

MAINE CLIMATE COUNCIL
Scientific and Technical Subcommittee
(STS)

14th Meeting (Zoom) – October 27, 2023
1-4 PM

AGENDA

Reference meeting slides for additional context.

Meeting Action Items:

- All subgroups to provide initial annotated outlines and top 3-5 priorities/highlights to co-chairs by November 15.
- Draft highlights and key messages due in December for conveyance to WGs.
- Iterative process post Nov 15 between Jess, Co-Chairs, and Leads and all STS members as draft report is developed. Final report from STS due in March, but likely a February target for the draft report to allow for layout and process production.
- The next STS meeting, to be held by Zoom, is scheduled for December 7 from 1-4pm.

1:00 1:15 Welcome

Co-chair Steve Dickson welcomed participants on behalf of the co-chairs to the second meeting of the STS in 2023 and thanked Jessica Riley-Moman for continuing to assist the STS and for help facilitating today's discussion. Steve started the meeting recognizing that we are on the unceded homelands of the sovereign people of the Wabanaki Confederacy, and he acknowledged that this has been a tragic week given the loss of life in the shooting in Lewiston, that our thoughts are with all those dealing with loss, and that we appreciate everyone's time. It is understood if anyone needs to leave at any time during the meeting. Steve also welcomed Muhammad (Mo) Drammeh, who is working on hydrology and Maine's water cycle at UMaine and will be participating as a second youth representative on the STS. Zoom and meeting participation guidance was also reviewed.

1:15 2:30 Subgroup Presentations and Discussion

Co-chair Susie Arnold provided updates on the Maine Climate Council Steering Committee that helps create cohesion across the various working groups and subcommittees of the Climate Council. The most recent meeting focused on the next MCC meeting, December 1, 2023, which will largely focus on updates on implementation to the 2020 Climate Action Plan. The working groups are also finalizing their membership and initial scopes of work and meetings for the workgroups are now being scheduled to begin as soon as possible with several meetings already scheduled for late October and November.

DISCUSSION NOTES

The initial priorities of the work groups (as presented at the September 29 Maine Climate Council meeting):

Working Group Draft/Initial Priorities (co-chairs)

Transportation (Joyce Taylor and Jeff Crawford)

- Accelerating EV charging deployment
- Ready the workforce to repair and service EVs
- Expanding electrification of medium and heavy-duty vehicles
- Reducing Vehicle Miles Traveled

Buildings, Infrastructure, and Housing (Kathleen Meil and Michael Stoddard)

- Heat Pump goal reached and new targets set
- Home Weatherization goals- on track
- Efficiency improvements to existing buildings
- Energy efficient affordable housing
- Advance the design and construction of new buildings
- Helping schools pursue climate action

Energy Working Group (Dan Burgess and Ken Colburn)

- Meeting Maine energy policy requirements- renewable portfolio standard, energy storage, offshore wind, solar, electrification
- Advancing clean energy workforce development
- Industrial Task Force to further explore decarbonizing this sector

Natural and Working Lands Working Group (Amanda Beal and Tom Abello)

- Conserve 30% of Maine's natural and working lands by 2030
- Maximizing conservation funding opportunities
- Increasing the amount of food consumed in Maine from state food producers to 30% by 2030
- Increased carbon sequestration in natural and working lands

Coastal and Marine Working Group (Carl Wilson and Curt Brown)

- Investing in resilient culverts
- Sharing climate science through MCSIE- the Maine Climate Science and Information Exchange at UMaine
- Investing in Maine's working waterfronts and fisheries
- North Atlantic right whales and American lobster
- Opportunities for sequestering carbon

Community Resilience Working Group (Judy East, Rebecca Boulos, Sam Roy)

- Preparing for SLR and inland flooding
- Providing technical assistance and funding for local climate action through the CRP
- Investing in climate ready Infrastructure through the Maine Infrastructure Adaptation Fund
- Helping communities take action through Maine Climate Corps
- Preparing for climate risks: psychological resilience, integrating resilience planning with emergency management and beginning the tough conversations around "getting out of harm's way"

DISCUSSION NOTES

Intersecting Issues mentioned- workforce and economic opportunity including innovative forest products, waste emissions, land use planning and education

Comments, Questions, and Discussion:

- Should the STS customize their report to the priorities of the working groups, understanding this would result in a loss of reporting on other issues? Yes, it is helpful for the STS to keep the work group priorities in mind, but this should not be the only focus. Also, the work group priorities may change from the initial list, since they were initially developed by working group co-chairs in conjunction with the Governor's Office.
- Will there be a group focused on solid waste in this current effort to produce the updated climate action plan for 2024? Yes, there will likely be a task force created temporarily to focus on this and inform strategies for the updated climate plan.

