THE TRUST for PUBLIC LAND

National Office
116 New Montgomery
Fourth Floor
San Francisco, CA
94105
T. 415-495-4014
F. 415-495-0541
www.tpl.org

TO: Mary Nichols, Chair, California Air Resources Board
FROM: Rachel Dinno-Taylor, Trust for Public Land (Rachel.Dinno@tpl.org)
DATE: August 15, 2008
RE: Climate Change Draft Scoping Plan
& the Greenhouse Gas Benefits of Urban Parks

The Trust for Public Land (TPL) applauds the California Air Resources Board (CARB) for its leadership and efforts to create a comprehensive statewide plan to reduce greenhouse gas emissions.

TPL is a national, nonprofit, land conservation organization that conserves land for people. Through our work, we recognize that land use choices and conservation directly affect transportation choices and emissions. Our experience and extensive research has found that urban parks and forests provide many benefits including carbon sequestration (TPL, 2008). Emission reductions, air quality improvements, health benefits, increased use of no- and low-emission transportation, water management and treatment, and environmental equity are all benefits of urban parks and urban greening projects. It is from this perspective that we provide our comments on the Climate Change Draft Scoping Plan.

Overview

Urban parks and forests reduce GHG emissions directly through reduced vehicle miles, ground water recharge, carbon sequestration, and reduction in use of cooling systems, and indirectly by contributing to the quality of life in dense, carbon-efficient urban communities. As CARB develops a comprehensive plan for climate change, consideration needs to be made for the role urban parks and other green infrastructure have in reducing greenhouse gas emissions.

As highlighted in the Scoping Plan, transportation is the largest single contributor of greenhouse gas emissions in the state. While we believe a low carbon fuel standard and increased vehicle fuel-efficiency are powerful tools to reduce emissions from this sector, we also believe that the state will not meet AB 32's GHG reduction targets without adequately addressing Vehicle Miles Traveled (VMT) through the coordination of land use and transportation.

A growing body of evidence shows that compact and mixed use development can result in lower GHG emissions due largely to the reduced need for automobile travel, and that denser communities have lower per capita emissions than sparsely-populated rural and exurban areas (Ewing, et al., 2008)

As cities become more densely populated, public parks, green space and recreational amenities become a key component to the quality of life. Not only will these amenities allow more people to thrive in dense communities, they will also directly and indirectly reduce greenhouse gas emissions by reducing automobile trips, increasing groundwater recharge, and utilizing trees to both sequester carbon and reduce energy consumption needed for cooling.

The Scoping Plan should take advantage of the opportunities that behavioral changes can have on greenhouse gas emissions and begin addressing how to improve urban infrastructure to support carbon sequestration and no- and low-emission transportation. To reduce emissions from vehicles, land use must bring housing and jobs together in more densely and thoughtfully created communities. Dense urban communities need transportation opportunities to be successful and parks and other green infrastructure to be livable. The State should encourage cities to create more livable communities, help cities estimate the carbon benefit from urban parks, and provide funding for cities to create parks and green infrastructure.

To achieve these goals, the Scoping Plan should:

- Develop clear and specific goals within the regional planning policies to reduce greenhouse gas emissions in the urban environment through the creation of urban parks, urban forests and urban greening programs.
- Create protocols to help cities and counties quantify climate benefits associated with urban parks, forests and other greening projects.
- Make funding available from climate protection program revenues for urban parks, river and stream corridors, trails, paths and urban greening projects.

To achieve additional greenhouse gas reductions local government should be encouraged and given incentives to green cities through the development of urban parks, river and stream corridors, trails and paths, and other greening projects, which will not only provide greenhouse gas reduction benefits but will have multiple co-benefits including:

1) help create transportation corridors that favor pedestrian, bicycle, and mass transit modes of transportation,
2) reduce the need for people to drive out of the city for recreational purposes,
3) provide public places for recreation for people of all ages and incomes within an urban environment,
4) improve the physical and mental health of people in urban areas, and
5) provide environmental equity to many of our communities who may be disproportionately impacted by newly adopted regulations to implement AB 32.
6) Encourage multiple benefits of green spaces including the treatment of storm runoff , storage of local groundwater, and overall pollution prevention methods.

