



## A Resource List

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### BROWN BAG LUNCH SERIES

The Brown Bag Lunch Series is a monthly webcast held at the lunch hour and made possible through support from The Home Depot Foundation and USDA Forest Service. The goal is to provide training opportunities for local urban and community forestry practitioners. The trainings highlight successful programs and practices that you may want to adapt in your communities. Webcasts are open to all.

Correctly planting and protecting trees is a good thing to do. However, planting and protecting trees also requires coordinating time and resources. ACT minimizes such requirements by sharing the innovative ideas and organized approaches of successful projects and models for members to replicate. We invite you to join the Alliance for Community Trees for more ways to get involved. Together, we create a strong voice on behalf of the urban forest and make a great difference in the health, beauty, and livability of our communities. We strengthen communities by offering action-oriented approaches that bring people together around a common purpose.

### TOPIC

Technology and trees is no more an oxymoron than urban forestry. If your mission is to restore, enhance, and protect the tree canopy of a given locality, then urban forestry technology tools can help you set and achieve ambitious goals using a suite of tools including Geographic Information Systems (GIS) and tree benefit calculators. Extrapolating the data into bottom line dollars and cents can be a powerful tool for gaining the attention of public officials.

More information at: [http://actrees.org/site/resources/events/technology\\_in\\_the\\_urban\\_forest.php](http://actrees.org/site/resources/events/technology_in_the_urban_forest.php)

### TRAINERS

#### **Scott Maco**

Research and Development Analyst

Davey Tree

1500 N. Mantua Street

Kent, OH 44240

425-605-0383

[smaco@davey.com](mailto:smaco@davey.com)

#### **Holli Howard**

Director of GIS & IT

Casey Trees

1425 K Street, N.W., Suite 1050

Washington, DC 20005

202-833-4010, x105

[hhoward@caseytrees.org](mailto:hhoward@caseytrees.org)

#### **Scott Maco**

Scott Maco's primary responsibilities fall in the areas of urban forestry research, analysis, and management. He focuses on prescriptive resource management through complete analyses of urban forests' structure, function, and value to the community. He has more than seven years of experience in planning, design, and implementation of urban forestry enhancement projects and developing the tools to facilitate effective resource management. Most recently, he worked at the Center for Urban Forest Research for the USDA Forest Service in Davis, California. He has a Master of Science in Horticulture and Agronomy from the University of California, Davis, and a Bachelor of Science in Urban Forestry from the University of Washington's College of Forest Resources.

#### **Holli Howard**

Holli Howard has been with Casey Trees for over five years currently as the Director of Geographic Resources. She holds a Bachelor of Science degree from the University of New Hampshire and completed her graduate work in Environmental Science/GIS at the University of Tasmania, Australia. She is an ISA Certified Arborist and Master Gardener.





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### SUCCESS STORIES

#### **Casey Trees (Washington, DC)**

Since 2001, Casey Trees has used GIS for inventories and surveys including neighborhood analysis, to share information with District and federal government partners, citizens, business improvement districts, and other organizations, for canopy analysis to set objectives for programs and strategic planning, and to measure success and track performance. Established programs that are supported by GIS, using the ESRI ArcGIS suite, include the Community Tree Planting program, GreenTech education program, and the Casey Trees interactive Tree Map. Recently they have begun looking at the use of GIS in long-range strategic planning- in particular, analyzing and setting tree canopy goals district-wide.

In the Summer of 2002, the Casey Trees Endowment Fund led over 500 citizen volunteers and 35 university interns to conduct a comprehensive GIS inventory of 106,000 street trees and 25,000 planting locations throughout Washington for the City's Urban Forestry Administration to use in its planning and decision-making processes and day-to-day operations.

Washington, DC had been known as the "City of Trees" since 1872 when Alexander Shepherd, then governor of the District of Columbia, planted 60,000 street trees to improve its quality of life. One hundred years later, trees are even more important to the image and quality of life in Washington.

