

MARYLAND COMMISSION

on. CLIMATE CHANGE

Adaptation & Resiliency Working Group

I. Welcome, Introductions & Review of Agenda

2:00 - 2:10 pm

Maryland Department of Natural Resources

Decision: Seek approval of February 25, 2019 meeting notes.

Materials: Agenda

February 25, 2018 draft meeting notes

2019 ARWG Work Plan

Phase I & II Implementation Table -- 2018 Review of Progress

II. Addressing Increased Precipitation at the Local Level

2:10 - 2:25 pm

Megan Granato (DNR) and Jim George (MDE)

Background: The ARWG 2019 Work Plan states that MDE, DNR, and others will partner to assess the state of

the science on projecting climate change impacts on precipitation, with a focus on design storms,

which could help Maryland communities better assess their localized flood risks and plan to

become more resilient to precipitation-induced flooding. Megan Granato and Jim George have

begun collecting information on the state of the science and speaking with relevant partners

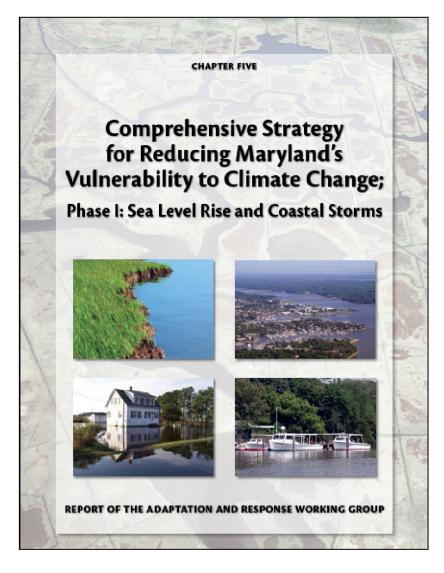
engaged on this topic.

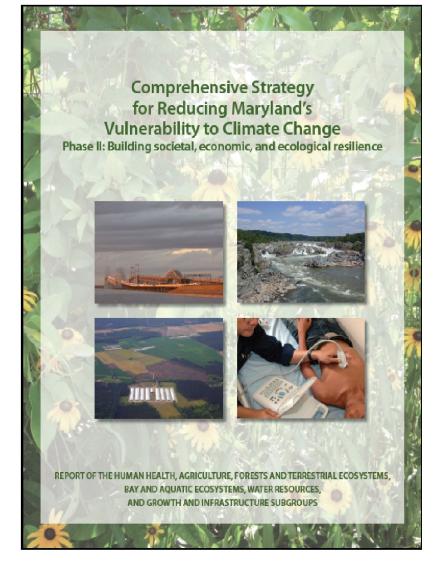
Discussion: Granato and George will present their research and seek feedback from the ARWG.



III. A Decade of Adaptation in Maryland - Tracking Progress, Renewing Focus

Review of Progress on Phase I & II Adaptation Strategies Kim Grubert (DNR)	2:25 - 2:35 pm
Options & Discussion for Metrics to Track Progress Bill Dennison & Dave Nemazie (UMCES)	2:35 - 3:00 pm
Resiliency Milestones - Past and Future Adaptation Progress Catherine McCall (DNR)	3:00 - 3:30 pm





