

Chesapeake Conservation Landscaping Council's
3rd **Turning a New Leaf** Conference
Friday, December 4, 2009
George Washington University, Washington, DC

TRACK D: THE SCIENCE OF SUSTAINABILITY: URBAN ECOLOGY AND NEW TECHNOLOGIES

Session D3. *The Urban Canopy*

Mike Galvin, Casey Trees

Casey Trees is seeking to restore, enhance and protect the tree canopy of Washington DC.

Background: This is the first time in history that more than 50% of the world's people will be urban, raising questions about carrying capacity, human health and sustainability. In 1920 urban and rural populations were equal. Now we are 80% urban. When Europeans first came here, the Chesapeake Bay area was 95% forested.

Evolution of the Bay program. It used to be all about the water. After 10 years, they started looking at the land around the water. The Chesapeake Bay is unique among all world's estuaries. It has a much bigger area of land draining into a much smaller area of water than anywhere else into the world. So we have to look at the land use.

After construction, you lose canopy and alter the hydrologic cycle. There is a great increase in surface runoff.

Correlation between impervious cover and stream health. Relationship between tree canopy cover and the watershed.

Is water a problem or a resource? We want to get it out of the way. With the urban tree canopy program, we are trying to collect water like a sponge. We don't know how to stop the spigot from flowing, so we need a bigger sponge. Forests release a rain event slowly over a period of time. At present levels the tree canopy in 100 years will degrade to having 100% runoff. A rain event would go through the canopy as though it were not there. Imperviousness is increasing as development increases. Impervious cover is 5 times worse than tree cover is good. Climate change predictions show more frequent and more severe weather events over course of time.

District must do some things to keep its good status (compliance) under EPA.

Chesapeake Bay is moving from voluntary to regulatory. DC is the only jurisdiction that is meeting nitrogen and phosphorus targets under the Bay Program rules. They want to

plant 4150 trees per year. The goal is to increase the tree canopy by 5%. Create tree box standards. Must not only plant trees, but protect the ones that already exist.

Metro DC/Baltimore region has included trees in their strategic implementation plan for ozone reduction, the only jurisdiction in the country to do so. All our local jurisdictions had to join together to do this.

Air/heat island. In California in 2007 they say that environmental effects are coming more from impervious cover increase than from climate change itself.

Air quality. Two regulated pollutants are smog (ozone) and soot (particulate). Trees raise the height of ozone above us. They also reduce air temperature and reduce energy needed for cooling. Remove ozone and NOx from air.

Someday maybe you'll have to plant trees under the Clean Air Act. At a 5% increase in tree canopy you get a measurable reduction in pollution.

Regional greenhouse gas initiative. ten states in the Northeastern US plan to launch market by 2009. Cut power plant emissions by 10%.

In a regulatory market you can buy and sell credits. Not so in a voluntary situation.

Casey Trees: Mapping land cover through using high resolution gives 95% accuracy or more. Land cover mapping was formerly done through Landsat, which didn't assess accurately. Aerial imagery is remarkably more detailed, more reliable.

They look at the existing urban tree canopy. Then, they look at what the tree canopy will be with vegetation vs. with impervious coverage. What can we cover physically vs. what will be tolerated socially? For example, FedEx field physically could be planted with trees, but not socially.

They ask: how much canopy do you have? How much could you potentially have? Then they target areas where the air quality is bad, but there is a high potential for trees and a high willingness in the community to plant and care for them.

D.C canopy goal is 40% tree coverage by 2035. Presently coverage is 35%. Need 2041 acres of new tree canopy. 100 trees equals one acre. They assume a 6% loss of existing trees from any cause – disease or construction. This adds up to: 216,300 trees must be planted, 8,600 trees per year.

Measuring success. Tree report card will be issued annually. Will look at performance relative to the 40% goal.

Bigger trees have a much bigger environmental effect.

Discussion

How do we sell trees to customers? Lots of people want instant gratification. Most people don't want to wait 20 years. City managers may not have the incentive if it takes 20 years to get the benefit. They think short-term.