The nation's capital is home to 572,000 people and attracts 25 million visitors per year. District of Columbia Mayor Anthony Williams aims to attract 100,000 new residents to Washington. Quality of life issues and beauty rate high on people's list when considering a move to the city from the suburbs and other areas. Trees provide solutions to other issues facing DC which affect its quality of life including:

- Air Quality
- Storm Water Management and Combined Sewer Overflows
- Heat Island Effects
- Crime
- Health and Well-Being

Washington, however, has lost a significant number of its trees. On November 19, 1999 the Washington Post published satellite photographs by American Forests showing a 64% decrease in Washington, DC's heavy tree cover from 1973 to 1997. That same month, the Committee of 100 on the Federal City reported Washington had lost 25-30% of its street trees due to years of neglect, budget shortfalls, and tree-unfriendly design, development, and construction practices. An outdated inventory created both a liability and missed opportunity for the city to plant and care for its street trees.

The first task toward re-greening the city with street trees was to develop a state-of-the art inventory of all the street trees. The inventory would form the baseline for setting objectives and developing and implementing programs to reach those objectives and the goal to re-green DC's streets. The inventory included the information needed by both Casey Trees and UFA as well as information system needed to manage it.

Casey Trees chose a citizen-based approach for data collection. The benefit of a citizen-based inventory was community participation, increased awareness of the benefits of trees, and commitment to their care and support after the inventory. A participatory process was also consistent with the Casey Trees' mission.

In the summer of 2002, Casey Trees Endowment Fund led an unprecedented citizen-based inventory of every street tree in the District of Columbia for the city's Urban Forestry Administration (UFA) to use and maintain in its planning, decision-making, and day-to-day operations. Recent enhancements in computer technology and software development





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made a citizen-based inventory of this size and quality possible within the short data collection timeframe. The key innovation was the Geographic Information Systems (GIS)-enabled handheld computers that allowed field teams to enter data directly rather than recording onto paper forms. Compaq iPaq®'s were programmed with ArcPad® 6.0 to provide the data collection interface.

Thirty-five university student interns led teams of community volunteers to locate and collect information about existing street trees and potential tree spaces. Student interns received an intensive two-week training to prepare for their role as team leaders. Over half the interns were landscape architecture students. Over 500 people including DC high school students partner organizations, and local volunteers participated in the inventory. In addition, Casey Trees launched a DC Citizen Forester Program to train volunteers for the inventory and future planting, pruning, care, and environmental stewardship in the District. For the inventory, each participant attended eight hours of training and offered five days of field service.

All inventory objectives were met: Data quality was >95%, the inventory was completed by August 15th, participants were satisfied with their experience and rated it highly, and everyone was safe except for a few scrapes, blisters, and bee stings. Field teams worked Monday through Saturday from June 3rd to August 13th collecting data and talking to 1,000's of people about the benefits of trees and the inventory. Professional support services were critical to the success. Landscape architects, arborists, and GIS consultants supported the project from concept through design and implementation and were contracted to provide assistance with programming, training, quality assurance, and monitoring. An end-of-inventory program and celebration was hosted by the National Building Museum with over 400 people in attendance.

Inventory findings show the District has 131,000 street tree sites, with 106,000 existing trees, 23,000 empty street tree spaces, and 2,000 dead trees. Of the existing trees inventoried, nearly one-third were in fair or poor condition. Two-thirds of the existing trees required routine pruning. Maples comprised 38% of the street trees, oaks 31%, and elms 10%. Four percent of the 8,626 American Elm trees showed signs of Dutch Elm Disease. Of the approximately 1,000 street trees with tree grates, 38% have openings less than 2 inches from the trunk. Eighty-three percent of the trees had no mulching. An additional four percent were mulched improperly.