2008 2011

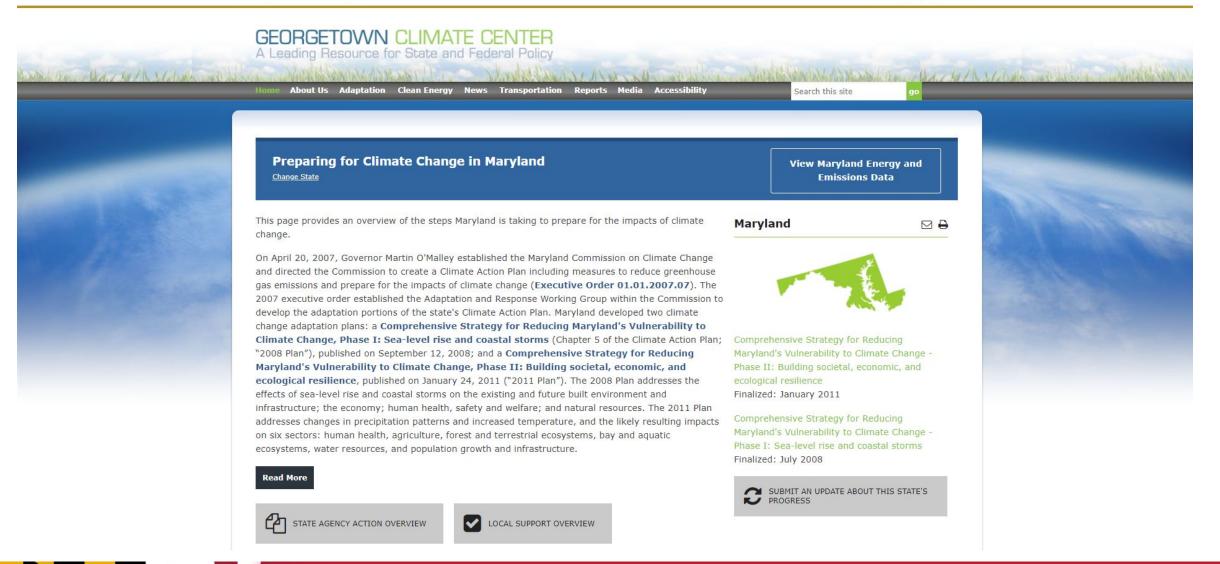
Adaptation: Phase I

Affected Sectors	Climate Stressor	Climate Vulnerability	Adaptation Strategies
Coastal Zone	Sea level riseExtreme events	Submergence of low-lying landsIncreased coastal flooding	Protect coastal infrastructureIncrease natural vegetative buffers
Human Health	Increased air temp.Extreme events	Vector-borne illnessHeat-related health effects	Designate "cooling centers"Vector-borne surveillance
Agriculture	Changes in precip.Sea level rise	DroughtSalt-water intrusion	Plant salt tolerant cropsDrought management
Forest & Terrestrial Ecosystems	Changes in precip.Increased air temp.	Disease, FireSpecies shifts	Fire mgmt. and controlInvasive species mgmt
Bay & Aquatic Ecosystems	Sea level riseIncreased water temp.	Increased salinityHabitat loss	Install "living shorelines"Protect critical habitat
Water Resources	Changes in precip.Extreme events	Decreased water supplyIncreased flooding	Create water marketsImprove flood control
Growth & Infrastructure	Changes in precip.Sea level rise	Increased population growthIncreased flooding	 "Smart" site and building design Retrofit stormwater management



https://www.georgetownclimate.org/adaptation/state-information/maryland/overview.html

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2018 Work Plan

6. *Metrics for Tracking Progress*: Work is being undertaken by the Chesapeake Bay Program Climate Resiliency Workgroup to develop indicators of adaptation. ARWG members are engaged in this effort to determine if this work and/or the indicators could be relevant to the ARWG. Staff will coordinate with Chesapeake Bay Program staff in 2018 to hold future discussion about these resilience indicators. In addition, MDP will continue to track progress on the integration of coastal resilience components in comprehensive plans and hazard mitigation plans.

2019 Work Plan

for Reducing Maryland's Vulnerability to Climate Change recommendations to identify progress and highlight gaps and needs. The MCCC 2018 Annual Report called on the ARWG to develop metrics for tracking adaptation progress, and while this review was a start, more could be done to standardize metrics. In 2019, MDNR will convene a group of ARWG members to discuss possible metrics for tracking progress. In support of this work, MDP will continue to track progress on the integration of coastal resilience components in comprehensive plans and, with guidance from MEMA, 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. The ARWG will also consider the merit of developing a Phase III Strategy based on where progress can continue to be made. An update will be provided at the second quarter (Q2) ARWG meeting.

