

Written contribution on Governor's Climate Change Council (GC3)'s Draft Reports

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The undersigned are scholars and researchers affiliated with the Engineering for Human Rights Initiative (ENGR-HR) at the University of Connecticut, USA. This group of academics is actively working to understand and solve societal and engineering challenges following human rights and sustainable development principles. As members of the ENGR-HR initiative, we want to express our support for the Governor's Climate Change Council (GC3)'s critical work to reduce greenhouse gas emissions and adapt to climate change impacts in Connecticut. We believe this work is very timely and necessary in order to support equitable development that respects the human rights of Connecticut's people and the natural environment in which we live.

Taking note of the points mentioned above, we submit the following comments on a set of GC3 draft reports:

1. Equity and Environmental Justice Draft Report

[Contributors: Marisa Auguste, Davis Chacon-Hurtado, Shareen Hertel, Michael Rubin]

The document defines equity and equitable programs largely in terms of intent and in process. Key to achieving equitable *outcomes* will be to define and measure equity in outcomes and to build in an evaluation of program impacts on those outcomes into the design and monitoring and evaluation components from the beginning of implementation. The current section on assessing/evaluating impact (briefly on pg. 19) discusses post-implementation information campaigns and solicitation of feedback. These may be important, but to assess program impact on equity outcomes requires a *clear and observable set of criteria for equitable outcomes* and a *program design* that allows for identifying the program impact on those outcomes.

Overall, the recommendations are very robust, especially when discussing the principles needed for equity. A recommendation in that area would be to discuss the inter-generational implications of equity, sustainable development, and adaptation to climate change more extensively. The future generations are not at the negotiating table, so there must be a way to consider their needs as a part of the strategies recommended. Although the future is uncertain, it is essential to explore future scenarios and their impacts on environmental justice within Connecticut communities.

In addition, pages 8-9 and page 12 offer an excellent conceptual framework for equity (i.e., distributive, procedural, contextual, and corrective) but we recommend considering the use of the term "restorative" rather than "corrective" because of the regenerative nature of environmental sustainability is better captured therein. There is also ample human rights literature on "restorative justice" (see, for example, Vermont Law School).

^[1] There are also UN frameworks for criteria for food justice that might be applicable here (i.e., available, accessible, adequate, and sustainable^[2]) when evaluating the relative advantages/disadvantages of proposed policy approaches. Also, it may be useful to consider the core elements of the Boston Human Rights City initiative as a comparable model for civic engagement and participatory planning ^[3]

Similarly, when considering disparities in health and the additional impacts climate change will have on this, it is important to remember that the disparities that exist for minorities in particular exist because of systemic racial/ethnic/cultural inequality, not because of any inherent differences or deficiencies in biology that predispose them to certain illnesses. Hence, stakeholders, leaders, and others involved in projects may need to be made aware of this, as there may be a lack of understanding among people outside public health and some social science disciplines which could in turn affect viewpoints.

In the transportation area, regarding strategies related to electric vehicles for low and middle-income households, there needs to be a discussion of how current and planned infrastructure (including infrastructure financed by the private sector) is distributed in Connecticut and how it matches areas of Environmental Justice (EJ) populations. Also, when referring to public transportation, it is important to note that its usage depends not only on the availability of infrastructure, but also on the preferences of commuters. Public transit (especially between towns in Connecticut) is very deficient compared to cars, so it will take considerable planning and investment to convince commuters to switch modes.

Similarly, innovation from new providers such as Uber and Lyft could be adding more vehicle miles traveled (VMT) to Connecticut roadways. However, there is a significant limitation with data to assess these new transportation services' positive and negative impacts. We recommend that the Connecticut Department of Transportation require the disclosure of data that could be used to evaluate the implications of these services on access, congestion, and equity. Other locations such as New York City and the City of Chicago report data on ridership from these services.

A final recommendation is related centrally to accessibility of the consultative process: while inclusion has been at the forefront of the EEJ report, the document's formatting itself may not be fully accessible for the EJ communities (including people with disabilities). For example, the document has an *accessibility score* of 9% (i.e., organization of the report's content, tags, and contrast create challenges for visually impaired people who rely on computerized readers). In addition, considering that in 11% of households in Connecticut, Spanish is spoken at home, the absence of a Spanish version of the report is problematic; the report has not been translated into any other main language(s) spoken across minority communities in Connecticut). We recommend that

¹ <https://vermontlaw.edu/ncrj>

² <https://www.ohchr.org/EN/Issues/ESCR/Pages/Food.aspx>

³ <https://www.umb.edu/humanrights/projects/boston>

the documents be reformatted for visual accessibility and that at least the executive summaries be translated into Spanish or other relevant languages spoken by members of Connecticut's minority communities.

