
**Governor's Council on Climate Change
(GC3)
EQUITY AND ENVIRONMENTAL JUSTICE
WORKING GROUP -SCIENCE AND TECHNOLOGY
WORKING GROUP MEETING MINUTES**

Date: August 20, 2020

Time: 9:00 am – 10:00 am

Zoom Link: <https://ctdeep.zoom.us/j/98482761108>

ATTENDANCE

Name	Title	Organization	Present
Lee Cruz Co-chair, GC3 Equity and Environmental Justice Working Group		Community Foundation for Greater New Haven	✓
Marianne Engelman-Lado Co-chair, GC3 Equity and Environmental Justice Working Group		Yale University	✓
Leticia Colon de Mejias			✓
Lynne Bonnett		New Haven Bioregional Committee, Greater New Haven Green Fund	✓
Susan Masino Co-chair, GC3 Science and Technology Working Group	Vernon D. Roosa Professor of Applied Science	Trinity College	✓

James O'Donnell Co-Chair, GC3 Science and Technology Working Group	Executive Director	CT Institute for Resilience and Climate Adaptation (CIRCA)	✓
James Albis	Senior Advisor to Commissioner Katie Dykes	CT DEEP	✓
Colleen Murphy- Dunning Member, GC3 Science and Technology Working Group		Yale University	✓
Denise Savageau Member, GC3 Working and Natural Lands Working Group/Wetlands subgroup	Chair	CT Council on Soil and Water Conservation	✓
Kathy Fay	Director of Community Sustainability	Neighborhood Housing Services of New Haven, New Haven	✓
Kate Losey			✓
Henry Auer		New Haven Energy Task Force	
Diane Lauricella			✓
Diane Hoffman			✓
Brian Hall		Harvard Forest	✓
Caitlin Daddona		UConn Office of Sustainability	✓
Chris Donnelly		DEEP (retired)	✓
Mary Pelletier		Park Watershed	✓
Ralph Jones		Hamden Alliance for Trees	✓

Melinda Tuhus		Sunrise New Haven Hamden Alliance for Trees	✓
Ray Hinchcliffe			✓
Edith Pestana	Equity and Environmental Justice Program	CT DEEP	✓
Doris Johnson	Equity and Environmental Justice Program	CT DEEP	✓
Mary-beth Hart	Senior Environmental Planner Land and Water Resources Division	CT DEEP	✓

Welcome and Announcements

- Equity and Environmental Justice (EEJ) Working Group Co-Chair Marianne Engelman-Lado started the meeting at 9:04 am and introduced Co-Chair Lee Cruz, who introduced himself as Director of Community Outreach for the Community Foundation for Greater New Haven and a resident of the Fair Haven section of New Haven. He welcomed and thanked attendees and turned the meeting back to Co-Chair Engelman-Lado.
- Co-Chair Engelman-Lado introduced herself as a teacher at Yale who also runs an Environmental Justice Clinic at Vermont Law School and works with the Yale School of Public Health to run a climate justice clinic.
- Co-Chair Engelman-Lado set the agenda for the meeting, a 20 minute presentation from the GC3 Science and Technology (Sci/Tech) Working Group followed by 25 minutes of questions and answers and public comments at the end of the meeting.
- Co-Chair Engelman Lado also stressed that this is not the last opportunity to comment on the Sci/Tech report; the Sci/Tech Working Group, like all other GC3 working groups, has been amendable to an exchange of ideas and input, and she anticipates that this presentation will result in rich discussion similar to what the EEJ Working Group has experienced from the other working group presentations this week. She suggested that members of the EEJ Working Group review the draft report in more detail and provide feedback to Sci/Tech Co-Chairs Susan Masino and Jim O'Donnell who are presenting today to ensure their report and recommendations are informed by issues of equity, and acknowledged that Sci/Tech has already taken these issues seriously in their draft report.
- Co-Chair Engelman-Lado also pointed out the upcoming public comment period as another opportunity for review and comment. She then turned the presentation over to Sci/Tech Co-Chairs Masino and O'Donnell and thanked them for their presentations.

