Street Trees: A New Hampshire Primer

Benefits and Implementation Considerations

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EXECUTIVE SUMMARY

The benefits provided to communities by urban forestry programs, specifically street tree planting and maintenance, appear to outweigh the costs in all cases studied. As such, street tree planting and management programs may be viable options for communities to consider incorporating if they are currently seeking to revitalize downtown village business districts and residential neighborhoods, encourage pedestrian traffic and walkable neighborhoods, or create green infrastructure. Depending upon the site and scope of the street tree program, as well as physical design, street trees can provide functions consistent with the aims of safe, healthy, pedestrian friendly and aesthetically pleasing communities.

However, many obstacles may impede the successful design or implementation of a street tree program. Foremost of these concerns is the budget required to create and maintain a successful program that produces results valued by the public. A secondary concern is often lack of public awareness of street trees and the benefits they can provide as well as a lack of public support. Communities investigating street tree programs may be best served by exploring the costs and benefits of these programs as measured by the degree to which they match community goals.

1. INTRODUCTION

Recent community planning approaches, specifically in the New Urbanist model, place increasing emphasis upon the creation of greener communities that more effectively incorporate natural elements into the urban landscape. Not only urban planners, but also citizens and their municipal governments have begun to take into account the full fiscal value of natural capital services, including examples such as improved air quality and storm water runoff provided by a variety of natural resources that were previously unmeasured and hence undervalued. Primary in these considerations are the value of aquatic ecosystem services, urban forests, and street trees. Further, many communities have actively begun to manage these less traditional natural resources to maximize the natural capital benefits they provide to the community. Accordingly, community forestry plans have evolved and become more thorough and sophisticated as they gain importance and funds in a wide range of communities, from metropolises such as Chicago, to thousands of smaller municipalities at the town and village level.

As communities began to deal with the effect of sprawl the loss of open space and traditional downtowns, researchers began to investigate ways to incorporate greenery and natural vegetation into development. Given the focus of the majority of academic studies on the benefits of street trees, the available research is, on balance, wholly positive. Although there are many costs and difficulties coupled with street tree programs, they are not always apparent in the short run. As a result, this report will most thoroughly detail the benefit of street trees, but it is important to keep in mind throughout that the most pressing drawback of street tree plans is the budget required to begin and maintain an effective program properly. This brief will provide a primer for communities interested in

the benefits associated with street tree programs and will offer a preliminary guideline for communities beginning to explore how to implement such a program.

2. ECONOMIC BENEFITS OF STREET TREES

Consumer Preferences
As communities search for ways to reduce sprawl and revive traditional downtown shopping districts, researchers have begun to investigate what components of redevelopment draw consumers back to urban, pedestrian-based shopping districts and away from "Big Box" strip mall retailers. Street trees have been shown to be an important and positive influence on consumer perception of business districts. In particular, consumer studies have shown that downtowns featuring large, mature, full-canopied and well maintained street trees are consistently rated as having the most attractive districts when compared to less forested areas and areas lacking any vegetation.[1]

Although full-canopied trees shift the visual focus away from projects such as historic building restorations that are traditionally the focus of downtown revitalization projects, consumers rank tree-lined streets higher when faced with a choice between the two scenes.[2] These results suggest that it may be advantageous for communities to consider urban greening not only as a secondary issue, but also as a potentially more cost-effective tool for downtown revitalization than the redevelopment of physical structures.

Case Study: Athens, GA Downtown Revitalization and The National Main St. Program
The National Main Street program is an effort to assist urban merchant groups through improvements and innovation in physical planning for central urban business districts. Athens, GA participated in the program and included a comprehensive plan for street tree planning and maintenance. Through a study of consumer preferences, it was discovered that the large trees, which have been an integral part of the economic rehabilitation effort, were a dominant and very positively perceived component of the area's streets and increased pedestrian travel and use of public spaces.

Source: Wolf, Kathleen. *Trees and Business District Preferences: A Case Study of Athens, GA*. Journal of Arboriculture. 30 (6): November 2004.