Some additional minor recommendations include:

- When discussing resilience to climate change, additional aspects related to the economic workforce could be considered. For example, the COVID-19 outbreak and related lock-down measures have added a new dimension to the notion of vulnerability: these, in turn, relate to the type of occupation and incomes experienced by a particular type of worker category (e.g., home care workers, Gig economy workers, and other highly flexible/vulnerable workers).
- The BIPOC denomination may be problematic if minority groups do not identify themselves with this term. Were the people from EJ communities or minorities consulted about being called BIPOC? This term could have the same issues that denominations, such as BAME, has in Europe. There is so much diversity *within* these communities that it would be worth checking as to whether they agree with this nomenclature.
- On page 7, one of the causes of disparities is associated with political representation and participation, however, no recommendations are made on this topic. This point is essential because providing agency to people is a key tool for overcoming poverty and social disparities. This is also related to the issue of inequitable distribution mentioned in the last paragraph of page 7. Similarly, on the same page, the historical roots of inequality in CT are mentioned. It would be helpful to explore the most critical roots and to analyze whether they represent any major problem today intrinsic to social inequality.
- On page 11, the recommendation that "*[p]olicies should prioritize the most vulnerable communities by targeting resources to vulnerable communities first and then expanding statewide*" needs to be complemented with methodologies and strategies related to these investment. For example, infrastructure projects tend to favor areas with the best economic return (based on cost/benefit analysis). Other methods and techniques to maximize other performance measures based on equitable outcomes need to be recommended.
- On the notion of corrective equity (i.e., restorative equity), in order to do more than simply rhetorically hold people accountable, there should be a mechanism by which EJ groups can consult and reach out to people in order to make decisions on how the process should happen.
- On the "*environmental justice public participation guidance*" section, there is a need for specific criteria and mechanisms to assess whether those who attend GC3 consultations are actually representative of the EJ communities and to engage grassroots participants more fully. Given that 15% of Connecticut households do not have internet access and more than 10% do not have access to a computer or smartphone (in 2016),⁴ it would be helpful to print and mail hard copies of documents and to use conventional phone numbers in order to reach these communities. In

⁴ https://nces.ed.gov/programs/digest/d17/tables/dt17_702.60.asp

- addition, there needs to be a process to ensure that the community preferences regarding projects and policies are considered. Also, is there a process (page 13) to verify that the decisions made are consistent with public opinions?
- On the subtitle *Mitigation Subcommittee Recommendations* (Page 40), additional strategies could include telecommuting and other technological alternatives. In addition, how is commercial (freight) considered as part of these strategies?
 - On page 41, how will the overburdened communities be identified? This should be tied to the equity mapping effort. Specific thresholds could be suggested to identify low, medium, and high levels of burden within communities.
 - For theme 4 on workforce development, there need to be studies looking at Connecticut workers' skills gaps. Based on these results, joint efforts with local schools and corporations will be needed to match the skills necessary for green jobs.
 - A final missing element relates to interstate coordination; perhaps this is integral to theme 5 within the adaptation strategies. Climate change actions need to be scaled up to regional levels.

2. Progress on Mitigation Strategies Draft Reports

[Contributors: Mike Rubin]

Expand consumer education and awareness efforts to increase the uptake of zero- and low- carbon technology measures

The program's stated goal is to increase uptake of zero- and low-carbon technology, but it seems as though the outcomes observed in the assessment are primarily the expansion of messaging strategies and the population exposed to these messages. The key question is, what has been the change in adoption of lower-emissions technologies attributable to these activities? If there is a clear research design to assess the impact of these information campaigns on adoption of technologies for lower emissions, it is not clear in this document.

The group might consider designing an evaluation that would measure individual- or neighborhood/other geographic unit-level emissions technology behavior and assess the extent to which it responds to these information campaigns. This could take a variety of forms. Lab experiments exposing subjects to various messaging and measuring some behavioral response may be the easiest to implement, and could provide some clues, but would have limited external validity to actual technology uptake in the broader community. The group might vary where, or through what media, they distribute certain information campaigns and follow up with individuals exposed and unexposed to elicit their uptake. The key would be to design an impact evaluation that allows us to determine whether, and to what extent, these information campaigns change behavior and investment in the alternative technology.

