January 12, 2016

Portland Planning and Sustainability Commission
1900 SW 4th Ave, Suite 7100,
Portland, OR 97201
psc@portlandoregon.gov

RE: Hearing on "Tree Preservation in Development Situations"

Dear Members of the Planning and Sustainability Commission:

Thank you for hosting this hearing and providing an opportunity for members of the community to share our thoughts and concerns about the City's relationship with our trees and how the City can adopt a more successful role in their protection and management.

We are here, because over the past year, the removal of large healthy trees across our City has been an unmitigated mistake. On almost a monthly basis this summer and fall, it has brought neighbors out protesting into the streets and creating human walls. It has led concerned citizens to climb into the upper branches of majestic trees to protect them from the developer who sees them only as dots on a site plan, or a cheap permit away from an empty lot. The way we permit trees in our City to be removed has to be changed.

I have served two years as a volunteer Commissioner with the Portland Urban Forestry Commission. The trees in Portland work around the clock, cleaning our air, slowing down and filtering our stormwater, and providing shade and safer, walkable streets. They provide a refuge from summer heat and winter rains for those of us, like our schoolchildren, who wait on the sidewalk for our next bus ride. They help to reconnect our modern gray urban infrastructure to our surrounding environment, providing habitat connectivity for wildlife, and an aesthetic identity for Portland that extends back more than a century (e.g., tree-lined corridors physically and symbolically connecting Portland to the Columbia Gorge were outlined as early as 1903 in the plan for Portland Parks prepared by the Olmsted Brothers).

Moving beyond these generalities about "ecosystem services", my focus throughout my career has been on the quantifying those values that we as a society typically take for granted from the natural world. My own expertise and professional work involve forestry data science at Ecotrust, a nonprofit organization founded here in Portland.

When a tree is removed in Portland, and only then in those select circumstances where mitigation is required, a variety of metrics like "inch-for-inch" and "tree-for-tree" are used which have an unclear relationship to the cost of the replacement value of the tree actually being removed, or the value of the services that it would have continued to provide. If and when trees are permitted for removal, without a

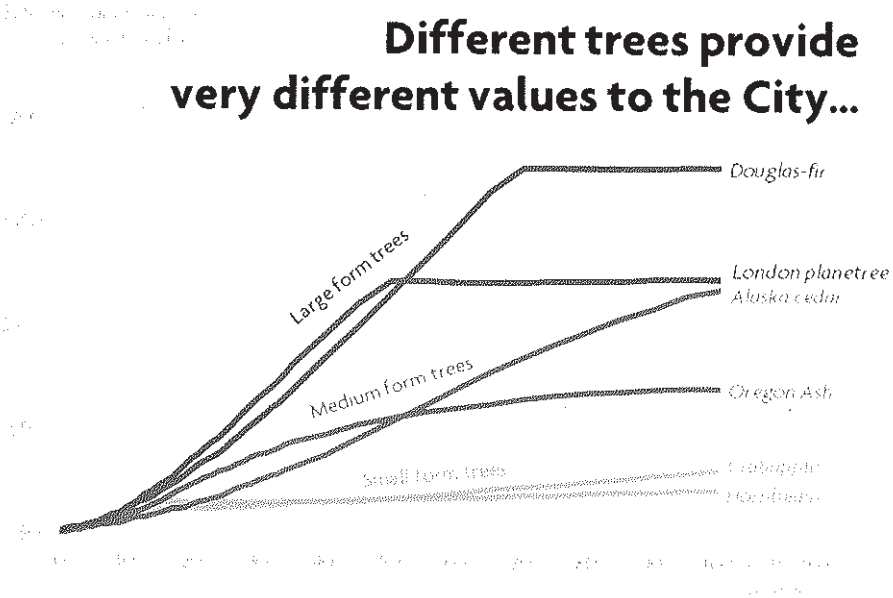
thoughtful policy that fully recognizes the value of our trees, we risk setting in motion a vicious cycle, a downward spiral where we not only deplete the asset value of our trees, we also sacrifice the real value of services that would have been provided by those trees now and into the future and impose new costs onto our already-stressed gray infrastructure, particularly our stormwater management system. In urban forestry, the asset value of a tree can easily be estimated using nationally-standardized appraisal techniques to estimate replacement value. Although ecosystem service quantification remains an active field, we can now also easily calculate the value that individual trees provide in terms of carbon sequestration and stormwater interception. As far as I can tell, neither of these readily accessible approaches have been employed to ensure we do not permit the unsustainable degradation of our urban forest.

