

## **Urban Forest Climate Resiliency Master Plan Kick-Off Public Forum**

Wednesday, June 10, 2020, 6:00 PM

Webex Virtual Meeting

**Committee & Staff Present:** Nancy Heller (Chair), Clara Batchelor, Elizabeth Erdman, Roberta Schnoor, Erin Gallentine, Thomas Brady, Katie Weatherseed, Jed Fehrenbach, Swannie Jett, Kara Brewton, Ruthann Dobek

**Guests:** See attached.

### **Welcome/Call Meeting to Order**

N. Heller introduced herself and welcomed the public to the kickoff meeting. She introduced the members of the Select Board Committee on Tree Protection.

### **Project Overview**

E. Gallentine introduced herself and gave a brief overview of the Parks and Open Space Division. She described the importance of trees in Brookline, particularly as it relates to climate change. E. Gallentine then outlined the project goals, and discussed the anticipated project deliverables and project timeline. She stated that the need for an Urban Forest Climate Resiliency Master Plan came out of the Climate Action Summit and was identified as a priority in the 2017 Climate Action Plan. She continued that the project received tremendous support from community as the Town applied for an MVP Action Grant, and discussed the Municipal Vulnerability Preparedness Program. She briefly reviewed the project budget, and introduced KZLA, the selected Lead Consultant for the project. She emphasized that the project is intended to serve the community for generations ahead. The Parks and Open Space Division will be looking for opportunities for community engagement throughout the entirety of the project. She continued to outline the schedule for the six future public forums, and reviewed the goals for each meeting.

### **Introduction to Project Consultant Team**

Kyle Zick, of Kyle Zick Landscape Architecture, Inc. (KZLA), introduced himself and the present members of his team: Indrani Ghosh of Weston & Sampson and Nick Martin of Bartlett Tree Experts. He described his previous work experiences in crafting urban forest master plans and conducting forestry work.

### **Review of Regional & Local Impacts of Climate Change**

I. Ghosh reviewed the projected increases in average temperatures and summer temperatures in the Northeast. She concluded that late century projections indicate that the climate of Massachusetts will be like that of current-day Virginia.

I. Ghosh then shared projections determined locally for the City of Cambridge. She stated that by midcentury, Brookline should not only expect hotter temperatures, but longer heatwaves. She discussed the dangerous effects of heat on human health. She reviewed the average ambient air temperatures in Brookline, and discussed the impacts of the urban heat island effect and the prevalence of localized hot spots (specifically in Northern Brookline along Beacon Street and the Harvard Street corridors).

I. Ghosh stated that the impacts of climate change are not distributed equally, and the Town should prioritize the health and safety of vulnerable population groups. She presented a figure which showed Brookline's Environmental Justice neighborhoods overlaid with known urban heat islands. The figure indicated that urbanized areas, particularly in North Brookline, have particularly high temperatures and large concentrations of vulnerable population groups.

I. Ghosh discussed how extreme precipitation events have increased significantly from 1958 to 2012. Projections show that the 25-years storms Brookline is currently experiencing will likely be the 10-year

storm by 2070. She continued that today's 100-year storm will be comparable to a 25-year storm in 2070. She commented on the impacts of climate change on inland flooding, and noted the projected change in sea level rise as modeled in the Mass. Flood Risk Model, by Mass DOT.

She discussed predicted changes to ecosystems, particularly in regards to species assemblages. K. Zick elaborated by discussing USDA hardiness zones, stating that the hardiness zones in Massachusetts have already changed once over the span of his career. He added that some trees, such as sugar maples, may not be able to grow in Brookline as a result of climate change, and others that were once not able to grow in Brookline, may be abundant across Town in several decades time.

K. Zick stated that hotter temperatures will contribute to heat-related illnesses and higher cooling costs. More frequent and extreme flooding will likely cause property and infrastructure damage. He stated that the impacts of climate change will produce numerous stressors for trees in Brookline.