Co-chair Ivan Fernandez outlined the agenda and shared that after the meeting, Jess will be sharing the initial scope of work that each of the subgroups have outlined for their sections of the STS report. Jess then facilitated the subgroup presentations and discussion. The sequence from the initial agenda was adjusted to accommodate members changing schedules the day of the meeting. Subgroup report outs were provided by the lead for each subgroup.

Reference subgroup slides for additional information (available for climate, forestry, human dimensions, marine subgroups). Brief presentations from each subgroup were followed by discussion.

Climate (Sean Birkel) Goal is to provide the content as soon as November 6. The outline will cover updates to the same indicators of the 2020 report (e.g. temperature/precipitation time series, daily heavy precipitation, snowpack, soil moisture, growing season, drought, etc.), as well as comparison of modeling projections (CMIP5 vs CMIP6), and discussion and implications of a several recent studies and of 2023 climate extremes. Review of literature since the 2020 report found that the previous 2020 literature and information needs remain relevant for hydrology, but there is new information for freshwater quality and air quality.

Discussion:

- For the agricultural audience, the 2050 timeframe is much more operationally relevant. If feasible scientifically, near-term estimates for 2030 vs 2040 vs 2050 would be of interest. Is this feasible? Yes, there are different ways we can look at this, and we can discuss further what figures to put into the report as well as make available as supplemental information.
- The lake water temp plots have yet to be updated, but updates are expected soon.
- How are winter recreational impacts going to be included? Primarily using temperature and precipitation modeling, downscaling, and then determining the implications for snowmaking needs.
- Can we also include the effect of those travelling from southern new England to northern new England because of less snow to the south and interest to see recreational opportunities in greater numbers by travelling north? Yes, Alex will be working more closely on this analysis.

DISCUSSION NOTES

Forestry (Adam Daigneault) Subgroup has reviewed the 2020 report and found that much of the previous report is still relevant. Their focus is on updating literature in each of the topic areas. They are currently drafting an update including refining the priority information needs, adding highlights and key points, and adding context to each subchapter heading. They will be standing by to address feedback from other STS members once the draft is completed and circulated.

Example highlights include that trees are expected to grow faster with more optimal growing conditions, that a change of species will continue, and with this will come additional pests. An additional focus for the report will be on adaptive management opportunities. They have also looked at peak foliage occurring earlier, and the implications for longer tourist season and management needs as a result. The carbon budget is being updated with additional studies, supporting the current calculation of net emissions for Maine counting the offset of gross emissions. The subgroup is looking at studies regarding sequestration rates, which are anticipated to decline with climate change; however, there is literature that shows opportunities to increase sequestration in the future through forest management practices.

Biodiversity (Sally Stockwell) Subgroup has reviewed the 2020 report and found that there is limited amount of updating needed to the topics. Their focus is on updating literature in each of the topic areas. They are developing an annotated bibliography. Members of the subgroup will be meeting with Jasmine Lamb and several members of the Wabanaki Alliance to help them understand Indigenous perspectives on climate change and biodiversity. The subgroup will reconvene to outline and draft summary information. Initial reviews of literature are showing that biodiversity loss is accelerating, in terms of the number of species and the number of individuals. There have been documented extinctions of species globally directly tied to climate change for the first time. And they have found that biodiversity loss is of great concern to people. Maine is uniquely positioned to utilize opportunities in land across the state that protect species and mitigate climate change.

Discussion:

- Is there opportunity for STS to develop recommendations, or policy and management considerations? There are some opportunities within the information needs report of the STS, acknowledging that this may not provide the mechanism for all recommendations of interest to STS members. Looking at the last STS report, most chapters did include priority information needs that in addition to monitoring or research needs, in some chapters there are considerations for the Climate Council. In part the way the final report was completed, and any unevenness across the chapters, was a result of the fast pace of the development of the report versus the time needed to have consensus on format across the STS members. Given the expertise of the STS, there is interest and need to ensure that this type of information is included in reporting.
- It's understandable that climate change could affect biodiversity through habitat loss, but could you please elaborate on how biodiversity impacts climate? As we're losing species the whole system changes, and therefore that can impact how climate change is going to affect those systems. One example is terrestrial salamanders in the northeast are the most common terrestrial vertebrates. The salamanders are so prevalent in the forest litter, and as top predators in that habitat their population size effects their prey (primarily shredding insects and

DISCUSSION NOTES

arthropod communities), which if they decline result of increased recycling of the forest floor and in turn the carbon sequestration potential.

