

**Maryland Commission on Climate Change  
Adaptation and Response Working Group  
2017/18 Work Plan**

***PURPOSE***

The Maryland Commission on Climate Change is charged with advising the Governor and General Assembly on ways to mitigate the causes of, prepare for, and adapt to the consequences of climate change and maintaining and strengthening the state's existing Greenhouse Gas Reduction Plan (GHG Plan). The Commission is supported by a Steering Committee and four working groups. The Adaptation and Response Working Group is charged with developing a Comprehensive Strategy for Reducing Maryland's Climate Change vulnerability. The Strategy includes both short and longterm measures that State and local governments may undertake in planning for and adapting to diverse impacts of climate change.

Even as the state moves forward with actions that will reduce greenhouse gases (GHGs) and ultimately result in increased energy efficiency, a more sustainable economy, and cleaner air; climate impacts will still be felt into the future. Therefore, adaptation, together with mitigation, is necessary to address climate change. The Maryland Commission on Climate Change (MCCC) has charged the Adaptation and Response Working Group (ARWG) with implementing solutions for reducing Maryland's Climate Change vulnerability.

***MEMBERSHIP***

Membership of the ARWG is currently comprised of a number of sector leads from seven State agencies, three public sector representatives, a MCCC liaison, and a number of technical advisors from a variety of state agencies and departments. A priority for the ARWG in 2017 will be to seek opportunities to broaden stakeholder representation to include business, organized labor and industry representatives, along with local and federal partners with specific expertise in or understanding of the areas of the ARWG'S work. A complete membership roster is located in appendix A of this document.

***IMPLEMENTATION PROCESS***

In 2008, the ARWG – working collaboratively with more than 80 experts from the governmental, nonprofit and private sectors – developed a comprehensive plan to protect Maryland's people, property, natural resources, and public investments from the impacts of climate change (Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change). This Phase I strategy addressed the impacts associated with sea level rise and coastal storms. Transitioning beyond anticipated coastal flooding impacts, in 2011 a Phase II strategy was released. This compendium to the Climate Action Plan addresses changes in precipitation patterns and increased temperatures and their likely impacts to human health, Maryland's economy, agriculture, forest and terrestrial ecosystems, bay and aquatic environments, water resources, and population growth and infrastructure. ARWG members are working diligently to move forward actions and recommendations made in both Phase I and Phase II strategies. Appendix B of this document provides a list of the actions and activities that the ARWG will undertake in 2017 and 2018.

## CROSS-CUTTING PRIORITIES FOR 2017/2018

In addition to the work that the ARWG members are already doing in response to Phase I and Phase II strategies, the AWRG has identified the following cross-cutting priorities to focus on in 2017 and 2018.

1. *Evaluating New Sea Level Rise Science* ~ Scientific understanding of the causes and rates of sea-level rise is rapidly evolving. In 2013 the Maryland Commission on Climate Change updated its projections of sea-level rise for Maryland over the rest of the 21st century in order to provide reference points for planning. Since 2013, climate models and tools have continued to evolve which merit reconsideration of the Maryland projections. The ARWG will work with the Scientific and Technical Working Group and Maryland's Coast Smart Council to understand, evaluate and assess how best to account for new sea-level projections in resilience planning. With the bay wide implications and to leverage existing efforts, the ARWG will look into holding a joint meeting with the Chesapeake Bay Program's Climate Resiliency Workgroup, the Scientific and Technical Advisory Committee and the Scientific, Technical Assessment and Reporting Workgroup.
2. *Broadening the Adaptation Scope* ~ As the focus of the ARWG, its members' work and the challenges of different climate impacts evolve, the working group is recommending that additional emphasis be placed on meeting adaptation needs in non-coastal areas and on non-flooding issues such as extreme heat events, which are forecast to become more common. Through its Coast Smart Construction Program, Maryland is already a leader in ensuring that state investments will be resilient to the impacts of sea-level rise and coastal flooding. The ARWG will consider how it can ensure that other impacts are also considered when designing and siting state infrastructure. Work to better understand if Maryland's water resources and drinking water reservoirs are prepared for more frequent intense downpours and longer prolonged dry spells. In addition, the ARWG wants to ensure that adaptation efforts include vulnerable populations and communities that may not already be part of the climate change discussion.
3. *Healthy Soils Initiative* ~ Soils are already huge stores of carbon, and improved management of this resource could expand their capacity for carbon storage. ARWG will promote innovations in soil sequestration technologies, as well as, seek ways to improve how their implementation is integrated into climate change adaptation. In addition, working in partnership with the University of Maryland through the Innovative Technology Fund, the ARWG will offer two soils workshops (April 21st at Chesapeake College and April 26th at Frederick Community College) to better illustrate the connection between soils and adaptation and promote available grant programs for soil stabilization best management technology development.
4. *Local Comprehensive Plan Adaptation Research* ~ Local governments and communities will play a key role in successful adaptation. Many adaptation interventions necessary to increasing resilience are often squarely in the purview of local governments, including zoning codes, floodplain management, and building codes. To better understand how the ARWG partners can support the diversity of local governments and communities (social, geographic, income) with tools, resources, and technical

