

California Trees

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The Future of Urban Forests in California's Cap & Trade Market

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By Jane Braxton Little

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Wherever trees grow, they are quietly performing a miracle. By capturing carbon dioxide from the atmosphere and storing it as carbon in their branches, trunks and roots, trees are helping the planet adapt to climate change. From the vast forests that carpet northern Russia and the Amazon Basin to the foliage that shades city streets, trees are playing a vital role in stabilizing Earth's climate.

At a time when carbon dioxide and other greenhouse-gas emissions (GHGs) are melting glaciers and elevating sea levels, scientists recognize the power of trees to slow global warming. Proposals for harnessing their ability to sequester carbon were part of the international negotiations in 1997, when the Kyoto Protocol was created, and again in 2009, when world leaders met in Copenhagen to design a new international climate treaty. California took a lead internationally several years ago to reduce GHG emissions throughout the state. The Global Warming Solutions Act of 2006 empowered the California Air Resources Board (CARB) to launch a



In the Santa Monica Greenhouse Gas Tree Planting Project, *Calocedrus decurrens* (Incense Cedar) were planted in between mature *Washingtonia robusta*.

comprehensive program that develops regulations and market mechanisms that will ultimately lead to a 25-percent GHG reduction statewide by 2020.

In the six years since the Act (commonly referred to as AB 32) was passed into law, CARB has worked to implement mandated components that include adopting a regulation requiring the mandatory reporting of greenhouse gas emissions, and convening an Environmental Justice Advisory Committee.

However, CARB's most ambitious endeavor
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Empowering grassroots efforts and building strategic partnerships that preserve, protect, and enhance California's urban and community forests.



California ReLeaf is a 501(c)(3) nonprofit organization working to empower grassroots efforts and build strategic partnerships that preserve, protect, and enhance California's urban and community forests.

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in AB 32 implementation, and consequently the component most relevant to statewide urban forestry activities, is the development of California's Greenhouse Gas Cap-and-Trade Program. The program is a core element of the Global Warming Solutions Act and covers major sources of GHG emissions in the State such as refineries, power plants, industrial facilities, and transportation fuels.

Today, the role of urban forestry within this program is somewhat uncertain. However, efforts underway in Sacramento that would directly impact two key components of the cap-and-trade program may translate into opportunities for urban forests to significantly contribute to the statewide effort to reduce GHG emissions to 1990 levels.

URBAN FORESTRY ON THE FRONTLINE: CARB'S COMPLIANCE OFFSET PROGRAM

As part of its larger cap-and-trade program, the Air Resources Board developed a Compliance Offset Program in which GHG emission reductions or sequestered carbon that meets regulatory criteria generates CARB offset credits. Each CARB offset credit is equal to one metric ton of carbon dioxide equivalent (MTCO_{2e}) and can only be quantified using a CARB approved compliance offset protocol.

Forests and urban forests are among the tools recognized by CARB for offsetting greenhouse gases. As such, protocols exist for calculating the amount of carbon stored through tree planting and reforestation, improved forest management, and avoiding the loss of trees through conversion of forestlands to other uses. Qualified projects can earn carbon credits, which they can then sell to firms emitting more than their allowed amounts of greenhouse gases.

Since its implementation, the Compliance Offset Program has attracted 64 forest projects designed to precisely measure the amounts of carbon dioxide they remove from the atmosphere and store. Five projects have gone through the rigorous verification process and are registered with the Climate Action Reserve, a national non-profit that insures their integrity and financial value in the U.S. carbon market. Registration makes these forests eligible to receive income from sources that emit more carbon dioxide than state regulations allow. The Van Eck Forest in Humboldt County, the first to be registered, has sold 185,000 metric tons of carbon offsets – the equivalent of taking 123,000 cars off the road for a year. The owners have received around \$2 million for the stored carbon.

Like their wildland cousins, California's urban forests also reduce greenhouse gas emissions. With a single tree capable of absorbing as much as 48 pounds of carbon dioxide per year (or more than one ton over a 40-year period), the tremendous potential for urban forestry as a compliance offset tool is evident. At around \$20 per metric ton, the estimate state officials used to model the program, California's urban forests currently store carbon worth over \$8 million a year. Despite these promising possibilities, urban forests have had a slow and difficult initiation into the world of calculated carbon storage. (See one story of success in the sidebar on page 5.)

