

**From:** Blosser.Dolan [Blosser.Dolan@comcast.net]  
**Sent:** Tuesday, January 13, 2009 3:24 PM  
**To:** Rogalin, Ellen  
**Subject:** Attachments for next Tree Task Force meeting

**Attachments:** ValueoftreesforBCCstudysessionjan2008final2.doc

Ellen: I would like the following to be made available to members of the Tree Task Force at your next mailing. In addition to the attached attachment, the following should be attached to that mailing:

Regional Ecosystem Analysis for the Willamette/Lower Columbia Region of Northwestern Oregon and Southwestern Washington State, American Forests, [http://www.americanforests.org/downloads/rea/AF\\_Portland.pdf](http://www.americanforests.org/downloads/rea/AF_Portland.pdf). This one answers some of the demographic questions we asked Doug to provide

Trees in Business Districts: Positive Effects on Consumer Behavior, University of Washington, <http://www.cfr.washington.edu/research.envmind/CityBiz/Biz3Ps-FS5.pdf>

The Value of Trees to a Community, Arbor Day Foundation, <http://www.arboday.org/trees/benefits.cfm>

Thank you, Ellen. Catherine Blosser

## **LETTER SENT TO ANSWER QUESTIONS POSED BY COMMISSIONER SCHRADER ON PROPERTY VALUES, MITIGATION, BENEFITS OF TREES**

To: Chair Peterson  
Commissioners Schrader and Kennemer  
County Administrator, Jon Mantay  
Planning Director, Doug McClain  
Regarding: Tree Inventory Study Session, January 22, 2008  
From: CC Urban Green  
January 29, 2008

Commissioner Schrader asked two questions at the Board of County Commissioners' Study Session of January 22, 2008. Her initial question was:

“Is there any study to give us data to show us how maintaining tree canopies or trees in a development help the value? “ At the time the response from Ernie Platt, a home builder, was, “ It probably does, but that is pretty subjective.”

Commissioner Schrader also asked how policy is informed by a tree inventory. Members of Clackamas County Urban Green ([www.ccurbangreen.org](http://www.ccurbangreen.org)) offer the following information in answer to these questions. It is our belief that we all benefit by questions like Commissioner Schrader's, and that they, in turn, deserve well-researched answers.

Definition of the urban forest: the sum of all woody and associated vegetation in and around dense human settlements. All of these vegetated areas are an important part of the urban and suburban surroundings, interacting with soil properties, weather, wildlife, and man-made aspects (Dorr et al, 2007).

### **DATA REGARDING THE VALUE OF TREES**

Research data assigns increased real estate values due to mature trees of 5%-25% (depending upon the market and city) (Wolf, 1998; McPherson, 2002; Gilsdorf, 2006; Hudson, 2001). Wolf (1998) also notes that “developers can maximize profits by retaining existing trees....”. *The Regional Ecosystem Analysis for the Willamette/Lower Columbia Region of Northwestern Oregon and Southwestern Washington State: calculating the value of nature* (American Forests, 2001) provides the following data for this region:

1. Savings in the construction of stormwater control infrastructure based upon the presence of tree cover (calculated on the basis of avoided costs of handling added stormwater runoff) = \$20.2 billion in one-time construction costs.
2. Removal of pollutants due to tree cover in 2000 (nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, particulate matter less than 10 microns in size) = 178 million pounds annually with value of \$419 million. Note that the tree cover in 1978, which was approximately twice that of 2000, removed approximately 315 million pounds of pollutants at a value of \$739 million.
3. Trees store 73 million tons of carbon as biomass and absorb another 563,000 tons of carbon (called sequestration).

4. Estimated annual residential saving in energy for air conditioning is approximately \$1.86 million, or 20% for a shaded residential home (this also saves in the amount of carbon pollution produced by utility companies, which is estimated to be a savings of about 140,000 tons annually, as a result of direct tree shading of residences).

An excellent resource is McPherson EG, Maco SE, Simpson JR et al: *Western Washington and Oregon Community Tree Guide: Benefits, Costs and Strategic Planting*, Silverton, Oregon, 2002, International Society of Arboriculture, Pacific Northwest Chapter. You will find quantifiable research data on the benefits of trees, such as increased property values, energy savings (air conditioning and heating), carbon dioxide reduction, air quality, stormwater runoff reduction, and aesthetics.

