Science and Technology Working Group

May 13, 2022, 2-4 p.m. Meeting link via Zoom:

https://umces-edu.zoom.us/j/99167953661?pwd=ZDFFUThHTXFNS2R0cGJpY0hOUndIdz09
Meeting ID: 991 6795 3661 Passcode: 633821
Phone: +13017158592,,99167953661#,,,,*633821# (Washington DC)

Summary Report of March 2022 STWG Meeting

Meeting Date: March 18, 2022

Attendees

Members: Peter Goodwin (Chair), Paulinus Chigbu, Russ Dickerson, Jonah Erlebacher, Adel Shirmohammadi, David Vanko,

Agencies: Suzanne Dorsey, Susan Casey. Erick Thunell, Jim George, Vimal Amin, Cindy Osorto, Josh Foster, Mark Stewart, Kim Drake, Eric D. Wachsman, scott.knoche

Others: Matt Fitzpatrick

Staff: Tassew Mekuria, Dave Nemazie

Objectives:

The main objective of this meeting was to use scientific evidence presented by the IPCC and the significant consequences of climate to Maryland. We will dedicate the STWG March meeting to an analysis of the Working Group II report (Adaptation and Vulnerability). The discussion topics of the march 2022 STWG meeting focus on important points in this voluminous report that should be highlighted to the Commission, locating the major discrepancies between any

of these regional analyses and scientific information being generated by colleagues within Maryland, topics that the STWG should highlight in the Science section of the MCCC Annual pans, and the actions that STWG should consider emphasizing the critical importance of this decade in responding to climate change. We are going to use the presentation information and discission results to improve our planning of the STWG working plans in the future academic years.

Introduction

The Scientific and Technical Work Group (STWG) is responsible for updating and informing the MCCC on the science of climate change. In 2022, the STWG focused on multiple climate change topics in the USA and the State of Maryland. The 2022 STWG meetings and discussions were partially affected by the COVID-19. Topics discussed in this meeting are the IPCC Working Group II Sixth Assessment Report (Adaptation and Vulnerability) in perspectives of the state of Maryland and what facts are presented in the report. How does the MCCC use this information to plan the next work to respond to climate change? The meeting discussion will be expected to help the 2022 and 3023 STWG working plans.

Message from the Chair, Dr. Peter Goodwin

As you are aware the IPCC Working Group II Sixth Assessment Report: Climate Change 2022 - Impacts, Adaptation, and Vulnerability was released recently https://www.ipcc.ch/report/ar6/wg2/. IPCC Working Group I: Physical Science Basis was released in August 2021, and this helped inform the STWG contribution to the 2021 MCCC Annual Report. IPCC Working Group III: Mitigation of Climate Change is expected to release its draft report in April 2022 with the 6th Assessment Report: Climate Change 2022: Synthesis Report expected to be released in September 2022. The issuance of the report has been accompanied by widespread frustration among climate professionals representing governments, NGOs, and corporations. The UN was particularly scathing https://news.un.org/en/story/2022/02/1112852.

"*This report is a dire warning about the consequences of inaction*," said Hoesung Lee, Chair of

the Intergovernmental Panel on Climate Change. The UN Secretary-General António Guterres called the report of Working Group I, issued last August, a *code red for humanity*, and said: *"If we combine forces now, we can avert climate catastrophe*." For the Adaptation and Vulnerability report released in March 2022, he described the evidence detailed by IPCC as unlike anything he has ever seen, calling it an ***"atlas of human suffering and a damning indictment of failed climate leadership***." "*Nearly half of humanity is living in the danger zone – now. Many ecosystems are at the point of no return – now. Unchecked carbon pollution is forcing the world's most vulnerable on a frog march to destruction – now*." Given the copious scientific evidence presented by the IPCC and the significant consequences of climate to Maryland, we will devote the STWG March meeting to an analysis of the Working Group II report. We will also invite representatives of the ARWG and ECO Working Group to join our discussion. In preparation for the discussion, please consider the following questions in your area of expertise. It is recognized that some members' expertise will be of more relevance to the Mitigation or Synthesis reports to be released later in 2022 but everyone will have something to contribute. Consider the following questions for our March 2022 STWG meeting.