- In what ways can STS provide information about how management decisions can result in different outcomes, based on the scientific literature? Can the STS provide this evaluative component to strategy development? For now, subgroups should continue to compile this information and include it in draft reporting.

Human Dimensions (Cindy Isenhour) Where this section is new to the STS structure, the previous report did not include any information to revise. The subgroup has focused early work on the merits of creating a new section or integrating into the existing sections. Currently the idea is in the long run to focus on 1) impacts and 2) human response and engagement. The current outline is comprehensive to all aspects of human dimensions including drivers, impacts, mitigation, and adaptation. Goal is to fully populate the outline by Nov 7, decision about approach November 8 where they will then determine whether to create a new section or integrate content into existing sections. The subgroup has begun to add supporting literature to the outline.

If there are topics of interest by other subgroups, the human dimensions subgroup requests that they are contacted for the specific input sought.

Discussion:

- Can the subgroups provide their outlines to the human dimensions group to expedite this process? Yes, but also specific questions are most helpful, especially if where the subgroup is looking for emphasis on or to echo, they can review and provide what literature they are aware of for support.
- Also, if there are topics other subgroups are interested in having a focus on that fits with human dimensions, but that they are not planning to cover, they can refer that to the human dimensions subgroup to consider.
- Farmers stress has always been part of climate change impacts and challenges to responses. Farmer buy-in to adopting suggested practices has also always seen reluctance even with incentives.
- Will this group cover how to communicate climate change and related impacts, response, etc.? Will this group cover how behavior change occurs, such as once enough people begin to act a larger number of those previously more reluctant than begin to act? This subgroup doesn't currently have the expertise to cover all these subjects. They are going to have to draw on the expertise they have. However, they intend to get as much of the relevant information in the section that they can now, and they also recognize this can serve as a placeholder for a deeper dive in a follow-on effort later.

Agriculture and Food Systems (Glen Koehler) The subgroup has reviewed the 2020 report and is in the process of updating literature to the previous report and developing initial draft highlights. Most topics were covered in the 2020 report and the focus is on updating. Soil heating is a new topic that was not previously addressed and has large implications for adaptation and mitigation. The subgroup has also discussed some adaptation strategies and funding opportunities and is preliminarily identifying benefits and drawbacks of those. They are also discussing information needs such as a need for standard methods for carbon accounting. Other key topics include evaluating potential for biochar, addressing

DISCUSSION NOTES

extreme weather and farm viability and farm stress and with that crop insurance program changes. These relate to strategy of increasing local food production to 30% as it would require small farm viability. In terms of 2023 being a terrible year for extreme weather, data on recent impacts to farming in 2023 are not fully available for Maine in time for the STS report, but the subgroup is utilizing what is available as well as drawing relevant information from other states in the NE region.

Marine (Damian Brady, Nicole Price, and Peter Slovinsky) The subgroup has reviewed the 2020 report and is in the process of updating literature to the previous report and developing initial draft highlights.

A national report on sea level rise was produced since the 2020 report and the subgroup is working on updating this section accordingly. There have also been additional reports on weakening ocean circulation, on ocean storms intensifying faster, and on ocean temperatures. There is updating information on impacts to coastal wetlands that will be included. There are growing numbers of groups installing gauges around the state to keep track of water levels. Saltwater intrusion is anticipated to be a new information need as well as groundwater monitoring. We are continuing to see records being broken for sea water levels that will be included. The current 2050 sea level rise scenarios that are “commit to manage” are anticipated to be recommended to be kept the same. The 2100 sea level rise scenarios recommended as “prepare to manage” are still relevant; however, the latest scientific report pushed those water levels out to 2120. Therefore, there is still the need to keep these scenarios within the reporting.

There is a lot of additional information to include because coastal areas have changed quite a bit in the past few years, including for the lobster fishery, with recent reports showing 40% declines in juveniles leading to a gauge change which will have serious socioeconomic impacts. Additionally, North Atlantic right whale updated science may influence future interactions. It is also anticipated that there will be newly available data on ocean surface and bottom temperatures which can also have implications for marine resources. There is also some new data on ocean acidification and dissolved oxygen during droughts and deoxygenation. There have been observations in the past few years of ecosystem changes to our fisheries including significant increases in the numbers of menhaden, a related decline of Atlantic herring, and an increase in blue crabs. They are seeing the need for additional monitoring to track changes and inform management. And there is need for new tools to explore for carbon accounting, which is becoming of growing interest in relation to carbon markets.