Science and Technology Working Group Presentation

- Susan Masino greeted attendees and introduced Jim O'Donnell.
- Jim O'Donnell introduced himself as a professor of marine sciences at the University of Connecticut and Executive Director of the Connecticut Institute for Resilience and Climate Adaptation (CIRCA). He encouraged meeting attendees to review the draft report submitted by Sci/Tech because time constraints in this meeting prevented him from providing background details. The highlights from Dr. O'Donnell's presentation:
 - It is clear that sea level is rising around the world, and it's rising faster in Connecticut than elsewhere for a variety of well understood scientific reasons associated with how the ocean transports heat around the earth. He said that Connecticut is also sinking slowly and the scientific reasons for this are also well documented and understood.
 - The consequence of sea level rise relative to the shoreline is that the frequency of flooding is going to increase. The Sci/Tech report outlines why that's true and provides graphics and information to support this finding.
 - Sea level could rise up to 2 meters by 2100, and it's likely to rise up to 50 cm by 2050 and increase after that. This 50 cm rise through 2050 will happen regardless of what happens with CO2 emissions. After 2100, the amount of sea level rise will depend on CO2 emissions, so reductions in CO2 emissions through mitigation strategies will make a difference in how much sea level rises.
 - Temperature is also expected to rise by up to 5 degrees Fahrenheit by 2050. Data from New Haven shows that, currently, temperature is about 2-3 degrees centigrade warmer than it was 200 years ago, and that the growing season in Connecticut is about 30 days longer than it was 200 years ago. Although small changes in the mean value of temperature (e.g., 3 degrees centigrade) is not much compared to the annual variation of temperature in Connecticut (30-35 degrees centigrade) but it does change ecosystems and the probability of severe heat.

- Currently, Connecticut cities like New Haven, Groton, and Bridgeport experience roughly 3-4 days a year above 90 degrees Fahrenheit. If mean temperature increases by 5 degrees Fahrenheit, the number of days per year over 90 degrees Fahrenheit will jump to around 25 days.
- There's a strong correlation between increased temperatures and heat-related stress and admissions to hospitals. With several days above 90 degrees Fahrenheit, we can expect to see adverse impacts on vulnerable populations, people who work outdoors and in certain jobs, for example. If we see 5 times as many days above 90 degrees Fahrenheit in 30-40 years, the need for intervention will increase.
- There are statistics related to crime and other issues that are impacted by heat, but those are not based on Connecticut data; they are correlations based on data from other states.
- The Sci/Tech report includes a recommendation for an ongoing effort to project what the impacts of climate change are going to be on the citizens of Connecticut and its infrastructure and the need to pay attention to the full spectrum of communities in the state
- Co-Chair Engelman-Lado suggested that both presentations be given before any questions were asked, and reminded meeting attendees that the presentations are focused on the equity aspects of the Sci/Tech report, and if anyone had comments related to other aspects of the Sci/Tech report they could contact Co-Chairs O'Donnell and Masino.
- Susan Masino gave her presentation. In addition to the slides provided, the highlights of Dr. Masino's presentation:
 - Dr. Masino introduced the concept of "Right Relationships," a term adapted from Native American Elder Stan Rushworth; in order to address the climate crisis we must have an understand of "What's happening?" and "How did we get here?" in order to find a solution. She also quoted Gina McCarthy, former Commissioner of Connecticut DEP and former EPA Administrator under the Obama Administration and current President/CEO of the Natural Resources Defense Council (NRDC), "What kind of future do we want?" to again stress the need for a vision of "where we're going" and "how did we get here" to restore what we need to solve climate change issues.
 - The focus of the Sci/Tech Working Group has been on how to apply evidence-based actions, unbiased interdisciplinary science, and the precautionary principle to a common goal of a just and healthy future. Dr. Masino stated that her background (a PhD in biology, Professor of applied science at Trinity, joint appointment at Trinity in neuroscience and psychology) allows her to bring her experience in the Liberal Arts and in the community to address this complex problem.
 - The Sci/Tech Working Group was divided into sub-groups; Dr. O'Donnell focused on the subgroups looking at changes in temperature, precipitation flooding, energy, infrastructure, etc., which will have disproportionate impacts on distress communities; Dr. Masino focused on the sub-groups looking at food systems, public health, ecosystems, culture, behavior, and education.
 - The amount of CO₂ in the atmosphere won't matter if we also don't protect our clean water, our environment. We need nature to sustain us. So we must consider multiple components that are equally important.
 - The Sci/Tech report stresses that science and everyday life cannot and should not be separated. Science touches every aspect of our societies, our functioning, and our health. The role of science is to observe and measure and describe things so that we can make decisions and make predictions. We must move forward with the best information, integrating physical, emotional, psychological, and spiritual values to addressing questions.
 - Both Sci/Tech and EEJ have raised the concept of "multi-solving," pulling together all aspects of the system and asking different aspects of the system to solve each other's problems. This concept pulls in all of the values and critical issues that should be considered for resilient communities. Dr. Masino suggested that all GC3 Working Groups should adopt the multi-solving approach when they consider their recommendations.

