

“Carmel has become the innovative city to look to for new initiatives such as tree planting projects with structured soil, pre-development tree protection and tree planting programs, and planning initiatives far beyond the standard tree ordinance of most cities. Today Carmel is recognized statewide as a community and urban forestry leader by the Indiana Department of Natural Resources, the Indiana Urban Forestry Council, the Indiana Arborist Association and many other organizations. They continue to be an innovator that we can all look to for advice and good ideas. They are truly an outstanding urban forestry program....”

- Burnell C. Fischer, Ph.D., CF
Professor, Indiana University
and former IN State Forester

Contacts

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Looking Ahead

Project Monitoring and Evaluation

In 2007 the Urban Forestry Program purchased five hand-held personal digital assistants (PDAs) to enable staff and volunteers to produce a real-time inventory of City trees using the U.S. Forest Service's i-Tree software. This system will also allow the Program to quantify the environmental, energy, and economic benefits of the City's urban forest.

Project Maintenance

The City is responsible for maintenance of all trees within public right-of-ways and public service easements. Though the majority of the program is directed by the Urban Forestry Program, Carmel's Parks and Recreation, Street, and Utilities Departments also provide tree maintenance in some areas, as do private property owners. The various responsibilities and the means by which they are carried out are specified in a series of ordinances, standards, and planning documents adopted by City Council. For example, the City's Zoning Ordinance specifies that in the U.S. Highway 31 Corridor Overlay District maintenance – including irrigation, mulching, and replacement of dead or diseased plantings – is the responsibility of the property owners. Similarly, the City's Tree and Shrub Installation Specifications include detailed maintenance requirements.

Challenges Faced

A key ongoing challenge faced by the City is the continued land use pressure for additional residential and commercial development. This hinders the efforts of the Urban Forestry Program to educate and convince all parties of the need for trees and the soil volumes to support them in areas of rapidly dwindling open space. The City's response, led by the Urban Forestry Program, has been a series of measures to promote long-term planning and institutionalize consideration of urban forestry issues across all City departments.

Innovation Applied

Carmel's Urban Forestry Program has implemented a number of innovative approaches. One is its use and promotion of structural soils, a specialized mix that supports pavement and allows extensive tree root growth, as a growing media under pavement. These efforts have resulted in about ten urban projects using this technology – including a new Home Depot – contributing to improved size, structure, and health of the City's shade trees. The Program has also developed and implemented landscape standards for residential subdivisions and commercial developments, and is in the final stages of promulgating new urban forestry rules and regulations that include specific homeowner responsibilities, planting standards, and species diversity requirements.



PROJECT AT A GLANCE

Location

Carmel, Indiana

Lead Partners

City of Carmel, Indiana
Citizens for Greenspace

Award Category

Small City (population <100,000)

Timeframe

1989-2007 (ongoing)

Total Cost

Total City expenditures on community forestry increased from \$100,000 in 1996 to \$1 million in 2007, including a \$400,000 Urban Forestry budget per year. Tree and landscaping standards also leveraged considerable in-kind private spending by developers.

Size and Scope

The City of Carmel has planted over 42,000 trees since 1995, in subdivisions, commercial areas, parks and along public right-of-ways.

Outstanding Accomplishments

- Created a professional Urban Forestry Program staff with three full-time foresters
- Integrated urban forestry as central to City's overall land-use planning
- Established landscape standards for residential subdivisions and commercial development
- Used and promoted structural soils under pavement to improve soil volumes and tree size and health
- Developed new urban forestry regulations with planting standards and species diversity requirements
- Designated a Tree City USA community for 14 consecutive years
- Partnered with Citizens for Greenspace to maintain City's green infrastructure
- Promoted proper tree selection with a "right tree, right place" message
- Engaged thousands of volunteers in planting trees

Urban Forestry Program

City of Carmel, Indiana



Carmel Indiana's Urban Forestry Program grew out of an initiative by Citizens for Greenspace, an organization of local residents formed to prevent further widespread loss of trees due to rapid development of residential subdivisions. The City's response evolved into the Carmel Urban Forestry Program, whose mission is to create a healthy, diverse, and sustainable urban forest. The Program has two major functions. First, it manages Carmel's urban forest, including the planting and maintenance of thousands of trees in residential and commercial areas, as well as in parks and along public right-of-ways. Second, the Program anchors the City's green infrastructure efforts, advising and coordinating with several other departments responsible for planning, construction, and maintenance of roads, drainage, utilities, and parks. This high level of municipal integration is rare and has put urban forestry at the center of Carmel's efforts to manage development and maintain a high quality of life for its residents.