#### Overview of Challenges & Benefits of the Urban Forest

K. Zick stated that by expanding and caring for the urban forest, the Town can mitigate the impacts of climate change and improve overall quality of life for Brookline residents. He added that trees can offset some flooding concerns, lower temperatures, and absorb carbon dioxide. He reviewed the many benefits of an urban forest.

He added that there are many challenges to growing trees in an urban environment. K. Zick stated that arborists have to tailor emergency responses to the urban environment. He listed additional challenges, including the abundance of pollen, property and infrastructure damage from roots and tree growth, and the soil volume requirements for a healthy tree to grow.

K. Zick displayed a map from Brookline GIS depicting locations where gas leaks have been found and had a profound impact on street trees. He stated that natural gas causes trees to decline or die. He commented that natural gas infrastructure is aging and is often difficult to replace/restore.

#### Assessing Brookline's Canopy: 3-Part Inventory

N. Martin described the history of Brookline's inventories, including the first inventory which was done in 1994 by volunteers. He noted that Brookline was concerned with planting new trees in the 1880s. He congratulated Brookline on being a designated Tree City USA community for over 30 years.

He stated that his crews are assessing Brookline's tree canopy, and will update the Town's current records of 11,500 public trees. He described his previous work experiences with KZLA. He stated that the overall goal of the inventory is to combine the stem-by-stem data with LiDAR data, to get a good picture of the entire urban forest (both public and private trees).

N. Martin stated that the stem-by-stem inventory involves identifying each tree's species, diameter at breast height, and condition. He stated that the process has involved a great deal of planning and collaboration between Bartlett, KZLA and the Town. He added that his associate, Tim Armstrong, has been using the Town's PeopleGIS platform to update current inventory information and has had a good experience with the software so far. He stated that his crews have been working for the last two weeks of this month, and anticipate completing the stem-by-stem inventory in July. He stated that his crews have been seeing fewer issues in the field than they usually do in urban environments.

He noted that the purpose of this inventory is to better our understanding of what Brookline currently has in regards to its street trees, which will then serve as a baseline for future comparisons. He added that the tree condition can inform whether a species is suited for a certain location, and that tree size can inform on general age and maturity of the urban forest. The inventory will also help guide future planting efforts – the Town is not only looking to plant within the gaps of the canopy, but is also looking for opportunities to plant understory trees. He also added that the trees that the Town plants will have to be able to withstand both hot and extremely cold conditions.

K. Zick stated that the second part of the inventory consists of soil testing. He stated that soil samples were collected in 16 locations and that this information will be compared with trends seen in the other components of the inventory.

K. Zick stated that the third and final part of the inventory is the LiDAR analysis. He described how LiDAR imagery capture can detect heights and be used to isolate information on trees and land cover, etc. Data from 2014 and 2020 will be sent to the University of Vermont which will allow the Town to see how tree canopy and land cover has changed. LiDAR will also provide information on private trees, which is of great importance to this project. With this information, the Town will be armed with information to make informed decisions about the management of the urban forest- how the Town reacts to emergencies, potential changes to equipment, staffing, budget, etc. It will also allow the Town to set informed goals for canopy coverage, tree performance and tree condition, and make sure it is equitably distributed for generations in the future.

He stated that the final piece of this project will be to analyze town operations and best practices, and create recommendations for policy, general operations, etc.

### Open Discussion/Questions/Feedback

E. Gallentine thanked the presenters and noted her excitement to work with them on this project. She recognized the Tree Warden/Town Arborist, Tom Brady, the Forestry Supervisor, Peter Jutras, and the Forestry Zone Manager, Richard Baily, and stated that she is very fortunate to have those three arborists as part of her team. E. Gallentine also recognized Dr. S. Jett, Director of Health and Human Services, Kara Brewton, Economic Development Director, and Ruthann Dobek, Council on Aging Director, who are working with the project team to address the impacts of climate change on environmental and human health for generations to come.