The use of computerized technologies has provided a number of new tools for urban foresters to utilize in the management of trees in a community. Recently, the introduction of low-cost, easy to use Personal Digital Assistants (PDAs) have made it possible to increase the speed and accuracy of data collection in the field, and have provided new opportunities for strategic and operational management. Commercial consultants, as well as public agencies, including the USDA Forest Service, have led the way in bringing these tools to communities across the country. The use of PDAs, Geographic Information Systems (GIS) and community involvement has been successfully completed in many locations, and the Casey Trees Endowment Fund provides a good example of a working model.

More information at: [www.caseytrees.org](http://www.caseytrees.org) and [http://actrees.org/files/Newsroom/dc\\_gis.pdf](http://actrees.org/files/Newsroom/dc_gis.pdf)





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### SUCCESS STORIES

#### **Trees Atlanta & City of Atlanta (Atlanta, GA)**

In Georgia, nonprofit and nongovernmental agencies actively assist local governments with greenspace preservation efforts. Over the last three years, the Georgia Institute of Technology's Center for Geographic Information Systems (CGIS) has developed the Greenspace Acquisition Support System in partnership with two nonprofit organizations, Trees Atlanta and The Turner Foundation. This GIS-based system aids local governments and nonprofits in preserving greenspace in Metro Atlanta. The Greenspace Acquisition Support System identifies and prioritizes parcels larger than five acres that are important for water quality, urban forest preservation, and the formation of contiguous greenspace systems. Parcels identified as potential greenspace are prioritized by these three project objectives. A greenspace layer is created and overlaid with ownership information and parcel boundaries. The intersection of the prioritized greenspace layer and the parcel boundaries results in a list of ranked greenspace parcels that includes ownership and land value information.

More information at: [www.atlantagreenspace.com](http://www.atlantagreenspace.com)

#### **Friends of the Urban Forest & City of San Francisco (San Francisco, CA)**

San Francisco is widely known for being eco-friendly and "green." Two local groups, the Friends of the Urban Forest (FUF) and the San Francisco Department of Public Works, (DPW) Bureau of Urban Forestry (BUF) partnered to help protect trees, ensuring that the city's reputation endures. With support from Autodesk and a local GIS developer, the team is efficiently maintaining and enhancing the city's urban forest. Using MapGuide Open Source, FUF and BUF are working together to create an open source urban forest management application, offer the application to cities and agencies around the world for free download, improve interagency communication, streamline manual workflows, develop an accurate cost/benefit analysis for San Francisco's urban forest, increase public access to urban forest information, and encourage public participation and volunteerism.

More information at: [www.urbanforestmap.org](http://www.urbanforestmap.org) and

[http://actrees.org/site/news/newsroom/the\\_dirt\\_mapping\\_the\\_urban\\_forest.php](http://actrees.org/site/news/newsroom/the_dirt_mapping_the_urban_forest.php)

#### **Sacramento Tree Foundation & City of Sacramento (Sacramento, CA)**

Sacramento partnered with their public utility and the fire department in doing a GIS tree inventory (Redwoods City, CA tied their tree inventory into a sidewalk inventory). As a result, the costs were relatively low for Sacramento Tree Foundation. The inventory looked at sidewalks, fire hydrants, drains, gutters, and aprons. The inventory was actually subcontracted out to West Coast Arborists and tied it into a three-year contract for street tree trimming. The final cost worked out to about \$1 per tree for the inventory. Their one piece of advice is: call it a "risk assessment" rather than a "hazardous" tree assessment.

More information at: [www.sactree.com](http://www.sactree.com)

#### **Palo Alto Young Tree Care Survey (Palo Alto, CA)**

Since 2001, Canopy has trained and coordinated teams of volunteers of all ages to survey Palo Alto's street trees during the critical first five years following planting to ensure their long-term health. Volunteers assess each tree's health and growing conditions, provide first care for trees, and deliver brochures with tree care information and deep-watering guidelines to residents. The data collected is provided to the city to help streamline maintenance. The City of Palo Alto and their GIS experts help Canopy to efficiently create route maps and tree data tables. Returning volunteers- such as the Gunn High School Key Club- report that conditions for young trees improve as a result of educational outreach efforts. Through the, Is Your Tree Thirsty Campaign, Canopy encourages residents to conserve water in other areas of their home and landscape and create a weekly deep watering schedule for their young trees. Once established, the trees roots and leaves will payback their water debt by creating cooler temperatures, preventing evaporation from the soil in the summer, reducing runoff, and recharging groundwater in the winter.