- One of the Sci/Tech recommendations from Dr. Masino's sub-groups most relevant to EEJ is related to Education and communication: trying to develop more unified messaging about climate change impacts and climate science is really important. The general level of science understanding among the general among the public is lower than it should be, and we should try to use this opportunity to increase our level of scientific understanding in our communities in the public. This is especially critical in relation to cultural change and local action. Large studies in Europe show that local action is really needed cultural change.
- Detailed landscape mapping for strategic decision-making: the EEJ Working Group has a Mapping Sub-group and this should be coordinated. Sci/Tech mapping discussions have focused more on the physical variables Dr. O'Donnell mentioned, so a coordinated effort could integrate those variables with other landscape values related to equity and environmental justice.
- Dr. Masino again stressed that science isn't solely related to changes in temperature and sea level rise, although those are critical, it also applies to social science. The ECOLISE study from Europe shows that affecting cultural change and engaging local communities are vital to solving climate issues.
- Another critical point related to local communities is nature and its role in brain health. Improving brain health is also often associated with several other health benefits. Linking nature and health, and particularly brain health, is a rapidly advancing research topic. There are also significant economic benefits. In the context of multi-solving, there are ways to simultaneously provide additional community resilience, climate benefits, biodiversity benefits, and health benefits.
- An additional Sci/Tech recommendations is to bring nature and its associated benefits to distressed communities. This has great potential to address some of the inequities in these communities, while providing additional co-benefits.
- Dr. Masino shared slides of maps to show that Connecticut is located in a densely populated region of the United States, and to show that natural areas such as the Adirondacks are extremely resilient. Natural areas store carbon, support very high biodiversity, and provide essential wildlife corridors. These values should be taken into account and protected. There is a significant amount of carbon stored in the land in Connecticut, there is great potential to store even more carbon.
- With respect to rural and suburban areas, these areas can also experience equity and environmental justice issues, so these should be considered as a statewide issue.
- Dr. Masino mentioned that some of the national resources and databases that scientists have been using to make strategic decisions are now difficult to find.
- There is a lot of protected land in Connecticut, but less than 1% of it is protected to the level of a national park.
- Dr. Masino expressed the opinion that everyone needs access to a natural area, and the science shows that two hours a week in a natural area enhances well-being. This is especially important for people who don't have time, money, or a lot of mobility. Some of the natural areas that should be protected are located within the public bus system as it exists now, and that access could also be improved.
- These areas prevent extinction, store high levels of carbon, and help mitigate air pollution which has significant effects on brain health and cognition and several neurological disorders.
- The last Sci/Tech recommendation is a proposal for pilot regions to demonstrate all the goals of the GC3 in terms of mitigation, adaptation, and resilience. These could be areas where this type of work has already started. It's important to quantify and demonstrate the CO2 benefits of planning that is really proactive and risk based and takes into account health and justice.
- In closing her remarks, Dr. Masino supported the use of an evidence-based preventative approach to protect what we have, restore what we can, and fund what we need, so that everyone in Connecticut is taken care of, especially children and other vulnerable populations.

