CHAPTER V.
Appendices

A. List of Plan Reviewers

The Tree Commission would like to thank all of the members of the public and selected reviewers who have helped with this document. In particular, the following individuals have made significant contributions:

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C. Level of Service Matrix: Five Year Master Plan Case Study

The Goals, Policies, Actions and Standards in Chapter III establish the framework for tree-related management issues. Implementation of these recommendations must be prioritized and budgeted on a long-term basis (a five-year master plan) as well as annually. The Tree Management Planning Tool/Level of Service (LOS) Matrix, page 53, has been developed to direct this prioritizing and budgeting process.

This chapter presents the working document for master planning for the 2002-2007 fiscal year. The LOS Matrix, with accompanying text, explains the issues and processes involved in developing recommendation for this time frame. It is included in this plan for its value at the present time and for reference as a model for future years' planning and budgeting.

The purpose of the LOS Matrix is to identify priorities for care of city-owned/maintained trees along with identifying annual and long-term projected management costs. In this prototype, the analysis does not include private trees, which are an extremely important part of the community forest, but the City does not manage these trees nor budget for their care. The LOS Matrix is designed to respond to budget levels from optimal (in adequate budget years) down to minimal service (to be used rarely and only for extremely lean budget years.) When funding exceeds the optimal service levels for annual maintenance and administration needs, the five year plan may address additional long-term goals of the Community Forest Master Plan (CFMP), such as completing a tree inventory, addressing landmark tree issues, establishing a removal/replacement program for targeted neighborhoods, or other goals, priorities and actions contained in the recommendations of Chapter III.

1. Proposed Priorities and Budget for FY 2002-2007

This FY 2002-2007 Level of Service (LOS) matrix and resulting budget are based on the FY 2001 budget. The recommended implementation strategy included in this Chapter combines cost effective management and contracted service opportunities with City-provided services to maximize high standards with reasonable budget demands for the current fiscal climate.

The LOS Matrix compares current levels of service (identified in the first column) with four possible levels/ budgetary demands for the next five years: minimal care (LOS 1) through optimal care (LOS 4). Within the matrix, five annual ongoing maintenance/program management areas are: Tree Planting, Young Tree Care, Mature Tree Care, Hazard Tree Abatement, and Program Administration/Management.

Although each of these annual ongoing program areas is essential to the maintenance and life of the community forest, they have been prioritized for the budget in this five year time frame, based on existing conditions and planned available budget. Concern for public safety and responsible management of the existing community forest has been

placed as the highest priority. The final column of the matrix proposes the recommended implementation strategy and budget for the next five years. In this fiscal year, there are adequate funds to evaluate existing service levels, and have planned for Levels of Service that meet or exceed these standards.

The analysis extends current patterns of community forest management in terms of urban forest structure, growth, mortality and documented costs for the next five years. Given these planning and mortality rates, the projected tree population (of City-owned/maintained trees only) is estimated to increase by as many as 480 trees annually, from 30,379 currently existing trees in 2002 to 32,779 trees in 2006, depending on the Level of Service selected.

The issues inherent in the management of each program area and related implementation standards are addressed in the text below, organized by budget priority.

2. Hazard Tree Abatement

Hazard tree abatement, or removal of dead or dying trees within the community forest, has been given the highest budget priority for FY 2002-2007 due to potential public safety concerns. Dead and dying trees can be in danger of falling or loosing major branches, with resultant property and/or personal injury concerns.

There is no national standard for hazard tree abatement. Local standards typically reflect the city risk manager's assessment of acceptable level of risk for hazardous trees. Cities with established street tree programs typically have less than five percent (5%) of their inventory classified as dead or dying--in other words in a 'hazard tree' situation. In the City of Davis, with our weather conditions and extensive population of large, old trees, a more acceptable standard for safety concerns would be a goal of less than one percent (1%) dead or dying trees, with elimination of any existing backlog of potentially hazardous trees.

During the typical year in Davis about 125 city-owned trees require removal. These trees are removed on request by homeowners and City staff as well as in emergency removal situations such as following a storm. About 75% of all tree removals are 'hazard trees' while the remainders are removed due to declining tree health, conflicts, nuisance species, or making space for replanting a tree. These 125 trees can be thought of as trees that become candidates for removal due to the normal aging process of Davis' community forest.

Assuming current mortality rates in Davis continue during the next five years, 125 city-owned trees per year will need to be removed. There may also be a projected backlog of hazard trees identified, based on a 10% sample area of the recent survey (the number of backlog trees used for budgeting is 250). The total number of tree removals anticipated during the next five years is 875, and includes any backlog plus the 125 per year due to normal aging of the population.

Tree removal costs vary depending on the size (and possibly species/growth habit) and location/situation of the tree (i.e., removal around power lines or adjacent to structures.) The current cost is $252/tree and we have established an average rate of $275/tree removal for the next five years, based on projected City maintenance cost data and cost of living increases. The total cost for removing all 875 trees and stumps for a five-year time frame is $240,625 or $48,125/year. This expenditure is approximately 34% higher than the FY2001 tree removal cost of $31,500 due to the increased removal rate and unit cost.

