



Austin, Texas: Exploring Urban Forestry & Carbon Offsets



Fast Facts

Activity: Carbon footprint calculation and offset through supporting tree plantings

Launch Date: 2007

Purpose: Provide residents and city departments with local options for addressing their carbon footprint.

Tree Ownership: TreeFolks, an Austin-based nonprofit organization, plants trees in both city-owned and privately-owned spaces.

Funding: Initial project development by TreeFolks was approximately \$2,000 (out of pocket, plus staff time).

Verifier: No third party verification to date

Payment Mechanism: Online transaction tied to a carbon calculator.

Price: Original Treefolks offsets sold for \$14/mtCO₂e. As of July 2011 the organization will be engaged in a new carbon offset initiative with the City of Austin and the price of offsets has yet to be determined.

Climate Benefits: The total amount of carbon offset to date was not available at the time this case study was written.

Co-Benefits: Stormwater mitigation, reduced water use, avoided emissions through shading, lowering the urban heat island effect, increasing property values, reducing particulate air pollution, and creating wildlife habitat. TreeFolks' carbon initiatives emphasize the importance of supporting local sustainability and educating and engaging the people of Austin around climate change.

Overview

TreeFolks is an Austin-based nonprofit organization that has been engaged in the sale of carbon offsets to raise funds to plant trees since 2007. Hosting and administering its own carbon footprint calculator and carbon offset program for three years, in 2011 the organization was selected by the City of Austin's Climate Action Team to participate in a pilot project to generate local carbon offsets. The offsets will be quantified, monitored, and sold through the Austin Carbon Footprint Calculator (ACFC), which is one component of an extensive city resolution to promote carbon neutrality throughout the city. Though TreeFolks and the City of Austin have collaborated on projects for many years, this emerging partnership represents an innovative approach to support the growth of the urban forest, the expansion of a voluntary carbon market, and the City's sustainability initiatives.

The Projects

TreeFolks hosted a carbon calculator and carbon offset purchase option on its website under the direction of Scott Harris, the organization's executive director from 1999-2010. Individuals and businesses seeking to purchase carbon offsets associated with the approximately 10,000 trees planted by TreeFolks annually had

periodically approached Harris. After attending a presentation on carbon credits at the Texas Tree Conference in 2006, he “decided that if our carbon credits were valuable for somebody else, they might be valuable to us.” Harris spent the next ten months exploring and comparing over 20 existing carbon calculators, choosing the most reliable and credible numbers on carbon sequestration from over 50 references, and vetting his calculations through a group of local environmental and forestry professionals. With the help of a paid web designer, the TreeFolks Carbon Offset Program (TCOP) was launched in August of 2007 and Harris was confident that it had been designed “with enough really credible data to produce numbers that actually meant something.”

The TreeFolks carbon calculator was a simple interface that was user friendly and clear about the sources used for the calculations [see text box 1]. Users would input information about annual kilowatt-hours of electricity used, miles driven in a year and miles per gallon of vehicles, annual air travel miles, and cubic feet of natural gas used in a year in the household. A carbon footprint would then be generated and the user would have the option of offsetting by paying \$14 per ton of carbon dioxide equivalent (this price was decided by Harris and was based on other carbon calculator offset prices). The number of trees that would be planted in order to achieve the offset would also be indicated and was supported by a documented minimum average 80% survival rate of TreeFolks’ trees (based on annual tree survival studies performed by the organization). The funds collected through the TCOP would be put into a general fund to support trees planted on public land through the CommuniTrees or CityShade programs or the Urban Orchard Project [see text box 2]. When carbon offsets were purchased TreeFolks staff would assign the funds to specific trees from the list of scheduled plantings for the current or upcoming planting season and would offer each user the option of knowing exactly where those trees were located. Some users even requested purchasing the carbon offsets for specific tree planting projects. The program was minimally marketed in the organization’s newsletter and on the website and was for the most part targeted at TreeFolks’ existing network of volunteers, tree recipients, and partnering organizations and institutions (11).

