City of Seattle
Urban Forestry Commission

Julia Michalak (Position #1 – Wildlife Biologist), Co-chair
Joshua Morris (Position #7 – NGO), Co-Chair
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Jessica Jones (Position # 12 – Public Health)

May 4, 2022

Urban Forestry Core Team
700 5th Avenue
Seattle, WA 98104

RE: Recommendations on Canopy Cover Assessment Work

Dear Urban Forestry Core Team,

Duwamish Lands (Seattle, WA) – The Urban Forestry Commission (UFC) thanks the City for reassessing Seattle's tree canopy cover. For the first time, we will have robust, directly comparable datasets from which to establish trends in our urban forest, such as canopy loss or gain and changes in size and species composition.

The UFC respectfully submits a list of recommendations and questions that it believes are important to investigate. Answers to these questions can directly inform for urban forest management decisions with implications for tree canopy equity, climate resilience, and public health.

Tree Count, Size and Height

The 2016 assessment maps trees with a diameter at standard height (DSH) ≥ 30 inches and the location of tree groves with at least 8 trees with DSH ≥ 12 inches forming a continuous canopy. Figure 16 in the 2016 report shows the results of this analysis. There is a pronounced cluster of large trees located within downtown. This is surprising and does not seem to match with current aerial imagery. The UFC would like confirmation that these data are accurately illustrating the location of large trees in Seattle.

The DSH is measured based on statistical relationships between height and DSH. The 2016 report does not include information on the accuracy of these estimates, which would be helpful to know.

The scope of work document lists the following dataset: "**Tree Count**. The number of trees attributed with the crown radius and height." It is not clear whether all trees are mapped, but only those 30 inches or greater were shown in the report, or whether only 30 inch or greater trees were mapped. If possible, we would be interested in seeing maps of trees in the following size classes: 1) DSH ≥ 30 inches, 2) DSH < 30 and ≥ 24 inches, 3) DSH < 24 and ≥ 12 inches, and 4) DSH < 12 and ≥ 6 inches. We understand that

these DSH values are estimates based on tree height and not completely accurate. However, LiDAR estimates could be compared to field surveys to estimate accuracy.

The UFC would be interested in seeing tree canopy summaries at different heights. For example, the Washington Department of Fish and Wildlife uses the following height classes in their canopy cover assessment: 0-10', 11-20', 21-50', 51-80', 81-110' and 110-190'. Understanding canopy cover for various height classes will provide information on differently sized trees which provide different types of ecosystem benefits.

The UFC is interested in knowing how the distribution of tree canopy height and tree canopy spread has changed over time. How does this differ based on the geographies of interest (e.g., land use types, census tracts)? Knowing this for all four tree size classes is desirable.

Land use and associated development influence on tree canopy

This is a very important question and was minimally analyzed in the 2016 report. In the 2016 report, the analysts selected randomized points within different land use types (single family, multifamily, commercial, etc.) and compared canopy cover based on aerial imagery for 2007-2017. The results were not statistically significant as only 10 points were selected from each land use type. Given that LiDAR data is available for both 2016 and 2021, we hope that this analysis can include a substantially larger number of sampling points.

In addition to the land use types that were summarized within the 2016 report, we also recommend further differentiating between different types of development that occur on single family parcels:

- Single family to new single-family house
- Single family to multi-family development
- Single family to new attached accessory dwelling units/detached accessory dwelling units with existing or new single-family house

We suggest focusing on single family (i.e., neighborhood residential) developments as these are the parcels with the greatest current canopy coverage and the greatest potential for canopy loss through the development process. Focusing on single family would allow for a more detailed assessment of the degree of canopy loss/retention depending on the type of development.

Within all land use types, there is a need to compare before and after for a sample of parcels with no development to establish a baseline level of change.

