

Capturing carbon in your community: New reporting protocol for tree planting projects

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PLANTING AND STEWARDING TREES IS ONE OF THE BEST WAYS TO CAPTURE AND store carbon for climate protection, while at the same time enhancing quality of life where we live, work and play. Over the course of its life, a tree can store 10,000 lb of carbon dioxide (CO₂), or 4.5 metric tons (t) (McPherson and Simpson 1999). Also, if planted strategically, a city tree will lower energy use and thereby reduce greenhouse gas (GHG) emissions at the power plant. In hotter climates, like California's Central Valley, the GHG benefits from energy conservation can exceed those of carbon storage.

The California Global Warming Solutions Act of 2006 (AB32) requires a reduction in GHG emissions to 1990 levels by 2020. This amounts to a reduction of 173 Mt (million metric tons) from the predicted level in 2020. Our initial research suggests that planting lots of trees in California communities can make a difference when it comes to fighting climate change. Using aerial photography, we found 242 million empty tree planting sites in California cities (McPherson and Simpson 2003). If 50 million trees were planted, they would sequester about 4.5 Mt CO₂ (million tons) annually. If they were planted strategically to shade east and west walls of residential buildings, they would reduce air conditioning energy use by 6,408 GWh, equivalent to an average annual CO₂ equivalent emission reduction of 1.8 Mt. The estimated total CO₂ reduction of 6.3 Mt annually is 3.6 percent of the 173 Mt statewide goal.

Given that urban forestry can be a win-win investment, a stakeholder-driven process has developed a credible but simple approach for accounting and reporting GHG benefits from urban tree planting projects to the California Climate Action Registry. Reporting carbon reductions to the Registry guarantees their credibility and accuracy in the eyes of regulators and investors. The Urban Forest Project Reporting Protocol (UFP) provides a standard set of guidelines for use throughout the United States.

Underpinning the UFP is new science quantifying effects of urban forests on GHGs. A new technology, the US Forest Service's Center for Urban Forest Research's Tree Carbon Calculator (CTCC) is a companion to the UFP that translates research into a useful tool. The Excel spreadsheet provides numerical data on carbon storage, energy savings, and biomass volumes for common tree species in California cities. Together, the UFP and CTCC will put a wealth of science-based information at your fingertips.

The UFP provides a reporting process for GHG tree projects that will permanently increase carbon storage. Guidance is provided for quantifying GHG emissions re-

leased by motor vehicles and equipment used to maintain project trees. In addition to GHG benefits related to carbon storage, project developers are encouraged to quantify and report a project's GHG emission reductions related to energy conservation and use of tree residue as feedstock for biopower plants. Guidance for reporting carbon stored in wood products is under development. Some key aspects of the UFP follow:

- ▶ The UFP is aimed at three users: cities, utilities and college campuses, because many of these types of entities have already begun to inventory and report their GHG emissions.
- ▶ A 100-year project reporting period guarantees the long-term existence of carbon storage gains from urban forestry projects. Each tree site may have one or more replacement trees over the 100-year project lifetime. It is the project developer's responsibility to promptly locate and plant replacement trees so that a permanent increase in canopy cover is maintained.
- ▶ Planting at least 1,000 project tree sites is recommended as this will allow entities to benefit from economies of scale for planting, monitoring and verification.
- ▶ All project tree sites must be inventoried at least once every ten years, but more frequent sampling is recommended, using remote sensing or field surveys.
- ▶ Procedures are presented to track changes in spending for existing (non-project) tree care to ensure that project activity does not adversely affect their composition, health, and functionality by shifting of funds and maintenance to project trees. This impact, termed activity-shifting leakage, is suspected if annual tree care expenditures decrease by more than 10 percent from planned amounts. If leakage is confirmed, carbon storage from project trees cannot be registered.
- ▶ One goal of the UFP is to ensure that entities are sustaining their existing carbon stocks before engag-



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ing in new GHG tree projects. They meet this goal by demonstrating that every existing tree removed is replaced. Once an entity meets this standard, net GHG benefits from a new tree project are “additional” to its business as usual baseline. Using this baseline provides a high level of certainty to project developers, investors, and regulators because it is clear, consistent, and facilitates prompt and accurate verification.

- ▶ An initial project report contains (1) a project summary, (2) a description of project boundaries, (3) proof of eligibility including the average annual number of non-project trees removed and planted, (4) steps taken to promote the longevity of project trees, (5) potential co-benefits and negative impacts of the project, (6) a tree maintenance plan (TMP) that documents planting and maintenance procedures for project trees, and (7) a tree monitoring plan that describes methods for measuring trees.
- ▶ Once a GHG tree project is underway an annual monitoring report is required. This report includes (1) documentation of compliance with the non-project tree baseline (i.e., one tree planted for each removed) and expected expenditures for tree maintenance, (2) quantification of the CO₂ stored in project trees and released via tree care activities for that year,

(3), a leakage assessment, (4) quantification of other GHG benefits (optional), and (5) a description of monitoring techniques.

- ▶ Initial and annual monitoring reports are reviewed by an independent verifier hired by the project developer. At designated intervals, carbon stocks and tree care-related emissions are measured by the verifier and values are compared to those reported by the project developer. Also, the verifier determines if leakage has occurred and reviews the methods used to inventory trees and quantify GHG benefits.

To obtain a complete copy of the protocol and learn more about the Registry, visit their website at: <http://www.climateregistry.org/resources/docs/protocols/progress/urban-forest/urban-forest-protocol-final-082008.pdf>

Currently, reporting activities that generate emission reductions is voluntary and there is a substantial demand for quality GHG emission reduction credits. Many organizations and individuals look to the voluntary carbon market for the purchase of GHG emission reduction credits that they can use to offset their GHG emissions and, in some cases, to demonstrate carbon neutrality. Now that the protocol has been adopted by the Registry, the stage is set for significant investment in large-scale tree planting projects. New investments in our community forests have the potential to transform how our cities look, feel, and function. To make that potential a reality will require new knowledge, improved practices and stronger partnerships.

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