The 2007 *Urban Forest Canopy Report* estimated the replacement value of Portland's trees to exceed $4.9 Billion. This report also estimates that our City's trees provide stormwater control, carbon sequestration, and air pollutant removal valued at nearly $40 Million each year. This does not begin to capture the additional positive impact trees have on human health.

In Title 11, the intent of tree preservation requirements were spelled out surprisingly clearly in the corresponding commentary.[1] Mitigation for projects on private property unable to meet on-site tree preservation standards, which only require 1 out of 3 trees to be retained, were designed "to offset the loss of the established tree and the time lag for new trees to provide benefits."

So, rather than pluck a 5:1 or 2:1 tree placement, or inch-for-inch mitigation ratio out of thin air, I set out to try and estimate what those values were that might be lost when a tree is removed, as well as what the time lag in new benefits might be. I present my major findings here with the hope that these could provide a more informed basis for making policy decisions.

Using a free and easy-to-use online application developed by the US Forest Service called iTree, I calculated the total monetary value of carbon storage, air pollutant removal, and stormwater interception from each of six different tree species growing over 100 years.



It is immediately apparent that trees that grow to fill out a large form may provide and sustain

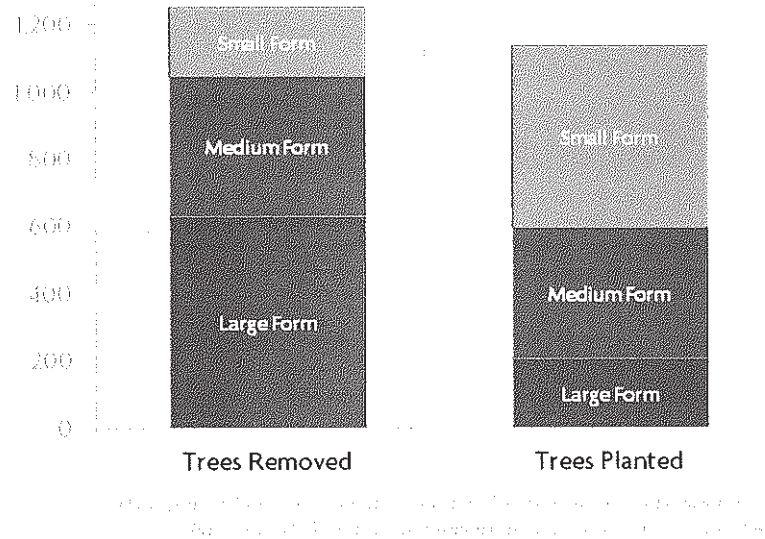
[1] See commentary describing the Tree Preservation Requirement, preceding Section 11.50.040 C on page 94 of Title 11 (2011), available online at *www.portlandoregon.gov/bps/article/518940.*

much higher values of service. Large form trees clearly outperform their medium and small counterparts, particularly as they approach maturity. Neither the current mitigation policies, nor any of those now being proposed recognize or incorporate this fundamental fact about our trees.

So why might that matter? In the limited data we have seen to date about permits for tree removal in development situations, we know that on-site preservation is being used overwhelmingly to preserve small diameter trees while large diameter trees are removed more frequently. We also know that when on-site tree planting is used for mitigation, large form trees are being removed and replaced with small form trees.