While Harris is unsure of the total amount of funding acquired through the TCOP, he did indicate that within

several months of the launch, the calculator did recover the approximately \$2,000 it cost to develop the tool (equivalent to 143 metrics tons of carbon equivalent offset.) Both Harris and TreeFolks board member Chris Searles noted that beyond that the TCOP saw regular activity through 2008. Several domestic urban forestry organizations contacted Harris with interest about the program’s design and use. But by 2009, due to a variety of factors such as the lack of capacity for marketing and the state of the economy, the calculator lost its steam. In 2010 only about \$300 was raised through the TCOP. In January 2011 Harris retired from Treefolks and April Rose became the new executive director. Rose, who was previously the town forester for nearby Pflugerville and had partnered with Treefolks in the past, took the carbon calculator off of the organization’s website within the first few months of her employment with the organization. Acknowledging her unfamiliarity with carbon markets and the calculations associated with the tool, Rose intended to familiarize herself with Harris’s design before continuing to offer the TCOP as a service.

Factors and Sources for TreeFolks Carbon Offset Program:

- **Carbon emitted from gasoline and natural gas from the United States Department of Energy:**
 - 1) Energy Information Administration. 2005. *Documentation for Emissions of Greenhouse Gases in the United States*. DOE/EIA-0638 (2005), October 2007, Tables 6-1, 6-2, 6-4, and 6-5.
 - 2) U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *Alternative Fuels & Advanced Vehicles Data Center, Fuel Properties* web page (<http://www.eere.energy.gov/afdc/fuels/properties.html>)
- **Carbon emitted for air travel (averaged) from a Tufts University study:**
 - 1) Kollmuss, Anja & Bowell, Benjamin. 2006. *Voluntary Offsets for Air-Travel Carbon Emissions: Evaluations & Recommendations of Voluntary Offset Companies*. Tufts Climate Initiative. 53p.
- **Carbon emitted from electricity based on fuel mix then used by Austin Energy at www.austenergy.com.**
- **Number of trees to offset a user's carbon footprint come from a conservative average of .66 tons of CO2 per mature tree from the American Forests Carbon Calculator webpage at www.americanforests.org/learn-more/carbon-calculator (page has since been updated).**

Text Box 1: Factors and Sources for the TreeFolks Carbon Offset Program



TreeFolks Programs Linked to Carbon Offsets

When active, the **TreeFolks Carbon Offset Program** (TCOP) supports trees planted in publicly owned spaces through three different channels/mechanisms/institutions/programs:

- **CommuniTrees** is a grant program that offers trees and planting expertise to volunteer groups planning tree-planting projects. Since 1992, the program has provided thousands of trees to schools, churches, medians, green-spaces, and housing projects all over the Austin area. The majority of the trees planted through the TCOP were allocated to CommuniTrees.
- Through the **CityShade** program, TreeFolks partners with municipalities and organizations to plan events that give citizens hands-on opportunities to improve their communities by planting trees. During the 2010-2011 planting season, 2,391 trees were planted through CityShade at nine sites.
- The **Urban Orchard Project** was started in 1999 to plant groves of locally adapted fruit and nut trees and to use those trees as a platform to teach people how to grow fresh fruit using healthy, organic methods. During the 2010-2011 planting season, TreeFolks helped five community groups plant small orchards, up to one acre in size.

The **Austin Carbon Footprint Calculator's** offset component will support trees planted along the residential Right of Way through the NeighborWoods program.

- TreeFolks has been contracted by the City of Austin to implement the **NeighborWoods** program since 2004. With an annual goal of 3,600 trees, TreeFolks evaluates neighborhoods and offers free street trees to residents who agree to plant and care for the tree(s) for at least two years. The goals of the program are to lower summer temperatures and reduce energy consumption by investing in tree canopy cover that will shade paved streets. This program fits well within the **Austin Climate Protection Program**.