The primary problem is funding, says Ray Tretheway, executive director of the Sacramento Tree Foundation. The current protocols for urban forestry cost the project sponsor around \$200 per ton of carbon dioxide stored. On the current market, a ton of stored carbon dioxide is worth around \$14.

“There's not a planner in the state of

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California that wouldn't want trees as a mitigation source for climate change. Right now the protocols are just too restrictive and too costly," Tretheway says.

But potential for change is on the horizon. Dr. Greg McPherson, a research forester with the U.S. Forest Service's Urban Ecosystems and Social Dynamics program (formerly the Center for Urban Forestry Research), recognizes the obstacles to starting urban forestry carbon offset projects under the current protocols.

He has proposed an alternative that reduces some of the uncertainties and recognizes urban forests' unique assets. Among them is a proposal that links carbon storage to increasing urban tree canopy cover rather than planting individual tree sites. It would make current tree cover for a city or region the baseline, with increases to the canopy

translated into equivalent amounts of additional carbon storage. It's a more holistic approach that encourages canopy conservation and recognizes the full spectrum of urban tree management, according to McPherson.

The McPherson proposal and the idea of using urban forests to qualify cities for carbon credits under the Climate Action Reserve is exciting, says John Melvin, state urban forester with the California Department of Forestry and Fire Protection. "Urban trees behave differently. If they got credit for all the work they are doing, projects would pencil out better," Melvin says.

Tretheway is also enthusiastic about the proposed changes: "This is a fantastic opportunity to not only fight climate change but also find a new economic incentive for urban forests."

URBAN FORESTRY ON THE BACK END: CAP & TRADE ALLOWANCE AUCTION REVENUES

No matter how compelling the reasons to reduce greenhouse gas emissions, California will not achieve its ambitious goals through sheer altruism. The Compliance Offset Program is a great incentivizing tool, but must be complimented by another mechanism that motivates large-scale GHG reductions within the capped sectors identified by CARB.

CARB's solution involves the state-sanctioned auction of emission allowances – a market-based approach that is the core component to cap-and-trade. It involves a limit, or cap, on the amount of pollution that may be emitted. The cap is allocated to firms in the form of emissions allowances - the right to discharge a specific volume of the pollutant.



Right: Before and after shots of an open space adjacent to the I-10 freeway in Santa Monica. This was an Eagle Scout project that involved planting 19 California Sycamores (Platanus racemosa).

Opposite: 24" box Monterey Pines (Pinus radiata) were planted along the southern boundary of Santa Monica to create a "green border" for the city and to increase canopy coverage in the southern part of the city.

Under AB 32, CARB limits the allowances and gradually reduces them in a phased program aimed at lowering all emissions to 1990 levels by 2020. During each phase of the program, all operations covered by the regulations are required to turn in allowances equal to their total greenhouse gas emissions. Operators that emit more GHGs than their allowances cover must buy permits from other firms whose operations are under their allowances. This transfer of permits is referred to as a trade. In effect, the buyer is paying a fee for polluting, while the seller is being rewarded for having reduced emissions.

California's first cap-and-trade compliance period begins on January 1, 2013, and is projected to raise significant funds for projects that reduce GHG emissions statewide. Through the Cap-and-Trade Program, CARB will issue carbon allowances for entities to trade on the open market. By issuing these allowances at quarterly auctions, the program will generate billions of dollars in state revenue. In the 2012-2013 fiscal year, the program is estimated to generate between \$660 million and \$3 billion. Over time, a total of 360 businesses at 600 locations throughout the state will begin participating in the auction, and by 2020, it is estimated that the program could generate \$4 – \$6.5 billion. This is where urban forestry can once again contribute

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The Greenhouse Gas Tree Planting Project: An Opportunity to Put Urban Forestry on the Compliance Offset Map

The urban forestry project that has come closest to registration by the Climate Action Reserve is in Santa Monica. The Greenhouse Gas Tree Planting Project is designed to plant 1,000 new trees in parkways along the boulevards of this city just west of Los Angeles. It was launched several years ago at about the same time city officials were writing a long-range urban forest master plan. Within months of the master plan's adoption in December, nearly all of the 1,000 new trees were in the ground, says Walt Warriner, Santa Monica's urban forester.