Discussion:

- The biodiversity group is intended to continue focus on birds and any ecosystems and species above the water. Will the marine group continue to focus on anything below the water? Yes, this includes focus on species as well as ecosystems/habitats.

2:30 2:45 **BREAK**

2:45 3:30 **Discussion**

Jess led discussion about what people feel about what they are hearing, what issues are there about process or content, and other reflections from members.

DISCUSSION NOTES

- It is difficult to determine how best to structure human dimension content with the report as well as acknowledging there is also need for more literature on the topic. Should STS focus on incorporating human dimensions within each of the other sections? For this report should we emphasize this topic within each of the other sections, and then if there is residual content it could be noted somewhere else?
- For rivers and hydrology, we don't have a lot of studies showing trends have changed for larger rivers; however, we have documentation for streams and for floods and droughts that have occurred. Should members be looking at records set?
- Should decision support tools be included for tracking and cataloging hydrology? They could be very helpful. Also new base flow inventories or new flood maps that are in progress. Or in general including tools that can be used to apply the scientific data be included in the report? If there are new maps/studies developed or in progress, yes. If there is new technology available to apply data that we are not yet using in Maine but there is literature showing their efficacy, then it is okay to include and is certainly representative of an information need.
- In the past we have not used studies from other states (e.g. study in MA about future precipitation and flows) but could relate to Maine, should we continue this approach? For studies that are occurring in other states but are relevant it is okay to include them.
- If there is information that is available and can support working groups, it is probably best to incorporate that information into STS reporting so that it can be considered for use by the WGs.
- For information that may be relevant, but is not yet peer-reviewed, it may be helpful to include, but if it is it should be qualified, such as, this is being discussed by practitioners in Maine even if it is not peer-reviewed.
- The human dimensions subgroup is looking for guidance on how to get their work to a manageable size and be accomplishable in time to incorporate it into the report. Also, there is information on a national scale that they won't have opportunity to fully become familiar with. To what extent can/should we include, that may have a high likelihood of confidence but haven't yet been proven. In some cases, the answers to the questions about behavior change implications are unknown; for example, current research on impact of snow conditions to the snowmobiling industry and future of that industry because of both changing physical conditions and the way that behavior changes as a result. What should be done? Information can be included and qualified. It's important to include information that is relevant even if the scientific community needs more information. Better to include for now and it can be removed in the drafting process.
- Is there air quality monitoring for things beyond aeroallergens, such as smoke? And how long of a time series is there? Yes, Maine DEP does monitor particulate, and that is a way that measures for example wildfire smoke from fires in Canada. Maine DEP also does use various products from NWS and NOAA for forecasts to advise about air quality. For PM 2.5 the monitoring goes back to 1999.
- DEP is looking at a new emissions inventory called a consumption-based emissions inventory. Results may be available as early as December. The method accounts for consumption using economic data and applying emissions to it, incorporating upstream and downstream emissions from imports and exports. It is complementary to our current emissions inventory, adding another lens which can focus on topics such as materials and consumption behaviors. This relates to a few different topics in STS. Should this be included as new data to inform decision-

DISCUSSION NOTES

making? This will be delivered, presented as a separate report as well. It's not part of the biennial greenhouse gas reporting currently.

3:30 11:30 **Next Steps**

Ivan and Jess provided an overview of next steps for STS and subgroups. By November 15, goal for all subgroups is to have filled out initial section outlines with content and identified the top 3-5 priorities/highlights for the report. The subgroup work will get rolled up into an annotated outline. It's important not to stay siloed as the outline gets developed. After listening today, most subgroups focused on what is new. If the 2020 section is mostly current with not a lot of change, providing that context to Jess is helpful. This is also helpful for the workgroup to hear so can use it to shape recommended strategies. The STS process continues after Nov 15 to full draft of emerging science highlights due in December, with the full report due for public consumption by March. The next STS meeting is scheduled for December 7 from 1-4pm, a meeting invitation for that will follow shortly after today's meeting.