There is also research that addresses the economic benefits of trees to home values depending upon the home's location near open spaces, parks, and golf courses—referred to as hedonic pricing (Bolitzer & Netusil, 2000; Wolf, 1998; Wolf, 2007; Lapish, 2005; Lutzenhiser & Netusil, 2001). Appraised property values of such homes are typically 8%-20% more than comparable properties found elsewhere (Crompton, 2001). This is important, because the Clackamas County Comprehensive Plan: Chapter 9 notes that “the pressures on open space for recreation are increasing and will continue to mount in the future. The County must take the lead to preserve the resources..., especially within the urban area” (pg 1). And, “the north urban area of the County is significantly deficient in public park land; the most deficient categories are neighborhood and community parks, particularly east of the Willamette River” (pg 2). Property values will be affected then, by the lack of attention to the preservation (and continued destruction of the potential areas) of these open spaces within this region.

### **HOW DOES A TREE INVENTORY HELP FACILITATE PUBLIC POLICY?**

A high-resolution tree inventory using aerial GIS technology can analyze the green infrastructure, as well as grass and shrubs, and impervious surfaces (called gray infrastructure). The information obtained can serve as a basis for setting goals for substantially increasing the green infrastructure of a region in order to realize the benefits communities derive from the urban forest. The natural landscape should be recognized for its economic as well as its ecological value.

In 2002, the average tree cover in the Willamette/Lower Columbia Region was 24%---down from 46% in 1972. In the region's urban areas, the coverage was 12%---down from 21% in 1972. This loss translates into \$322 million per year loss to pollution; carbon storage/absorption loss of 157,000 tons/year; and an increase of 963 million cubic feet of stormwater during an average, 24 hour storm event, which equals a \$2.4 billion system.

American Forests (a national nonprofit citizen conservation organization located in Washington DC) has studied urban tree cover for almost twenty years, working closely with federal, state, and local urban forestry experts. They have developed the following target tree canopy coverage goals based upon region.

Pacific Northwest metropolitan area: average of 40% overall coverage. Specifically:  
urban residential: 25; central business district: 15 %; **suburban residential zones: 50% (most of unincorporated, urban areas of Clackamas**

## County)

The tree cover should not only be calculated, but also the dollar costs and benefits of changing the tree cover. In addition, the gray infrastructure (impervious streets, sidewalks, parking lots, etc.) data should be added to the database. Using a target goal, Funders' Network for Smart Growth and Livable Communities (2005) provides the following guidelines for policy makers:

1. A healthy tree represents the “outputs,” the “natural capital,” a community enjoys for “free.” Too often the green infrastructure is sacrificed to growth and development based on an incomplete set of facts and lack of understanding of the value.
2. City managers rarely account for the untapped opportunities afforded by their “green” infrastructure (trees, shrubs, open spaces, soils); these are assets or capital and consequently the dollar values of the work done by trees should be applied to the budget process (the “green data layer”).
3. **The most environmental benefit of trees comes after they are at least 30 years old.**
4. Zoning ordinances should be updated to specify tree canopy cover by land use and specify minimum tree canopy cover in parking lots.
5. The decision regarding the target tree canopy percentage must be made at the highest levels of government so that the managing departments can carry out the actions needed to meet those goals.
6. Trees need to be incorporated into all growth and development activities by key departments of city and county governments, as well as by the private building industry. “Allowing construction practices that damage, kill, or remove trees---whether they occur on public or private property---without replacing them should no longer be acceptable. Assuring trees will live.....must be accepted by everyone that builds infrastructure.” (p7).
7. Combine both the green and gray infrastructure data into one database, using a GIS; all departments can utilize the same data to identify opportunities and conflicts before decisions are made on specific actions. There are software packages or other techniques to do this (e.g., CITYgreen [not necessarily being recommended by these authors]; ecoSmart). The city of Salem has been using such a system.
8. When trees are viewed as a public utility, fee systems can be established to direct the stormwater management costs to owners of property based on the amount of impervious surfaces on the property. This technique was used in Garland, Texas and created incentives to reduce impervious surfaces, and to both plant more trees and site them in places suited to growing trees.
9. Public encouragement through advocacy groups and community leaders will help property owners recognize the benefits of trees and encourage planting and tree maintenance.

## **MITIGATION**

Mr. Platt proposed that mitigation was a reasonable solution to the loss of native tree canopies. Mitigation processes are recognized as part of tree conservation ordinances of cities and counties. It is acknowledged in these various ordinances that the number of mature trees

lost is not equal to the replanting of an equal number of immature trees; ratio replacement formulas are provided; and mitigated trees should be above and beyond standard landscaping. The types of trees chosen for mitigation are delineated-- their energy savings value; site and root characteristics; benefit to wildlife (including their potential as nesting sites); species; consideration of "genetic pollution" by the use of non-native plantings----as well as a method for monitoring their ongoing viability. Alternative mitigation tactics can entail replanting trees in special designated public or private receiver sites with permanent conservation easements and a fee structure or in-lieu fees (that go into a fund for tree maintenance and/or acquisition of woodlands/forests). Many cities and counties handle mitigation in their ordinances by combining various options. Mitigation considerations would be part of a Clackamas County Tree Ordinance.