Consumer Premiums
Due to preference for areas with street trees, consumers are willing to go to greater lengths to shop in these areas and pay a premium for goods and services offered in more forested areas. Specifically, Consumers report a willingness to pay more to park in locations with an urban forest in addition to traveling greater distances to shop there.[3] In addition, consumers indicated a willingness to spend more time in districts with urban forests. These preferences are important considerations for businesses, as "increasing the amount of time a greater number of people spend in a shopping district very likely translates into an increase in sales revenue."[4]

As a result of the aforementioned preferences, shoppers report a willingness to pay nine percent more for goods of all kinds in forested business districts when compared to districts that lack any street trees.[5] Regardless of whether retailers sell convenience items, traditional retail or high-end items, consumer judgments of products and merchant services (which include measurement categories ranging from customer service to the quality of merchandise) were ten percent higher for stores located in business districts having trees.[6] Further, judgments of place character (a key determinant in the formation of consumer preferences) for forested districts were fully 35 percent higher than business districts lacking vegetation.[7]

2.1 SAFETY BENEFITS OF STREET TREES

Pedestrian and Automobile Traffic
Until recently, conventional wisdom concerning safe street design has been to give motorists significant spatial separation from pedestrians and fixed roadside objects should be removed. However, recent research has challenged this notion, especially concerning roadway design for urban villages, where many communities value and encourage pedestrian traffic. Street trees, when purposefully placed between pedestrian walkways and the road, can change transportation dynamics in two significant ways that reduce accidents, keep pedestrians and motorists safer, and make urban village environments more welcoming and comfortable for pedestrian traffic.

First, when placed between the sidewalk and the road, especially in landscaped strips wider than four feet, street trees can act as buffer that provides space as well as an actual physical barrier between pedestrian and automobile traffic. When separated from motor vehicle traffic in such situations, pedestrians are more likely to feel safe and comfortable moving through the urban village environment.[8]

Second, recent research has shown that the inclusion of street trees in the roadside environment may reduce crashes and injuries due to the visual clues that they provide to drivers on urban roadways to maintain a lower speed in order to avoid accidents.[9] When drivers sense that the roadside environment is less forgiving of mistakes, i.e., when roadside obstacles are present and close to lanes of travel, as street trees will likely be (depending upon sidewalk design), drivers act accordingly to reduce the probability of an accident. Indeed, the community of Birmingham, Michigan witnessed a 10-15 mph speed reduction on roads where street trees are present.[10] Further, a 2001 study of crash/collision event frequencies in New Hampshire found that urban villages that had on-street parking and pedestrian-friendly features including sidewalks with street trees and frequent cross-walks were fully two times less likely to experience a crash event than areas that lacked those pedestrian amenities, due to a decrease in the speed of vehicle travel.[11]

The use of street trees as buffers between pedestrian and automobile traffic in the urban village can reduce vehicle speed, in turn reducing the probability of crash events while encouraging pedestrian traffic.

2.2 PROPERTY VALUE BENEFITS OF STREET TREES

Residential and Commercial Property

Trees have also been found to positively affect property values in residential and business areas. In turn, the boost in property values is reflected by a proportional increase in municipal property tax revenue. In particular, research comparing the sale price of residential plots with and without trees show that consumers are willing to pay a premium as great as seven percent for properties with ample trees versus those with few or no trees.[12] Further, recent research conducted by the Wharton School of Business at the University of Pennsylvania found that planting trees within 50 feet of houses increased the sale prices of those homes by an average of nine percent.[13] The increase in property value associated with tree planting, in combination with the traffic calming effect of street trees, may provide municipalities with an alternative means of encouraging the formation of safer and more walkable business districts and neighborhoods through carefully planned and executed street tree planting and management programs.

The increase in value for residential properties with trees as compared to those properties without trees has also been found to apply to business properties and rental rates as well. The average rental rates of buildings whose surrounding environments feature large, well maintained, full-canopied trees that provide building shade, are approximately seven percent higher than for buildings that lack these features.[14]

Street trees may also increase the value of government properties, particularly when natural capital services of trees are taken into account. One potential benefit of beginning a street tree management program and the requisite inventory of the urban forest may be a boost in the municipal government's financial performance and bond rating due to a revision in Government Accounting Standards Board Statement 34 (GASB 34). The rule requires governments to report the monetary value of their infrastructure assets throughout their lifetimes and factor in depreciation. Inclusion of the monetary value of the natural capital services street trees provide – principally stormwater runoff control and improving air quality – may increase the value of a government's assets, although more research is needed to determine to what extent the value of the urban forest can be included in GASB 34 calculations.[15]

A properly executed street tree program, including residential areas or business districts, may increase municipal property tax revenue based upon the consequent increase in assessed property values suggested through the current research. To that end, the increase in the value of municipal property taxes may offset the costs associated with street tree planting and management. More research is needed to determine the full range of financial implications associated street tree programs.