- What are the most important points in this voluminous report that should be highlighted to the Commission?
- There are regional analyses and summaries presented. As with the Physical Basis Report, this is presented at a coarser scale than is being analyzed by the experts in Maryland's Agencies and Universities. Do you see any major discrepancies between any of these regional analyses and scientific information being generated by colleagues within Maryland?
- What are the few points (due to limited space) that STWG should highlight in the Science section of the MCCC Annual Report?
- Based on this latest IPCC report, are there actions STWG should consider emphasizing the critical importance of this decade in responding to climate change?

Meeting Presentations and Discussions

a. Maryland Legislative processes

The meeting was started with a welcome message from the chair, Dr. Peter Goodwin, and

the February meeting summary was approved. Short updates on Maryland Legislative processes on Climate Issues, or bills such as Climate Solutions Now Act of 2022, https://mgaleg.maryland.gov/2022RS/bills/hb/hb0904f.pdf was highlighted by Dave Nemazie.

The climate solutions act bill was a bill that was out last year slightly different form this year, and it did pass through the full Senate, with some significant amendments one of those significant amendments was that well, first of all, let me just start high level that bill calls Maryland to had a 60% reduction of its greenhouse gas emissions by 2030 and net-zero by 2045. It significantly increases the rate at which we need to be making significant change within Maryland one of the key things that were ultimately removed from the bill was related to the heating systems going not being from a carbon-based system and the size of buildings and how that was going to be electrified. The House and the House broke up this same bill into multiple different bills.

b. Building Standards and Emissions Reductions

High Performance, State, and Local Government Buildings, State Operations, and Eligible Projects in perspective of GHG reduction plans have been discussed and participants asked questions on https://mgaleg.maryland.gov/2022RS/bills/hb/hb0806F.pdf. Reducing Greenhouse Gas Emissions in Maryland buildings including government own, commercial and residential buildings, https://mgaleg.maryland.gov/2022RS/bills/hb/hb0831F.pdf briefly presented. Mark Stewart, Russell R. Dickerson and Eric D. Wachsman.

In 2020 Maryland's greenhouse gas emissions were 32% below our 2006 baseline and if we adjust for covert impacts. Road gasoline consumption took a significant drop in that year as a lot of people were not driving. If we adjust for that, then the reduction is probably closer to maybe a 28% reduction, so all to say that Maryland has confidence that we cleared the bar for the 2020 target, the 2020 target was a 25% reduction. Maryland exceeded its legal requirement to achieve at least a 25% reduction. The climate commission weighed in on that, through the building energy transition plan and study funded by the US climate alliance and the nature conservancy to guide the commission's work on that last year. Planning to spend billions of dollars to upgrade the natural gas distribution system, the public service commission, The most cost-effective way for Maryland to achieve its decarbonization goals is to move away from natural gas distribution. Consumption rather in many of its buildings, so the three studies essentially conclude that in Maryland the pumps

can provide very efficient cooling and space heating and water.

c. IPCC Working Group II Sixth Assessment Report

Dr. Petter Goodwin presented the most important points in IPCC's second report, adaptation, and vulnerability were highlighted in the discussions, Sea level rise, GHG emissions, extreme heat, unexpected tornados and disasters, wildfires, etc are still in increasing orders in the report. The Physical Basis Report released the last year presented at a coarser scale than is being analyzed by the experts in Maryland's Agencies and Universities. Major discrepancies between any of these regional analyses and scientific information being generated by colleagues within Maryland were considered. This latest IPCC report can give additional inputs to the STWG to emphasize the critical importance of this decade in responding to climate change.

Globally, emissions continue to go up and sort of show Maryland's leadership in this area. The IPCC report projection indicates that our planet is heating. In the Goucher college polls, Marylanders remarked on the effect of climate change on their lives. The polls show that close to 87% of mobile others think that climates have a big issue. Almost the same high level of percent about climate change has a significant effect on extreme weather. Climate change is having a significant impact on wildlife and ecosystems, more than half very major impact and again we're up what will over 80% that thinking that this is having an impact on Maryland. Air quality, human health, fishing, and agriculture are significantly affected by climate change. The terrible war around the world such as the war in Ukraine, the middle east, and East Africa make things difficult about climate change. It is important to think about war taxation among nations, suggested by participants, War tax paid to climate War is the source of pollution and affects climate change reduction efforts negatively. The UN through IPCC or any other body should impose a tax on nations in war or planning to get into war. How does this help in reducing climate change and what do scientists and policy experts think about it? A lot of people were dying, and if we don't pay attention to climate change. climate change is serious consequences than a war between two countries