## **SUMMARY**

Clackamas County Urban Green recommends that the proposed Urban Forestry Commission, previously mentioned to the Board on January 17, 2008, be assigned the task of recommending a target urban forest canopy goal after a more complete tree inventory analysis-- that covers the unincorporated areas within the UGB--using 6- inch color Orthophotography. The analysis should not be restricted to stands of trees one-tenth of an acre and larger. This restriction prevents knowledge about the full extent of the natural capital afforded by the urban tree canopy. Also, limiting the question only to the benefit of trees to property values minimizes the plethora of benefits the whole community gains from a vigorous urban forest. A regional Ecosystem Analysis of the green infrastructure should be adopted as a permanent part of the budget process and land use planning and development processes. The tree inventory, along with a Tree Conservation Ordinance, are complementary elements of any County policy that deals with ensuring that unincorporated areas of urban Clackamas County have a functional, sustainable green ecosystem.

Also, it would be of use to have the research data that the home builders use to defend their development practices. Such data should concern the value that clear cutting affords the community ecosystem and the choice of landscaping tree species that are usually chosen for subdivisions to replace the lost, natural, beneficial green infrastructure.

Clackamas County Urban Green has accumulated a large library of references over the course of our work. Should you have any further questions, please feel free to use us as a resource.

## **References:**

American Forests: The Regional Ecosystem Analysis for the Willamette/Lower Columbia Region of Northwestern Oregon and Southwestern Washington State: calculating the value of nature, sponsored by the USDA Forest Service, 2001.

Bolitzer B, Netusil NR: The impact of open spaces on property values in Portland, Oregon, *J Env Management* 59(3185-193(9)), 2000.

- City of San Jose, CA: Guidelines for Inventorying, Evaluating, and Mitigating Impacts to Landscaping Trees in the City of San Jose, updated May 2006. Available [www.sanjoseca.gov/planning/eir/resources\\_Environmental520\\_consultants/mitigationdetermination\\_Trees.doc](http://www.sanjoseca.gov/planning/eir/resources_Environmental520_consultants/mitigationdetermination_Trees.doc)
- Crompton JL: The impact of parks and open space on property values and the property tax base. Ashburn, VA, 2001, National Recreation and Park Association).
- Dorr JL, Otey J, Wiseman PE: Tinker Air Force Base urban tree inventory. Conservation Management Institute and Department of Forestry, College of Natural Resources, Virginia Polytechnic Institute and State University.
- Funders' Network for Smart Growth and Livable Communities: Urban forests: new tools for growing more livable communities. *Livable Communities @ Work*, Vol 2(1), 2005.
- Gilsdorf E: Backstory: what is the value of a tree? *CSMonitor*, April 26, 2006. Available [www.csmonitor.com/2006/0426/020s01-sten.html](http://www.csmonitor.com/2006/0426/020s01-sten.html). Accessed January 24, 2008.
- Hudson J: Landscaping. *Real Estate Essays*, 2001. Available [www.kate-jody.com/essays/landscaping.html](http://www.kate-jody.com/essays/landscaping.html).
- International society of Arboriculture, USDA Forest Service, National Urban and Community Forestry Advisory Council: Guidelines for Developing and Evaluating Tree Ordinances. Available [www.isa.arbor.com/publications/treeord/resources/treeord.pdf](http://www.isa.arbor.com/publications/treeord/resources/treeord.pdf).
- Lapish W: Money does grow on trees, *American Nurseryman* 202(5):34-36, 2005.
- Lutzenhiser M, Netusil NR: The effect of open spaces on a home's sale price, *Cont Econ Policy* 19(3):291-298, 2001.
- McPherson EG, Maco SE, Simpson JR et al: *Western Washington and Oregon Community Tree Guide: Benefits, Costs and Strategic Planting*, Silverton, Oregon, 2002, International Society of Arboriculture, Pacific Northwest Chapter.
- Wolf KL: Urban forest values: economic benefits of trees *in cities*. In *Human Dimensions of the Urban Forest Fact Sheet #3*, University of Washington College of Natural Resources, 1998.
- Wolf KL: City trees and property values, *Arborist News* 16(4):34-36, 2007.