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### SUCCESS STORIES (continued)

#### **New York City (New York, NY)**

New York City is the largest, most densely populated urban area in the nation. It also has one of the most extensive urban forestry networks in the country. The importance of proper tree maintenance resulted in an examination of systems used to manage the city's trees. Each of the five boroughs managed tree maintenance through stand-alone systems with no network connectivity. This resulted in burdensome management reporting, inadequate data structure design, data quality problems, and frequent database corruption. The city also required the ability to manage large numbers of contractors pruning and planting trees, permit administration, tree damage resolution, and activities in pest and disease quarantine zones. The Department of Parks and Recreation needed to perform these functions in the field with wireless connectivity, utilizing GIS and aerial imagery to support work order management and perform field mapping.

More information at: [http://actrees.org/files/Newsroom/nyc\\_gis.pdf](http://actrees.org/files/Newsroom/nyc_gis.pdf)

#### **City of Buffalo (Buffalo, NY)**

On October 13, 2006, a historic lake-effect snowstorm surprised the city of Buffalo, dumping more than two feet of snow overnight. The City, together with Wendel Duchscherer Architects & Engineers- the city's urban forest manager since 2005- and GIS professionals collaborated to develop a GIS-based tree management program to answer the urgent and comprehensive needs of the city resulting from the weather disaster. The program was called Urban ForesTREE Management and was developed utilizing a combination of ArcGIS Server and ArcIMS technologies. When the initial development started two weeks after the storm, four separate groups were identified as primary users of the program: contractors, inspectors, city officials, and the urban forest manager. Each group had a customized Web-based GIS site developed to fit the particular needs and requirements of the work that was completed. By having each site use the same central database, work that was completed on one group's site instantly updated the information on the other three sites. This prevented errors caused by lack of information or delaying communication to the decision makers.

More information at: [http://actrees.org/files/Newsroom/buffalo\\_gis.pdf](http://actrees.org/files/Newsroom/buffalo_gis.pdf)

#### **City of Charlotte (Charlotte, NC)**

Laura Brewer, senior urban forestry specialist, and Nick Roberts, systems analyst with the Engineering Department, chose the CITYgreen extension from ESRI Business Partner American Forests to evaluate the impact of development proposals received by the city on current and future tree cover. For the large-scale analysis this means using ArcGIS Desktop software and CITYgreen to create a baseline of current conditions by combining land cover and land use data. The current condition is then fed into a land use projection model to establish a metric for future land cover. The future land cover includes specific measures for tree cover that are then compared to the requirements set forth in the tree ordinance. This analysis provides direction to the public policy makers so they can determine the effectiveness of the development code at controlling tree loss. The small-scale analysis allows the Land Development Division to evaluate the impact of all new development or rezoning on the tree cover and make immediate adjustments in development in keeping with the tree cover goals of the tree ordinance.

More information at: [www.charmeck.nc.us](http://www.charmeck.nc.us)

#### **Soundprint Media Center, Inc. (Laurel, MD)**

Soundprint Media has submitted a proposal to the National Science Foundation to document a multidiscipline of high school classes and how they are using GIS/Arcview software. It is a project about citizens document urban forests, scientists grounding truth with research, and building a stronger understanding of our urban forests.