We urge CARB to recognize the carbon sequestration contributions and additional co-benefits of green infrastructure in cities and provide the funding which will be necessary to achieve them. These benefits are referenced below and in greater detail in a report prepared by ICF International, *Quantifying the Greenhouse Gas Benefits of Urban Parks* (TPL 2008).

Transportation and Land Use – Creating Livable Cities

The built environment has a powerful role to play in our transportation decision-making, and we strongly encourage CARB to include urban parks, river and stream corridors, paths and trails to the list of no- and low-emissions transportation options and provide local governments incentives to assist their creation, development and use.

Our cities and urban environments need to be developed and maintained to support multi-modal transportation (pedestrian, bicycle, mass transit, and vehicular travel). The Scoping Plan acknowledges that land use patterns strongly influence driving patterns (Appendices C-41). It further notes that the key to addressing the VMT challenge is providing people with more choices through diversified land use patterns, greater access to alternative forms of transportation including transit, biking, and walking, and creating cities and towns where people can live, work and play without having to drive great distances (Appendices C-22).

Parks, located between origin and destination (home and work), provide an attractive route and an incentive to use a non-motorized mode of transportation. By providing a safe location for walking and biking separate from cars, parks can actually increase the amount of travel by these means, and shifts trips from autos and other means. (Bay Area Quality Management District, 2006: Lindsey, Wilson, Rubchinskaya, Yang, and Han 2007)

Urban Parks can also reduce transportation-related GHGs by serving as pedestrian-accessible destinations for recreation purposes. Urban parks are considered destination because people travel to them from their homes, businesses, or jobs in order to participate in recreational activities. When located in urban areas that people can walk or bicycle to, small parks can obviate the need for automobile trips to other parts of the city or large regional parks to satisfy everyday recreational needs.

Greenways, often developed from abandoned railroad corridors or along waterfronts, are a popular way for communities to promote healthy lifestyles, support exercise programs and incidental exercise such as running errands, and provides healthy, human-powered transportation such as walking and biking to school or work. (TPL 2007)

Urban infill development improvements in California have repeatedly proven the “if you build it, they will come” philosophy. New land development needs to incorporate green spaces, parks, and urban forests where possible to facilitate transportation alternatives to automobiles. Just as the creation and use of an extensive road network results in increased automobile travel, the creation of more extensive bicycle and pedestrian infrastructure will lead to increased use of those modes of travel. This principle, known as induced travel demand, is a well-researched concept that finds people will make new trips in their car simply because road capacity has expanded (Noland, Lewinson, 2000). Similarly, urban parks that provide a safe, direct way to make non-motorized trips may provide enough incentive and induce people to shift transportation modes (Nelson and Allen, 1997).

Urban parks, river and stream corridors, paths and trails create viable no- and low-emissions transportation options. The Scoping Plan should include them and local governments should be given incentives to assist with the creation, development and use of these green infrastructure projects.

Water Resources and Green Space

The Scoping Plan acknowledges the co-benefits, including reducing greenhouse gas emissions, by reuse of urban stormwater runoff and the implementation of nontraditional stormwater management strategies. However, the measures identified do not acknowledge the extent through which the expansion of green spaces in urban areas can assist in the creation of impervious surfaces and reflect in the progress of overall greenhouse reduction efforts through the health of respective watersheds.

The expansion of green spaces in urban areas has been identified as a pathway for reducing the energy use and CO_2 emissions associated with water delivery by providing a medium for wastewater recycling and increased stormwater retention (Anderson, 2003; Kramer and Dorfman, 2000) while reducing the need for areas of the state to import water. The most direct and quantifiable impact on water resources is through the increase in groundwater recharge that is associated with the high permeability of green spaces, compared with the low permeability surfaces of densely developed areas.