The document highlights that the LMI communities are key, and attributes lack of resources to the lagging uptake or implementation of transitions to lower-emissions

technology. It may very well be the case that limited access to information represents a barrier to progress, but precisely because resources are a constraint that information campaigns may be of limited value. In order to assess the impact of the information campaigns, alongside the policies that provide incentives for technology uptake, requires an evaluation design that allows tracing changes in behavior to exposure to the campaign. This would allow documenting the effectiveness and cost-efficiency of the campaign. Steps forward might include evaluating the combination of information with complementary policies that aim to resolve these resource constraints as well, to determine which combination of strategies works best to encourage uptake of low-emissions technology.

A clear evaluation of the impact of current strategies is a crucial first step to motivate the questions regarding whether additional strategies mentioned (e.g., door-to-door, town-based, etc.) are needed. We also need an evaluation of existing strategies (for their impacts on behavioral outcomes) to compare to the assessments of these alternative strategies if and when they are implemented. The introduction of new strategies should be accompanied by an implementation that takes the evaluation of outcomes into account.

The document notes that real estate professionals have resisted voluntary action. Though not stated explicitly, it seems as though this is a matter of financial and business incentives, structural features of the industry. Therefore, it is not clear why or how training real estate professionals would result in a desirable or sufficient change in behavior to promote efficient emissions. The document alludes to policy options that have been blocked or delayed that would require reporting emissions information, which would, it seems, address these industry fundamentals (though there remains the question of whether those transparency initiatives are sufficient or effective in yielding actual changes in consumer behavior and in emissions!). But, if legislation avenues are blocked politically, it may be worth considering alternative ways to alter these incentives. Of course, it may be the case that training real estate professionals would work, but it may be useful to establish empirical evidence for this before expanding or continuing to invest resources in those efforts, given that incentives may dominate. And if possible, it would be ideal to design a pilot program to compare the effects of training to alternative strategies that address incentives.

What is the mechanism for change in emissions associated with changing real estate professionals' behavior? Is the information on energy efficiency supposed to drive changes in consumer behavior? Is there evidence that it would, in fact, make meaningful changes sufficient to motivate owners to invest in energy-efficient technology in their properties? Given the dominance of resource constraints in housing considerations, I would suspect there are multiple links in the causal chain that could break down between training real estate professionals and the desired outcomes of increased rates in investment in low-emissions technology.

The new strategy providing a one-stop-shop concierge to advise owners provides an opportunity to build in an evaluation component from the beginning. Each of the identified barriers may require different strategies for addressing that source of under-investment in lower-emissions technologies. The changing and varied nature of the incentives for upgrades seems the most direct opportunity to engage for evaluation. Streamlining and simplifying the incentives programs coupled with an information campaign in certain jurisdictions but not others, to compare changes in behavior, for example.

The issues surrounding the fact that upgrades are usually taken up to address immediate concerns as building components fail seems a more difficult problem rooted in the fundamentals of owners' behavior that generates opportunities to promote lower-emissions alternatives. What are the kinds of interventions that would encourage owners to devote attention or identify incentives to upgrade more regularly, or during time periods that do not immediately respond to building component failures? Again, this may come down to thinking about incentives rather than simply access to information.

To engage with the equity initiative highlighted in other areas of the GC3 documents, these evaluations might build in assessment of the distributional and migration consequences of these campaigns. Most directly, we may expect that promoting upgrades and adoption of new technology in buildings in LMI communities may contribute to rises in housing prices that displace those currently residing in these communities and prevent their equitable access to the benefits of these programs. What complementary policy, information campaigns, and incentive programs may be necessary and effective in protecting these communities and securing their access to benefits from the programs? These outcomes should be clearly defined and measured and incorporated into the monitoring and evaluation of program impacts from the very beginning.

3. Rivers Sub-Working Group Draft Report

[Contributor: Guiling Wang]

On Page 4, "According to the Connecticut Physical Climate Science Assessment Report (2019), the observed and projected annual total precipitation in Connecticut is projected to increase by 4-5 inches by the midcentury and by 4.5-5.5 inches by the late century (2070-2099)."