2.3 STREET TREE NATURAL CAPITAL SERVICES BENEFITS

Stormwater Management, Cooling, and Air Pollution
When properly designed, placed, and cared for, urban forest systems and street trees can provide valuable natural capital services that include reducing storm water runoff, capturing air pollutants, and providing cooling shade that reduces the "heat island" effect of hotter temperatures that originate from pavement exposed to direct sunlight during the summer. In order to maximize benefits, systems must be designed by professional engineers and arborists, as the functioning of natural systems is complex. It is generally exceedingly difficult to estimate the financial value of the full range of services provided by street trees, however the majority of case studies found that the benefits provided by street trees outweigh the costs of maintenance once the trees are mature.

"In most areas of the country, communities can care for their trees for as little as $13 per year per tree, while each tree returns an average of $65 in energy savings, cleaner air, better managed storm water and higher property values."[16] In particular, given the extent of canopy coverage, buildings shaded by trees can reduce summer energy bills by half.[17] Trees also provide very effective natural drainage that has been found to be about 25 percent less expensive to build than conventional roadside drainage systems in Seattle. In fact, the effectiveness of natural, tree-based roadside drainage systems increases with time (as long as trees are properly cared for) as compared to man-made infrastructure, which becomes less effective over time.[18] Designing street tree systems to provide natural drainage can also reduce maintenance costs, as watering is less necessary. A properly engineered street tree system is costly and complex to build. Nonetheless, the long-term benefits of such a street tree system, designed to provide appropriate natural capital services, may very well outweigh the initial costs, meriting their consideration as a potential alternative to conventional man-made systems.

3. STREET TREE PLANNING

The decision to begin a street tree program should come after a careful consideration of all of the various factors involved in such a program. Foremost, municipal authorities must gauge the level of community support for such a program, the level of support within the government itself, as well as the availability of funds and manpower for the program. The following sections provide a short primer detailing some of the most important aspects of urban forestry programs.

Street Tree Ordinances and Ordinance Goals
One of the first steps in creating a successful urban forest management plan is the establishment of a street tree ordinance. A good ordinance will contain a statement that expresses the purpose of the ordinance and the goals (down to specific practices or numeric targets) that it is intended to accomplish. It is crucial that the statement of goals be clear, precise, and unambiguous because goals provide much of the basis for legal interpretations of the ordinance and the guidelines it sets. A survey of more than 150 tree ordinances by the International Society of Arboriculture found that a clear statement of

goals is the element most commonly lacking in street tree ordinances, a fact that jeopardizes their effective implementation over an extended period of time.[19]

Scope
Street ordinances will also establish the planting and removal guidelines for trees within public rights-of-way, set up guidelines governing maintenance procedures and schedules, and address tree removals. The most effective ordinances will also include tree-planting requirements for the building or renovation of:

- *Sidewalks*
- *Parking Lots*
- *Sub-Developments*
- *Roads*
- *Pedestrian Trails*

These requirements are intended to ensure that new construction is geared towards fully incorporating street trees into the community as it expands and redevelops. Depending upon the standards deemed appropriate to a specific community, requirements may come in the form of number of trees to be planted over a designated area or of necessary percentage of canopy coverage for the area under renovation or construction.

Definitions and Legal Interpretation
In addition to including the aforementioned elements, an effective street tree ordinance will also include a definitions section in order to ensure that the meanings of certain key terms or phrases are delineated beyond misinterpretation and legal challenge. Even simplistic terms such as "cut" or "damage" can be interpreted as having different meanings under different sets of circumstances. As such, precise definitions are necessary so that regulations and practices are uniformly applied, legal issues avoided, and in the event that they do arise, settled with relative ease.[20]

A successful tree ordinance will not, however, attempt to impose management practices that address every imaginable situation, as unforeseen scenarios may evolve. While it is necessary for language and definitions of key terms to be precise, an ordinance is meant to provide a framework through which a community can accomplish the goals it has set for its forestry management program. A tree ordinance will set the guidelines of what the municipal forest management program will accomplish and prescribe what practices the community is legally obligated to take in regards to trees. Tree ordinances cannot assure that the trees in the community will be improved or maintained; rather the ordinances provide the authorization and standards for management activities.[21] With an effective tree ordinance in place, communities can establish management strategies and programs to meet the goals laid out in the ordinance.

