Maryland Commission on Climate Change
Adaptation and Response Working Group
DRAFT
2019 Work Plan

PURPOSE

The Maryland Commission on Climate Change (MCCC) 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 members of the working groups are appointed by the MCCC Chair and include representatives of academic institutions, renewable and traditional energy providers, environmental organizations, government agencies, labor organizations and business interests. The Adaptation and Response Working Group (ARWG) is charged with developing and implementing a comprehensive strategy for reducing Maryland's climate change vulnerability, and providing state and local governments with tools to plan for and adapt to climate impacts such as extreme weather and sea level rise.

Even as the state moves forward with actions that will reduce greenhouse gases and ultimately result in increased energy efficiency, a more sustainable economy, and cleaner air; numerous climate impacts will still be felt into the future if we fail to adequately adapt. The climate is already changing and Maryland is already seeing an increase in extreme weather events, presenting new adaptation challenges in both the coastal and non-coastal zones.

ADAPTATION PROGRESS

The Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change[1] (henceforth referred to as the Adaptation Strategy) includes both short- and long-term measures that State and local governments may undertake in planning for and adapting to the diverse impacts of climate change. Ten years have passed since the MCCC drafted the Adaptation Strategy Phase I: Sea-level rise and coastal storms, and seven years since drafting Phase II: Building societal, economic, and ecological resilience. Within that decade, a tremendous amount of progress has been made, but there is still much work to undertake to ensure a resilient, prosperous future for Maryland's people, environment, and economy.

Throughout 2018, the ARWG undertook an assessment to analyze progress made on implementing the Adaptation Strategy. That progress review, along with conversations about agency- and issue-specific adaptation challenges, informed ARWG priorities for 2019. While the issues presented below are not an exhaustive list of all the topics the ARWG will seek to address in 2019, they have been identified as some of the most pressing issues, with also the most opportunity for progress to be made.

[1] The Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change includes both Phase I: Sea-level rise and coastal storms published July 2008 and Phase II: Building societal, economic, and ecological resilience published January 2011.

2019 ARWG PRIORITIES

1. *Supporting Local Decision-Making:*

    a. *Building Local Capacity to Compete for Natural Infrastructure Resilience Funds* - ARWG partners recognize there is a need to prepare Maryland and its communities to take advantage of upcoming federal funding opportunities (e.g. FEMA, NOAA, USACE) that promote the use of natural infrastructure to build resilience to climate impacts, particularly flooding. Using partnership frameworks that have previously been employed for water quality enhancement, ARWG partners will meet throughout 2019 to discuss landscape-level needs for natural and nature-based (NNBF) project identification so that Maryland communities are better situated to compete for future funding.

    b. *Nuisance Flood Plans:* The Maryland General Assembly passed House Bill 1350 / Senate Bill 1006 in July 2018, which charges local jurisdictions to develop plans to adapt to nuisance flooding on or before July 1, 2019. To help jurisdictions comply with this legislative change, ARWG partners are developing a guidance document that will be released in early 2019 that outlines ways communities could address nuisance flooding.

    c. *Climate Leadership Academy*: ARWG partners will continue to foster a community of climate-smart local government and infrastructure leaders through the participation in and promotion of the Maryland Climate Leadership Academy. Cohorts A, B and C will complete the Certified Climate Change Professional (CC-P) Credential Training Program in 2019, and additional Cohorts may be added in 2019. Work will also commence to identify Maryland case studies and to develop a Local Government Certificate or "short course" as part of the Maryland Climate Leadership Academy.

2. *Adaptive Retreat*: The State's adaptation strategies include both short- and long-term measures that state and local governments may undertake in planning for and adapting to diverse impacts of climate change. As landscapes change and shift, retreat or relocation is an emerging issue being discussed in many jurisdictions across the country. In 2019, the ARWG plans to explore the concept of adaptive retreat as it is currently being used in other jurisdictions/regions to address issues caused by sea level rise and increased storm events and erosion. The ARWG will hear from the Georgetown Climate Center about their toolkit on this issue to bolster knowledge about how such tools are used and to evaluate possible needs for this strategy in Maryland.