N. Heller thanked E. Gallentine and commented that the data from this project will be enormously helpful to the Town. She noted her excitement to be involved in this project and is interested to learn what we should plant and nourish going forward.

N. Heller inquired about Norway Maples and how they are faring in Town. She asked what KZLA might recommend as the Town looks to replace those trees. K. Zick responded that Norway Maples haven't been part of the Town's planting operations for several years now. He added that most are older and weak-wooded. He stated that in replacing the existing Norway Maples in Town, he would suggest replacing with a diverse number of species, which is what is currently happening in Brookline. N. Heller opened the discussion to the Committee members. There were no comments from the Committee.

E. Gallentine opened the discussion to comments and questions from the public. E. Gallentine read a chat-box comment from Anne Lusk, stating that there is a conflict between the space requirements for tree pits and ADA sidewalk design requirements, and she suggested bearing this matter in mind as the project team proceeds in their analysis. She recommended a broader application of silva cells. K. Zick stated that it's a good question and commented that this Plan will identify goals to increase canopy coverage in areas that are challenging in terms of space. He said that he has had good experiences with silva cells, and his team will be seeking out what are the best practices for these difficult circumstances. E. Gallentine also noted that we will need to think about public access and planting strategies that are cohesive with Town goals for pedestrian/cyclist access and lighting. She noted that there are several comments supporting the soil sampling efforts included in this project. E. Gallentine read a comment from Hugh Mattison stating that the Town has limited the number of Norway maples. E. Gallentine then read another comment suggesting greater setbacks to allow for additional street tree plantings.

Pamela Templer and Michael Berger were unable to make their comments due to technical difficulties.

Sarah O'Neil stated her excitement that Brookline was able to attain grant funding for this project. She commented that the presentation was sobering and she is very interested in what data will show. She inquired

as to whether there will be a focus on planting native species, as these trees typically require less maintenance and are less susceptible to pests. She also inquired that in regards to tree distribution, would KZLA's inventory shed light on how many trees are publically owned, privately owned, commercially owned, etc.? E. Gallentine responded that as the Town is looking at climate change, it will need to think about what "native" looks like for Brookline moving forward. Some traditionally native species that once thrived in Town may not be as successful in the future. She noted that in the renovation of Fisher Hill Reservoir Park, both native and adaptive species were planted. She added that her Division is always thinking about pollinators and habitat, and is committed to managing invasive species in parks, sanctuaries, open spaces and water bodies. K. Zick added that the LiDAR-piece of the inventory will allow the Town to look at what trees are public and private. He stated that the Town will learn a lot from assessing the size, species diversity and condition of trees, and overlaying that data with ownership.

E. Gallentine read P. Templer's comment in the chat. She asked whether there are plans to construct a carbon budget for Brookline that could be incorporated into the Climate Action Plan. She is interested in learning how much carbon is being stored in vegetation and soils, and how much could be stored in the future. I. Ghosh stated that there are some tools available to do this type of analysis. She noted "iTree" as a potential tool.

E. Gallentine read M. Berger's comment in the chat. He inquired about the status of Putterham Woods and other natural stands of trees in regards to declining and/or dead trees. E. Gallentine stated that she is interested to see what the LiDAR shows. She added that the Town's assessment of Putterham Woods shows that this particular stand of trees is in poor condition. T. Brady stated that there is a large hemlock percentage in Putterham Woods and the trees have experienced some windthrow from recent storms. He noted that there has been a change in the water table, affecting trees along Hammond Pond Parkway, and that he has been seeing an increase in pests and pathogens of concern. He said that the Parks and Open Space Division has ramped up coordination with the state.

Maiyim Baron was unable to make her comment due to technical difficulties.

Matthew Eddy stated that he appreciated seeing the map of all the natural gas leaks in Brookline. He wondered what the spatial correlation between the natural gas leaks and the stem-by-stem inventory might show, and is curious to see how this information may inform future planning. K. Zick responded that it is a great asset that Brookline has gas leak information in GIS, and that the Town can identify a ring of disturbance around each leak which may affect trees. He added that this tool will allow the Town to identify trees of concern which require close monitoring. He noted that as repairs are done on these gas mains, it sometimes pushes the leaks further down the aging infrastructure, causing leaks in other locations. He concluded that this information will be part of an ongoing conversation.