Management Responsibility
A single authority should be designated to oversee the implementation of the urban forestry program. Depending upon the resources available to the community, the

authority can either be a staff member hired as a designated urban forester, a volunteer tree board composed of community members, or an employee in a municipal department related to urban forestry (e.g., Public Works). However, it is necessary to have a single authority directing a community's programs to ensure that management is progressing towards the professed goals of whatever forest management plan is eventually established. Further, an effective ordinance should include a timeline for the creation and periodic revision of an urban forest master plan, to be spearheaded by the authority deemed responsible for the urban forest.

Model Tree Ordinance Resources:
The National Tree Trust (www.treetrust.org): Publishes software resources online that assist in the development of tree ordinances.
International Society of Arboriculture (*ISA*): The ISA publishes a comprehensive tree ordinance creation guideline. Model ordinances for most conceivable situations are included, as is practical advice. www.isa-arbor.com/publications/tree-ord/ordprt1b.aspx
Georgia Forestry Commission: Published an extensive model community tree ordinance online at http://www.urbanforestrysouth.org/Resources/Library/Citation.2004-04-30.1107/view

3.1 STREET TREE PLANNING: INVENTORY

Community Resources
An initial step communities should take in developing a successful street tree program is taking an inventory of the community's resources. A comprehensive inventory will establish a baseline account of current resources that can be utilized through each step of the establishment of a management strategy. Baseline data allows the community to identify the strengths and weaknesses of the urban forest (in this case, street trees) and to identify a set of realistic goals and areas for improvement. Depending upon what resources are available to the community and the desired scope of the management program, an inventory may include some or all of the following data:[22]

- A total tree count, that dependent upon program scope may include data such as location, species, condition, size and age of each tree surveyed.
- A description of problems linked to each tree. In particular, pests or diseases should be identified, as should pruning needs and sidewalk damage, etc.
- Percentage of canopy cover.

If no street tree management has occurred in the past, the data collection program should be designed prior to moving forward. In designing such a plan, it is recommended that knowledgeable parties, which may include arborists, local biologists or similarly qualified parties be consulted to provide input on design or to certify a plan's effectiveness. Additionally, at the inventory stage many communities successfully seek outside assistance, including both consulting services and funding. More information on sources of external assistance is included in section three of this report.

Volunteers
At the inventory stage volunteer manpower is very useful as long as volunteers have been trained to collect information properly. Getting community groups involved is a useful way to reduce the hours that municipal staff must devote to the project while also raising community awareness of tree management efforts. Neighborhood organizations, youth groups (such as the Boy Scouts or Key Clubs), as well as local conservation organizations such as the Audubon Society are all great resources that may be available to assist with the launching of a community forest management initiative.

Tools For Street Tree Inventory: Geographic Information Systems (GIS)
Geographic Information Systems (GIS) are a powerful tool for electronically storing, integrating, analyzing, sharing and editing spatial information that is applicable to street tree management. For example, GIS can be very effectively applied to storing and analyzing species distribution and canopy coverage data, among other functions.

The Northeast Center for Urban and Community Forestry offers a suite of free street tree management tools specifically designed for New England Communities. In combination, the Street Tree Electronic Management System (STEMS) and the Mobile Community Tree Inventory (MCTI) provide an all-encompassing management tool for towns and small cities to inventory their street trees using PDAs and then use that data to generate work requests, orders, and reports. The software is compatible with all Windows operating systems and is available for free download at http://www.umass.edu/urbantree/.

3.2 STREET TREE PLANNING: MASTER PLAN

Inventory and the Master Plan
Once a tree ordinance has been adopted and an inventory of urban forest resources conducted, the next step a community needs to take is the formation of an urban forestry master plan. The formation of a master plan will rely heavily upon the information gathered during the street tree inventory. Goals for the plan should address the strengths and weaknesses of the urban forest and the needs of the community. Depending upon the specific needs or issues in your community, goals can address some or all of the following issues:[23]

- Species diversity, distribution, and age
- Tree planting priorities (numbers per year, locations, etc.)
- Desired canopy coverage levels
- Training for municipal staff, volunteers, or community organizations
- Education programs for the public as well as schools
- Maintenance schedules
- Establishment of guidelines for tree selection, planting, and siting.

