)?

III. *Coast Smart Construction Program Certificate.*

This form was created to ensure that project sponsors have considered and complied with the *Coast Smart* guidelines during various phases of the project development and multi-year approval process.

- a. Project name: _____
- b. Location: _____
- c. Brief project description: _____

Chapter 415 of the 2014 laws of Maryland House (Bill 615) established the [Coast Smart Council](#) to develop a *Coast Smart* Construction Program with [Coast Smart Siting and Design Criteria](#). These criteria address sea level rise and coastal flood impacts on state-funded capital projects. State-funded capital projects planned and built by units of state government that include the construction of a new structure, or reconstruction of a structure with substantial damage, must be in compliance with the established criteria. The Criteria include guidelines and directives applicable to the preliminary planning and construction of a proposed capital project; require the lowest floor elevation of each structure located within a Special Flood Hazard Area to be built at least 2 feet above the base flood elevation; and establish a process for a unit of state government to be waived from compliance. The intent of these criteria is to ensure that fiscally wise decisions are made by avoiding or minimizing unnecessary damage to state capital assets. If your project is located in a tidally-influenced coastal area of Maryland, please answer, sign and date the appropriate section below:

A. Initial Siting/Property Acquisition: A Vulnerability Assessment has been conducted during the siting and property acquisition process and the following determination has been made (Please check appropriate answer, sign & date below): Selected property (is is not) vulnerable to coastal and riverine flooding, storm inundation, and sea level during its design life.

Signed _____ Date _____

(If project screening demonstrates that your project is not vulnerable to sea level rise and coastal hazards addressed by the *Coast Smart* Siting and Design Criteria, no further action is necessary. If your project is vulnerable, please select the best description for your project from the choices listed below.)

B. Siting and Design of Structure (Both New and Major Reconstruction): If your property is vulnerable, please select below (with check mark) the best answer that describes the extent to which your project complies with the *Coast Smart* Siting and Design Criteria (Please sign & date below your answer):

Project is eligible for Categorical Exception (see Project Checklist top of page A-8) or is not subject to the Program requirements, but incorporates Siting & Design Criteria where practicable.

Project fully complies with Siting & Design Criteria

Project received one or more Criteria Waivers (attached herein), but otherwise complies with Siting & Design Criteria.

Signed _____ Date _____

C. Pre-Construction Certification: Please provide information below, sign and date.

I, _____, certify on behalf of _____
that best professional judgment and currently available knowledge and practices were applied to ensure
that the identified project complies with the *Coast Smart* Construction Program.

Signed _____ Date _____



APPENDIX C: FY2017 CAPITAL PROJECTS IN CLIMATE IMPACT AREAS

FY 2017 Capital Projects in Climate Impact Areas

Note: There were no State-Owned projects located in climate impact areas in FY 2017. Projects shown below received State Funding

Agency	Program	Project	County	Address	Longitude	Latitude	Flagged for Review?	DNR-CI Objections?	DNR - CI Comments	Agency response
MDE	Biological Nutrient Reduction	Chesapeake City Wastewater Treatment Plant Upgrade	Cecil	Charles Street, Chesapeake City MD 21915	-75.813548	39.528446	Yes	No	Will the new wet weather storage tanks be located away from the shore? Locating them as far out of the potential storm surge area as possible is recommended.	MDE confirmed that the tanks will be located away from the river.
MDE	Biological Nutrient Reduction	Oxford Wastewater Treatment Plant Upgrade	Talbot	103 J.I. Thompson Drive, Oxford MD 21654	-76.169228	38.680379	Yes	No		
MDE	Biological Nutrient Reduction	Smith Island Wastewater Upgrades	Somerset	3786 Smith Island Road; Ewell, MD 21824 & 3039	-76.041058	37.988586	Yes	No		
MDE	Water Quality Revolving Loan Fund	Back River Headworks Improvement SC-918	Baltimore Co./City	8201 Eastern Avenue, Baltimore, MD 21224	-76.494291	39.299737	Yes	No		
MDE	Water Quality Revolving Loan Fund	Princess Anne Wastewater sWWTP Upgrade	Somerset	Linden Avenue Extension, Princess Anne, MD 21853	-75.69997	38.197475	Yes	No		
DNR	Community Parks and Playgrounds	ADA Canoe and Kayak Floating Pier	Caroline	East Central Avenue, South of E. Central Bridge, Federalsburg, MD 21632	-75.77362	38.694249	Yes	No		
DNR	Community Parks and Playgrounds	North East Community Park Playground Equipment	Cecil	300 Cherry Street, North East, MD 21901	-75.944881	39.593888	Yes	No		
DNR	Community Parks and Playgrounds	Little Queenstown Creek Boardwalk and Kayak Launch	Queen Anne's	7013 Main Street, Queenstown, MD 21601	-76.157868	38.990655	Yes	No		
DNR	Community Parks and Playgrounds	Oxford Causeway Park Tennis Courts	Talbot	100 South Morrison Street, Oxford, MD 21654	-76.171119	38.689217	Yes	No		
MISC	MD Hospital Association	Edward W. McCready Hospital, McCready Foundations Inc. -	Somerset	201 Hall Highway, Crisfield, MD 21817	-75.85244	37.99679	Yes	No		
MISC	N/A	National Sailing Hall of Fame	Anne Arundel	69 Prince George Road, Annapolis, MD 21401	-76.48446	38.97709	Yes	No	As noted in project description, area was flooded during Isabel which resulted in substantial damage. Please incorporate Coast Smart design features to minimize damage from future sea-level rise, coastal flooding and storm surge.	
MISC	N/A	Harbor Point Parks and Infrastructure	Baltimore City	1300 Thames Street, Baltimore, MD 21231	N/A	N/A	Yes	No	Area is vulnerable to Category 2 storm surge. Please consider natural and nature-based features in design and development.	
MISC	N/A	Chesapeake Bay Maritime Museum	Talbot	213 N. Talbot Street, St. Michaels, MD 21663	-76.223519	38.788391	Yes	No	Area is vulnerable to coastal flooding. Please take precautions to elevate or remove valuable artifacts if flooding occurs.	