

2018 Working Group Draft Recommendations for the MCCC Annual Report

Education, Communication, and Outreach Working Group

ECO supports the education, communication and outreach goals of the Commission by providing expertise on best practices around outreach and education to stakeholders on climate change and state actions to address its causes and impacts. In 2018, ECO has worked to strategically reach out to stakeholder groups on their specific interests and via existing channels of communication. ECO has developed several recommendations and urges the state to use strategies similar to the recommendations for outreach.

In general, ECO's work is related to three specific charges in the MCCC law: (1) communicating with and educating citizens about the urgency of acting to reduce the impacts of climate change; (2) addressing any disproportionate impacts of climate change on low-income and vulnerable communities; and (3) developing broad public and private partnerships with local, State, and Federal agencies.

ECO is committed to considering the impacts of climate change on vulnerable communities such as those who may experience increased flooding, sea level rise and other climate-driven effects, as well as those with less ability to respond to these events based on socioeconomic status. ECO, the Commission, and the State should continue work to give full consideration to climate change impacts alongside community concerns. Likewise, it is important to identify and collaborate with existing trusted messengers in communities vulnerable to climate change to implement these efforts.

Recommendations:

1. MDE and other State agencies should include activities and plans around climate change outreach in the 2018 Draft GGRA 40x30 Plan order to facilitate collaboration and coordination on outreach efforts. This includes, but is not limited to, existing and new programs being implemented by MDH, DNR, MEA, MDOT, MSDE, and MDP.
2. The State should provide outreach and information to local governments (municipal and county) to support their efforts to respond to and educate about climate change via the Climate Leadership Academy and other agency efforts.
3. The State should continue to support efforts to train individuals and organizations to educate on climate change; and recognize and leverage efforts by private organizations to address climate change. This includes efforts such as training the trainer and the Maryland Green Registry's Climate Champion Contest.
4. The State should seek ways to provide materials to the public to inform and educate on climate change through common points of entry to state and local government and state facilities, in order to leverage existing contact between the State and the public. To the extent possible, the State should look for similar opportunities with private organizations that have widespread interaction with the public.
5. The State should develop an outreach plan around the 2018 GGRA draft plan that incorporates best practices for communication, education and outreach. The plan should reach various stakeholders throughout the State in order to seek diverse opinions about the final plan that is due

at the end of 2019. The State should collaborate with state and industry partners in developing this outreach plan.

Scientific and Technical Working Group

The Science and Technical Work Group (STWG) of the Maryland Commission on Climate Change convened 2 forums with regional content experts on: a) updating the estimates of relative sea level rise in Maryland; and b) the impact of climate change on Maryland’s agriculture. Both of the fora are summarized below while stand-alone reports are being completed and will be released in the coming months. In addition, the STWG began its review of the uncertainties associated with the sources and sinks of greenhouse gases that are being used by MDE to assess its progress in meeting the Greenhouse Gas Reduction Act goals which will continue into 2019.

1. Updated Projections for Sea Level Rise

Due to Maryland’s 3,100 miles of tidal shoreline along the Chesapeake Bay, Atlantic Ocean and the Coastal Bays, it is one of the most vulnerable States to sea level rise. Therefore, the Maryland Commission on Climate Change has give particular attention to sea-level rise as a significant threat. Prior to the 20th century, this was largely due to the slow sinking of the land since Earth’s crust is still adjusting to the melting of large masses of ice following the last glacial period. Over the 20th century, however, the rate of rise of the average level of tidal waters with respect to land, or relative sea-level rise, has increased, at least partially as a result of global warming.

A group of independent scientists held a forum and developed special report of the STWG entitled *Updating Maryland’s Sea-level Rise Projections* (2013). In 2013, the experts’ best estimate for the amount of sea-level rise in 2050 is 1.4 feet and would be unlikely to be less than 0.9 feet or greater than 2.1 feet. Their best estimate for sea level rise by 2100 is 3.7 feet and would be unlikely to be less than 2.1 feet or more than 5.7 feet based on current scientific understanding.

A similar group was brought together in October of 2018 to reassess the 2013 projections based on new scientific understanding of the global, regional, and local impacts of global climate change; updated tools to make future projections; and best professional judgment. Developing projections for relative sea-level rise along Maryland’s coasts requires consideration of the many factors that will affect: (1) the rise in global mean sea level (GMSL); (2) regional differences in sea level with regard to the global mean; (3) vertical land movement (VLM); and (4) changes in tidal range and storm surges due to inundation.