assistance to enable local adaptation efforts, the ARWG will work to better understand where Maryland's local governments, non-governmental organizations, and communities in embracing long-term adaptation planning and management.

5. *Resilience Financing Stress Test* ~ Communities are faced with the dual challenge of effectively managing and protecting important natural resources while at the same time preparing their communities to address the impacts and risks of climate change. The scale of these financing challenges requires communities to incentivize investment in critical infrastructure projects that advance environmental, social, public health, and economic development goals. This in turn will require local and regional capacity to develop and implement innovative financing structures and processes. Working with the University of Maryland's Environmental Finance Center, the ARWG will work to develop and pilot a "Resilience Financing Stress Test" to help communities accelerate and scale resilience financing efforts and that could be replicated for the diversity of Maryland's communities (social, geographic, income). In addition to identifying the financing structures at the community level through the stress test, the ARWG will investigate incentive programs and opportunities within the insurance industry as well as the role that state and federal governments can play to ease the finance burdens of adaptation.
6. *Metrics for Tracking Progress* ~ Adaptation efforts are only useful if they work, but states and other actors often lack defined methods for evaluating responses and monitoring success. Without easily measurable benefits (at least in the short-term) the state faces difficulty in building understanding for adaptation policies and investments. The ARWG will initiate a pragmatic approach to establishing indicator metrics to better understand Maryland's vulnerabilities and to evaluate and track its progress in implementing preparedness and resilience measures.
7. *Georgetown Climate Center Recommendations* ~ The ARWG will review, rank and will work with the MCCC as appropriate to implement ARWG-selected recommendations provided by the Georgetown Climate Center's 2016 report (attached). The purpose of this report was to help the ARWG document the important work it is already doing to prepare for the impacts of climate change and to provide recommendations and examples of other practices being implemented in other states as suggestions for additional steps that the state could take.

### ***SCHEDULE OF MEETINGS***

Appendix C of this document provides a summary of ARWG meetings scheduled for 2017, as well as tentative topics and MCCC work items.

## Appendix A

### ARWG Membership Roster

Updated 3/14/2017

**ARWG Chair:** Mark Belton, Secretary, Department of Natural Resources

**ARWG Coordinator:** Catherine McCall, Department of Natural Resources

**Maryland Commission on Climate Change Liaison:** C. Richard D'Amato, Retired Attorney

**State Senate Member:** James C. Rosapepe, Maryland General Assembly

**House Delegate Member:** Dana Stein, Maryland General Assembly

#### Public Sector Representatives

Brian Ambrette, Eastern Shore Land Conservancy

Fredrika Moser, Maryland Sea Grant

Eric Myers, The Conservation Fund

#### State-Agency Adaptation Sector Leads

Catherine McCall, Maryland Department of Natural Resources on Coastal Hazards

Clifford Mitchell, Maryland Department of Health and Mental Hygiene on Health

Susan Payne, Maryland Department of Agriculture on Agriculture

Bruce Michael, Maryland Department of Natural Resources on Bay and Aquatic

Don Van Hassent, Maryland Department of Natural Resources on Forest and Terrestrial