According to New York Times, a report came out what were the really big high-level issues that headlined or in the main part of the articles concluded that more than 40% of the world's population is highly vulnerable to the effects of climate change. We are seeing on average close to

$4 billion in weather or climate-related events. A call for action for dire projections is the warning calls for the significant action to be taken right now, which is, of course, where our climate change Commission is playing a leading role.

d. Public sessions: Discussion Questions

The public discussion and comment sessions brought different ideas and suggestions almost on all topics of climate change. The climate Commission weighed in on that, through the building energy transition plan. For example, hot water heating to buildings in Maryland and that there should be a transition to more electrified building stock, the consequence of that is cost. The natural gas delivery system is leaky we don't know exactly how leaky but it's typical of an older East sorry not by European standards, but by American standards old east coast cities. countries like Germany to reduce their reliance on Russia and, by doing that the way they do that is to reduce their reliance on fossil fuels and the way they do that is to move to more renewables, maybe nuclear. Electricity in Maryland is projected to get higher because of the RPS and further policy proposals and what did essentially say rough analysis was that a heat pump was installed. It is important to do something similar to IPCC like a mini-IPCC working group to report for the whole state where we try to keep the typology of the IPCC and apply it to the whole state and kind of make it like a report card. The government could be done there are certain metrics that wouldn't be relevant, but there are probably others that are right so needs to be considered in that framework.

Worth noting that MD was the first state to include an environmental literacy requirement for k-12 students, which could contribute to public awareness. Also, many of the USM institutions have gone to great lengths to educate students about climate change. "The Transportation and Climate Initiative (TCI) is a regional collaboration of 13 Northeast and Mid-Atlantic states and the District of Columbia that seeks to improve transportation, develop the clean energy economy and reduce carbon emissions from the transportation sector. The participating jurisdictions are Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, Vermont, and Virginia."

Links for topics discussed and additional information

- https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/MWG/Preliminary_GHG_Inventory_MDE%20presentation.pdf

- Goucher College Pools: https://umces-edu.zoom.us/j/99167953661?pwd=ZDFFUThHTXFNS2R0cGJpY0hOUndIdz09

- With climate March 2022 https://www.goucher.edu/hughes-center/documents/Goucher-College-Poll-March-2022-Part-2.pdf

- Goucher: https://www.goucher.edu/hughes-center/goucher-college-poll/

- MCCC reports: Decarbonizing Buildings in MD (https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/MWG/Decarbonizing%20Buildings%20in%20Maryland.pdf)

- Building Energy Transition Plan (https://mde.maryland.gov/programs/air/ClimateChange/MCCC/Commission/Building%20Energy%20Transition%20Plan%20-%20MCCC%20approved.pdf)
- Maryland Department of the Environment's Storm Water and flood mitigation program is hosting kick-off and engagement regional meetings to discuss strategies to improve the resiliency of stormwater management in Maryland: https://sb-227-maryland.hub.arcgis.com/

- https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MWG_Buildings%20Ad%20Hoc%20Group/E3%20Maryland%20Building%20Decarbonization%20Study%20-%20Final%20Report.pdf

- Example of potential regional collaboration: PA has recently created a climate change leadership academy, modeled after MD: https://www.publicnewsservice.org/2021-09-10/climate-change-air-quality/pa-becomes-2nd-state-to-offer-climate-change-leadership-training/a75677-1

- Transportation Climate Initiative (TCI)(NE and Mid-Atlantic states) https://www.transportationandclimate.org/

- The US Council on Environmental Quality recently developed a report for Congress on how to advance the "responsible, orderly, and efficient" development of CCUS.
  Press Release: https://www.whitehouse.gov/ceq/news-updates/2021/06/30/council-on-environmental-quality-delivers-report-to-congress-on-steps-to-advance-responsible-orderly-and-efficient-development-of-carbon-capture-utilization-and-sequestration/

- Report: https://www.whitehouse.gov/wp-content/uploads/2021/06/CEQ-CCUS-Permitting-Report.pdf

- Federal Environmental Symposium 2022
  https://www.fedcenter.gov/calendar/conferences/symposium2022/topics/