

**From:** Mike Nakagawa

**Sent:** Friday, December 6, 2019 12:22 PM

**To:** Woodbury, Catherine <cwoodbury@cambridgema.gov>

**Subject:** Comments provided at Dec 5, 2019 Urban Forest Master Plan Task Force meeting

Dear Urban Forest Master Plan Task Force,

I am attaching my written comments, which I provided to the Task Force, and transcribing my oral comments at the meeting herein.

I am generally supportive of the UFMP Technical Report, and am providing detailed written comments. I would like to highlight that the recommendations indicate a 15% canopy coverage target for commercial and industrial development, which is just far too low if we are to increase our canopy to the 40% level recommended for cooling gains per the previously cited Ziter study. Overall, the low targets in the Technical Report would increase citywide canopy coverage to only 2% more than what we had last year, and less than what we had 10 years ago.

The problem we face is not the City staff trying to make gains on environmental issues. The problem is at the top. Trees limit the area available for development. The City Manager wants development as a source of revenue and to address our housing issues. The only way we can make gains is if we change the laws that the executive branch is charged with enforcing. That means we need to clearly state what we need in ordinances, such as you discussed tonight, and zoning ordinances, which will direct how places are built.

As a member of the Climate Resilience Zoning Task Force (CRZTF), I ask you to provide guidance to our task force. There are several areas in the technical report that indicate possible zoning changes, as I have provided in my written comments, that I hope you will discuss to provide specific recommendations for us to discuss as we consider our recommendation for future climate resilience zoning.

In regard to things discussed tonight...

I have previously suggested that the City could provide a tax credit as a sort of conservation easement. The amount might be based on the canopy spread of permanently preserved trees. The value might be provided in credits that homeowners could use to offset tree assessment and pruning costs provided by our arborists, avoiding the issue of giving free services to homeowners. As trees grow, the tax benefit would increase.

In terms of the dollar amounts discussed in the tree ordinance, perhaps the values would be used if paying into the tree fund instead of replanting, because that is the value of replacing what the city has lost in tree benefit. If the property owner decides to replant, perhaps the expected mature tree canopy spread could be used in evaluating the replacement. Mature canopy is what is used in the Green/Cool Factor being developed by the City, which is to be discussed by the CRZTF. Your help in deciding the balance of tree credits in the Cool Factor would be helpful.

I wanted to point out that the cross sectional area of the trunk may be a good representation of canopy size, as the area of the trunk represents the capacity of providing water to the leaves.

Finally, my next door neighbors removed every last bit of vegetation from their back yard to put in a stone patio. They put in two ornamental pear trees to replace the previous shade trees. More needs to be considered than just a one-to-one replacement.

Thank you,  
Mike Nakagawa

# MICHAEL F. NAKAGAWA

Cambridge, MA 02140

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December 5, 2019

Dear Urban Forest Master Plan Task Force,

Thank you for taking the time to discuss the Urban Forest Master Plan (UFMP) Technical Report. There are certainly many good recommendations that I would like to see translated into stated city policy.

I have attached my comments to the City Council Health and Environment Committee when they were presented the update and report last month. Because the report was released the day of the Committee meeting, I was unable to present more than preliminary thoughts at the meeting, so I am including some further comments for your consideration.

As a member of the Climate Resilience Zoning Task Force, I think it would be helpful to have specific zoning recommendations from the UFMP Task Force which would lead to more informed discussions when developing our recommendations to the City.

The report mentions a minimum canopy goal for EQUITY (page 235) of 25% per neighborhood, with extra effort paid to neighborhoods to reach the minimum. The presentation at the Health and Environment Committee meeting indicated that in neighborhoods above 25%, they would try to minimize loss. Note, not make gains, just minimize loss. Page 237 states: "If neighborhoods that currently have a canopy cover deficit were all to achieve 25% canopy cover, total citywide canopy cover would increase to 28%." That's only 2% more coverage than last year, and less than the 30% of 2009.