3. *Beneficial Use as an Adaptation Tool*: ARWG partners will explore the scope of beneficial use of dredge material in coastal resilience and living shorelines projects for adaptation purposes. The ARWG will discuss how projects could align with funding sources that promote nutrient reduction (e.g. CWCA, Trust Fund, MEMA/FEMA funds), efficient use/matching of dredged material (DNR BUILD tool), and GIT Grants on Social Marketing to Improve Shoreline Management (Conowingo).

4. *Building Financial Resilience*: With climate change threatening Maryland communities, infrastructure, economy, and culture, Maryland needs a long-term strategy for building financial resilience. Throughout 2019, ARWG partners will have discussions on multiple ways the state could build financial resilience. For example, discussions have begun in DGS on how to adopt Asset Management for the development of Capital Improvement Plans and Operation & Maintenance Strategies, and are considering developing a Response Plan that will create a framework for evaluating climate change impacts on level of service, risks and costs; optimizing climate change response projects; and identifying the best long-term funding strategies.

   Membership review request: *what other specific items or issues could or should be included here? Ideas previously discussed have included insurance, procurement and other investments.*

5. *Addressing Increased Precipitation*: Maryland's average annual precipitation is projected to increase 10% from the current average by 2100. The frequency of extreme precipitation events is also anticipated to increase, which our existing gray infrastructure (e.g. stormwater systems) and green infrastructure investments (e.g. water quality BMPs) may not be able to effectively manage. Computer models, like those used by the Chesapeake Bay Program Partnership, are starting to be used to predict possible changes to precipitation regimes resulting from climate change. In 2019, ARWG partners will explore regional downscaled precipitation models, which could help Maryland communities better assess their localized flood risks and plan to become more resilient to precipitation-induced flooding.

6. *Saltwater Intrusion*: The Maryland General Assembly passed House Bill 1350 / Senate Bill 1006 in July 2018, which directs the Maryland Department of Planning to establish a plan to adapt to saltwater intrusion by December 15, 2019. Work began in 2018 and MDP, in consultation with a state agency work group and subject matter experts, will continue to work on this plan for submission by the 2019 deadline. By summer 2019 a working draft plan will be available for ARWG review.

7. *Tracking Progress*: In 2019 the ARWG will continue to review its Phase I and II Comprehensive Strategy for Reducing Maryland's Vulnerability to Climate Change recommendations to identify progress, highlight any gaps or needs, and consider revising as needed. The ARWG will also consider the merit of developing a Phase III Strategy based on where progress can continue to be made. In addition, MDP will continue to track progress on the integration of coastal resilience components in comprehensive plans and hazard mitigation plans, and MDH will continue to track climate adaptation projects happening across the state via the Maryland Environmental Public Health Climate Adaptation Tracker online mapping portal.

8. *Dam Safety*: MDE will lead work in 2019 to ensure Maryland dams are resilient to the effects of climate change by: prioritizing inspections of significant and high hazard dams, assessing their condition, and requiring repair or removal of dams where necessary to protect life and property. MDE will ensure adequate emergency preparedness by requiring owners to complete routine updates of dam Emergency Action Plans and by providing technical assistance to dam owners to implement table-top exercises for these Emergency Action Plans. MDE will develop intra-agency standard operating procedures for emergency response to individual and multiple dam failure incidents.

2019 CROSS-WORKGROUP PRIORITIES

9. *Mapping Zones of Vulnerability*: In October 2018 the MCCC Scientific and Technical Work Group (STWG) updated Maryland's sea-level rise projections[2]. Separately but concurrently in 2018, the Maryland General Assembly passed an act concerning Sea Level Rise Inundation and Coastal Flooding - Construction, Adaptation, and Mitigation[3]. Part V of this act requires the Maryland Coast Smart Council to establish criteria to evaluate whether state funds may be used to mitigate hazards associated with sea level rise inundation and coastal flooding, and to incorporate tools to assess the vulnerability of an area or structure to those hazards. In 2019, the ARWG will collaborate with the STWG and the Maryland Coast Smart Council to produce a uniform set of maps or mapping tools that are practical for use by local governments, practitioners and the public, and then work with ECO to disseminate and communicate the appropriate uses of these mapping products.