Master Plans, Goal Formation, and the Public
A successful forest management plan is one that will be adopted and valued by the public. As such, it is important to consider the full range of limitations that the program

could face so that the goals formulated are realistic and possess support throughout the community. Typical constraints facing urban forestry programs are low budgets, general unawareness about the benefits of street trees in the community, and a lack of staff support. Taking these potential obstacles and challenges into account while drafting a management plan will help garner community support. Depending upon the program, specific constituencies may be particularly important. For example, for street tree programs designed to coincide with or create downtown revitalization, it is important to take into account the opinions of affected businesses or business groups.

Case Study: Village of Red Hook, New York Forestry Management Plan
Over a two-year period beginning in 2002, the community of Red Hook began to be concerned with the loss and decline of large maples on the Village's streets. The Village Green tree committee was formed by concerned citizens and over the next two years worked with the Cornell Community Forestry Outreach Team to develop a street tree plan, carried out an inventory of Red Hook's street trees, calculated their value, created a community forestry budget and then was designated as a Tree City USA, making it eligible for assistance for its forestry program. To date, the community has continued planning, maintenance, and tree planting. The document is a modest twelve-page report, but is consistent with an effective street tree management program in a small community.

Source: Village of Red Hook Forestry Management Plan
www.redhookvillage.org/villagegreen/

The process of formulating the goals of a street tree management strategy, because its success depends so heavily upon public acceptance, should involve the public on a broad level.[24] One way to involve the public in the drafting process is to hold preliminary community meetings to discern the concerns of residents. A second option is to place surveys in heavily frequented public places such as town offices, libraries, or businesses so as to gather a range of opinions. A third option is the use of the charrette, a public work session that involves the guidance of professionals in concert with the involvement of concerned citizens. Funding or discounted guidance may be available for communities interested in utilizing the charrette format, although competition for these resources generally exists.

The involvement of the public in the formation of a master plan helps guarantee that the concerns and perceived needs of the public are incorporated into the plan. Doing so increases its chances of broad community support and the success often entailed therein. Further community involvement can serve as a means of public education about the function, benefits, and practices involved in the management of the urban forest. In addition, such sessions can raise awareness of the need for volunteer participation from the community and emphasize the critical role volunteers often play in urban forestry programs in smaller communities.

3.3 STREET PLANNING CHALLENGES

The Urban Environment and Growing Conditions
Although the value of street trees is at its greatest when the trees are located in the urban core of a city or town, urban and street conditions present the most challenging environment for the growth of a healthy tree. Managing the interaction between street trees and the urban hardscape (curbs, pavement, sidewalks, bricks, etc.) so that both continue to function effectively for their intended uses and remain well maintained are long-term projects that require both care and forethought in order to achieve success.

Many survival challenges face street trees in the urban environment. Due to the lack of permeable surface area, natural water availability is often low. The presence of streets and sidewalks constrain the area available for roots to grow. Oftentimes, soil quality becomes a greater problem the more urbanized or disturbed the planting site.[25] In particular, soil compaction and debris from construction can render urban soils ill suited for sustaining tree growth. Considering the range of challenges facing urban trees, the careful selection of species is especially important for street trees.[26] Different species have different requirements for space needed, nutrients, intensity of care, water needs, etc. that all impact the ease with which the tree is maintained in an urban environment that is often less than ideal for tree growth.

Management
An effective tree ordinance and a thorough master plan will ideally establish a set of acceptable practices (which should be flexible enough to allow change as new urban forestry best practices are identified) and provide the basis for the foundation of a strong urban forest. Street tree management is responsible for carrying out the mandates of the former two documents, and may be the most crucial component in sustaining a green community.

Depending upon the scope of the community's forestry program, certain management tools and techniques will be more appropriate than others. Regardless, a reasonable management program for any community will include a regular update of the inventory of street trees, a pruning cycle at least every five years, tree replanting and removal when conditions call for such actions, and pest control if necessary.[27] To carry out these actions effectively, a minimum annual budget of between two and three dollars per capita is recommended by almost all urban forestry organizations; that is, for each citizen in the community two to three dollars should be appropriated for urban forestry programs, although a larger budget will allow more thorough maintenance and the corresponding increase in the value of the urban forest.