The recent study by C. Ziter, published in the Proceedings of the National Academy of Sciences, showed that significant cooling was achieved only when canopy levels exceeded 40%. [National Science Foundation [https://www.nsf.gov/discoveries/disc\\_summ.jsp?cntn\\_id=298456](https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=298456)] Therefore, it seems that in addition to having a minimum coverage level, we should also have a target level, ideally at least 40%. Note that the canopy cover targets recommended on page 142 of the technical report- for all of the zoning areas - is under the Ziter study's threshold of 40% for more than insignificant cooling.

City targets for canopy cover are:  
Residential - no setbacks: 20%  
Residential - setbacks: 35%  
Institutional - 30%  
Commerical/industrial - 15% (!!!)

We should have a larger target.

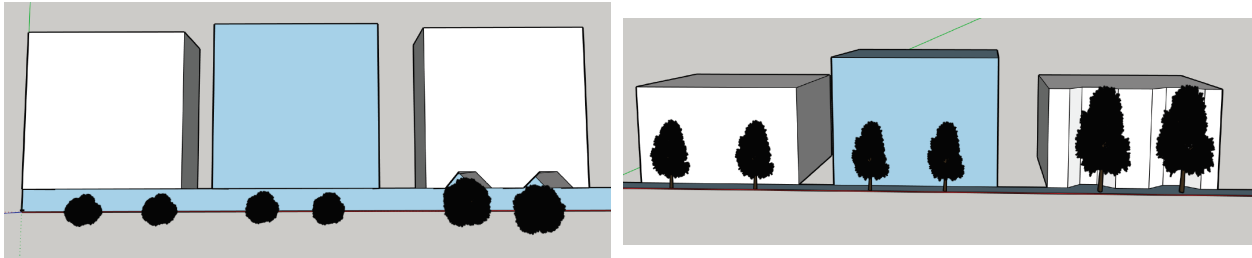
The Green Factor that was proposed with the Climate Safety Petition, now being developed as the "Cool Factor" by CDD, appears on page 142. However, under "cons," they claim it "[i]s time intensive for staff to evaluate, monitor, and enforce." This seems somewhat of a stretch. By creating a single number based on the elements in the landscape plan on a single page form does not seem difficult to evaluate, monitor or enforce. Periodically we may want to evaluate if the intended outcomes are being achieved, then adjust the weighting factors, and possibly elements, accordingly.

One of the keys aspects of the Green/Cool Factor is balancing the relative weighting of landscaping to achieve the City's goals. It would be helpful for the UFMP Task Force to discuss the benefits of different mature canopy sizes and the weighting of saved mature trees vs. new saplings to help with the initial development of the Cool Factor.

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The Technical Report also mentions periodic deeper setbacks, which I have been suggesting would allow larger trees that don't have branch growth limited by the building without needing a continuous deep setback, on page 177. They don't mention that this could be part of zoning, rather than just a request to the property owner, who will likely say no.

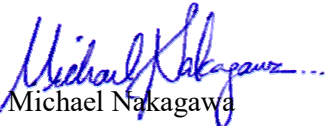
Here are some figures created with my rudimentary landscape planning skills to show the difference of how two trees would look in front of 100-foot wide buildings with zero setback to a 15-foot sidewalk. The left shows the size of trees in front of a 60-foot building when the canopy reaches the building. The middle shows the same situation with an 80-foot building, showing much less shading from solar heat gain in the summer. The right shows a 60-foot building with two 10-foot deep recesses.



Below are the page numbers of the referenced sections of the Technical Report, followed by my letter to the Health and Environment Committee

Thank you for seriously considering the urban forest as an essential part of our city's future.

Sincerely,

  
Michael Nakagawa

attachment

Page 142

POLICY STRATEGY 3A

### **Establish canopy coverage requirements by parcel through Zoning Ordinance**

The concepts behind this strategy have been taken under consideration by the Resilient Zoning Task Force

#### ANALYSIS

If the City amended the Zoning Ordinance to require specific canopy coverage percentages by land use or district, future development would be structured to contribute to overall City-wide goals. Emphasis or higher percentages could be applied to priority areas such as canopy corridors through an overlay district. If cover requirements were to apply citywide, they could be incorporated into the existing requirements/standards for open space or established as a separate minimum requirement alongside the existing setback and open space requirements applied to each zoning district and land use type

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POLICY STRATEGY 3C

### **Establish flexible landscape requirements through Zoning Ordinance**

## MICHAEL F. NAKAGAWA

The concepts behind this strategy have been taken under consideration by the Resilient Zoning Task Force.