10. *Integrating Climate Change into the Phase III Watershed Implementation Plan*: Preliminary EPA estimates project that climate change will increase nitrogen, phosphorus, and sediment loads to the Chesapeake Bay. Additional science is needed to both quantify those increases and understand how current pollution reduction practices will perform under a changing climate. Between now and March 2021, the Chesapeake Bay Program (CBP) Partnership has committed to improve scientific understanding of these impacts, identify outstanding research needs, and refine nutrient and sediment load estimates for each Bay jurisdiction. Then by September 2021, Maryland will account for the additional nutrient and sediment loads resulting from climate change by developing a strategy with best management practice implementation sufficient to reduce the increased load. Within the Maryland jurisdiction, the MCCC is the entity charged with implementing actions and strategies to mitigate and adapt to the likely consequences and impacts of climate change. Therefore, it makes sense for MCCC work groups to collaborate with the CBP Phase III Watershed Implementation Plan (WIP) teams throughout 2019 and beyond to determine how best to account for additional nutrient and sediment loads resulting from climate change.

11. *Conceptualizing a Maryland Resiliency Master Plan*: In concert with the Mitigation Work Group, DNR will lead an interdisciplinary team, supported by subject matter experts, to produce a concept framework for developing a State Resiliency Master Plan focused on nature-based strategies to build resilience. The Master Plan will complement existing state and local plans addressing climate change (Maryland's Phase I and II Comprehensive Strategies for Reducing Climate Vulnerability, Hazard Mitigation Plans, etc.) and align multiple agency efforts. The plan will establish a deliberate pathway into the future for sustaining and enhancing healthy ecosystems, resilient communities and vibrant economies on a regional basis through the use of nature-based solutions. Both coastal and inland resiliency elements will be included. This effort will support aspects of the Chesapeake Bay Watershed Implementation Plan through water quality-related climate adaptation actions that also advance climate change greenhouse gas mitigation. Benefits of a State Resiliency Master Plan include 1) identifying data collection needs and the technical analyses and methodologies necessary to support resiliency

[2] Boesch, D.F., W.C. Boicourt, R.I. Cullather, T. Ezer, G.E. Galloway, Jr., Z.P. Johnson, K.H. Kilbourne, M.L. Kirwan, R.E. Kopp, S. Land, M. Li, W. Nardin, C.K. Sommerfield, W.V. Sweet. 2018. Sea-level Rise: Projections for Maryland 2018, 27 pp. University of Maryland Center for Environmental Science, Cambridge, MD.

[3] House Bill 1350 / Senate Bill 1006

projects, 2) developing a portfolio of conservation and restoration projects that would generate mutual benefits for water quality and resilience goals, and 3) serving as a roadmap for generating long-term actionable plans that could drive, leverage and secure new sources of funding and investments.

12. *Healthy Soils Initiative*: House Bill 1063, passed during the 2017 legislative session, established a Healthy Soils Program and requires MDA to provide incentives, including research, education, technical assistance, and subject to available funding, financial assistance to farmers to implement the management practices that promote soil health and sequester carbon. MDA, MDNR, and MDE should work together through the Adaptation and Response and Mitigation Work Groups, as well as the Healthy Soils Consortium, to identify long-term sources of funding to support the purposes of the Healthy Soils Act.

13. *Human Health Implications of Climate Change:* ARWG partners will continue to provide tools, resources, and technical assistance for citizens, communities, non-governmental organizations, schools, local governments, planners, and State agencies to help them think about health and use health data as they develop climate change plans. ARWG partners will also continue ensure public health considerations are integrated in community forums that address climate adaptation efforts.