Jason Dubow, Maryland Department of Planning on Growth and Infrastructure

Sandy Hertz, Maryland Department of Transportation on Transportation Growth and Infrastructure

Gary Setzer, Maryland Department of the Environment on Water Resources

Chas Eby, Maryland Emergency Management Agency on Emergency Management

#### Technical Advisors

Dave Guignet, Maryland Department of the Environment

Megan Granato, Maryland Department of Natural Resources

Vacant, Local Governments

Katherine Charbonneau, Critical Area Commission

Matthew Fleming, Maryland Department of Natural Resources

Scott Zarcharko, Maryland Department of the Environment

Sasha Land, Maryland Department of Natural Resources

Nell Ziehl, Maryland Department of Planning - Maryland Historical Trust

Kevin Wagner, Maryland Department of the Environment

Fiona Burns, Maryland Department of Budget and Management

Shawn Kiernan, Maryland Department of Transportation/Maryland Port Administration

Elizabeth Habic, Maryland Department of Transportation/State Highway Administration

Joy Hatchette, Maryland Insurance Administration

Mostafa Izadi, Maryland Department of General Services

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## Appendix B

### ARWG Actions and Initiatives 2017/2018

Updated 3/14/2017

#	Action	Leads	Time-Frame
<b>Growth and Infrastructure</b>			
<b>Goal: Reduce the impact to existing built environments, as well as to future growth and development.</b>			
GI 1.1	The Maryland Resiliency Partnership will further refine and develop timelines for the strategies defined in the Strategic Implementation Plan of the 2016 State Hazard Mitigation Plan. The partnership would also look to expand and include state agencies not currently represented such as Department of Housing and Community Development (DHCD).	MDE, DNR, MEMA, MHT, MES	In Development
GI 1.2	With funding from the National Park Service Hurricane Sandy Disaster Relief Fund, the Maryland Historical Trust (MHT) has awarded seven grants throughout the state to help protect historic places and archaeological sites from future storms. As these projects are completed, the Maryland Historical Trust will develop case studies so that other jurisdictions can benefit from lessons learned.	MHT	In Development
GI 1.3	In 2014, Maryland Department of Transportation/State Highway Administration conducted a pilot study under a Federal Highway Administration grant to develop a methodology to assess vulnerability of the State's bridges and roads. Pilots were completed for Anne Arundel and Somerset Counties in the summer of 2016. SHA will work to apply the methodology to all tidal counties.	SHA	In Development
GI 1.4	Maryland Department of Transportation/Transportation Authority conducted a high-level vulnerability assessment of its nine maintenance facilities for sea level rise, storm surge, precipitation, and temperature for years 2050 and 2100. MDTA will update this framework to use for a variety of climate stressors including sea level rise, storm surge, temperature, precipitation, and extreme weather events.	MDTA	In Development
GI 1.5	Maryland Department of Transportation/Transit Authority completed a draft vulnerability assessment and is continuing to utilize the results in development of adaptation measures and resiliency planning. Results of the Climate Change Vulnerability Assessment will be incorporated into MTA's Asset Management Plan and system preservation program.	MTA	In Development
GI 1.6	Maryland Department of Transportation/Port Authority developed a climate change resilience program. MPA will implement a resiliency plan that includes the installation of additional tie-downs for cranes, installation of future emergency generators above ground level at +10 feet, elevation of berths, wharfs and parking lots, protection from inundation for underground utilities, review of emergency response plans to incorporate updated sea level rise data.	MPA	In Development
GI 1.7	The Maryland Department of Natural Resources will be issuing awards under the Community Resiliency Grants Program to help Maryland communities become more resilient to impacts from the changing climate. As these projects are completed, the Maryland Department of Natural Resources will develop case studies so that other jurisdictions can benefit from lessons learned.	DNR	In Development