### ANALYSIS

Implementing a more flexible system that acknowledges and balances the value of all green infrastructure including contributions to canopy cover could help to consolidate the existing landscape requirements, making them more consistent across the city and more flexible for property owners.

Sometimes referred to as a "Green Factor," this type of system can be designed to encourage mature tree retention and tree planting through multipliers “increasing” their relative value, but would allow property owners who cannot meet canopy coverage requirements to achieve similar goals with alternative green infrastructure features like green roofs, rain gardens, planting areas, and other features. This is a complex system needing thorough analysis and periodic review to ensure the goals of the system are being realized.

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DESIGN STRATEGY 2D

### **Encourage frontage planting with varied setbacks**

#### PROPOSED:

Create periodic setbacks in the frontage zone, providing for landscaped spaces; where there is no parking implement multiple stories of vegetation in verges.

# MICHAEL F. NAKAGAWA

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November 12, 2019

Dear Health and Environment Committee,

Below are the comments I presented at the Health and Environment Committee meeting this evening. Additionally, I would like to point out more pointedly that the report set out a minimum goal for tree canopy coverage per neighborhood, suggesting a 25% coverage minimum, with areas above that being targeted to minimize canopy loss. The recent study by C. Ziter, published in the Proceedings of the National Academy of Sciences, showed that significant cooling was achieved only when canopy levels exceeded 40%. Therefore, it seems that in addition to having a minimum coverage level, we should also have a target level, ideally at least 40%.

Thank you for seriously considering the Urban Forest Master Plan as an essential part of our city's future.

Sincerely,



Michael Nakagawa

Comments presented at the Health and Environment Committee, November 12, 2019 with some annotations for references in brackets:

This morning I attended the presentation of the Urban Land Institute [ULI] report Living with Heat [<https://boston.uli.org/living-with-heat-report>]. On page 7 of the report, they show a map of the entire urban inner core overlaid with tree canopy [in green] and the relative heat [grey to yellow, orange and red]. We have seen the picture for just Cambridge [Fig 2.3, Cambridge Urban Forest Master Plan Technical Report, November 2019, page 53], but seeing the context of the whole inner core region, Cambridge looks pretty good. However, we can also see the effects in areas with many big buildings and large impervious areas in our neighboring cities that create widespread extreme heat when there are few, if any, trees. Currently, Cambridge is increasing the development of big buildings that displace trees. We should be looking toward making significant improvements in our city's hot spots while we can, before new development places buildings that will occupy the space for trees. We should not be content with 5-10% improvements.

At the ULI presentation, "cool corridors" was a common theme for the focus areas. It was indicated that bus routes tend to represent areas with vulnerable populations, so these would be ideal locations for cool corridors to protect the residents using transit to get around. But if we just focus on these corridors, the rich people will buy up the properties on the new, lush, tree-lined streets with transit options, displacing the current residents and leaving the rest with nothing. The trees need to be interspersed throughout the city, not just in cool corridors.

The ULI planners also suggested that taller, denser buildings should be developed to make room for more open space for trees. But large buildings have greater thermal mass, which retains the solar heat energy and releases it at night, and taller buildings will be harder to shade as they exceed the height of trees. Also, it's hard to achieve a recommended 40% canopy threshold [National Science Foundation [https://www.nsf.gov/discoveries/disc\\_summ.jsp?cntn\\_id=298456](https://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=298456)] when buildings cover areas the size of city blocks.

## MICHAEL F. NAKAGAWA

I like the Urban Forest Master Plan report's suggestion of converting two-way streets to one-way streets to have space for trees in areas that currently don't have adequate setbacks. I would also suggest possibly widening the sidewalks on one side of the street for trees and ADA compliance, while making the other side narrower to compensate.

I also feel we need to change the view of trees as "nice" to trees as a necessary part of our infrastructure that residents can't opt out.

I like many of the recommendations presented, but I have little faith that this will translate into codified city policy. I have seen similar results from many city task forces and working groups. Please work to ensure we actually see the recommendations get implemented.

Thank you.