MD Relative Sea Level Rise	2013 Projections	2018 Projections
Best Estimate	1.4 feet	<i>TBD</i>
Low Estimate	0.9 feet	<i>TBD</i>
High Estimate	2.1 feet	<i>TBD</i>

Implications to Maryland of the 2018 sea level rise estimates include:

1. TBD
2. TBD
3. TBD

2. *Impact of Climate Change on Maryland's Agriculture*

The STWG hosted a one-day forum in October with scientists and organizations that focuses on the current status of research on the impacts of climate change on agriculture in Maryland, its implications, and potential solutions. In 2011, the STWG completed a similar report. The key finding identified then included:

- *Warmer temperatures and more variable precipitation will likely lead to changes in crop and animal production and pest management.* Maryland farmers will likely have to plant different crop species and more drought-tolerant varieties of the ones they currently plant. Farmers will likely face increased costs associated with the summer cooling of poultry and livestock and the need for a rapid response to variable precipitation and pest infestation.
- *More intense water management and increased technical and financial support for agricultural transitions will help boost resilience.* Changing climate is very likely to cause changes for farmers. They may need to shift the timing of planting or fertilization, or increase irrigation and the cooling of animal production facilities. As farmers adjust, state and local governments will need to provide new education and training and to help alleviate the costs and risks associated with these changes.
- *Farmers need new information tools to support decisions regarding environmental and economic conditions.* Increased investment in improved monitoring and forecasting tools would increase a farmer's ability to prevent, rather than react to, adverse impacts.

Since 2011, there have been significant new research programs focused on the global, regional and state impacts of climate change on Maryland agriculture. Therefore, the STWG felt it best to bring together researchers to initially discuss their current studies and key findings. Topics to be covered include: existing research on carbon sequestration; salt water intrusion and planning; agricultural best management practices in the context of a changing climate, developing Watershed Implementation Plans (WIP), and meeting the Total Maximum Daily Load; survey of crops under different climate change scenarios; and agricultural biomass, bioenergy, and manure treatment technologies. Following these presentations, a facilitated discussion will be focused on: a) key findings of current research; b) vulnerability to agriculture; c) potential solutions; and d) future research needs. The final report is expected to be released in early 2019.

Impacts to Maryland's agriculture and possible solutions potentially include:

1. TBD
2. TBD
3. TBD
4. TBD
5. TBD

3. *Estimates and Uncertainties Associated with Emissions and Uptake of Greenhouse Gases*

This activity will begin in September 2018, but will be a major focus in 2019. The STWG will work closely with MDE to evaluate:

- **Emission Estimates.** MDE's inventories of greenhouse gas emissions are estimated directly from electricity and fuel indirectly estimated for transportation. These three categories make

up approximately 90% of the total emission. However, there are many uncertainties in the emission estimates associated with from forests, agriculture, wetlands and waterways.

- Net Sinks of Greenhouse Gases. Estimation of the net sinks are generalized for forest carbon flux and organic biomass storage. While wetlands, waterways, and agricultural soils can be sinks they can also be sources of emissions.
- Land Use and Land-Cover Estimates. Growth simulation modeling suggests that Maryland will confront significant land-use and land-cover changes by 2030 and beyond. This has quantitatively significant implications for net greenhouse gas emissions (including sequestration) from forests, agricultural lands, and wetlands, as well as for vehicle miles travelled (VMT) and, consequently, on-road vehicle emissions.

Adaptation and Response Working Group

Saltwater Intrusion - Part IV of Senate Bill 1006 / House Bill 1350 requires that on or before December 15, 2019, MDP, in consultation with DNR, MDE, and MDA, shall establish a plan to adapt to saltwater intrusion. The Commission recommends that MDP facilitate a state agency-level workgroup and gather information from subject matter experts to develop the content for the plan, including collecting data on the spatial extent of saltwater intrusion in Maryland, identifying data gaps regarding the spatial extent of saltwater intrusion in Maryland, forecasting how the spatial extent of saltwater intrusion in Maryland could change in the future due to sea-level rise, and developing recommendations for how to fill the data gaps. As this plan is developed, the Commission recommends that MDP and the subject matter experts consider and discuss the range of impacts to various sector's best management practices and how those topics could be addressed in required future saltwater intrusion plan updates.

Nuisance Flooding - Part VI of Senate Bill 1006 / House Bill 1350 requires that on or before July 1, 2019, a local jurisdiction that experiences nuisance flooding shall develop a plan to address nuisance flooding. The Commission recommends that DNR facilitate a workgroup comprised of DNR, MDE, MDP, MEMA, and local governmental and non-governmental partners to provide guidance and assistance to local jurisdictions to comply with this requirement.