Land suitable for planting

Identifying how much land is available for planting is of interest to the UFC. We are particularly interested in the availability of plantable land on public lands. Figure 5 in the 2016 report shows an image of "Potential Tree Canopy." It is not clear how this was calculated from the report or what it represents. There is no summary of "potential tree canopy" by census tract or land use type, which would be useful. We would like to know what the relative potential for increasing tree canopy cover is within these different jurisdictions with a particular interest in equity focus locations, public lands, and locations with the potential to provide off-site mitigation.

Forest Patch Model

The scope of work mentions implementing a Forest Patch Model, which was not included in the 2016 report. The UFC believes that a forest patch analysis is important for understanding the configuration of the urban forest including the distribution of large, medium, and small forest patches. This configuration has significant implications for wildlife habitat suitability.

Ecosystem services

The scope of work mentions an Ecosystem Service Analysis for both urban heat island and stormwater runoff. The 2016 report includes an analysis of urban heat island effects, but not stormwater runoff. Stormwater runoff has significant implications for salmon habitat quality and Puget sound water quality. The UFC would like to see an analysis of stormwater runoff in the 2022 report in addition to the urban heat island effects. We would also be interested in estimates of soil carbon storage and above ground biomass storage.

Recommended Geographies of Interest

The UFC is interested in seeing changes in tree canopy, number of trees, tree size, and forest patch size by different "geographies of interest" (i.e., zoning, ownership, neighborhood, etc.). Specifically, we recommend summaries based on the following:

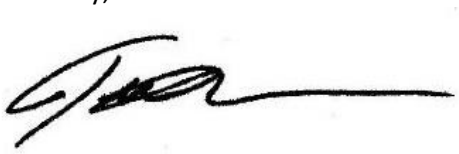
- Zone [need to identify which zoning types and how to group]
- Urban centers, hub urban villages, residential urban villages, manufacturing/industrial areas, remainder of city.
- Landownership/jurisdiction: Private versus public, and break public down by department jurisdiction (Parks, SDOT, etc.).
- Right-of-way analyzed separate from other land use types
- Special areas of interest: EEIs, SDOT street tree management units, Urban Forest Management Units, schools, riparian areas.
- Industrial buffer zones? (i.e., the buffer areas between industrial and residential zones)
- Undeveloped rights-of-way/street ends
- Highways and other high-traffic transportation corridors

<u>Additional questions of interest</u>

- How much canopy loss (if any) are we seeing on private property without redevelopment? This would help us quantify tree canopy loss on private property over time outside the development process due to aging, hazard, views, gardens, etc.
- How has tree cover changed in buffer areas surrounding parks? Tree canopy in the "matrix" surrounding a protected natural area can help buffer edge effects and "soften" the matrix between protected areas. In addition, trees lining streets leading to parks improves the experience of walking to the park.
- How has tree cover changed in priority corridor locations (assuming these exist)?
- For zones that are a priority for tree planting, how does the rate of change in those locations compare to the rate of change overall or in non-priority planting locations?
- How has canopy changed in areas with zoning changes implemented?

- For parcels that had been under development, is it possible to know how many trees might have been impacted in a long-term perspective? For example, if we see new pavement is built under an existing tree's dripline, it is reasonable to say the existing tree is susceptible of long-term impact.
- Analyzing tree health condition over time based on Normalized Difference Vegetation Index bands. For example, we know a large number of trees, especially south facing trees, were damaged during the heat wave last year. The datasets comparison can help confirm the location and scale.

Sincerely,



Julia Michalak, Co-Chair

Josh Morris, Co-Chair

cc: Mayor Bruce Harrell, Council President Deborah Juarez, CM Lisa Herbold, CM Andrew Lewis, CM Tammy Morales, CM Teresa Mosqueda, CM Sara Nelson, CM Alex Pedersen, CM Kshama Sawant, CM Dan Strauss, Marco Lowe, Jessyn Farrell, Michelle Caulfield, Sharon Lerman, Urban Forestry Management Team

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