	General Terms Used			Specific Climate Change Hazards Mentioned											
	80000 E 80000			Co	astal Haza	ards	Precipitation Variability			Extreme Weather					
County - Comprehensive Plans	Climate Change (General)	Sea Level Rise	Coastal Resiliency	Hurricanes	Storm Surge	Coastal Inundation	Precipitation Variability*	Winter Storms	Drought	Dam Failure	Wind	Tornados	Heat	Wildfires	Air Quality
Allegany (2014)	✓						X			e .			Į.	ė.	
Anne Arundel (2009)		✓		X	Х	X	_	*	X			4			
Baltimore City (DP3) (2013)	✓	✓			1		1	1		√	1		1		1
Baltimore County (2010)	✓	✓			Х			e e							
Carroll (WRE) (2010)	✓						1		1	X					
Charles (2016)	✓	✓		1	/	1	V	*	V			V		1	X
Harford (2016)		✓	✓		1		X	2					8		X
Howard (2012)	✓	✓					*		*					1	1
Kent (2006)		✓					5	×	X					8	X
Montgomery (County															
Climate Protection Plan)															
(2009)	✓	✓		4	1		✓		✓		✓		*	1	X
Prince George's (2014)	✓	✓					1								X
Queen Anne's (2010)	✓	✓			1		*								
St. Mary's (2010)	climate variability	✓		×			X	X	X		X	X	X	X	
Talbot (2016)	✓	✓		1	1		1	X	X				X	X	
Wicomico (2017)	✓	✓			1	1	X								
Worcester (2006)		✓		X			X							X	

Key:

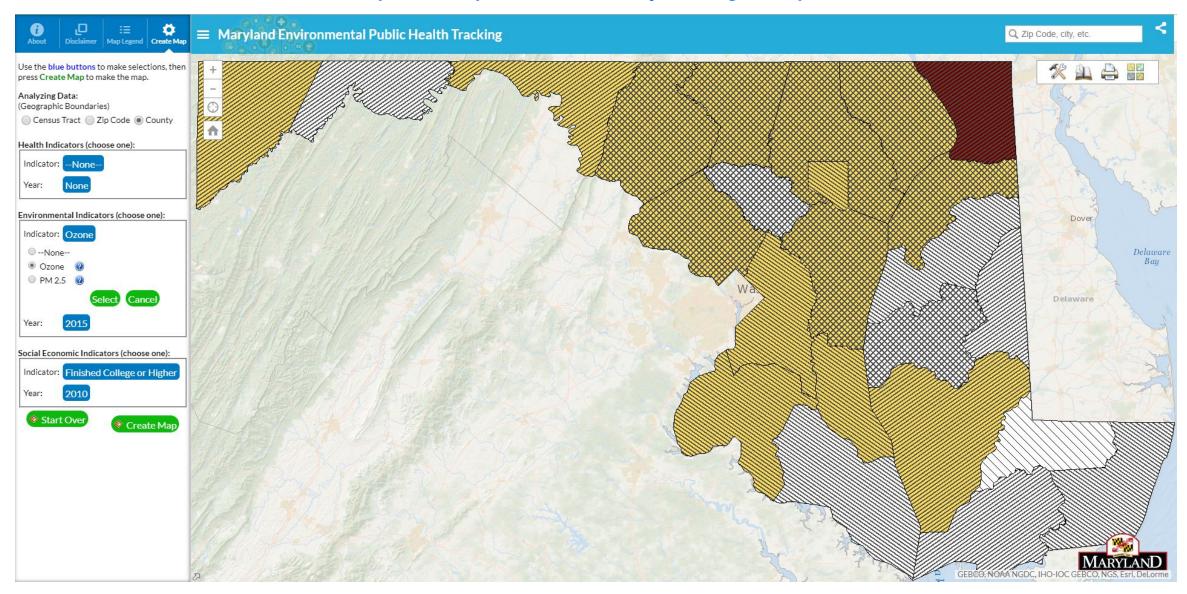
√= direct link

x = indirect link

*Includes inland flooding, extreme storm events



https://maps.health.maryland.gov/epht/





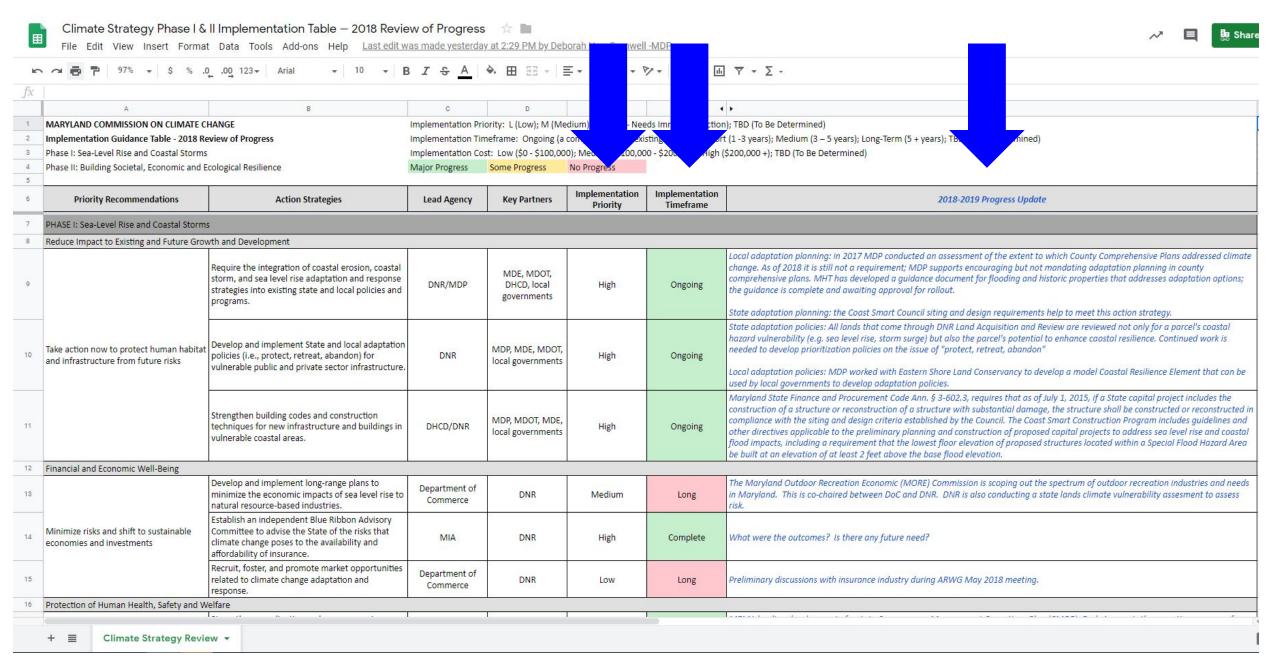
Climate Strategy Phase I & II Implementation Table — 2018 Review of Progress 🌣 📗

Adaptation: Phase I

Adaptation: Phase II

Affected Sectors	Climate Stressor	Climate Vulnerability	Adaptation Strategies
Water Resources	Changes in precip.Extreme events	Decreased water supplyIncreased flooding	Create water marketsImprove flood control
Bay/Aquatic Ecosystems	Sea level riseIncreased water temp	Increased salinityHabitat loss	Install "living shorelines"Protect critical habitat
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Coastal Zone	Sea level riseExtreme events	Submergence of low-lying landsIncreased coastal flooding	 Protect coastal infrastructure Increase natural vegetative buffers