More information at: [www.soundprint.org](http://www.soundprint.org)





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### SUCCESS STORIES (continued)

#### **City of Cincinnati (Cincinnati, OH)**

Ohio- and particularly Cincinnati- is actively using GIS to manage trees and fight the Emerald Ash Borer threat by working in cooperation with the Departments of Entomology, Plant Pathology, Horticulture and Crop Science, and the School of Natural Resources at Ohio State University as well as the United States Department of Agriculture and the USDA Forest Service. GIS allows parties to follow the extent of Emerald Ash Borer in the state.

#### **Virginia Tech (Blacksburg, VA)**

Virginia Tech forestry faculty and students have developed the first comprehensive web-based GIS for Virginia Tech's campus urban forest. Over 3,000 trees were inventoried on the campus during 2006 and 2007. A web-based GIS was created from the tree inventory using ESRI ArcIMS. The GIS contains composition data for each tree, including species name, size, condition, and structural defects. In addition, each record is hyperlinked to HTML fact sheets on the dendrology, silviculture, and arboriculture of each species. This GIS has enhanced undergraduate education in dendrology and urban forestry and has increased community awareness about urban forestry issues at Virginia Tech. In addition, the GIS has enabled university staff to better manage the campus urban forest.

#### **Cisco Systems & City of San Francisco (San Francisco, CA)**

An inventive Internet-based tool will let San Francisco residents track their personal carbon footprint and gauge how green their neighborhood is compared with the rest of the city. The Web site at [UrbanEcoMap.org](http://UrbanEcoMap.org) was built by Cisco Systems engineers using information such as trash collection, recycling rates, and hybrid-car ownership to break down energy consumption and other environmental factors by Zip code. The site is divided into sections that identify carbon emissions by type- whether they come from transportation, energy use, or waste- as well as an overall picture. Users are encouraged to look at specific information for their Zip code and then find ways to improve the carbon footprint. San Francisco is the first city to take advantage of the ecomap technology, to be followed soon by Amsterdam and Seoul. The maps will be updated regularly as part of a 12-month pilot project paid for by Cisco, which plans to transform the site to nonprofit status sometime in 2010.

More information at: [http://actrees.org/site/news/newsroom/net\\_tool\\_tracks\\_carbon\\_footprint\\_by\\_zip\\_code.php](http://actrees.org/site/news/newsroom/net_tool_tracks_carbon_footprint_by_zip_code.php)

#### **Casey Trees (Washington, D.C.)**

Casey Trees recently unveiled an updated city tree map. The Casey Trees Map features two interfaces- the Urban Tree Canopy (UTC) Map and the Casey Trees Tree Planting Map. The UTC Map allows users to determine the current tree canopy and opportunities for planting of any street address or place in the District. The Casey Trees Tree Planting Map allows users to locate all the trees planted by our organization by tree species and/or event planting name. Both are extremely user friendly, and hopefully a great tool that the general public will begin to use and that other organizations will begin to develop for their communities.

More information at: <http://www.caseytrees.org/geographic/maps-tools/viewer/index.php>

#### **Texas Trees Foundation (Dallas, TX)**

The Roadmap to Planning & Planting Trees is a new national model developed by the Texas Trees Foundation and NCDC Imaging with support from the City of Dallas, NCTCOG, Texas Forest Service, EPA, Communities Foundation of Texas, Urban Renewal, and the Houston Area Research Center. The Roadmap identifies and maps tree planting sites using GIS & remote sensing technologies and environmental factors. The model developed in this pilot project mapped existing tree canopy, possible planting spaces and then potential tree planting sites for five areas of interest (AOI's). The Roadmap results reveal that Dallas has the potential to plant a total of 34,128 trees, of which 11,490 are specific for energy efficiency. The Texas Trees Foundation will begin mapping the whole City of Dallas when additional funding has been secured. TTF is identifying projects through the initial model throughout the city and will begin to coordinate planting projects in the near future.