The replacement of impenetrable surfaces with green spaces can have significant impacts on the need to import water, the associated energy use, and CO_2 emissions. Currently, the groundwater aquifer below Los Angeles has 2,000,000 AF of capacity available. A watershed "makeover" plan that has been designed for the Los Angeles basin, based on the premises of expanding permeable surface area and redesigning the remaining impermeable surfaces to guide stormwater runoff into designated systems for reuse and groundwater recharge. The plan estimates that Los Angeles could cut water imports by 50 percent by 2020, reduce flooding, and create 50,000 jobs (TreePeople, 2008).

Water conveyance and treatment is the largest single use of energy in our State. California's Department of Water Resources, utilizing over 20% of all electricity, is one of the largest purchasers of electricity in the state, due in large part to the need to pump water throughout the state for residential, commercial, and agricultural uses (California Chronicle 2008). The wise use of open space in a manner that prevents run-of and groundwater pollution permitting for recapture of water supplies in a watershed can be a significant and efficient contributor to reducing greenhouse emissions.

These energy reduction benefits of green infrastructure should be quantified and taken into consideration to help cities and counties quantify the climate benefits and funding should be made available to help them achieve these goals.

Forestry – Energy Reduction from Urban Parks and Forests

The benefits to the global climate, our air and water quality, and habitat from forests are well documented. Less known, but very important, are the benefits of forests in urban areas.

Urban trees and vegetation directly and indirectly affects local and regional air quality. This vegetation alters the urban environment by reducing temperatures, removing air pollutants, and sequestering carbon dioxide (TPL 2006). The planting of trees as a part of urban park development can be effective at sequestering carbon dioxide and reducing local energy consumption. As trees grow, they remove carbon dioxide from the atmosphere and store it in the form of biomass carbon in the leaves, roots, branches, and trunk. The amount of carbon that a tree sequesters annually is based on a number of factors, the most significant of which are age and tree species. A young sapling can sequester anywhere from 1.0 to 1.3 lbs. carbon each year, while a 50 year old tree can sequester over 100 lbs. annually (DOE 1998).

With the sequestration of many trees put together, urban trees can be a significant sink for carbon dioxide. The rate of net sequestration per area of tree cover can be as high as 0.29 kg C/sq. in tree cover (EPA 2008). Indeed, the sequestration by urban trees in the city of New York is estimated to be 38,374 MT annually, and other cities can also claim similar GHG benefits. In total, urban trees in the US sequestered an estimated 95.5 $MMTCO_2$ in 2006 (EPA 2008).

The trees and vegetation provided by urban parks and the greening of urban streets provide an effective way to reduce urban heat islands. Over 48% of energy consumption is attributable to buildings: 21% from residential and 17% from commercial (Ewing 2007). On an individual level, carefully selected and planted trees can reduce the energy consumption for individual buildings. Trees achieve this effect by providing shade and evapotranspiration to cool buildings during summer, thereby reducing the need to run air conditioners and consume electricity (EPA, 2007). Lawrence Berkeley National Laboratory researchers demonstrated that trees and other heat island reduction measures could combine to reduce building carbon emissions by 5-20 percent (Akbari and Konopacki, 2003).

This area has been widely researched and can be of assistance to cities in greening their communities. Among other organizations, the Center for Urban Forest Research and the United States Forest Service has conducted studies on the carbon sequestration of urban trees. The information from these studies can provide perspective on estimating the potential carbon sequestration that a planned park could provide, and it can help estimate the carbon sequestration of existing parks as well, and with better accuracy.

The state, through actions taken with the California Climate Action Registry (CCAR), recognizes the benefits of urban forests and has developed Urban Forestry Protocol to quantify the climate benefits of urban greening in California.

To reach the targets set in AB 32, we encourage CARB to include the carbon sequestration and energy benefits of the greening of our cities, help cities and counties quantify the climate benefits associated with urban parks, forests and other greening projects, and to adopt clear and specific goals within the regional planning policies to reduce greenhouse gas emissions in the urban environment through urban parks, urban forests and other urban greening projects.

Environmental Justice to Equity

The Global Warming Solutions Act clearly calls for CARB to direct public and private investment toward the most disadvantaged communities in California (section 38565) and to maximize additional environmental benefits (section 38570(b)(3)). In addition to the many greenhouse gas reduction benefits of urban parks and urban greening projects, these projects have the co-benefit of serving park-deficient and disproportionately burdened communities.