- In generating and submitting the priorities/highlights, what should be done with figures or other larger files? Please hold on to these separately for now but please also include a link or other information for how Jess can access that content for report writing.
- There has been a lot of discussion about what has been happening outside of Maine and referencing that information when relevant. How should we draw the line on that content versus the focus on Maine content? Starting with a Maine focus is most important. A full synthesis or assessment of all literature on the topic is not necessary and we can point to other synthesis papers and reports as a pathway to that information. If there are topics we are aware of but don't have a lot of information on for Maine, those areas represent where we might seek studies from other areas outside of Maine and identify as information needs.
- Part of what we are reporting is the state of conditions, and the top priorities are not only the support for monitoring but the strategies that reduce impacts to what we are observing. How should we be focused on developing top 3-5 priorities? Our goal in the near-term is to be able to provide some critical points that are bubbling up from this process and want to convey earlier rather than later to the working groups, but not as a formal public presentation. The formal presentation of the information from STS will come in the March meeting of the MCC. However, we do not want to wait until March to inform working groups so the STS will be providing initial information on an earlier timeline (likely in January). There will be additional time to develop the actual final report for release coincident with the March MCC quarterly meeting.
- In 2020, all the priorities in the freshwater quality were related to research that still needed to be done. A lot of the information about climate change effects on lakes translates into the need for managing storm water runoff which should be top priority for building resilience into our watersheds. How should we be identifying top priorities for research versus on the ground actions?
- There were several suggestions as to how this information should be presented. Some new things for members to consider. For example, some of the science and technical information may not readily lend itself to people understanding how to act to reduce impacts of the change unless more research is needed; in other cases, there is literature available that evaluates benefits of one action over another action. Could that be assembled and sent out to us all? Yes,

DISCUSSION NOTES

we should include what we are learning and that the literature on what has been shown to work. Priority needs can also be highlighted as either research focused versus or the ground action. Meeting discussion notes were also taken today and will be distributed to all STS members following the meeting as soon as possible along with presentations and a recording of the meeting.

- There is information on freshwater systems that has biodiversity implications in the biodiversity section. It would be good to at least cross link those, because the culverts issue is big from biodiversity perspective for fish and other aquatic organisms' movement as well. Does this go in the community resilience section? Yes, and Jess is providing support to make sure all of that is cross linked and identifies each other. If it's redundant, it's also a way to emphasize how important it is.

Ivan thanked everyone for the amazing amount of progress already made over the last month by the subgroups and the work being accomplished collaboratively across the subgroups and thanked everyone for making time to be willing members of the STS. Additional recognition was given to Nathan Robbins for initial notetaking, and to STS legislators both in attendance and not for their interactions and commitment to the work of the STS.

11:40 11:50 **Public Comment**

No public comment received.

11:50 12:00 **Wrap-up**

Steve provided a final summary. A lot of gears are turning and producing good information for this Assessment. This is an impressive effort in a few short weeks. Sharing information today has been helpful to have others listen for opportunities to include new information, to widen topics, and to find linkages across sectors. One of the important things we are doing is finding those cross connections. The feedback loops are better in focus in some areas but deserve consideration in other areas – so we should all think about sharing feedback in the natural system, managed systems, the economy, and human behavior. These feedbacks become evident because of the STS approach.

The subgroups initial findings are encouraging from a standpoint that what the STS already covered was very comprehensive, and by some reports that climate trends in the last few years are like those in the last assessment – for example, temperature, hydrology, some aspects of fresh waters, and decadal trends in sea level. However, those trends still support more action being taken. That change is here, now. We do not want to lose sight of that. Other things are changing or new since the last assessment. Projections in some areas are significant and of concern – like the structure of future forests, rapidly changing farming, significant disruption to biodiversity and terrestrial and marine ecosystem structures, and acceleration in sea level rise in recent years. We're seeing changes in years, not decades to centuries. So, we need to identify and highlight this change which needs to be addressed among the work groups and eventually in policy. The work of the STS is greatly appreciated in this regard as it helps to inform policy design.

DISCUSSION NOTES

Zoom Registrants

First Name	Last Name
Ivan	Fernandez
Cheryl	Spencer
Abigail	Hayne
Eileen	Johnson
Steve	Dickson
Glen	Koehler
Jess	Reilly-Moman
Susie	Arnold
Andrew	Barton
Jonathan	Rubin
Cindy	Isenhour
Pamela	Lombard
Muhammad	Drammeh
peter	slovinsky
Allison	Bistline-East
Mark	King
Sean	Birkel
Nicholas	Whiteman
Gail	Carlson
Sally	Stockwell
Jesica	Waller
Kristen	Puryear
Lily	Calderwood
linda	bacon
Amanda	Cross
Alyssa	Soucy
Damian	Brady
Nathan	Robbins
Phillip	deMaynadier
Val	Watson
Sen. Nicole	Grohoski
Andrew	Johnson
Susan	Elias
Kathy	Mills
Adam	Daigneault
Dan	Hayes
Carl	Wilson
Parker	Gassett
Nichole	Price
Ramon	Juarez