A note on TreeFolks' Trees: TreeFolks generally plants trees in 5 gallon pots that are usually at or less than 1" in diameter and between 5-7' tall. They offer locally sourced native trees that are well adapted to the Austin climate and they deal primarily with two local wholesale nurseries that are within 10 miles of the TreeFolks office. Examples of tree species planted include: live oak, lacey oak, chinquapin oak, Elm, Mexican plum, mountain laurel, and flame leaf sumac.



A newly planted 5-gallon live oak tree delivered through the Neighborwoods program in February 2009.

Text Box 2: TreeFolks Programs Linked to Carbon Offsets

However, before Rose began that task, an opportunity to collaborate with the City of Austin arose that would allow the small organization to be involved with a larger, emerging voluntary carbon market. In 2007 the Austin City Council passed a resolution to become carbon neutral by 2020. Titled the Austin Climate Protection Plan (ACPP), this resolution identifies objectives for reducing emissions and also includes a provision for creating carbon offset opportunities for city departments, Austin residents, and visitors to central Texas (4). In simple terms, said Austin Environmental Program Coordinator Marc Coudert, "the City of Austin is mandated to create a carbon calculator and is also mandated to engage in carbon offsets."

The latter was accomplished in 2010 when the Canadian nonprofit organization ZeroFootprint was hired to build a localized calculator for the city (available at www.ci.austin.tx.us/acpp). For an Austin resident to use the calculator they simply enter their Austin Energy ID number and the tool auto-populates the customer's household energy, water, and salvage services to generate a carbon footprint (Austin Energy is the local municipal energy provider and is also a key partner on

the ACPP). The user also has the option to input information about annual travel (car and air) and diet. Visitors to the Austin region (not Austin Energy customers) can manually input their travel information to generate a carbon footprint. Coudert and the City's interdepartmental Climate Action Team began designing the carbon offset purchase component in 2010, which is anticipated to be added to the current calculator design and officially launched by early 2012.

In February 2011 the City of Austin released an RFP for a grant titled "the Austin Climate Protection Challenge Grant" to solicit local projects that could create carbon offsets for the ACPP [see text box 3]. While the offsets created by these projects won't be available until mid-2012 and beyond, the City currently has a large pool of renewable energy credits (RECs) from solar and wind projects through Austin Energy that will be sold during the pilot period. "The idea," said Coudert, "is that any money we make off of this project through the sale of offsets we put right back into a pool of money geared towards local offsets projects."

Rose submitted a proposal on behalf of TreeFolks that is

based on the organization’s NeighborWoods program (see text box 2) and it was one of two initial projects selected by Coudert and the Climate Action Team to pilot the carbon offset program. Two additional projects will be chosen after the official 2012 launch. The \$10,000 grant award will be used by TreeFolks to increase the 2011 NeighborWoods tree plantings from 3,600 to 3,800 and to use the National Tree Benefits Calculator (2) to generate data on carbon sequestered and avoided by NeighborWoods trees planted over the course of the year.

As of July 2011, logistics of the ACFC carbon offsets component are still being figured out, such as the price of the offsets per ton of CO2 equivalent, and how the project will be marketed. Coudert knows that there will be a budget for marketing, but the City “hasn’t really pushed hard to market the carbon calculator because at this point [July 2011] there is neither the carrot nor the stick -- but it’s a fun tool for people to gauge how well they’re doing. Until we can really connect the carbon calculator to the projects and the offsets, we haven’t marketed.” Additionally, Coudert and Rose have begun to consider options for having the carbon offsets from NeighborWoods trees verified by a third party, and

exploring the possibility of registering the program through the Climate Action Reserve’s *Urban Forest Project Protocol* in the future (5).



3,600 trees delivered to homeowners’ front doors through the NeighborWoods Program each year lead to greener neighborhoods, cleaner air, and happier residents!