In non-development situations, 1,130 trees were permitted for removal on private property over the first six months of 2015 (Jan – Jun). 946 (84%) of these trees were exempt from tree preservation requirements, and could be removed without any mitigation. Among the 1,044 removal and replanting permits requested during this timeframe, only 4% were denied. More than 90% of trees removed were 12" diameter or larger, and nearly 45% were 20" or larger.

More trees are being removed than planted, and large form trees are being replaced with small ones.

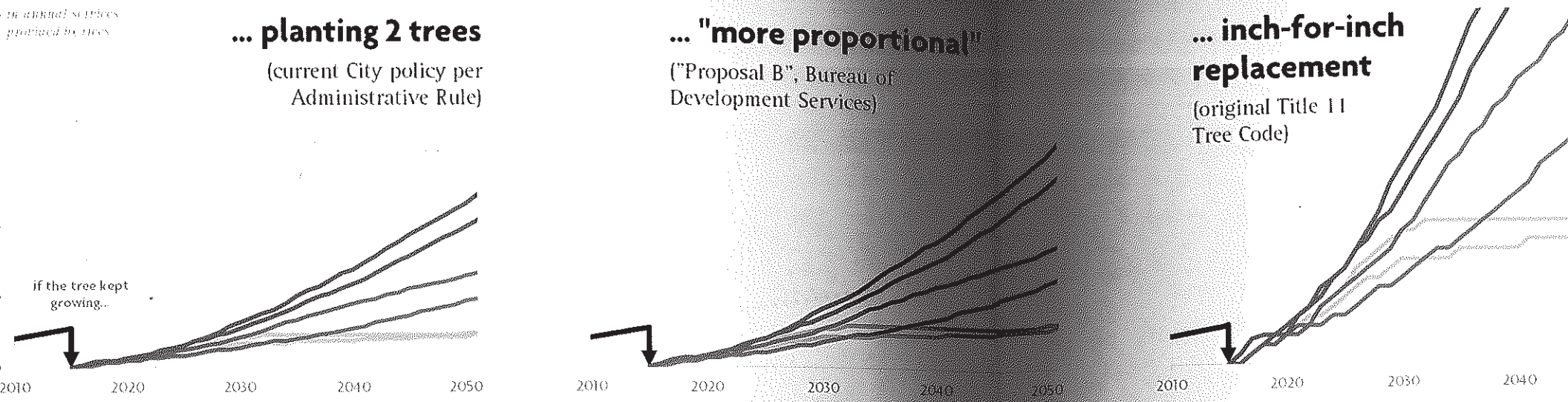


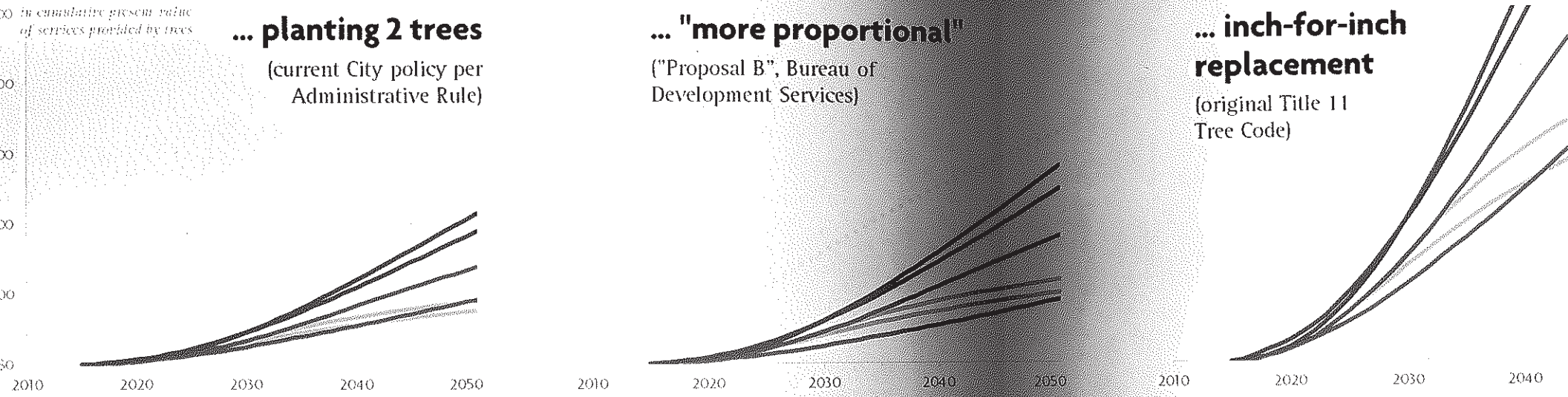
As shown in the graph at right, more trees are being removed than are being planted on private property. In addition, the majority of trees being removed are large form trees, and they are being replaced primarily by small form trees that provide only a fraction of the services the City was previously benefiting from. This sets in motion a systematic downward spiral for these natural assets.