Climate Leadership Academy - The Commission recommends that DNR establish a community of climate-smart local government and infrastructure leaders through the Maryland Climate Leadership Academy. The Commission recommends the Academy's programs and planning efforts be informed by an advisory council that includes senior leadership from Maryland state agencies in order to ensure continuity and coordination with the Commission. The Commission also recommends that the Academy's programming be coordinated with universities and community colleges throughout the state, as well as other convening organizations, to deliver training programs statewide.

Public Health - The Commission recommends that the Commission work groups assist MDH in populating an online inventory of climate adaptation efforts across the state that focus on health adaptation, or that use health as a major component of the adaptation effort/justification. In addition, as work groups continue to provide and expand data/tools/technical assistance to local communities or other agencies to support climate adaptation efforts, the Commission recommends that public health be integrated in community forums that address climate adaptation efforts.

Phase III WIP - The Commission recommends that the MCCC work groups collaborate with Maryland's Chesapeake Bay Program Phase III WIP teams to ensure that climate change is reflected in the draft Phase III WIP that Maryland will develop and deliver to the Environmental Protection Agency in 2019.

Evaluation of Adaptation Strategies

The Commission recommends the ARWG continue to review its Phase I and Phase II Comprehensive Strategy recommendations to identify progress on the existing suite of recommendations, highlight any gaps or needs, and present a review of the strategies in the summer of 2019 to inform priority setting and recommendations for 2020.

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. The Commission urges MDA, DNR, and MDE to work together through the Adaptation and Response and Mitigation Work Groups, as well as the Healthy Soils Consortium, to explore and identify funding sources or incentives to support the purposes of the Healthy Soils Act.

Environmental Justice

Environmental justice (EJ) remains an important part of climate change work. If a related recommendation(s) is included in the 2018 report it should be representative of any overarching EJ goals that the MCCC has as a whole. For reference, the 2017 report included three EJ-related recommendations

Mitigation Working Group

1. The State's 40 by 30 Plan should build from the many programs already contained in the final 25 by 20 Plan that are expected to continue generating reductions beyond 2020, following an internal review of implementation to date.
2. The State's 40 by 30 Plan should continue to examine measures that may be critical for meeting long-term goals, such as an 80%-90% reduction in GHG emissions or carbon neutrality by 2050, and should ensure that proposed programs are compatible with achieving these goals.
3. The State's 40 by 30 Plan should include new programs that have been discussed by the MWG and may have been finalized by State or legislative action. For programs that have been finalized, the GHG reductions and economic benefits should be quantified and included in the 2018 draft plan. For evolving programs that have been discussed but not adopted, the 2018 draft plan should provide available information as well as pros and cons on each of these measures, and ask for specific comment.
4. The State's 40 by 30 Plan should include explicit discussions of uncertainty. Examples may include emission reduction quantification, economic and job creation analysis, life-cycle emissions and the potency of short-lived climate pollutants. To the extent possible, these uncertainties should factor into efforts to exceed the 40 by 30 emission reduction goal.
5. The State's 40 by 30 Plan should include information and analysis on efforts to address social equity, and how proposed strategies impact underserved and environmental justice communities, including equitable distribution of both costs and benefits. This should address public health, environmental, economic, and job creation impacts.