More information at: [www.texastreesfoundation.org](http://www.texastreesfoundation.org)





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### **City of Philadelphia (Philadelphia, PA)**

Central Philadelphia now has 90,000 residents, making it the third largest downtown population in the U.S. Recognizing the importance of a sustainable city in attracting residents and visitors, Mayor Michael A. Nutter established the city's first cabinet-level sustainability position in 2008. Through renewed open space planning efforts, the city is creating baseline inventories of its sustainable amenities, including street trees. In June 2008, Philadelphia's Fairmount Park Commission, the agency responsible for street trees, contracted with the Center City District, the business improvement organization for downtown Philadelphia, to conduct a street tree census. New York City's Street Tree Census was used as a model. From July through October 2008, Central City District planners and landscape architects spent 520 hours canvassing the 2.6-square-mile downtown, which was divided into 12 survey areas. Staffers used Hewlett-Packard iPac handheld computers and the program Arc Pad v.6. A special survey program, developed using ArcView v.9.2, enabled the users to document each tree's location, species, condition, trunk diameter, estimated canopy diameter, and any special issues. The Fairmount Park Commission is using the data to set priorities for its collection of street trees, specifically when and where to replace them. Areas with blank canopies or with concentrations of trees in poor condition will be the first to be addressed. More information at: [http://actrees.org/files/Newsroom/apa\\_philly.pdf](http://actrees.org/files/Newsroom/apa_philly.pdf)

### **INDY Parks (Indianapolis, IN)**

As a push to plant 1 million new trees across Indiana nears its halfway mark, a new study shows that trees provide an annual \$5.7 million benefit in Indianapolis alone. Researchers from the U.S. Forest Service evaluated more than 117,000 trees managed by Indy Parks and Recreation. They found that every \$1 spent brought a \$6.09 return in part through: intercepting rainfall at an estimated savings of nearly \$2 million, or about \$17 per tree, in stormwater handling costs; cutting electricity use by more than 6,447 megawatt hours, worth \$432,000; removing 1.5 pounds of air pollutants per tree, valued at \$212,000; increasing property values and providing other benefits worth \$2.9 million or, on average, \$24 per tree. Scientists analyzed 2005 expenditures and found Indianapolis spends about \$940,000 in a typical year planting new trees and maintaining existing ones. The biggest single cost and more than half the annual budget was for tree removal at \$491,000, followed by pruning at \$122,000. Overall, the annual return for the planting, care and management of the 117,525 trees in the study reached nearly \$5.7 million. Indianapolis was the Reference City for the Lower Midwest region in this study. The data can be directly correlated with the I-TREE Suite/STRATUM program so that municipalities in the region can quantify benefits, values and costs on their own tree populations from their tree inventories. More information at: [http://actrees.org/site/news/newsroom/trees\\_worth\\_57\\_million\\_a\\_year\\_to\\_indy\\_study\\_s.php](http://actrees.org/site/news/newsroom/trees_worth_57_million_a_year_to_indy_study_s.php)





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### TECHNOLOGY RESOURCES

Urban foresters increasingly rely on remotely sensed and field inventory data to characterize urban forest structure and function. Geographic information systems (GIS) are used to analyze and display urban forest data for enhanced management decision-making. Due to their visual nature, GIS are also valuable public information and education tools. Before fully launching into GIS planning, it is helpful to figure out the exact purpose of the inventory. The software you choose, fields your capture, and inventory method may vary depending on if you use it to get the city to manage the trees differently, get citizens engaged, or value assets. Luckily, most software makers will let you play with their systems first.

