
Carbon Storage and Sequestration

How do urban forests help to store and sequester carbon?

As trees grow they remove/sequester carbon dioxide (CO₂) from the atmosphere to use during metabolic processes and store it as woody tissue (carbon storage). Therefore, a growing tree sequesters carbon annually and stores it for the life of the tree. The amount of carbon sequestered and stored over time is a function of a tree's stature and lifespan. Young trees tend to sequester carbon faster than older trees due to their increasing vigor. Long-lived trees store carbon for a longer period of time than shorter-lived trees because when a tree dies most of the stored carbon is released back to the atmosphere as it decomposes. The time span for carbon storage can be extended if the wood from the tree is used to make a product (i.e. furniture).

Why is storing and sequestering carbon important?

Over time, the global carbon cycle has changed and the concentration of CO₂ in the atmosphere is currently increasing. While there are many sources of CO₂ one of the largest sources over the last century is due to the burning of carbon rich fossil fuels (oil, coal and natural gas). Since CO₂ is a greenhouse gas this accumulation is contributing to changes in average global temperatures and climate changes worldwide. These changes in temperature and climate will lead to changes in rainfall patterns, increase storm events and rising sea levels. These are impacts that have long term ecological, economic, social and political effects for us and future generations.

How do we help urban forests store and sequester carbon?

In order for trees to sequester and store as much atmospheric carbon as possible, they need to be healthy. Trees in our communities need to be actively managed to maintain their optimal health. This management comes at a cost, but represents an investment by the community in the long-term health and vigor of the urban forest. Just as we want to encourage the management of the living trees it is important to recognize the value of dying and dead trees. They serve an ecological role by providing ecosystem services and provide habitat for wildlife. In Tampa, the urban forest sequesters more carbon than it emits and this amount can be increased over time through sound management of existing and newly planted trees.

Can urban forests help the with environmental policy initiatives?

On July 13, 2007 Florida Governor Charlie Crist signed three executive orders addressing climate change, increasing energy efficiency, and pursuing more renewable energy sources. In February 2008, Tampa Mayor Pam Iorio signed the U.S. Mayors Climate Protection Agreement to reduce greenhouse gas emissions. For these goals to be met urban forests will be an integral component of the solution. They sequester and store carbon, offsetting emissions from human activities, increase energy efficiency of homes and buildings by reducing cooling needs and can act as a feedstock for alternative fuel production.

What is the value of stored and sequestered carbon in Tampa's urban forest?

Carbon credits are a commodity that are bought and sold in many parts of the world today. Therefore, the amount of carbon sequestered by the trees in Tampa's urban forest has a monetary value. The total carbon stored in Tampa's urban forest is estimated to be over 500,000 tons and has a value of \$10.3 million dollars if sold at ~\$20 per ton. The total carbon sequestered by Tampa's urban forest is about 46,525 tons per year, and which could generate \$1 million dollars annually if sold.