Parks are an essential and indispensable part of the state's infrastructure and an essential element in the health of Californians as evidence shows that a lack of access to open spaces to play and exercise contributes to poor health. Unfortunately, the distribution of parks and open spaces within cities is often inequitable, with the majority situated in affluent areas. Low-income residents are left with few affordable, high quality, and accessible recreational options. Concern about rapidly increasing rates of childhood obesity has resulted in increased attention on the access of youth to opportunities for recreation and physical activity (U.S. Dept of Health and Human Services, 2000). Yet many children in our State have no place to play. In some of our State's cities, only one-third of all children live with walking distance to a public park or other open space area (TPL 2004).

Neighborhood parks provide many social and health benefits including: safe opportunities for children to play outdoors and common gathering places for neighbors; reduced crime, particularly juvenile delinquency; and, enhanced physical activity, particularly among children, resulting in more positive health outcomes.

Urban parks are the recreational outlets for those residing in densely populated regions of the State, providing:

- Outdoor Equity: Urban parks provide open space resources to neighborhoods least served by the current park system where the majority of the population resides.
- Anchors for Community Renewal: Urban parks development projects encourage broad-based community involvement and enhance economic renewal.
- Safe Places to Play: Urban parks provide safe recreational opportunities for children and at-risk youth.
- Proximity to Open Space: Urban parks bring recreational outlets closer to people and inner-city neighborhoods.

Low-income and minority populated neighborhoods are especially short of park space. In Los Angeles, caucasian neighborhoods boast 31.8 acres of park space for every 1,000 people, compared with 1.7 acres in African-American neighborhoods and 0.6 acres in Latino neighborhoods (Pincelt 2003). From an equity standpoint, there is a strong need to redress this imbalance.

By giving local government incentives to green cities through the development of urban parks, river and stream corridors, trails and paths, and other greening projects, CARB will not only provide greenhouse gas reduction benefits but will create multiple community co-benefits including providing environmental equity to many of our communities who may be disproportionately impacted by industrial facilities. The Trust for Public Land urges CARB to provide for the equitable distribution of conservation resources to park-deficient communities.

Use of Revenues – Investment in Green Infrastructure

Developing denser, more efficient, and livable green cities will require a significant financial investment. Yet the draft Scoping Plan does not specify how local government is to obtain the necessary funding needed. We request that CARB, for all of the reasons identified in our comments above, include as a use for the revenue generated from climate protection programs the creation of green infrastructure needs including neighborhood parks, trails, paths, stream and river corridors, and urban forests.

Conclusion

Urban parks and forests reduce GHG emissions directly through reduced vehicle miles, ground water recharge, water pollution prevention, carbon sequestration, and reduction in use of cooling systems, and indirectly by contributing to the quality of life in dense, carbon-efficient urban communities. The air quality, water quality, recreational, health and other social benefits of parks have long been known, but as CARB develops a comprehensive plan for climate change, consideration needs to be made for the role parks play in reducing greenhouse gas emissions.

The State should encourage cities to create more livable communities, help cities estimate the carbon benefit from urban parks, and provide funding for cities to create parks. For these reasons, the Scoping Plan should 1) develop protocols to help cities and counties quantify the climate benefits associated with urban parks, forests and other greening projects, 2) adopt clear and specific goals within the regional planning policies to reduce greenhouse gas emissions in the urban environment through the creation of urban parks, urban forests and urban greening programs, and 3) make available a portion of the climate protection program revenues for the urban parks and urban greening programs. With the successful introduction of more urban parks, communities can take concrete steps toward reducing their GHG emissions while improving the quality of life for their residents.

Thank you for taking the greenhouse gas benefits of urban parks and green infrastructure into consideration before finalizing the Climate Change Scoping Plan. We look forward to continuing our work with CARB on developing a programmatic approach to California's natural resources that can serve as a national model for the reduction of carbon emissions associated with climate change.

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