Participant Perspectives

The staff of TreeFolks and the designers of the ACPP have both recognized the potential market for local carbon offset projects in the Austin area. Coudert said, “it’s harder for people to connect to [carbon offsets generated through] wind towers in western Texas, which is a 10-hour drive from here, than to something that is happening in their own neighborhood . . . so when people visit the carbon calculator and at the end they want to become carbon neutral, they can look at these local projects as way to do it, so it’s just a good feeling all around.” Coudert continued, “it’s not just about making money through carbon offsets, it’s also about promoting local projects that are green.” Searles noted, “Austin has developed a really neat cultural thread over the last three or four years that has to do with trees and water, which is pretty scarce, and we’ve built a community around that.” This community and the city’s tree planting initiatives support the idea that “we should all be really serious about planting as much as we possibly can right now.”

Those involved with the TCOP and the ACPP also recognize challenges around implementing carbon projects through urban forestry. Coudert noted, “these local projects will never really produce a large amount of carbon” and Searles said that after the economic downturn in 2008, the TCOP “just kind of went out of fashion,” leading to decreased traffic on TCOP webpage. Harris, who designed the TCOP, acknowledged that through his research he “noticed that there was a low level of accountability” in different online carbon

Project requirements indicated in the RFP for the Austin Climate Protection Challenge Grant include:

- The project must occur within the five Austin-area Counties,
- it must either avoid the release of greenhouse gases (GHGs) into the atmosphere or permanently reduce a specific amount of GHGs,
- it must demonstrate additionality (the GHG emission reductions achieved with the grant award must be greater than what would occur under business as usual circumstances)
- the amount of GHG reduced by the project must be quantifiable (in metric tons of GHG emissions), and over the life of the project, must be quantified,
- the project should act as a prototype for other projects in the Austin area and is repeatable,
- the project should be visible to the general public and is easily identifiable,
- preference will be given to projects that provide co-benefits like education and increased awareness of climate change issues and benefits to populations that are vulnerable to the effects of climate change, and
- the awardee must establish criteria and procedures for monitoring. These procedures must have a high level of accuracy and transparency and provide monitoring methodologies and monitoring roles and responsibilities.

Text Box 3: Austin Climate Protection Challenge Grant offsets requirements.

calculator tools and offset projects. Further, he said, “some of the things that groups were counting as credits were just really questionable to me . . . some of them were so simple that you really had to question the credibility of the numbers that you got off of them . . . and [at the time] nobody had a real local and verifiable option for offsets.” While Harris ultimately developed a carbon calculator “that he felt was really good and that drew attention from other people in the tree planting industry,” in the absence of recognized protocols for urban forestry carbon projects, concerns about accountability will likely persist. Harris also pointed out, “the only restricting factor for it [the TCOP] was marketing . . . we essentially didn’t have the resources to market it adequately” but, despite the challenges emphasized, “everyone who was exposed to it I think had favorable impressions of it, but we just weren’t able to reach the audience.”

April Rose, current executive director of TreeFolks, removed the TCOP from the TreeFolks website based on “the rationale that if the city has one that we are participating in, do we really need one too?” Rose recognizes that “the carbon offsets option that we’re just fleshing out with the city is really right up here on the forefront of a new part of what we’ll be doing to help the City. The City of Austin’s goal is to be carbon neutral by 2020 but they’re already realizing that offsets will have to be included in their neutrality goal . . . so why not offset a portion locally to improve our residents’ quality of life and support proven local initiatives?”

Looking Forward

There is obvious enthusiasm around the TreeFolks partnership with the City through the Austin Climate Protection Challenge Grant. TreeFolks will be able to plant more trees through its Neighborwoods program in 2011 with the grant funding and potentially in the future through direct funds from the sale of carbon offsets on the ACFC. Further, the City will meet key objectives of the ACPP. But the benefits of this pilot project don’t end there. “My long term vision,” said Coudert “is to use this project with TreeFolks as a sort of prototype that goes through the process of becoming viable according to the

CAR [Climate Action Reserve] protocol and then eventually take our City as a whole and go through the protocol.” In order for the City departments to be carbon neutral by 2020 they will “have to have some kind of sink and this is where the trees could come in on a larger scale,” noted Coudert, “and hopefully within the next five years we will be able to do it full-blown for the whole city.”