Most fast growing trees are weak wooded, subject to breakage. People think Bradford pears are good because they grow faster. People have to be educated. At 40-45 years natural trees begin to die and people cut them down. At that point, do they replace them? This is the decision point. Will I replace the tree?

Upcoming goals: Launch "Trees of Note" program in December 2009. Convene a tree summit to engage community in canopy goal. Launch big tree care initiative in summer: encourage people to water, mulch trees using social media. Use colors: green, yellow, red to notify the community of times of drought when people need to get involved.

Below-ground biomass helps soil stability. Mycorrhizae, fungi, insects cluster around trees. Urban areas are not native areas. So it is sometimes hard to install a native tree. The natives won't like the non-natural area.

Tree benefits calculator. You can plug in details of your tree, and it will tell you its stormwater management ability, etc. The software is iTree.

What gets a community to establish a tree canopy goal? Cost-effective program that is replicable.

If you plant a tree on the south or west side of your house, you save 10-15% on your cooling costs.

[Summary prepared by Carol Cavanaugh]

The Urban Canopy as an Environmental Management Tool

by Mike Galvin, Deputy Director of Casey Trees

DC's trees are about to have more company. At least, that is the goal of Casey Trees, the nonprofit organization whose mission is to increase the city's tree canopy by 5 percent -- from 35 to 40 percent -- by 2035. Attaining the 40 percent goal would require planting 2000 acres of new canopy, with 100 trees per acre. This translates into 8600 trees per year, or 216,300 trees total by 2035. Mike Galvin, Deputy Director for Casey Trees, outlined the plan and spoke about the vital role that trees play in the health of our environment in his presentation at the CCLC conference.

Increasing DC's tree canopy will not only improve the aesthetics and livability of the capital, it will lead to significant environmental benefits as well. Trees are known to reduce the heat island effect of urban areas, as well as help to reduce ground level ozone concentrations, making the air we breathe cooler and cleaner.

On a wider scale, trees will play a vital role in restoring the Chesapeake Bay to a functioning ecosystem. The 30-year-old Chesapeake Bay Program initially focused on efforts to clean up and restore the *water*. According to Galvin, the organization soon recognized that in order to fix the water, the *land* needed to be fixed. Specifically, the issue of excess run-off needs to be addressed, as impervious ground in the Bay's watershed continues to increase at alarming rates every year. Another interesting point highlighted by Galvin is that the Chesapeake is an especially fragile ecosystem when compared with other estuaries around the world. This is due to the Bay's extremely large watershed (2743 sq. km) draining into a relatively small body of water. The Chesapeake's ratio of land to water is 14:1, which is the largest of any coastal water body in the world. (See www.chesapeakebay.net) Planting and preserving more trees in the watershed is critical if the ecosystem of the Bay is to be restored.

Galvin also explained the process of Tree Canopy Assessment, which must be conducted before any Urban Tree Canopy program can proceed. Data collection methods are critical. Improvements in Remote Sensing and GIS technology have provided organizations like Casey Trees the power to analyze various data on *individual residential parcels*. Thanks to this innovative technology, organizations are able to create planting maps/plans based on several factors, including physical conditions of the site, environmental need, existing air quality, etc. Check out some incredible interactive maps at <http://www.caseytrees.org/geographic/maps-tools/index.php>

So what's next for DC's Urban Tree Canopy project? Galvin says the organization plans to hold a Tree Summit on March 25, 2010, in which they will formally announce the 40 percent goal to the public. Casey's newly-planted trees are already dotting the streets of Washington (look for their name on the brown water bags around young trees), but Galvin hopes to engage the community in the tree planting effort on a deeper level in order to make greater strides toward the 40 percent goal. Other plans for the UTC project include issuing annual report cards (this year's grade was a B), and launching a major tree care initiative in the summer of 2010.

Casey Trees maintains an excellent website which lays out the UTC project, describes the environmental benefits of trees, and lists volunteer opportunities and classes. Check it out at www.caseytrees.org.

[Article prepared by Mary Gray]