On Page 16, "Based on Connecticut Physical Climate Science Assessment Report (2019), the observed and projected annual total precipitation in CT is projected to increase by 4-5 inches (approximately 8.5%) by the midcentury (2040-2069) and by 4.5-5.5 inches (approximately 10%) by the late century (2070-2099)."

I have one editorial comment (actually a correction, since these sentences cite numbers I produced) and one scientific comment:

1. Edits: "observed and projected" should be deleted. The sentences should read as "... (2019), the annual total precipitation in Connecticut is projected to increase by" If you would like, you can include information on how observed annual total precipitation has been changing by including additional information, but the numbers cited here are purely for projected future changes.
2. Given that the focus here is on rivers, mentioning the projected precipitation increase alone might be misleading. I believe the projected decrease of potential water availability is highly relevant. A decrease of potential water availability in summer (by 2.4 inches by the midcentury) is projected due to a strong increase of potential evapotranspiration in a warmer climate. This has enormous impact on summer base flow with greatly enhanced risk of streams running dry.

4. **Science and technology Draft report**

[Contributors: Marisa E. Auguste and Diego Cerrai]

The component related to engaging and educating leaders, businesses, and advocates regarding the importance of climate change action is critically important. Indeed, the report is accurate in stating that "education is not just for children." Even seasoned transportation experts need new tools to fully apprehend and reflect the human element and the necessity of behavior modification in transportation. For example, research demonstrates the involvement of human error in crash outcomes; more fulsomely reflecting the benefits of new approaches has been a crucial first step in advancing traffic safety initiatives through the Connecticut Transportation Safety Research Center (CTSRC).

In the report, it is written: "Climate impacts to energy reliability are underscored by recurring and recent storm events. A pernicious cycle of power outages and recovery efforts (at all levels) risks serious economic and health impacts, lost mitigation, and cumulative impacts. Some factors:

- **Extensive vegetative management releases stored carbon and decreases ongoing mitigation, increases local temperatures, and fosters a network of invasive plants."**

Beyond the fact that no references are found to support this opinion⁵, I believe that the reasons why vegetation management is performed are entirely missing in the sentence. Vegetation management is performed for many reasons by different entities (for details on vegetation management, see the USDA website: <https://www.fs.fed.us/forestmanagement/vegetation-management/>). In the energy field, vegetation management is performed to increase the resilience of the system to weather and climate extremes (which is actually the subject of the main sentence above). This need becomes even more pressing in a changing climate, due to an increase of storms intensity, as discussed earlier in the document:

- *9. Though it is unclear whether the frequency or intensity of extratropical storms in Connecticut will change, they will likely bring more precipitation. There will be less snow and more rain, but high snowfall events will be more probable.*
- *10. Projection of changes in the frequency of tropical cyclones in a warmer climate are uncertain. However, it is likely that they will have higher winds and lead to more precipitation. Since 1980 there has been an increase in the frequency of hurricanes in category 3 or greater.*

Since it is demonstrated that utility vegetation management increases the system resiliency to extreme events (see ⁶), I believe that the above sentence in bold needs to be either supported or replaced with a more comprehensive explanation of the pros and cons of vegetation management.

5. Infrastructure and land-use Draft report

[Contributors Marisa E. Auguste]

I would like to highlight non-driving teenagers and young adults as an additional vulnerable population with regards to publicly funded transit and the built environment for non-motorist travel. I conducted a retrospective survey of CT teenagers' travel behavior and mobility issues (in press in *Transportation Research Interdisciplinary Perspectives*) and discovered that because of age and financial restrictions (i.e., GDL, ride-share age requirements), teens in rural areas who do not drive or otherwise have access to a personal vehicle, face specific challenges. Their environments typically lack reasonable access to public transit, lessening their exposure to businesses and commodities outside their immediate area and their potential for employment. There is also a noticeable absence of built sidewalks and bike paths in rural areas and many pedestrians and cyclists are left having to traverse narrow, dimly lit roadways with high-speed vehicle traffic, increase their risk for injury and death. If these areas were to become flooded as a result of climate change, it could greatly exacerbate these issues.

⁵ It looks like the document refers to “vegetation mismanagement” instead of “vegetative management”

⁶ <https://www.sciencedirect.com/science/article/pii/S0378779619302287>

Considering the income disparities in the state and that nearly a quarter of CT's population is under the age of 21, this may be something to consider.

We appreciate the opportunity to provide input on the draft reports and we look forward to participating in future discussions on its content and implementation.

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