14. *Environmental Justice Considerations:* There remains a need to define 'vulnerable populations' from the perspective of the MCCC. In 2019 and beyond, the ARWG will continue to work with the Steering Committee, other MCCC working groups, and the Maryland Commission on Environmental Justice and Sustainable Communities (CEJSC) to assist in defining vulnerability for ARWG efforts.

Appendix A
ARWG Membership Roster -- Updated 2/1/19

ARWG Chair: Jeannie Haddaway-Riccio, Secretary, Department of Natural Resources
ARWG Coordinators: Catherine McCall, Department of Natural Resources
Kimberly Grubert, Department of Natural Resources
Maryland Commission on Climate Change Liaison: C. Richard D'Amato, Retired Attorney
House Delegate Member: Dana Stein, Maryland General Assembly

Public Sector Representatives
Fredrika Moser, Maryland Sea Grant
Brian Ambrette, Eastern Shore Land Conservancy
Eric Myers, The Conservation Fund

State-Agency Adaptation Sector Leads
Matthew Rowe, Department of Environment on Water Resources
Don Van Hassent, Department of Natural Resources on Forest and Terrestrial
Chas Eby, Maryland Emergency Management Agency on Emergency Management
Bruce Michael, Department of Natural Resources on Bay and Aquatic
Clifford Mitchell, Department of Health and Mental Hygiene on Health
Jason Dubow, Department of Planning on Growth and Infrastructure
Susan Payne, Department of Agriculture on Agriculture
Sandy Hertz, Department of Transportation on Transportation Growth and Infrastructure
Catherine McCall, Department of Natural Resources on Coastal Hazards

Technical Advisors
Katherine Charbonneau, Critical Area Commission
Susan Gore, Department of Budget and Management
Scott Zacharko, Department of the Environment
Kevin Wagner, Department of the Environment
Nell Ziehl, Department of Planning - Maryland Historical Trust
Spyridon Papadimas, Department of General Services
Lisa Lowe, Department of Information Technology
Sasha Land, Department of Natural Resources
Megan Granato, Department of Natural Resources
Matthew Fleming, Department of Natural Resources
Elizabeth Habic, Department of Transportation - State Highway Administration
Shawn Kiernan, Department of Transportation - Maryland Port Administration
Vacant, Local Government Representative
JaLeesa Tate, Maryland Emergency Management Agency
Andrew Asgarali-Hoffman, Maryland Emergency Management Agency
Joy Hatchette, Maryland Insurance Administration

ARWG & Partners Meeting Schedule for 2019

Date/Time	Location	Agenda Topics
February 25 2 to 4 pm	DNR (Tawes)	Adaptation & Response Work Group Q1 Meeting - Finalize 2019 Work Plan - Managed Retreat Toolkit - Operationalizing Climate in Local Planning
April 18	MDE	Maryland Commission on Climate Change Meeting
May 20 2 to 4 pm	DNR (Tawes)	Adaptation & Response Work Group Q2 Meeting - Downscaled Precipitation Models - Phase III WIP and BMP Implications - Conceptualizing a Resiliency Master Plan
May 30 (tentative)	MDE	Maryland Commission on Climate Change Meeting
June 20	MDE	Maryland Commission on Climate Change Meeting
June 23-26	Ocean City	Maryland Municipal League Summer Conference
July 11 (tentative)	MDE	Maryland Commission on Climate Change Meeting
August 5 10 am to 12 pm	DNR (Tawes)	Adaptation & Response Work Group Q3 Meeting - HB 1350 / SB 1006 Progress Update - Review of Progress on Phase I & II Strategies - Generate 2019 Annual Report Recommendations
August 8 (tentative)	MDE	Maryland Commission on Climate Change Meeting
August 14-17	Ocean City	Maryland Association of Counties Summer Conference
September 19	MDE	Maryland Commission on Climate Change Meeting
October 16	MDE	Maryland Commission on Climate Change Meeting
November 6	MDE	Maryland Commission on Climate Change Meeting
November 18 2 to 4 pm	DNR (Tawes)	Adaptation & Response Work Group Q4 Meeting - Finalize 2019 Annual Report Recommendations - Scope 2020 Work Plan