III. A Decade of Adaptation in Maryland - Tracking Progress, Renewing Focus

Review of Progress on Phase I & II Adaptation Strategies

Kim Grubert (DNR)

2:25 - 2:35 pm

Options & Discussion for Metrics to Track Progress

Bill Dennison & Dave Nemazie (UMCES)

2:35 - 3:00 pm

Resiliency Milestones - Past and Future Adaptation Progress

Catherine McCall (DNR)

3:00 - 3:30 pm

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Resiliency Milestones - Past and Future Adaptation Progress 3:00 - 3:30 pm

Catherine McCall (DNR)



Resiliency Milestones - Past and Future Adaptation Progress

- What does climate awareness, integration or institutionalization currently look like in your organization?
- Forward Focus Topics:
 - Equity
 - Sub-topic of precipitation/riverine systems
 - Financial investments, procurement, asset management
- Preferences for organizational construct to discuss metrics and new targets?

ADAPTATION AND RESPONSE WORKING GROUP

Chair: Secretary John R. Griffin, Maryland Department of Natural Resources

SCIENTIFIC AND TECHNICAL WORKING GROUP

Chair: Donald F. Boesch, University of Maryland Center for Environmental Science

Human Health subgroup

Lead Author: Joel Scheraga (US Environmental Protection Agency)

Contributing authors: Sania Amr (University of Maryland), Russell Dickerson (UMD), J. Morgan Grove (US Department of Agriculture Forest Service), Clifford Mitchell (Maryland Department of Health and Mental Hygiene), Kimberly Mitchell (MD DHMH) John Sherwell (Maryland Department of Natural Resources), and Konstantin Vinnikov (UMD)

Agriculture subgroup

Lead author: Frank Coale (University of Maryland)

Contributing authors: Arvydas Grybauskas (UMD), Robert Kratochvil (UMD), Stephen McHenry (Maryland Agricultural and Resource-Based Industry Development Corporation), Connie Musgrove (University of Maryland Center for Environmental Science), Douglas Parker (UMD), Daphne Pee (UMD), Jennifer Timmons (UMD Extension), John Rhoderick (Maryland Department of Agriculture), and Lewis Ziska (US Department of Agriculture)

Forests and Terrestrial Ecosystems subgroup

Lead author: Christine Conn (MD DNR)

Contributing authors: Sally Claggett (USDA Forest Service/Chesapeake Bay Program), Bert Drake (Smithsonian Environmental Research Center), Joel Dunn (The Conservation Fund), Matthew Fitzpatrick (UMCES), Anne Hairston-Strang (MD DNR), David Inouye (University of Maryland), Dana Limpert (MD DNR), William Miles (Association of Forest Industries, Inc.), Douglas Samson (The Nature Conservancy), and Eric Sprague (Pinchot Institute of Conservation)

Bay and Aquatic Ecosystems subgroup

Lead author: Zoë Johnson (MD DNR)

Contributing authors: Britta Bierwagen (US EPA), Nancy Butowski (MD DNR), Carol Cain (Maryland Coastal Bays Program), David Curson (Audubon MD-DC), Patricia Delgado (Maryland-Chesapeake Bay National Estuarine Research Reserve), Robert Hilderbrand (UMCES), Paula Jasinski (NOAA Chesapeake Bay Office), Susan Julius (US EPA), Beth McGee (The Chesapeake Bay Foundation), Jonathan McKnight (MD DNR), Thomas Parham (MD DNR), Chelsie Papiez (MD DNR), Douglas Samson (The Nature Conservancy), David Secor (UMCES), and Scott Stranko (MD DNR)

Water Resources subgroup

Lead author: Andrew Miller (University of Maryland Baltimore County)

Contributing authors: Allen Davis (UMD), Jason Dubow (Maryland Department of Planning), Jeff Halka (Maryland Geological Survey), William Hewes (American Rivers), Ronald Klauda (MD DNR), Lyn Poorman (Maryland Department of Environment), Jeff Raffensperger (USGS MD-DC), Sean Smith (MD DNR), and Claire Welty (UMBC)