Question & Answer/Discussion and Public Comments

- EEJ Co-Chair Engelman-Lado moderated questions for Dr. O'Donnell and Dr. Masino.
- Chris Donnelly asked what level of nature is necessary as a threshold to have an experience of nature. He commented that he grew up in Bridgeport and played in the Rooster River catching eels and crayfish, yet the Rooster River was not “natural” by definition, but to him it was nature at its fullest.
- Susan Masino replied that riparian corridors in urban areas are among the landscapes that we need to anchor some of our climate actions to, because those are areas that one can have a feeling getting away and getting into nature. Although it isn't a wilderness experience like the Adirondacks, we also need local areas where people can feel like they're getting away from it all. Dr. Masino also mentioned a high school student who grew up near the north branch of the Park River in Hartford and said playing on allowed him to get lost in a quiet and serene natural space, exploring the trails along the river, and being in tune with the natural world and the history of the area. Small urban forests also provide a lot of value in terms of “getting away” because it's quieter and one can detach one's self from noise and stress.
- Chris Donnelly then acknowledged a comment from Brian Hall that the level of nature depends on who you are and what your day-to-day environment is. In some cases nature could be the tree growing in front of your house. And it can be a more full environmental experience because it connects to your day-to-day world.
- Brian Hall asked whether the Sci/Tech Working Group makes any suggestions for considering traditional knowledge, or has suggestions that were based on traditional knowledge as opposed to Western science. He is interested in how traditional knowledge can inform science.
- EEJ Co-Chair Engelman-Lado gave kudos to the focus on education and local action which another chat comment did as well. She said it should be noted that there are a lot of locally based climate action and Climate Justice efforts already such as the Northeast indigenous climate resilience network among many others. She stressed that any focus on education should really be careful to acknowledge and account for existing local work, and that learning is two-way, we teach and we learn from each other, and that recommendations for local action should also consider including support for these locally based organizations for engagement. She wondered if that's already in the report, thinking about what we're learning from others.
- Jim O'Donnell replied that he is not aware that there has not been any information solicited from non-Western science. However, he acknowledged that, in general, we haven't addressed questions raised by EEJ communities very well. He said for the last five years, he has been involved in the State's response to climate change, but the questions that were investigated were related to sea level rise and its effect on coastal properties. But more recently, a project being conducted by CIRCA called Resilient Connecticut focuses on adaptation planning in New Haven and Fairfield Counties, and it became clear that there are many communities for which coastal flooding is not the primary challenge associated with climate change. Dr. O'Donnell also explained that much of the data used in the report was just happens to be available, but it is collected in locations such as ports for commercial activities, or from locations selected by meteorologists because they represent a wide area. So temperature statistics are based on Bradley airport and Sikorsky airport, not downtown Bridgeport or New Haven or in buildings or neighborhoods where people live. He stated that there is now an opportunity of the Sci/Tech and EEJ Working Groups to amplify the need for understanding the “Micro climate” where people live and work in Connecticut, because without actual measurements in cities, changes can't be determined. Dr. O'Donnell identified the inability to effectively correlate changing variables to outcomes, to track unemployment or health indices without knowing the environmental variables in a reliable and precise way. He suggested that community groups and networks can raise these questions to get the attention they deserve.
- EEJ Co-Chair Engelman-Lado also moderated questions from the chat.
- One person asked that Dr. O'Donnell's slides be made available.