3.4 STREET TREE PLANNING BEST PRACTICES

Community Forester/Arborist
The successful management of an urban forest and street trees is a complex task that requires an intimate knowledge of how best to utilize tree biology as natural capital for

communities. As such, it is recommended that municipalities hire a professional arborist to do tree work properly so that the money spent by the community is invested soundly and generates high returns. The arborist should be insured so that the town is not liable for damages and accidents that may result from his/her work. Although arborists need not be certified in New Hampshire, the certifications offered by both the International Society of Arboriculture and the New Hampshire Arborists Association (NHAA) offer easy ways to help ensure that whomever is hired is fully qualified to be doing tree work. Although that work can be expensive, proper maintenance is necessary if the money spent on the urban forest is going to produce a resource valuable to the community. The NHAA publishes an online list (www.nharborists.org/list_nhaa.php) of certified arborists within the state.[28]

Planting Guidelines
Although standardization of town planting guidelines and practices would appear to increase the efficiency of a street tree-planting program, the opposite is often found to be true. Due to the inconsistency of planting conditions at various sites, as well as the different requirement of each different tree species, using uniform planting guideline can often lead to poor success rates for trees planted. The preliminary analysis of a planting site should be standardized to allow for efficient transfers of information, but standardizing anything beyond the aforementioned step jeopardizes the ultimate success of the trees planted.[29]

Pruning
In order to maximize the benefits of street trees in business districts, the trees must be kept orderly and well maintained. One way to accomplish this is "limbing up" (cutting off lower branches while leaving higher ones) and canopy thinning, rather than stunting the growth of trees by topping them. Over time and in combination, these management strategies will produce a mature, tall urban forest that doesn't interfere with pedestrian and business life below.[30]

Tree Pits vs. Landscaped Strips
To grow, ideally trees need adequate space to both establish a root system and sustain healthy growth,[31] which in turn maximizes the natural capital functions that make urban trees such a valuable resource. Oftentimes, street trees are planted in small planting pits (which are essentially holes in the sidewalk filled with soil), too small to sustain tree growth through maturity. The "rule of four" (the roots of a tree with a four inch trunk diameter will outgrow a 24 cubic foot pit in approximately four years) dictates that in order to maintain growth greater space is needed than the traditional size of many urban tree pits.[32]

To achieve the greatest level of success for street trees in an urban environment, the use of a tree lawn between eight and twelve feet wide is most desirable.[33] Although less room can be used as long as the soil-planting strip extends root space under the sidewalk, a wide planting strip provides benefits (such as a further separation of pedestrian and automobile traffic) beyond more advantageous growing conditions.

Sidewalk Construction and Street Tree Installation

Sidewalk construction or reconstruction offers the best opportunity to incorporate street trees into the area undergoing renovation and to build better tree planting sites.[34] Renovation can allow for the incorporation of planting strips as well as small modifications to utility-rights-of-way[35] that can foster the establishment of strong root systems for street trees. To that end, flexible sidewalk standards should be used for areas with street trees, due to the fact that enlarged planting pits, which often do not meet more rigorous sidewalk standards, are a significant factor in determining the success of street tree growth. Further, significant funds are allotted to pedestrian improvement projects through TEA-21 act (as outlined in the subsequent section of this report). Considering the considerable cost of correctly installing street trees, TEA-21 funding is an excellent opportunity for communities to procure a considerable level of financial assistance for street tree plantings.

3.5 STREET TREE PLANNING, FUNDING GUIDELINES, AND SOURCES

Funding Guidelines

In many municipalities, the lack of budgetary resources can seem to be an insurmountable obstacle to beginning and maintaining a street tree program. One means of remedying the lack of funding is to educate the public about the benefits that an urban forest provides but that are not apparent to those unaware of the value of the natural capital services of trees. A second approach is to seek outside sources of funding. Many funding opportunities exist for both street tree programs and other projects that include the planting of street trees. In particular, street tree plantings are often incorporated in the construction of new affordable housing sub-developments, as a part of downtown revitalization projects, trail construction, or any number of other programs. Communities that find ways to incorporate street tree programs into other development or revitalization programs are more likely to find outside funds available to assist their programs due to the current lack of funding specifically designated for stand-alone street tree programs.

Case Study: Working with Community Development Block Grant Funds
Wilmington, Delaware: US. Department of Housing and Urban Development & the
Delaware Center for Horticulture

The Delaware Center for Horticulture (DCH), receives $50,000 a year in funds from the Community Block Development Grant (CDBG) through a partnership with the city of Delaware (that began in the 1970s) to plant and maintain trees in the CDBG area. Working with neighborhood organizations that make landscaping decisions (with the consultation of professional arborists) and provide volunteer support, DCH plants more than 50 trees annually. Although CDBG funds focus primarily on housing, street tree plantings can be an important component in the creation of livable neighborhoods for low-income families.
Source: http://actrees.org/site/stories/working_with_community_block_g.php