#### **iTree, UFORE, and STRATUM**

iTree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban and community forestry analysis and benefits assessment tools. Developed by USDA Forest Service Research, State and Private Forestry, and other cooperators, iTree is in the public domain and available by request through the iTree website. The current release of the iTree suite has been in development for over 10 years as individual components. For the first time, complete support of the software is available to the user through any of the means listed on the iTree support page. The iTree software suite 2.0 includes the following urban forest analysis tools: UFORE (Urban Forest Effects Model- designed to use standardized field data from randomly located plots throughout a community, along with local hourly air pollution and meteorological data to quantify urban forest structure, environmental effects, and value to communities), STRATUM (Street Tree Resource Analysis Tool for Urban forest Managers- utilizes a sample or complete tree inventory to describe tree management needs and quantify the value of annual environmental and aesthetic benefits such as energy conservation, air quality improvement, CO2 reduction, storm water control, and property value increases), MCTI (Mobile Community Tree Inventory- a basic tree inventory application that allows communities to conduct tree inventories and manage those records), Storm Damage Assessment Protocol (provides a standardized method to assess widespread storm damage in a simple, credible, and efficient manner immediately after a severe storm), Species Selector (a free-standing Utility designed to help determine the most appropriate tree species for selected urban forest functions based on geographic area, and Integrated Tree Inventory Utilities.

More information at: [www.itreetools.org](http://www.itreetools.org)

#### **STRATUM: New Tree Guides and New City Analyses**

For those who live in the Interior West or the Northeast, there are new versions in the series of Community Tree Guides. These peer-reviewed publications provide regionally based information and quantification of the many benefits that trees provide. They offer help adapting the data to fit your city's circumstances and suggest ways to maximize benefits through strategic planting.







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### TECHNOLOGY RESOURCES (continued)

#### **Environmental Systems Research Institute (ESRI)**

ESRI designs and develops some of the world's leading GIS technology. Desktop GIS allows you to perform advanced spatial analysis, model operations processes, and visualize results on professional-quality maps. Server GIS enables you to distribute maps, models, and tools to others in your organization in a way that fits well into their workflows. Mobile GIS enables field-based personnel to capture, store, update, manipulate, analyze, and display geographic information.

More information at: [www.esri.com](http://www.esri.com)

TechSoup is proud to partner with ESRI, a leader in GIS (geographic information system) modeling and mapping software. ESRI is offering its sophisticated ArcView GIS software so eligible U.S. nonprofits and public libraries can create, analyze, and display spatial data. For example, organizations have used ArcView to analyze accessible parks per capita, measure the impact of sea level rises, and understand the distribution of infectious diseases.

Learn more about the uses and benefits of ESRI's ArcView 9.3 software, and place your request for a \$175 admin fee (the retail value is \$1,842). In addition to the software, this donation also includes tools to help you get started: two textbooks, an online training course, and one year of product support from ESRI.

More information at:

[http://www.techsoup.org/stock/Category.asp?catalog\\_name=TechSoupMain&category\\_name=ESRI&Page=1&cg=npa&sg=dec1&visit=1](http://www.techsoup.org/stock/Category.asp?catalog_name=TechSoupMain&category_name=ESRI&Page=1&cg=npa&sg=dec1&visit=1)

#### **CityGreen**

American Forest's CITYgreen software conducts complex analyses of ecosystem services and creates easy-to-understand reports. The software calculates dollar benefits for the services provided by the trees and other green space in your specific area. CITYgreen is GIS software that is an extension to the Environmental Systems Research Institute's (ESRI) ArcGIS. It works only with Windows-based PCs that have ArcGIS installed. It is not a stand-alone software package nor is it a tree inventory software application. CITYgreen analyzes the ecological and economic benefits of tree canopy and other green space. The analysis is based on a landcover dataset that is provided by the user. The source of the landcover dataset can be derived from a variety of sources, such as aerial photography or satellite imagery. The imagery should be leaf-on, color with a four meter or better resolution so all of the landcover features, such as individual trees, can be identified. The dataset must be 'classified' into various landcover features, such as tree canopy, open space, impervious surfaces, water, etc., before CITYgreen can analyze the data.