In addition to actively engaging in plan review for new development proposals, the City Forester has helped institutionalize the importance and value of the City's urban forest. The Program has accomplished this through development of landscape standards for residential subdivisions and commercial development, adoption of best management practices (BMP) for stormwater management, incorporation of planting specifications into the City's requests for bids for construction and maintenance, and a new set of urban forestry regulations that includes homeowner responsibilities, planting standards, and species diversity requirements. These efforts have allowed Carmel to transcend short-term, reactive management to development pressures and adopt a long-term sustainability perspective.

Project Description

Pre-Existing Conditions

The City of Carmel, Indiana is a wealthy edge city located just north of Indianapolis. Carmel's population has increased from about 18,000 in 1980 to over 68,000 in 2007, a factor of almost four in less than 30 years. As a fast-growing young city, it faces several serious challenges, including intense development pressure and skyrocketing land prices, sprawl, and forest fragmentation. Moreover, the majority of Carmel's urban forest is young in age and, as it matures, it will require increasing maintenance. This makes preservation of older trees all the more important. Other threats to the urban forest are a lack of species diversity, foreign exotic pests (e.g., emerald ash borer), and poor planting and maintenance practices. The need to focus on short-term development pressures makes it difficult to promote a long-term urban forestry perspective.

Project Components

Purpose: The overarching goal of the Carmel Urban Forestry Program is to provide a healthy, diverse, sustainable urban forest. The Program directs the City's tree planting and maintenance efforts through all aspects of development, and is responsible for ongoing tree health in City-owned right-of-ways.

Process: Carmel's urban forestry efforts started in 1988 in reaction to stands of woods being bulldozed by developers of residential subdivisions. Outraged residents formed the Citizens for Greenspace to promote green open space and urban forestry issues. The City government responded and formed the Urban Forestry Committee to advise the Mayor and City Council. The Committee evolved into the Urban Forestry Program within the Division of Planning and Zoning in Carmel's Department of Community Services and now includes three full-time foresters.

The City Forester is also an Environmental Planner and is responsible for reviewing all landscape and open space plans for development in the City. With this structure, Carmel has put urban forestry at the center of the building and development process. From the early stages of project development, trees and landscaping are considered as important as other facets of the built environment. The Urban Forestry Program serves as the hub of the City's green infrastructure and sustainability efforts. In this role, it advises and coordinates with the Engineering, Utility, Street, and Parks and Recreation Departments.

Outreach: Both the City Urban Forestry Program and Citizens for Greenspace are engaged in outreach to promote tree planting as well as the value of trees and greenspace. Their joint efforts around the Arbor Day planting and related celebration is a major community event, involving more than 1,000 residents each year. The City's newsletter for residents often includes articles on urban forestry and green infrastructure. The Program has produced several videos on urban forestry issues that are shown on local cable television and distributed. It also maintains an extensive website with updates, links, and planting information (see www.carmelurbanforestry.com). Also, the City Forester's ongoing participation in project development review processes heightens awareness. Citizens for Greenspace outreach efforts include monthly public meetings, and partnerships with the Parks and Recreation Department and the local Boy Scouts and Girl Scouts.