Department of Transportation – Transportation Equity Act for the 21ˢᵗ Century
TEA-21 funds transportation programs aimed at improving infrastructure, protecting the environment, and fostering economic development. States set aside approximately ten percent of available Surface Transportation Funds (STP) for transportation enhancement projects such as scenic beautification, construction of pedestrian and bicycle trails, and landscaping. 20 percent of STP funds may be spent on environmental restoration. Currently, $8.3 million has been allocated to 27 sidewalk construction or renovation projects in 24 New Hampshire communities. As such TEA-21 represents a potentially enormous source of funding for street tree planting. Street tree programs can become an integral component of STP spending projects. Proposals are sought every two years. The regional planning commission coordinates the application process. See Appendix A for spending details.

 http://www.nh.gov/dot/municipalhighways/tecmaq/index.htm
See Appendix for details.

Alliance For Community Trees – National NeighborWoods Program
The NeighborWoods program issues grants to nonprofit organizations to organize volunteers for replanting communities with trees. Projects are undertaken by diverse community groups, that include conservation organizations, community development groups and affordable housing advocates. Grants are given to the communities most in need of financial assistance. Visit www.actrees.org for more information.

National Urban Forest and Community Forestry Advisory Council
Challenge Cost-Share Grant Program: Category 4, Section C
This grant is intended to disseminate or replicate successful urban forestry programs across states and regions. For fiscal year 2007, $1 million in grants are available and can be applied towards "duplicating a program model, training program, or event that worked well in another region or city." Application information is available online at www.treelink.org/nucfac/general_info.htm.

EPA Smart Growth Implementation Assistance Program (SGIA)
The SGIA Program is open to state, local, and regional governments and their non-profit partners. After the selected communities receive "direct technical assistance from a team of national experts in one of two areas: policy analysis (e.g., reviewing state and local codes, transportation policies, etc.) or the public participatory process (e.g., visioning, design workshops, alternative analysis, build-out analysis)." The assistance is not in the form of a grant but a site visit by a contractor team, which then produces a final report that is intended to provide the information necessary to simultaneously encourage economic progress and environmental preservation. Street trees can be an intrinsic part of a downtown revitalization plan, especially at the behest of the community receiving assistance. The program receives applications yearly and accepts four to five proposals. Application information is available online at www.epa.gov/livablecommunities/sgia.htm

Case Study: Taos, New Mexico EPA SGIA Consulting Team 2005
As part of encouraging pedestrian traffic in the busy downtown, the EPA team suggested that green strips be placed between sidewalks and roads and street trees planted so that pedestrians feel safer. Native street tree species will augment the sense of place for the main street area of Paseo del Pueblo Norte. These trees are being included in a planned DOT construction project. In addition, a planned revision of the busiest section of the Paseo del Pueblo Sur corridor will include a boulevard design with a vegetated median to provide a place of refuge for pedestrians who need to cross the boulevard as well as providing aesthetic value.

Source: www.epa.gov/livablecommunities/sgia_communities.htm

Enterprise Community Partners, Inc.: Green Communities Initiative
Provides funding for the construction of large-scale low-income/affordable housing that incorporates green elements including, but not limited to, components that create a greener built environment such as street trees (primarily as site improvement techniques that reduce storm water run-off). In the project's first year, $1.9 million was awarded to 49 affordable housing developers. The program is a five-year, $550 million initiative to create 8,500 new homes for low-income families. Application information is available online at http://www.enterprisecommunity.org/.

New England Grassroots Environment Fund: Small Grants
The New England Grassroots Environment Fund supports projects that demonstrate a major element of volunteer involvement (maximum of two paid staffers), while creating a healthy, just, safe, and environmentally sustainable community at the town and neighborhood level in New England. Projects may address, among other issues, forestry and the urban environment. Street tree programs, given their volunteer intensive nature in small communities as well as their contribution to a healthy neighborhood environment, are ideal candidates for these grants that range from $500 to $2,000 and are issued three times yearly. More information is available online at www.grassrootsfund.org

Community Foundations
Local community foundations are an excellent source of funding for street tree programs. Specifically, many foundations are interested in the community participation and volunteer involvement phase of street tree programs. Designing programs that work with community members, whether adults or school groups, is an effective way to gain funding for street tree projects.