- EEJ Co-Chair Engelman-Lado asked how the effects of sea level rise can be understood without understanding those other vulnerabilities, and hoped the science report will reflect an understanding of the effects without waiting to integrate data on demographics and find those correlations. Some demographic vulnerabilities are already known, such as environmental pollution in proximity to legacy sites, and data exists. The Sci/Tech report should include whatever caveats or qualifications are necessary, but it should still raise questions about equity and what should be done in the future.
- Dr. O'Donnell replied that the report does call for that but we also need broader real voices from different communities. Resilient Connecticut and the GC3, and even the University of Connecticut president have identified the challenge to make our work more aware of the variety of voices. Dr. O'Donnell mentioned the importance of community lifelines, those places in communities that are impacted after storms or floods such as banks and shops and transportation network capacity that vulnerable communities rely upon. These are the things that need to be identified and protected, and only people who live in the communities and know what they use can help identify them, map their vulnerability, and assess what has to be done to protect them and make them more resilient. There is funding capacity for that. Connections to the right community and getting information from them are important.
- Dr. Masino mentioned that she has coordinated with the Forests sub-group of the Working and Natural Lands Working Group and has been in touch with members of the Native American community about some of these issues.
- Dr. Masino also acknowledged a new partnership between the Department of Energy and Environmental Protection and the Department of Mental Health and Addiction Services to engage people during the pandemic and take advantage of the benefits of nature, but crowding has caused some areas to close. (The partnership is a series of live-streamed mindful outdoor experiences that will occur this summer at parks throughout the state. The interagency collaboration will offer tools to manage stress and will promote mental and physical health while connecting with nature and enjoying the beauty of Connecticut while maintaining safe social distancing. <https://portal.ct.gov/DEEP/News-Releases/News-Releases---2020/DMHAS-and-DEEP-Announce-Series-of-Wellness-Activities-in-State-Parks>)
- Dr. Masino also mentioned that another chat question focused on renewable energy and land use. She said this highlights the need for landscape level mapping, to identify areas that are most important for climate mitigation, most important for flood reduction, most important for vulnerable communities to have access to. This mapping can help make the most strategic decisions going forward.
- Denise Savageau thanked Sci/Tech Co-Chairs O'Donnell and Masino for their presentations and stressed the importance of the presentation on heat impacts. She thinks it is one of the areas that is not touched on nearly enough. Ms. Savageau is on the state water plan implementation work group and believes their work is not being informed enough by climate change and how that is impacting the state water plan. She said it is particularly important for urban communities because they're the ones that are served by the largest water resources. She asked for feedback on where we might need to go with science.
- Dr. O'Donnell replied that there has been an initiative to address the future vulnerability of drinking water in Connecticut with respect to changes in precipitation. However, models that predict warming and sea level rise are less reliable when it comes to predicting precipitation and evaporation distribution. There is consensus that Connecticut will see 8 percent more precipitation by 2100 but evaporation will increase too, and drought will probably increase but the level of increase can be reliably predicted. Dr. O'Donnell noted that another Sci/Tech report recommendation is to reassess predictions every five years, and that a new IPCC (Intergovernmental Panel on Climate Change) report will be released soon which might be based on new and improved models. Perhaps more information about the hydrologic cycle will be available within the five year review timeframe.
- Denise Savageau agreed and commented that it is understood that Connecticut may have more precipitation annually, but it might come in the form of a few major rainfall events with drought

conditions at other times. She also raised the issue of water demand increasing with hotter temperatures.