Furthermore, for that small sliver of permits where mitigation through tree planting or fees in lieu of planting are required, neither the current tree code nor any of the proposals now being circulated address whether the type of trees being planted can even get close to mitigating the loss of services provided by the removed tree.

And finally, caps on mitigation such as the Administrative Rule's 2:1 maximum tree replanting ratio, or the "more proportional" proposal from the Bureau of Development Services essentially bake into the Tree Code a guarantee that the original intent to "offset the loss of the established tree and the time lag for new trees to provide benefits" will never be met. This is illustrated on the following page.

uglas-fir tree is removed instead of being allowed to keep growing, inch-for-inch mitigation as originally written in Title 11 could mitig
ue of the removed tree within 10-30 years. Neither the current Administrative Rule nor "Proposal B" would fully mitigate for these losse





s: In the lower row of graphs, future values are discounted 5% per year to determine present value. In the lower graphs, mitigation "to offset the loss of the es and the time lag for new trees to provide benefits" is accomplished if planted trees (shown as colorful lines) cross the dotted gray line, which shows the cumul rvices that would have been provided by the removed tree. Trees shown in colorful lines correspond to large, medium, and small form tree species as in earlier

In summary, several useful themes emerge from these data that can help inform policy-making:

1. The value of a tree is relatively quick and easy to estimate with available tools. There is a clear opportunity to meaningfully incorporate these values into the way the City regulates our trees.
2. Different types of trees offer very different values. The form of trees at maturity (i.e., large, medium, or small) is a clear and important indicator of the value of services a tree may provide over its lifetime.
3. The replacement of large form trees with small form trees is now occurring across Portland. This is an ominous indicator of a downward spiral in the value of our natural assets, and foreshadows numerous direct and indirect costs on our community and our gray infrastructure.
4. A large majority of trees now being removed on private property are exempt from any mitigation requirements.
5. The continuation of the Administrative Rule, capping mitigation at a maximum of two trees planted per each tree removed, as well as "Proposal B" offered by BDS, would effectively guarantee that mitigation for tree removals is never fully realized. In contrast, inch-for-inch mitigation for the removal of trees greater than 20" diameter, as originally envisioned in Title 11, may fully mitigate for the loss of services that would have been provided by the removed tree, if the newly established trees are maintained in good health.

In conclusion, I would suggest that a data-driven policy that values our trees adequately, one that addresses the public outcry to prevent the further loss of large healthy trees, and one that fully mitigates for those that are permitted to be removed, can be accomplished through careful policy choices to strengthen our current Tree Code. Emergency rulemaking is critical, but unlikely to fully resolve these issues. A longer-term multi-stakeholder process to address these issues will be indispensable.

Thank you very much for the opportunity to share my comments with you today.

Sincerely,

David Diaz