Rose also expressed excitement about the potential of this project and noted, “there’s a lot of interesting things happening in Austin right now.” While the future of the TCOP is unclear, the focus on the carbon benefits of the organizations trees remains pertinent. Rose emphasized, “we [Austin residents] want to be a green city”, and mentioned that she recently submitted a significant proposal to a large business that is establishing a branch in Austin to “help them achieve some carbon offsets through tree plantings in riparian corridors to fruit tree orchards to expand NeighborWoods beyond the scope of the Austin Energy service area.”

Lessons Learned

TreeFolks’ efforts to be engaged in carbon offsets through its own carbon offset program and subsequently through that of the City of Austin offer significant lessons about urban forestry and voluntary carbon markets. Further, the carbon offset components of the Austin Climate Protection Plan demonstrate localized efforts to support carbon neutrality and sustainability at a municipal level. Specific lessons learned from this case study include:

- ◆ *Opportunities for collaboration exist in voluntary carbon market mechanisms:* As institutions and organizations consider ways to incorporate carbon offsets into their sustainability initiatives there are likely partnerships that can strengthen these efforts. TreeFolks and the City of Austin will collaborate in the pilot year of the ACPP’s carbon offset component, both entities benefiting from the abilities and assets of each other. It is important to note the importance of all collaborators having confidence in carbon accounting methods and the project guidelines.

- ◆ *The experience that TreeFolks had in developing and implementing the TCOP better prepared them to partner with the City of Austin in its emerging carbon offset project:* Even though April Rose stopped offering the TCOP as a service of TreeFolks, the foundation that Scott Harris laid by establishing the program provided the experience that primed the organization to be open and ready to partner with the City in the pilot cycle of its carbon project. By partnering with the City of Austin, TreeFolks’ “product” (the carbon offsets provided by the trees) will be available to a much larger market than was accessed through the TCOP.
- ◆ *Municipalities are meeting their sustainability goals through urban forestry:* As cities across the country develop their own sustainability agendas, places like Austin are demonstrating that trees can play a substantial role.
- ◆ *Involving local utilities in carbon offset projects is important:* Austin Energy is a vital partner in the Austin Climate Protection Plan and the carbon offset initiatives, both in the calculation of Austin residents’ footprint and in actually providing offsets through its investments in renewable energy. Partnering with local utilities can link residents and cities with energy providers in innovative ways.
- ◆ *The lack of broadly accepted protocols applicable to urban forests in U.S. voluntary carbon markets is an obvious barrier:* Because he had no recognized protocols or models on which to base his program, Scott Harris went through an intensive research process to develop a carbon calculator to which he felt comfortable attaching the TreeFolks name; in other words, there were high up-front costs. Despite this, when he left the organization and April Rose took over as executive director, she was not confident in the tool, both because of her lack of knowledge about carbon markets and Harris’s TCOP design. Had the TCOP been vetted or verified according to an established protocol, it would have had more weight.
- ◆ *Marketing is an important piece of any sustainability initiative:* The former executive director of TreeFolks admitted that the most limiting factor of the TCOP was the lack of marketing. Simply put, if people don’t know about an initiative, they won’t

participate, and allocating resources to marketing is essential for emerging carbon offset projects. It should be noted that marketing can be achieved through effective partnerships and that the City of Austin intends to design a marketing campaign for the launch of the offset component of the ACFC in 2012.

- ◆ *Urban forestry groups seek models for carbon offset projects:* Scott Harris noted that multiple urban forestry organizations across the country contacted him after he launched the TCOP in 2007 seeking guidance in developing their own carbon projects.
- ◆ *Carbon offset projects can be incorporated into existing programs:* TreeFolks has experience with implementing a carbon project and familiarity with the carbon benefits of its trees. Rose incorporated the existing Neighborhoods program into her proposal for the Austin Climate Protection Challenge Grant, recognizing the potential to build on a program already offered by the organization and to demonstrate additionality.