PROJECT GOALS

- Educate residents and businesses about the value of trees and greenspace and expand public involvement in urban forestry
- Increase the urban canopy through tree plantings, including 50% canopy coverage of all streets
- Increase the diversity of Carmel's urban forest
- Continue major Arbor Day planting and celebration
- Achieve ongoing designation as a Tree City USA community
- Promulgate and implement new Urban Forestry Rules and Regulations
- Expand contributions to the City's green infrastructure and sustainability efforts
- Update the City's tree inventory and calculate the value of Carmel's urban forest using the U.S. Forest Service i-Tree software
- Enhance coordination with Streets, Engineering, & Parks Departments
- Promote the preservation, conservation and enhancement of greenspace
- Create additional educational materials, including a video on the benefits of structure soils
- Establish and promote the highest standards of maintenance

Benefits

Community and Economic Benefits

The most obvious benefit of the Urban Forestry Program is the maintenance of an attractive green landscape in the City. Faced with rapid population and commercial growth over the past several decades, Carmel has been able to retain its aesthetic appeal and a high quality of life, with the Urban Forestry Program playing a significant role. The community has recognized the multifaceted value of developing its green infrastructure – including erosion control, stormwater management, provision of shade, and pollution and CO₂ reduction – and has increased its urban forestry budget accordingly.

The Program is in the process of completing a computerized inventory of City trees using the U.S. Forest Service's i-Tree software. This tool will also allow it to quantify the environmental, energy, and economic benefits of the City's urban forest, an important step in documenting the ongoing value accruing from the City's long-term investment.

Economic Vitality: Carmel continues to be one of the fastest growing communities in the region. Protection of the City's trees and greenspace and its visible commitment to green infrastructure has been important for maintaining Carmel's attractiveness for residents and businesses. The Urban Forestry Program has explicitly recognized the economic role of trees in raising property values, and therefore the City's tax base, as well as reducing costs for energy and stormwater management.

Citizen Engagement: Carmel's Urban Forestry Program is a direct result of citizens' initiative. Without the establishment of Citizens for Greenspace in the late 1980s and their ongoing engagement, the City would not have been motivated to create the Program and expand its purview, staffing, and funding over the past twenty years. The organization continues to be a key partner, playing an important role in engaging citizens in Arbor Day plantings and a range of other activities to support the urban forest and the protection of greenspace. Citizens for Greenspace works closely with Program staff educating local Boy and Girl Scouts, overseeing an annual third grade tree seedling program, and maintaining community gardens.

Education: Much of the Urban Forestry Program's educational efforts have been institutionalized and take place as an integral part of the staff's ongoing role in the planning and review process for new developments and their promotion of green infrastructure. Through the landscape standards for residential and commercial development, requirements for implementation of best management practices for stormwater control, planting specifications for City projects, and the new urban forestry regulations with planting standards and species diversity requirements, the Program is educating residents, the business community, and employees of other city and county departments on tree planting, maintenance, and the value of the urban forest. The Program also engages in traditional educational activities, often in conjunction with Citizens for Greenspace, such as presentations at community meetings, production and dissemination of videos and brochures on planting, structural soils, and articles in the City's newsletter for residents.

MEASURABLE BENEFITS

One of the goals that Carmel's Urban Forestry Program adopted in 2007 was the quantification of the benefits of the City's urban forest. To start the process they obtained the U.S. Forest Service i-Tree software and purchased personal digital assistants (PDAs) for updating Carmel's tree inventory. The Program unfortunately has not yet carried out the inventory and benefits valuation due to a combination of technical difficulties and staff availability. The Urban Forest Management Plan, pending approval in 2009, emphasizes the need to measure Program benefits.

Funding

The overall funding for Carmel's community forestry efforts has grown significantly, from \$100,000 in 1996 to \$575,000 in 2005, and to an estimated \$1 million for 2007. This includes over \$400,000 per year for the last several years from the City of Carmel's budget, which supports Program staff plus equipment.

These public funds have been supplemented by monies required to be paid by developers for trees and landscaping in new subdivisions and commercial properties. Private individuals have also donated land and funds for park lands, woodlands, and tree planting, and Citizens for Greenspace has partnered with the Legacy Fund for Hamilton County to provide a long-term fund for Carmel's parks and trees.

Hundreds of volunteers provide additional in-kind support to the program.