His primary objective is to measure the removal and corresponding storage of carbon dioxide from the atmosphere. The Climate Action Reserve's strict regulations require planting trees 16 feet apart and mapping the location of each one to demonstrate that it is in a new site. Warriner and his successors must record the growth of each tree over the next 100 years and report the results. City foresters are also responsible for reporting tree ownership and maintenance over the long term – "who does it and how often," Warriner says.

Once he has completed planting the mix of Torrey and Monterey pines, cedars and other broadleaf trees, Warriner calculates that they will sequester around 5,000 metric tons of carbon dioxide over 100 years. Even at \$10 a ton, this would earn Santa Monica \$500 a year. The city's trees are already storing over 2 million metric tons of carbon dioxide for an estimated value of \$830,843, Warriner says. In addition, Santa Monica's urban forest offsets roughly 21 million gallons of stormwater per rain event, a service worth over \$38,000 to the city.

Viewed in these monetary terms, urban forests assume the value of a public utility: They provide a public service that generates income for a municipality. Warriner's goal is to create a pilot project that demonstrates the worth of the Santa Monica urban forest in a way that can be replicated in other communities. Selling credits on the open market for the carbon stored in street trees can provide a revenue stream that justifies urban forests beyond the intangible benefits already widely recognized, says Warriner.

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to meeting AB 32 goals and objectives.

Decision-makers in Sacramento are currently debating the best use of these new fiscal resources, with legislators seeking to move forward with multiple measures that share a common thread of ensuring the dollars generated from allowance auctions are utilized to reduce greenhouse gas emissions in a manner consistent with AB 32 [see Legislative Update].

Should this suite of measures or similar proposals meet with success at the State Capitol this year, the urban forestry funding landscape could be significantly enhanced in both the short and long-term future. Assembly Speaker John Perez (D – Los Angeles), and Assembly Appropriations Committee Chair Felipe Fuentes (D – Los Angeles) cite urban greening and forestry as engines for positive change in their respective bills moving forward on this subject. With California's existing urban forests already sequestering 414,000 metric tons of carbon annually, it's easy to imagine how future urban forestry projects could create the change legislators are seeking.

Luckily, there's plenty of room in California to plant more trees. Dr. McPherson and other scientists with the Urban Ecosystems program used aerial photography to estimate 242 million empty tree planting sites in California cities. The researchers have found that if 50 million urban trees were planted strategically then they could offset emissions of an estimated 6.3 million metric tons of carbon dioxide annually – around 3.6 percent of the statewide goal.

The landmark legislation that launched these programs has put California in the forefront of the effort to reduce greenhouse gases, but the climate change challenge California seeks to address has become even more pressing than when that legislation was enacted.

“We must continue working together to create and use the whole array of tools we are going to need to successfully meet this challenge,” says Mary Nichols, chair of CARB.

CARB has already recognized the role urban forestry can play through offsets as one of those tools. With the rest of the nation watching, California's Governor and Legislature may continue this effort and include urban forestry as a qualified competitor for allowance auction revenues. With a proven track record and space to grow, California's urban forests are ready to meet the challenge.

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RELEAF

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California Trees

Partners in Community Forestry National Conference

We're online! Check out the new, interactive version of *California Trees* on our website.

To find the latest issue, just go to www.californiareleaf.org, scroll over the “Resources” tab and click “Newsletter.”

We recently made lots of other changes to the site, so look around while you're there. If you'd like to stop receiving a printed copy of the newsletter, email info@californiareleaf.org with “electronic subscription” in the subject line.

**PARTNERS IN
COMMUNITY
FORESTRY**

The Partners in Community Forestry National Conference, presented annually by National Arbor Day Foundation is coming to Sacramento November 14-16. Mark your calendars now!

Because we know your travel time and resources are limited, we will also host the California ReLeaf Network Retreat in Sacramento on November 13. Dues-paying Network members will receive a travel stipend and airfare (depending on location) to attend the Retreat.