#	Action	Leads	Time-Frame
<b>Growth and Infrastructure</b>			
<b>Goal: Reduce the impact to existing built environments, as well as to future growth and development.</b>			
GI 1.8	With funding from the National Park Service Hurricane Sandy Disaster Relief Fund, the Maryland Historical Trust (MHT) will develop a guidance document for local governments and property owners interested in protecting historic buildings from flood hazards, including sea-level rise. A Workshop will be held on May 25th, 2017 to highlight the guidance document.	DNR	Summer 2017
GI 1.9	Community field assessments and focus area characterizations will be undertaken as part of the integrated Community Resilience Assessment of the Deal Island Peninsula. The assessment will provide a ground level understanding of what's vulnerable, what adaptation measures are already occurring and identifying potential adaptation options based on community conditions and local knowledge.	DNR, UMD, MDSG, DHMH	Fall 2017
GI 1.10	The Eastern Shore Land Conservancy (ESLC) will continue to work with the Maryland Department of Planning to pilot a model Comprehensive Plan Element specifically focusing on coastal resiliency for local governments. With funding provided by DNR, the partnership will work with the City of Cambridge to develop a Cambridge specific coastal resiliency element.	MDP, ESLC, DNR, DHMH	Spring 2018
GI 1.11	With funding from the Town Creek Foundation, the Eastern Shore Land Conservancy (ESLC) and Antioch University's Center for Climate Preparedness and Community Resilience piloted a regional capacity building project for climate resilience on the Eastern Shore. Through the Eastern Shore Climate Adaptation Partnership (ESCAP, ESLC and other ARWG partners will assist communities to expand their capacity for risk reduction and preparedness; facilitate information and knowledge exchange between members of the partnership; and promote education for residents and elected leaders.	ESLC	On-going
GI 1.12	The Department of Natural Resources (DNR) plans to undertake 15 of the highest priority projects in order to address escalating risks from extreme weather and climate-related events. Projects will include shoreline restoration, beneficial use of dredged materials, tidal marsh restoration, and the protection of dune habitats to shelter coastal infrastructure and reduce current and future emergency repair costs. The goal of the program is to better protect Maryland communities and public resources using natural and nature-based approaches. During this time period the department will complete the design and engineering for six priority projects.	DNR	Summer 2018

#	Action	Leads	Time-Frame
<b>Financial and Economic Well-Being</b>			
<b>Goal: Shift to sustainable investments and avoiding financial and economic impact.</b>			
FE 1.1	A new methodology to encourage coastal restoration has been approved by the Verified Carbon Standard (VCS). Default carbon sequestration values for the VCS protocol will be evaluated for applicability to determine greenhouse gas benefits for various restoration projects under a range of salinity conditions.	DNR	Winter 2018



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<b>Financial and Economic Well-Being</b>			
<b>Goal: Shift to sustainable investments and avoiding financial and economic impact.</b>			
FE 1.2	The Department of Natural Resources will work with the towns of Oxford, St. Michaels, and Cambridge to incorporate coastal hazard considerations into the development of strategic waterfront development plans.	DNR	Fall 2018
FE 1.3	Maryland Emergency Management Agency will work to ensure that hazard mitigation projects submitted for federal disaster funds are reviewed for eligibility and to ensure that all State applications are consistent with the recommended Coast Smart Siting and Design Guidelines.	MEMA	Winter 2017

#	Action	Leads	Time-Frame
<b>Human Health</b>			
<b>Goal: Enhance preparedness to protect human health, safety, and welfare.</b>			
HH 1.1	Since the Climate and Health Profile Report was released in Spring 2016, the Department of Health and Mental Hygiene has continued work on climate in Maryland. Under the recently awarded 5-year cooperative agreement with the Centers for Disease Control and Prevention (CDC), DHMH is working directly with communities to develop and implement adaptation interventions for health outcomes related to climate change. DHMH is working with partners to measure the impacts of interventions on the communities to ensure improved resiliency to the effects of climate change. The specific objectives of the program are to: (1) Develop an overall statewide implementation and monitoring strategy for climate change health adaptation efforts that is integrated with the Maryland Climate Plan; (2) Provide tools and technical assistance to communities and other stakeholders on evidence-based public health interventions for climate adaptation; (3) Track the progress of local climate interventions and their associated health outcomes as they are implemented; (4) Use surveillance results to further refine and improve state and local interventions; and (5) Measure and communicate the health impacts of those interventions.	DHMH	In Development