Project Partners



Treefolks

Treefolks is a nonprofit organization that was established in 1989 in Austin, Texas. With a staff of under five (give or take a seasonal worker), Treefolks has planted tens of thousands of trees at schools, churches, retirement homes, and housing projects, and in medians, residential right-of-ways, community gardens, parks, preserves, and green belts. Treefolks offers a variety of tree planting programs, classes and workshops, and volunteer opportunities. Information about the organization can be found on its website at www.treefolks.org (11).



City of Austin

The Austin City Council passed a resolution in February 2007 creating the Austin Climate Protection Program, which is administered by an interdepartmental Climate Action Team, headed by Environmental Program Coordinator Marc Coudert. The overarching goal of the ACPP is to make Austin (*continued on page 8*)

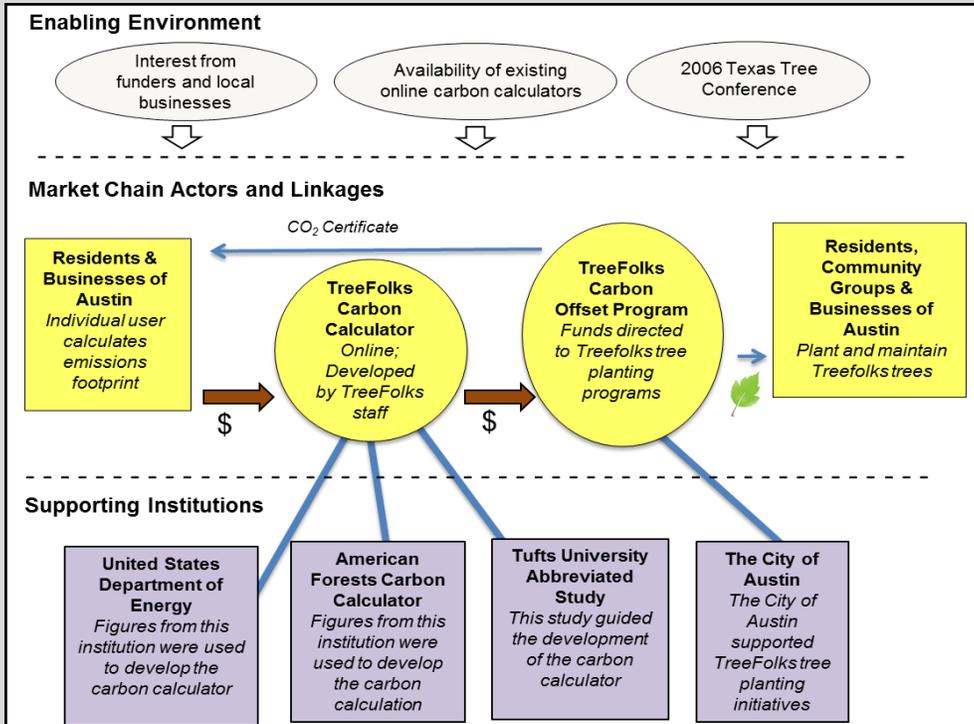


Market Chain Maps

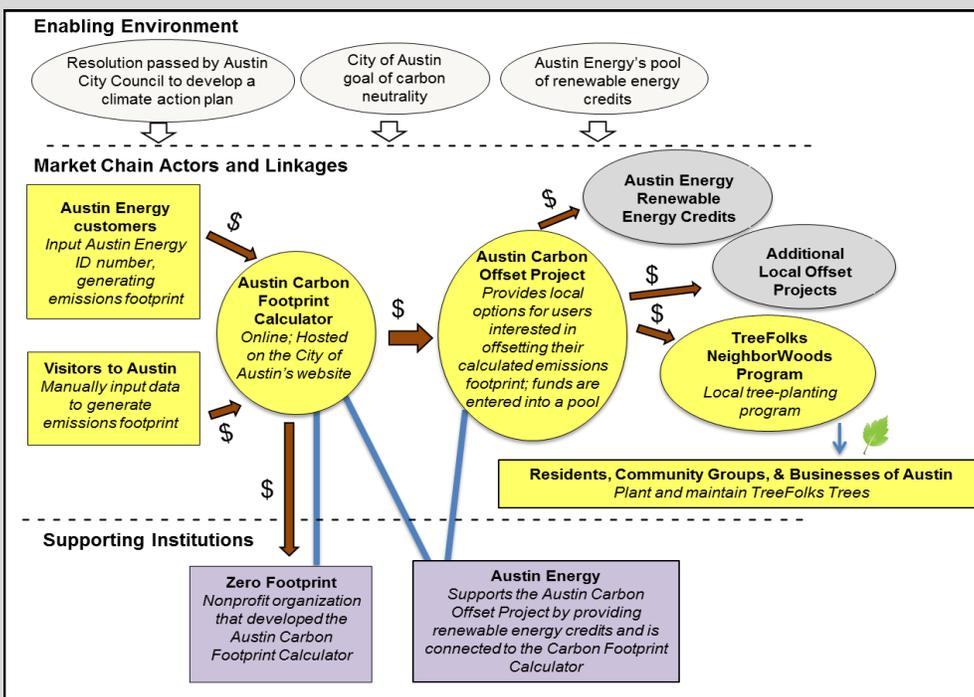
The market chain map summarizes the roles of participants and contributors to market-based initiatives (8). The Enabling Environment section indicates the external factors that facilitated the development of this urban forest carbon program. The Market Chain Actors and Linkages section includes the producers, purchasers, facilitating intermediaries and flow of funds. The Supporting Institutions section lists entities that provided critical support, but were not part of the market transaction. Because forest carbon markets are newly emerging, the same organizations may show up in more than one capacity as they work to develop all of the components needed for a successful, market-based program. The dollar signs indicate flow of funds and the leaves indicate trees planted.

In the top map, interest from funders and local businesses, availability of existing online carbon calculators, and the presentation on carbon offsets that Scott Harris saw at the 2006 Texas Tree Conference were all conditions that contributed to the decision of TreeFolks staff to pursue its program. The TreeFolks online Carbon Calculator and the corresponding Carbon Offset Program linked residents and businesses of Austin that wanted to offset their emissions locally to tree plantings in the area. Information available online from the U.S. Department of Energy, American Forests, and Tufts University was used to develop the carbon calculator and the City of Austin supported TreeFolks' planting initiatives.

