

Science and Technology Working Group

July 21, 2022, 2-4 p.m. Meeting link via Zoom:

<https://umces-edu.zoom.us/j/84389857130?pwd=aGxkUE1nVEI4eWltbktlUXlVMjFDZz09>

Meeting ID: 843 8985 7130

Passcode: 202823

Dial by your location

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Summary Report of July 2023 STWG Meeting

Meeting Date: July 21, 2023

Attendees

Members: Peter Goodwin (Chair), Scott Knoche, Adel Shirmohammadi, Amir Sapkota, Eric Wachsman, David Vanko, Donald Boesch, Eric Davidson, Paulinus Chigbu, Russell Dickerson, Alan Anderson, Jane Kirschling

Agencies: MDE: Mark Stewart, Vimal Amin, Kim Pezza, Susan Casey, Rachel Lamb, Suzanne Dorsey

Others: Lynn Faulkner, Shannon Kennedy, Matt Fitzpatrick, Alicia Zhao, Jennifer Laszlo Mizrahi, Steve Smith

UMCES Staff: Dave Nemazie, Kayle Krieg

Objectives

- *Climate Pathway Report: areas of focus for the STWG*
- *Summary of the recently completed 2023 Maryland SLR Projections*
- *Updates on other STWG activities*

Introduction

The Scientific and Technical Work Group (STWG) is responsible for updating and informing the MCCC on the science of climate change. In this meeting we were given a summary of the recently released (June 30, 2023) Maryland Climate Pathway Report by the Center for Global Sustainability staff. Included in the summary was an introduction to the modeling methodology and description of the core analysis behind the report.

STWG Outcomes

Welcome, Introductions and roll call (Peter Goodwin, STWG Chair)

The April 2023 meeting summary was approved with no objections or additions.

Climate Pathway Report: areas of focus for the STWG

Maryland's state targets through the Climate Solutions Now Act are to reduce carbon emissions by 60% by 2031, with a net zero goal of 2045. Previous reductions have put Maryland on track to meet these goals, and this pathway report describes an all-in strategy to meet the 2031 goal using a multi-sector approach. Using the Global Change Analysis Model (GCAM-USA), the group was able to model state level resolution of CO₂ and energy consumption along with other major sources CH₄, N₂O and F-gases. It is important to note that negative emissions will be needed to meet the net zero

goal of 2045, and innovation of carbon removal is sought to achieve this target. Solar and wind will rapidly replace fossil technologies, achieving 89% reductions by 2031. In the transport sector, 49% reductions will be achieved primarily through electrification and increased efficiency. Zero Emission Vehicles will account for over half of passenger service road travel by 2035. Innovations needed in this sector are vehicle charging infrastructure and personal and vehicle security when charging. The building sector is projected to achieve 35% reductions through energy efficiency and electrification technologies. Key policies to do so include all electric construction standards beginning in 2027 and aero emissions appliance standards that are in line with San Francisco Bay areas standards. A 79% reduction in the industrial sector, much of which has already occurred, are driven by key policies that include IRA hydrogen tax credits, fuel switching from coal to natural gas and "Buy Clean" standards to increase electrification, efficiency and carbon capture and sequestration. Primary considerations are for innovations to implement carbon capture and sequestration strategies. The fossil fuel industry achieves a 26% reduction in 2031 driven by decreased gas consumption overall. In waste management, a 40% reduction is achieved through methane reductions, utilizing additional waste diversion efforts. Agriculture achieves a 9% reduction by reducing enteric fermentation this is assuming no net change in livestock populations. To get to the overall 60% reduction, all sectors play a crucial role.

Sea Level Rise Projections for Maryland 2023

The Maryland Commission on Climate Change statute requires the University of Maryland Center for Environmental Science (UMCES) to produce updated sea-level rise projections for the state at least every five years based on the latest available science. Here we were given an overview of the findings of this recent report. Across Maryland, sea levels have risen 4.5-5.8 mm/yr since the mid 1970's, but these rates are accelerating, on average ~0.07 mm/yr. Based on the most recent IPCC-AR6 emissions scenarios, the most plausible one is SSP2-4.5 (intermediate). However, we see in these projections, that emissions don't have much effect until after 2050, after which achieving Paris Agreement targets would have much greater effect. Sea level rise is projected to be greater in Maryland than the global mean, in part due to our relation to Antarctic ice loss. And warming in the NW Atlantic and diminishing flow in the Gulf Stream. Using probabilistic projections, we can use estimates to serve as reference points for decision making, estimating current commitments it is unlikely that sea level rise will exceed 1.08 m, and is likely to exceed 0.62 m. We also must take into consideration that this doesn't take into consideration additional ice sheet loss. Later this year, an updated Guidance for Using Maryland's 2023 Sea Level Rise Projections is slated to be developed and released. This is a great tool for management agencies and policy makers.

Updates on other STWG activities

The Maryland Department of Environment's Climate Change Program has requested guidance from the Scientific and Technical Working Group of the Maryland Commission on Climate Change on how to account for biogenic emissions in the state's greenhouse gas emissions inventory. There is a memo posted on STWG materials for reference, outlining the specific request. The subgroup identified within the STWG is working on this issue and will update in future meetings. There will be a talk given by Stephanie Lansing addressing biogenic emissions, and Adel will be sharing the link for this meeting.

Next Steps:

- Subgroup meeting to discuss biogenic fuel emissions

Resources:

[Maryland's Climate Pathway](#)

[Feedback to Climate Pathway report](#)

[MCP Low Implementation Sensitivities pdf](#)

[Sea Level Rise Report 2023](#)

[Guidance for Using Maryland's 2018 Sea Level Rise Projections](#)

[MDE Memo on Biogenic Fuel Accounting](#)