

**Testimony of Jonathan M. Harris, 9 Marie Ave  
Regarding the Value of Mature Trees**

Public Comment Period of the City Council – January 28, 2019

Re: Policy Order #29

I work at Tufts University Global Development and Environment Institute, where we have an ongoing research project on forests and biomass, some of whose findings are relevant to efforts to preserve the urban tree canopy in Cambridge.

The primary conclusion from our studies concerns the extraordinary value of mature trees. Many people believe that when mature trees are cut, the damage can be compensated for by replanting – after all, aren't trees a renewable resource? The truth is not so simple.

For example, consider a project that removes a large 50-year old tree, approximately 18" in diameter and 45 feet high, and replaces it by planting a smaller tree, or trees, that are approximately 4" in diameter and 10-12 feet high. If the currently standing tree is about 4x the size of one of the proposed new trees in both radius and height, it would contain about 64 times as much biomass as the smaller tree and would store about 16 times as much carbon annually. Thus, to replace the lost biomass would require 64 new trees for each tree cut. Even to replace the annual carbon storage capacity would require 16 new trees per tree cut. These figures are clearly unrealistic for any of the tree-cutting going on in the city today. The damage done by cutting mature trees will therefore be long lasting. It will take decades to replace the carbon storage capacity and canopy area of the lost trees -- even if the new plantings survive in a city environment.

We tend to take for granted the trees that we see as we walk the streets of Cambridge. But these trees are a unique resource, the legacy of many decades of annual growth. It would not be quite accurate to refer to them as an irreplaceable resource, but they are replaceable only on a time-scale of decades or generations. In the meantime, tree cutting results in a carbon pulse to the atmosphere at a time when we can least afford it. According to the Intergovernmental Panel on Climate Change, the next few decades are critical to mitigating irreversible climate change. In terms of climate adaptation, it is also true that the next few decades will be a time when we have increasing need of tree canopy to mitigate urban heat island effects.

Planting new trees is an excellent endeavor, and the more of this that can be done as a long-term investment the better. But it does not compensate for the destruction of existing trees. I strongly support strengthening the Tree Protection Ordinance to take account of this important fact, and to minimize further losses of mature trees. This principle should also be applied for trees both on public and private property throughout the city.