More information at: [www.americanforests.org/productsandpubs/citygreen](http://www.americanforests.org/productsandpubs/citygreen)

#### **Autodesk**

Since 1982, Autodesk has ushered in state-of-the-art 2D and 3D technologies that let customers visualize, simulate, and analyze the real-world performance of their ideas early in the design process. This gives customers the flexibility to optimize and improve designs before actually executing them, and, ultimately, save them time and money, improve quality, and foster innovation. Autodesk, through the Mayor's Office of City Greening, worked together with the City's Bureau of Urban Forestry and Friends of the Urban Forest, a local San Francisco non-profit organization, to develop this Urban Forest Mapping System, which will serve as a central dynamic resource where San Francisco residents, community groups and city employees can update and share information about new or existing street trees that form part of the city's urban forest.

More information at: <http://usa.autodesk.com>





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### TECHNOLOGY RESOURCES (continued)

#### **CanVis**

There are many commercially available software programs that can be used to create visual simulations. The National Agroforestry Center (NAC) has developed CanVis, a free image editing program developed specifically for creating natural resource planning simulations. Image editing software digitally alters images to create visual simulations. Digital images of the planning area can be acquired by scanning photographs or taking pictures with a digital camera. The proposed design can then be “created” by adding objects, such as trees, shrubs, grass, and other materials, onto the image of the planning area.

More information at: [www.unl.edu/nac/simulation](http://www.unl.edu/nac/simulation)

#### **Street Tree Electronic Management System (STEMS)**

The Street Tree Electronic Management System (STEMS) system was designed as a tree maintenance and management software application that could be distributed to arborists, tree managers, city foresters, and consultants at no cost via the internet, and be packaged as a stand alone program requiring the purchase of no additional computer software. The STEMS software program is designed to operate on a Windows personal computer, running Windows 95 or greater. It uses a simple graphic interface that enables novice users to fully utilize the complete extent of the tree management software's features. The STEMS software is fully integrated with the Mobile Community Tree Inventory (MCTI) software.

More information at: [www.umass.edu/urbantree/stems/index.htm](http://www.umass.edu/urbantree/stems/index.htm)

#### **ACRT**

Whether you are looking to start out with a system assessment to diagnose where the vegetation problems are and the best way to remedy them, or you are looking for help in creating a best-in-class vegetation management program from start to finish, ACRT is a valid software option. Services such as Pre-Inspection result in efficient and effective work plans, and Post Auditing assures that tree crews achieve the results you are paying them for bring benefits that go right to the bottom line.

More information at: [www.actinc.com](http://www.actinc.com)

#### **Trees in the Hood**

Natural Path markets Trees in the Hood, a comprehensive tree management system developed in Microsoft Access. It can maintain an unlimited number of records and maintenance history for street, park, golf course and campus trees.

More information at: [www.naturalpathforestry.com/treesinthehood.html](http://www.naturalpathforestry.com/treesinthehood.html)

#### **Google.org Geo Challenge Grants for Nonprofit Organization's Map Projects**

Google.org has announced a pilot program of Geo Challenge Grants, small grants to help charitable organizations aligned with Google.org's core initiatives take advantage of online mapping tools that will enhance their work and impact. The program is designed to help nonprofit organizations use well designed maps to operate more effectively, convey the importance of their cause in a visual and compelling way, and give individuals from around the world a chance to experience their work. Grants will be issued through an open application process. Public, charitable organizations with nonprofit status in their country of incorporation and a compelling idea about how maps can help them work more effectively are eligible to apply.

Through this program, Google.org will be offering grants valued between \$5,000 and \$100,000 each, either directly from Google.org, or through grant recommendations from the Google.org Fund of the Tides Foundation. Smaller mapping applications requiring only static data might receive \$5,000 in funding, while development of tools that enable many organizations to create maps might receive \$100,000. Google.org is partnering with Google Earth Outreach on this program to help evaluate proposals from a technical standpoint and to help ensure that the grants are successful.

More information at: <http://blog.google.org/2008/10/introducing-googleorg-geo-challenge.html>





## A Resource List

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### FINANCIAL RESOURCES

1. Request the nonprofit discount from ESRI for their software.
2. Check if you can borrow equipment from the GIS program at the local university. Boston did this.
3. Inquire with your State Department of Forestry.