Population Growth and Infrastructure subgroup

Lead author: Gerrit Knaap (University of Maryland)

Contributing authors: Marty Baker (Maryland Department of Transportation), Peter Claggett (USGS/Chesapeake Bay Program), Zoë Johnson (MD DNR), Christopher Pyke (US Green Building Council), Dru Schmidt-Perkins (1000 Friends of Maryland), and Joseph Tassone (MDP)

Adaptation 2020: Organizational Approach

- Issues and sectors that are priorities for your organization now and into the next decade?
- Example: (assess evaluate strategies adopt changes)
 DNR Recreational Lands Resilience Strategy
 - State recreational lands vulnerable to flooding and changes in temperature/seasons
 - Impedes public access; creates public safety concerns; affects budgeting and staffing
 - Understand short- and long-term considerations and integrate priorities into capital improvements and emergency maintenance funding
 - Build awareness about changes to recreational industries and economies





IV. Additional Work Plan Updates

3:30 - 3:50 pm

Background:

This section of the agenda allows for brief updates each quarter on several work plan items and allows ARWG members to ask clarifying questions and provide feedback on work plan progress. Topics include:

- Phase III Watershed Implementation Plan, Matt Rowe (MDE)
- Coast Smart Legislation Amendments, Emily Vanieri (OAG)
- Nuisance Flood Plans, Catherine McCall (DNR)
- Saltwater Intrusion Plan, Jason Dubow (MDP)
- Climate Leadership Academy, Matt Fleming (DNR)

Discussion:

Speakers will provide a 5-minute update on each topic. ARWG members are encouraged to come prepared with questions for clarification or discussion.

V. Meeting Recap & Next Steps

3:50 - 4:00 pm

Department of Natural Resources

Call for Additional Updates

Membership Assignments: Metrics Tracking and/or Resilience Milestones

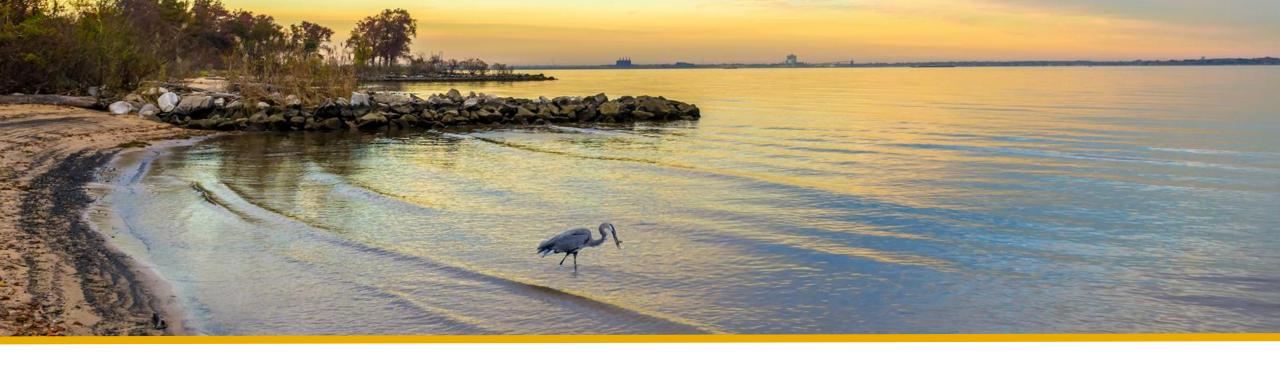
Upcoming Dates:

- Next MCCC meeting: Tuesday, May 21, 2019 10 am 12 pm at MDE
- 2019 ARWG meetings at DNR:

Summer TBD - Membership Metrics or Milestones Meetings

August 5

November 18



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