6. The State's 40 by 30 Plan should include a section that is explicitly focused on 'social and environmental justice'. This section should be developed through outreach and in partnership with urban and rural communities that have experienced particular socio-economic disadvantage and environmental burden. This section should specifically identify (a) the strategies, programs, and actions in the Plan that are expected to advance social and environmental justice objectives; (b) the objectives that these strategies, programs, and actions are expected to advance; and (c) the process by which progress towards these objectives will be assessed.
7. The State's 40 by 30 Plan should include specific goals, objectives, action plans, and evaluation and reporting protocols related to (a) ensuring the production of sustainable economic benefits from climate action strategies, policies, and programs; (b) addressing economic dislocations caused by climate strategies, policies and programs; and (c) improving the response of vulnerable communities to stressors and shocks.
8. The State's 40 by 30 Plan should include analysis and information on efforts designed to ensure a just transition for fossil-fuel-dependent workers, and other workforce-related issues linked to the State's efforts to reduce GHG emissions.
9. MDE, in collaboration with other State agencies, should seek relevant assistance from and work with Maryland academic institutions to develop a robust evaluation component as part of the 40 by 30 Plan. A sound evaluation component would include goals, objectives, indicators, metrics, implementation benchmarks, timelines, and reporting protocols that would allow for 'clear and complete understandings of the strengths, weaknesses, successes, and shortcomings of the strategies and programs that the state is employing'.
10. The 2020 manufacturing study required by the GGRA should explore the overall costs and benefits (both economic and environmental) of the Maryland GGRA on the manufacturing sector.
11. The 2020 manufacturing study required by the GGRA should explore the general feasibility of, and mechanisms for (a) potential modifications or enhancements to the current "buy local" provisions in the GGRA Plan, including the use of domestic iron, steel, and manufactured products in energy-related construction; (b) "Buy USA-Made" policies; and (c) the development of an in-state supply chain to create lasting manufacturing and other jobs related to renewable energy infrastructure, including committing additional funding for state-certified or otherwise accredited apprenticeship programs to support the workforce needs of clean energy industries, and collaborating proactively with industry and unions to develop local manufacturing capacity for offshore wind and solar industries.
12. Maryland should expand its wholesale-rate, net-metering benefit for combined heat and power (CHP) in accordance with PJM's pending recommendations.
13. Maryland should create a statewide CHP stakeholder working group, led by MEA, to discuss key issues and develop standardized processes across the State of Maryland, and to engage in outreach to smaller utilities in order to provide technical support for CHP projects.

14. As part of the process to meet the State's current light-duty zero emission vehicle (ZEV) goals and projections, the Maryland Electric Vehicle Infrastructure Council (EVIC) should specifically assess: (a) bolstering the State's consumer purchasing incentives for ZEVs, and regulatory and financial incentives for high power/speed ZEV infrastructure installation, including particular attention to investments and incentives for challenging areas; (b) policies that employ Maryland's public utilities to aid in efforts to rapidly and equitably expand EV infrastructure in Maryland, with specific targets in rural areas; and (c) policies that make it easier to install EV charging infrastructure at multi-family housing locations with attention to high density, urban populations.
15. The Maryland Department of Transportation (MDOT) should continue to research and evaluate the GHG emission reduction potential of vehicle and infrastructure technologies, including: connected and autonomous vehicles; EVs and other ZEVs; transportation network companies/shared rides; and system operations. The evaluation effort should include consideration of safety, congestion, and equity issues including public health, economic, and workforce impacts.
16. MDOT should continue to enhance travel demand management strategies, land use/smart growth, active transportation, and inter-city travel strategies, in collaboration with the Maryland Department of Planning (MDP) and other State agencies and stakeholders.
17. MDOT should develop tracking of key indicators of GHG reduction strategies to monitor progress of achieving goals. Examples include state facilities and fleet adoption of renewable/low-emissions energy sources, ZEV penetration, equity indicators to track participation, congestion levels, vehicle miles traveled (VMT) per capita, mobility access, and adoption of low-emissions vehicle technology for personal use.
18. MDOT, MDE, Maryland Energy Administration (MEA), Department of Budget and Management (DBM) and the Department of General Services (DGS) should review state fleet procurement procedures and practices and provide direction on procurement of EVs and other ZEVs, and associated charging/filling station installation guidance and targets, by October 2019.
19. MDOT should work with other appropriate agencies and stakeholders to examine the costs and benefits of supporting deployment opportunities of ZEV school and transit buses in Maryland. The analysis should include: (a) capital, maintenance and operating cost comparisons; (b) research into the viability of ZEVs as well as hybrid and alternative fuel technologies; (c) emissions reduction benefit summaries; and (d) potential goals to fully electrify bus transport in the State, including targets for deployment and provisions for low-interest financing.
20. MDE, Maryland Department of Natural Resources (MDNR), and Maryland Department of Agriculture (MDA) should utilize best available scientific data on land-based carbon sequestration and GHG emissions for existing GGRA programs, in collaboration with the University of Maryland/NASA Carbon Monitoring System program, the US Forest Service, and the MCCC Scientific and Technical Working Group.
21. MDNR should add a program on the carbon benefit of land conservation and avoided forest conversion through compliance with Maryland's Forest Conservation Act.

22. MDNR and MDE should continue tracking progress of wetland restoration and biomass to energy, but not project a carbon reduction associated with these programs, due to uncertainty in wetland methane emissions and establishment of new biomass to energy facilities in the state.
23. MDE, MDNR, and MDA should adopt the term “Natural and Working Lands” to refer to all GGRA programs concerning land-based carbon sequestration and avoided emissions of carbon or other GHGs. This will allow Maryland to better align with the effort coordinated by the US Climate Alliance.
24. 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.