#	Action	Leads	Time-Frame
<b>Natural Resources and Resource Based Industries</b>			
<b>Goal: Restore and protect Maryland's natural resources and resource-based industries.</b>			
NR 1.1	The Department of Natural Resources will hold two training sessions to share data from the Coastal Resiliency Assessment with local governments on the western and eastern shores. The department will also explore expansion of the analysis to the riverine environment, inclusion of critical infrastructure in priority rankings, and model updates based on user feedback and ground-truth findings. Resiliency data will be re-evaluated annually to determine if updates are necessary.	DNR	Spring 2018



#	Action	Leads	Time-Frame
<b>Natural Resources and Resource Based Industries</b>			
<b>Goal: Restore and protect Maryland's natural resources and resource-based industries.</b>			
NR 1.2	The Department of Natural Resources will conduct one day training sessions on the national network for ocean and climate change interpretation in partnership with Maryland Audubon, National Aquarium and MADECLEAR.	DNR	Winter 2017
NR 1.3	Over the next two years, Maryland's Chesapeake Bay National Estuarine Research Reserve will be establishing its Monie Bay component as a sentinel site. Monie Bay is located in Somerset County which is one of Maryland's most vulnerable counties to sea level rise. This additional site will provide valuable data on how local marshes are changing over time and if they are resilient to environmental stressors such as sea level rise.	DNR	Winter 2018
NR 1.4	Maryland officials will participate in a climate adaptation work group through the Mid-Atlantic Regional Council on the Ocean (MARCO). This partnership has identified strategies for regional approaches to reduce risks to priority coastal resources. The Department of Natural Resources will work to enhance and improve on efforts to coordinate with neighboring states through MARCO to reduce transboundary coastal impacts.	DNR	Spring 2018

## Appendix C

### ARWG Meeting Schedule for 2017 Updated 3/14/2017

Date/Time	Location	Agenda Topics	MCCC Work Items
March 6 2 to 4 pm	MD DNR	<ul style="list-style-type: none"> <li>- Local Support</li> <li>- Local Case Studies</li> <li>- Innovative Financing</li> <li>- Local Comp Plans</li> </ul>	Draft Work Plans
April 21 8:30 - 12 pm	Chesapeake College Wye Mills	Healthy Soils Workshop	
April 26 8:30 - 12 pm	Frederick Comm. College Frederick	Healthy Soils Workshop	
April 1st 8:30 - 1 pm	E.S. Conservation Center Easton	Unsinkable Eastern Shore II: Rural America Responds to Climate Change	
April 19	Maryland Commission on Climate Change Meeting		
May 11th 10 to 12 pm	Dept. of the Environment Baltimore	Agricultural Practices: Healthy Soils and Carbon Sequestration Presentation	
May 22 2 to 4 pm	MD DNR	<ul style="list-style-type: none"> <li>- Evaluation of data/tools</li> <li>- State funding programs</li> <li>- Progress Tracking tool</li> <li>- GCC Recommendations</li> <li>- GCC State Adaptation</li> </ul>	First Draft Annual Report Recommendations and Progress Report
June 21	Maryland Commission on Climate Change Meeting		
September 11 2 to 4 pm	MD DNR	<ul style="list-style-type: none"> <li>- Resource Based Industries</li> <li>- Healthy Soils Coalition</li> <li>- New sea level science</li> <li>- Research priorities</li> <li>- Regional adaptation plans</li> <li>- Joint meeting with CBP</li> </ul>	Final Draft Annual Report Recommendations and Progress Report
September 20	Maryland Commission on Climate Change Meeting		
Oct 29 - Nov 1	Annapolis Waterfront Hotel Annapolis	Keeping History Above Water: Annapolis	
October 18	Maryland Commission on Climate Change Meeting		
November 1	Maryland Commission on Climate Change Meeting		
December 11 2 to 4 pm	MD DNR	- Scope of Coast Smart rules	2 Year Workplan Update