4. POLICY RECOMMENDATIONS

Street tree programs are most viable when considered as an option for municipal governments as an instrument that can assist in the achievement of larger community goals. The planting and proper maintenance of street trees can be an important part of community efforts to revitalize downtown business districts and main street areas in urban villages. Further, properly planted street trees can be an effective means of encouraging walkable, pedestrian-friendly neighborhoods. Finally, street tree programs may be useful options for municipalities searching for ways to make their programs and policies more environmentally sound. Street tree programs are most likely to be effective when the functions they provide match the goals of the community.

If it is determined that the functions of an urban forestry program are consistent with community goals, there are two extremely important courses of action to consider as different types of street tree programs are contemplated.

- *Communities should, where possible, seek outside funding or expertise:* Due to the limitations of local budgets, urban forestry may be a difficult program to fund. However, many outside sources of funding an expertise exist, from national grants through the EPA that bring design teams to communities as well as financial assistance from local community foundations. One major source of potential funding for the incorporation of street tree programs are TEA-21 project funds from the DOT, which currently support 27 pedestrian transportation enhancement projects that begin planning this year.
- *Set the program scope proportionately to the level of funding.* Communities may lack the resources to embark upon town-wide urban forestry programs. In such cases an effective strategy is to undertake a full complement of quality improvements in street-tree infrastructure, management, and planning for smaller geographic areas. Effective plans and practices can thus be established before the program expands. [36] The creation of an effective template can maximize the usefulness of limited resources, as it is preferable to manage small portions of the urban forest effectively rather than stretching resources too thinly.

Disclaimer: All material presented in this report represents the work of the individuals in the Policy Research Shop and does not represent the official views or policies of Dartmouth College.

Appendix: *Transportation Enhancement Act - 21 (TEA-21) Projects in NH*

Project Name State # Federal #	Route-Street	Approved Project Cost	Status
Andover – Wilmot- Danbury 14823 X-A000(551)	NA	$257,715	Design to begin in 2008
Antrim 16828 X-A000(556)	US 202 / NH-31 Main Street	$406,688	Design to begin in 2007
Belmont 14400 X-A000(340)	Lake Winnisquam Scenic Trail	$353,400	Design underway
Bethlehem 13087 STP-TE-X-000S(328)	US 302	$45,000	Project delayed until 2007
Boscawen 14402 X-A000(342)	North Main Street	$553,500	Design to begin in 2007
Conway 14821 X-A000(549)	NH-16	$592,000	Design to begin in 2007
Dublin 14319 X-A000(301)	NH-101/Main Street	$262,500	Project scoping underway
Dunbarton 14403 X-A000(343)	NH-13/Schoo Street/Roger's Road	$338,750	Town requested delay to secure matching funds
Enfield 14406 Z-A000(346)	Maple Street	$173,000	Design to begin in 2007
Gilford 14825 X-A000(553)	Alvah Wilson Road	$168,383	Design to begin in 2007
Haverhill 13907 X-A000(108)	Forest Street	$56,000	Design underway

Hollis 13488 STP-TE-X- 000S(430)	Main Street, Ash Street, Broad Street	$160,000	Project delayed to 2008
Hudson 13100 STP-TE-X- 5229(013)	NH 3A	$144,700	Design underway
Hudson 13894 X-A000(095)	NH-102	$400,000	Design underway
Laconia 13895 X-A000(096)	US 3/NH 11B	$500,000	Design underway
Lebanon 13491 STP-TE-X- 5253(009)	US 4	$236,000	Design underway
Litchfield 14838 X-A000(566)	Albuquerque Avenue	$540,000	Approved 2006
Madbury 14410 X-A000(350)	Civic District Path	$50,000	Design to begin in 2007
Manchester 14411 X-A000(351)	Rockingham Recreation Trail	$400,000	Design to begin in 2008
Merrimack 14413 X-A000(353)	DW Highway	$367,200	Design to begin 2008
Milford 14837 X-A000(565)	South Street	$625,000	Design to begin 2007
New Castle 14827 X-A000(555)	NH 1B	$124,000	Design to begin in 2007
New London 14415 X-A000(355)	Newport Road/ County Road	$720,000	Design underway
Newbury 14819 X-A000(547)	NH 103	$643,100	Design to begin in 2007
North Hampton 14820	NH 111	$148,261	Design to begin in 2007

| X-A000(548) Portsmouth 14417 | Grafton Drive | $515,000 | Design to begin in 2008 |
| X-A000(357) Windham 14830 | | $210,000 | Design to begin in 2007 |

X-A000(558)

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