Science and Technology Working Group

September 9, 2022, 2-4 p.m. Meeting link via Zoom:

https://umces-edu.zoom.us/j/81913871322?pwd=bFBCT0ZDTnN5enpNWmJ4UFMzdTRFQT09

Meeting ID: 819 1387 1322
Passcode: 057392

Summary Report of September 2022 STWG Meeting

Meeting Date: September 9, 2022

Attendees

Members: Peter Goodwin (Chair), Russ Dickerson, Eric Wachsman, Belay Demoz, Donald Boesch, Eric Davidson, Scott Knoche, Amir Sapkota

Agencies: Suzanne Dorsey, Mark Stewart, Chris Beck, Chris Hoagland, Lee Currey, Elliott Campbell (MWG),

Others: Ning Zeng, Tassew Mekuria, Kayle Krieg

UMCES Staff: Dave Nemazie

Objectives

- Review definitions for selected terms in the CSNA
- Discuss the key points to include in the 2022 Annual Report (a) state-of-the science, and (b) 2022 recommendations for science

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 included a legislative update on climate issues, expected 2022 priorities for MCCC, suggestions on enhancements to the coastal adaption scorecard, review tentative schedule for 2022 STWG activities, update on regional GHG emissions, and preparation of the science section of the MCCC annual report.

STWG Outcomes

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

Climate Justice. Dr. Anderson was unable to attend and the talk will be postponed to a later STWG meeting. STWG will also be notified when the Climate Justice Team's webinar on unconscious bias is offered.

The May 2022 meeting summary did not need approval, no objections or edits were noted.

Kayle Krieg was introduced as new 2022 Maryland Sea Grant State Science Policy Fellow, working with the University of Maryland Center for Environmental Science in support of STWG.

Status of the update of Maryland's GHG Reduction Plan and other Commission Activities (Mark Stewart and Chris Beck, MDE)

The GHG plan needs to be updated in conformance with the Climate Solutions Now Act (CSNA).

Maryland will be able to take advantage of the Inflation Reduction Act. The state is tracking the opportunities in IRA and other recent federal legislation?

CSNA analytical support is being lined up, modelers are almost on board and then the scenarios can be run.

Update of Maryland's stormwater regulations to account for climate change (Lee Currey, Director, Water and Science Administration, MDE)

Lee Currey presented "The future of Maryland's Stormwater Management Regulations" with the goal to engage the STWG and MCCC on the state's efforts by MDE to modernize its stormwater management regulations (including the effects of climate change) and expand partnerships on MD to address to tomorrow's risks.

Conclusions- MDE is working to modernize stormwater regulations to include updated precipitation and better account for current and future flooding

Maryland's stormwater management has moved from quantity management (i.e. managing peak flows) to environmental site design, using green infrastructure and a range of microscale practices.

Maryland Stormwater Management Law SB227/HB295 requires state to:

1) Identify most recent precipitation data available
2) Review flooding events since 2000 to identify potential areas of concern
3) Revise Maryland's stormwater quantity management standards every 5 years
4) Update other stormwater regulations as necessary every 5 years
5) Stakeholder engagement with proposed regulations

Advancing Stormwater Resiliency in Maryland (AStoRM) offers action plan to modernizing stormwater management in the face of climate change.

Research needs include:

- How do we determine the best approach for employing forecasted IDF estimates and their associated uncertainty?
- What is the most appropriate storm duration and structure for use with WinTR-20?
- How do we estimate peak rate factors in addition to discharge data?
- SHA needs deterministic models to handle rational partitioning of watershed into urban and rural segments.

Big Science Ideas: Tree Burial for Carbon Sinks (Dr. Ning Zeng, X-Prize Finalist, University of Maryland)

Dr. Zeng's presentation "Wood harvesting and Storage (WHS) with Wood Vault" introduced the idea of burying sustainably sourced woody biomass in order to securely remove and store carbon. Stored carbon is durable (97% after 100 years),

low cost ($10-50/tCO2 emissions). It is also carbon efficient; emissions of methods are less than 2% of the carbon sequestered. There is potential for Maryland to more than offset emissions from agricultural sector. When compared to other negative emissions technologies it is cost efficient and commercially ready. The Montreal Project (UMD/Quebec Agricultural Dept) created a prototype using natural wood waste and found essentially no change in wood buried 1.5 m and deeper.

Wood vault version 1 was capped with clay then backfilled with original topsoil.
One wood vault unit (WVU):

- 1 hectare in area
- 20 m tall
- 100,000m^3 wood volume
- 0.1 $MtCO_2$ sequestered

Conclusions- WHS is the first step in fossilization, has high durability if done right, highly scalable, needs to be maintained to monitor and verify durability, and land occupied by wood vaults is small and usable (e.g., agrivoltaics), has co-benefits (e.g., fire risk reduction, mine remediation, solar development) and is economically viable now.

Review of draft definition of selected terms in CSNA: refer to read-ahead materials (Chris Beck)

There was a proposal to add net emissions definitions to the Maryland Code, to clarify 2031 goal is a reduction of net statewide GHG emissions.

Proposed definitions: (from materials provided by MDE)

- Statewide greenhouse gas removals: The total annual quantity of atmospheric greenhouse gases, measured in metric tons of carbon dioxide equivalents, captured in-state and stored through biologic, chemical, geologic, or physical processes.
- Net statewide greenhouse gas emissions: The difference between statewide greenhouse gas emissions and statewide greenhouse gas removals.
- Net-zero statewide greenhouse gas emissions: When the annual quantity of statewide greenhouse emissions is equal to the annual quantity of statewide greenhouse gas removals.

Discussion regarding this draft definition of selected terms in CSNA included agreements but questions about the necessity of changing or clarifying the wording. It was also noted that to meet the "60 by 31" we '*need to do all the things, both big and small*" now. Additionally, it is important to understand the background information used to create CSNA and ensure any clarification to ensure the intent of the bill is sustained. Clarity will be helpful, even if an amendment is unnecessary. STWG to await further direction.

Key point to highlight in Annual Report of relevance to Maryland (from AR6 report and other recent important papers)

- A brief, succinct report that people will read is essential. No need to repeat any of the science from previous reports.
- Recommendations should include only those that can be implemented or initiated in the next 12 months.
- ~ 2 pages on the update primarily on IPCC and other recent seminal papers.
- There should be 2-5 recommendations.
- Best results from GA when recommendations are prioritized
- Synthesize recommendations from all Working Groups
- Need to include equity impacts of future heat waves and rainfall damage
- Keep in mind who will be receiving these reports. New governor, new comptroller, new attorney general.
- Need to address state lack in technical resources.
- October 21st is deadline to final draft to AR

Summary of Action Items and Closure (Dave Nemazie)

STWG can assist as requested in the coming months with:

- Stormwater regulation update and how to make this easily usable by local governments.
- Definitions associated with CSNA:
- IPCC AR6 STWG will provide a summary of the new science when the synthesis report is complete (late 2022 or early 2023)
- Finalize input for MCCC Annual Report.

Next Steps:

- Don Boesch will develop paragraph re: sea level rise
- Eric Wachsman: paragraph re: MD need for technology to address minimizing and preventing climate change.
- Amir Sapkota/Jane Kirschling to add reecommendations on human health
- Please send paragraphs by 9/28