- Dr. O'Donnell remarked that as chair of the EPA/Long Island Sound Study Advisory Committee he notes there's been a long-standing problem with eutrophication associated with water treatment plant discharges. He commented that continuing to use water to carry human waste—the way the Romans did 2000 years ago—is another issue with respect to water usage. He suggested that there might be an opportunity to look at large-scale infrastructure changes to move us into a better way of using water, rather than as a transport mechanism for sewage.
- Dr. O'Donnell also remarked that another EEJ issue relates to open space. While there are many accessible parks and woodlands, there is limited coastal access to Long Island Sound. There is significant public expense associated with protecting the Sound as a resource, and there are public trust rights associated with using the Sound, and while it isn't necessarily a science issue, it is a political question. He reiterated the importance of the value of experiencing nature, and suggested that people will value the resources more if they have access to them.
- EEJ Co-Chair Engelman-Lado remarked that scientific findings often raise policy issues, and Dr. O'Donnell's remarks raise a critical equity issue of whether the state's resources should be used to protect coastal areas if those coastal areas aren't accessible to everyone.
- EEJ Co-Chair Engelman-Lado asked about the draft Sci/Tech report submitted to the EEJ Working Group and wondered if the report will be further fleshed-out as it is somewhat in outline form.
- EEJ Co-Chair Engelman-Lado also remarked that EEJ and Sci/Tech should coordinate offline about the extent to which their respective mapping recommendations overlap. Ultimately both working groups want maps to layer information to inform decision making.
- Diane Lauricella asked about the use of existing data, especially in urban areas and rural areas where former manufacturing took place. Some of these areas have great potential to be developed as brownfields. She believes that data sets currently exist within the DEEP, the Department of Economic and Community Development, and the Department of Public Health, that could help inform the environmental justice community and teach municipal land use planners to understand the interconnection of climate change, heat, toxins, and the need for people to be aware of. She gave an example of the need to mitigate contaminated areas that are subject to the one hundred year flood. She supports the efforts of UConn's Center for Land Use Education and Research (CLEAR), as well as providing financial assistance to support additional DEEP staff to collect existing data that might be scattered among different agencies.
- Mary Pelletier commented that she has recommended that the GC3 identify pilot areas to protect urban and suburban riparian corridors and wondered if there are maps of these corridors. She noted that upstream development exacerbates flash flood impacts downstream, but it also creates drought in those streams which deteriorates the quality of the corridors. She also believes that there is "lopsided attention" given to Long Island Sound in the media, and believes that people want to access Long Island Sound because they can no longer swim in rivers and streams in inland communities.
- Lynne Bonnet asked whether Sci/Tech was coordinating with the Infrastructure and Land Use Working Group because one of their recommendations indicated the need to consult with Sci/Tech.
- Dr. O'Donnell responded that Sci/Tech has been contacted by several groups for consultation.
- Dr. Masino also commented that Sci/Tech is reviewing all other reports submitted by all other working groups and will be discussing those reports at their next meeting (8/26/20). She also addressed a comment in the chat about toxins and mentioned that Sci/Tech Working Group member Anne Kulick is the toxins expert. Dr. Masino also mentioned that Sci/Tech plans to add sections to the report related to the topics covered by each of the Sci/Tech sub-groups, and might send recommendations to other working groups.
- Dr. Masino also responded to Mary Pelletier's comments by remarking that riparian corridors are a critical issue, and that natural areas are "free cooling centers" that can address heat island effects and the public health effects of heat.

Next Steps and Adjourn

- EEJ Co-Chair Engelman-Lado noted the meeting time had elapsed and encouraged anyone with additional comments to send them to marianne.engelman-lado@yale.edu, lcruz@cfgnh.org, or edith.pestana@ct.gov.
- She also reiterated that the EEJ Working Group will follow-up with the Sci/Tech Working Group regarding coordinating on the mapping tool recommendation.
- EEJ Co-Chair Engelman-Lado thanked attendees and Sci/Tech Co-Chairs O'Donnell and Masino for their presentations, and ended the meeting at 10:01 am.
- Comments can be submitted to DEEP.ClimateChange@ct.gov