Elizabeth Erdman thanked the project team for a great presentation. She stated that she wondered about how the project team will identify environmental justice neighborhoods to ensure that all vulnerable populations are accounted for. She added that crowded housing and rental housing may have been overlooked in the Environmental Justice Neighborhoods Map. E. Gallentine responded that the project team is working with the Housing Authority in this project and will be looking at population density and areas in Town where there are vulnerable communities. She added that K. Brewton and her team may have some additional guidance on identifying vulnerable populations. E. Erdman also mentioned that the project team might look to encourage residents on private ways to plant trees.

Dr. S. Jett stated that he was impressed with the presentation, and is excited about the future.

K. Weatherseed read several comments/questions in the "Q&A" box. Celeste Finison inquired as to whether Summit Avenue had been inventoried yet. T. Brady stated that the Town has pulled soil samples along Summit Avenue. He stated that National Grid has been doing work on the gas mains in this area, and so the soil samples will be very interesting. The stem-by-stem inventory work has not been completed yet for this stretch of roadway, but will be completed as part of the project.

C. Finison commented that she is thrilled about this project, and thanked Tom in his assistance in getting National Grid to do work on the gas pipelines. She commented that Summit Avenue has lost many of its major shade trees, and she is very interested in the results of the soil sampling. She inquired as to what trees might be planted along this street to replace the fallen trees. T. Brady responded that the Town will do an assessment, and will make sure that there are no active leaks. They will excavate any impacted soil and add new soil. He noted that Summit Avenue is a challenging area, as it is highly urbanized (meaning it is susceptible to the heat island effect) and is particularly steep and requires a great deal of salt in the winter. These factors will inform all decisions going forward.

Susan Helms Daley inquired about the prevalence of Emerald Ash Borer and Brookline's ash trees. T. Brady responded that Emerald Ash Borer has been impacting the region, and based on his experiences in Brookline, he believes the pest is now community-wide. He stated that Brookline has been working with the State and other departments regarding its spread. He noted that ash trees have also been effected by ash yellows. These trees are susceptible to several pathogens and decline quickly. K. Zick added that for all the reasons T. Brady mentioned, ash trees are not an ideal tree for Brookline anymore.

M. Eddy inquired as to whether the results of the stem-by-stem inventory will be made available to the public. E. Gallentine responded that the project team will be putting data and maps in the final report and will make this available online for everyone to access. Unfortunately, there is no tool that allows the public to access our PeopleGIS database. However, if M. Eddy or anyone from the public has specific questions, they may call the Parks and Open Space Division and staff can make certain data available to them. T. Brady added that the public can log into the Town's website and access the "tree viewer".

M. Baron stated that she hopes the Town focuses on preserving older trees. She added that she agreed with the previous comment on using natives, but recognizes the impact of climate change on whether certain native species are still a good fit for Brookline's landscape.

K. Brewton responded to an earlier comment on hotspots and vulnerable populations. She stated that the Town participated in a heat mapping project last summer in which heat across Town was captured through different hours of the day. She stated that the Town can look at those maps and identify hot spots at a small scale and identify nearby renter-specific apartments.

N. Heller inquired if anyone had any additional comments – there were none.

### Next Steps

E. Gallentine stated that the next public forum will be taking place on Zoom and apologized for the technical difficulties with Web-Ex. She stated that the next public forum will take place on September 14, 2020, and provided the URL for the project webpage and invited members of the public to reach out to K. Weatherseed if they wish to be included in the ListServ for this project. She added that the presentation will be posted on the website so that members of the public can access all the information shared tonight. She thanked K. Weatherseed, Project Manager, for her work on the project. E. Gallentine concluded that she is very excited about this project and thanked everyone for attending.

### Adjourn