In the lower map, the City of Austin's policy around climate and its carbon neutrality goal paired with the local utility company's investment in renewable energy sources make up the Enabling Environment. The Austin Carbon Footprint Calculator and the Austin Carbon Offset Project direct funds from Austin residents and businesses, as well as from visitors to the city, to local projects that produce carbon offsets, such as the TreeFolks NeighborWoods Program. The City of Austin hired a nonprofit organization, Zero Footprint, to develop its carbon calculator and is also supported by Austin Energy, which is the local community-owned utility company that is providing renewable energy credits as offsets for the pilot year of the program (2011).



Above: Market Chain Map for the TreeFolks Carbon Offset Program; Below: Market Chain Map for the Austin Carbon Offset Project.



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the leading city in the nation in the fight against climate change and to make all City facilities, vehicles, and operations carbon-neutral by 2020. The ACFC, the Austin Climate Protection Challenge Grant, and the emerging carbon offsets program are part of the ACPP. Information about the ACPP can be found at <http://www.ci.austin.tx.us/acpp/> (4).



Austin Energy

Austin Energy is Austin's community-owned electric utility. The company serves more than 400,000 customers and powers the capital city of Texas through a diverse generation mix including coal, natural gas, and a variety of renewable energy sources. Austin Energy's Renewable Energy Program, GreenChoice, allows subscribers to buy energy produced from 100% renewable sources such as wind power and methane gas from landfills. As of 2011, GreenChoice program customer subscriptions number over 750 million kilowatt-hours. Austin Energy is a partner to the City of Austin in its Climate Protection Plan and will provide renewable energy credits as carbon offsets in the pilot year of the carbon offset project (1).

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All photographs taken from either the TreeFolks or City of Austin webpages or have been submitted from one of the project participants.