However, to meet the public safety goal of eliminating any hazard tree backlog as soon as possible, a preferable approach is to plan for a first year one-time capital expenditure of $68,750. Additional funds in the amount of $34,375/year are budgeted for the five-year period to remove 125 trees each year that normally become dead or dying due to aging. This recommendation is identified as Level of Service Four and is considered optimal.

Therefore, to summarize the matrix, levels of service identified for hazard tree abatement are as follows:

Current Level of Service: About 125 tree removals each year on homeowner request. Budget impact: 125 trees/year at $252/tree = $31,500/year.

Level of Service 1 (minimal): Tree removals on homeowner request only; no backlog hazard tree removal. Budget impact: 125 trees/year at $275/tree. $34,375/year = $343,750/ 10-year or **$171,875/ 5-year** (leaving any hazard tree backlog after 5 years)

Level of Service 2: Tree removals on homeowner request; eliminate backlog of hazard trees in ten (10) years (approximately 25 trees/year). Budget impact: 150 trees/year at $275/tree. $41,250/year = $412,250/10-year or **$206,250/ 5-year** (potentially leaving 125 hazard tree backlog after 5 years)

Level of Service 3: Tree removals on homeowner request; eliminate backlog of hazard trees in five (5) years (approximately 50 trees/year). Budget impact: 175 trees/year at $275/tree. $48,125/year = **$240,625/ 5-year** (no backlog remaining after 5 years)

Recommended level:
Level of Service 4 (optimal): Tree removals on homeowner request; eliminate any backlog of hazard trees with one-time capital expense in one (1) year. Budget impact: 125 trees/year at $275/tree for 5 years ($34,375/year; $171,875/5-year) and one-time capital expenditure of $68,750 to remove any hazard tree backlog. First year expense of $103,125 plus remaining four years at $34,375/year = **$240,625/ 5-year**

3. Mature Tree Care

Mature tree care is identified as the second highest priority for the tree management budget over the next five years. Large trees are the most significant component of our community forest. They form the "living umbrella" over our streets, parks and private properties, and create the backbone of our urban form. The mature trees that are managed within the City budget include all street, park and other city-owned trees over four-inch diameter at breast height (4" DBH), as well as, in selected instances, Trees of Significance, Landmark Trees, and parking lot trees (See Glossary).

Because the majority of mature trees have an established structure, they need less frequent but more intensive care than young trees to keep them healthy as they age. Regular inspection and maintenance are crucial to protecting this important resource and maintaining public safety. Pruning to maintain sound structure, provide clearance and visibility, eliminate conflicts with buildings and trees, remove mistletoe and other pests/diseases, reduce damage from storms, and other maintenance is recommended on a five-year cycle. The Society of Municipal Arborists (SMA), the leading professional organization in the field of municipal urban forestry, supports this standard. They established a minimum standard for pruning street trees at least once every eight years, with recommended pruning every five years for older trees.

The current Level of Service for mature trees in Davis is about an eight-year cycle. Approximately 3,000 trees are inspected/pruned each year at an average cost of $94/tree. At the current time, the budget is $278,500/year, with the City staff providing $178,000 worth of services, and privately contracted arborists providing $100,000 worth of services. This equates to LOS 3.

About 23,400 trees larger than 6" DBH will require inspection/ pruning over the next five years, or 4,680 trees/year, assuming a five-year pruning cycle. To determine a per tree maintenance cost for the next five years, a study of current mature tree inspection/pruning suggests an average cost at $130/tree for City staff provided services, taking into account salary/benefits, direct costs and inflation. With existing staffing, the City can prune up to 1,500 trees/year. Pruning solely by City staff allows for more stringent quality control, scheduling flexibility, emergency care and better communication among arborist staff, other city employees, and the public. However, contracts for private arborist services for street trees are also made, at a reduced cost of $100/tree in current dollars. It is recommended that a mix of these services provides the most flexible and cost-effective care of the mature trees in our urban forest.

To reach the optimal LOS 4, pruning on a five-year cycle, costs could be budgeted as follows. Even with the City providing services to only approximately 30% of the mature trees, or 1,500 trees/year, the cost at $130/tree is $195,000/year. Contracted private arborists provide services for the remaining 3,180 trees/year at a cost of $100/tree or $318,000. Total annual costs for five years under this scenario are $513,000/year. This is almost twice the current annual budget for mature tree care of $278,500/year.

The recommended Level of Service for mature tree care, considering the significant impact of this large budget element, is to maintain the current pruning cycle as a minimum, and as funds permit, increase LOS to an optimum five-year cycle. On the eight-year cycle, 2,925 trees/year require inspection/pruning. With the City providing service to approximately 60% of the trees (as is currently done), it would be 1,500 trees/year at $130/tree or $195,000/year. Contracted private arborists would inspect/prune the remaining 1,425 trees for $142,500/year. Total annual costs are $337,500, or 20% higher than the current level, due to inflation.

Therefore, to summarize the matrix, the levels of service identified for mature tree care are as follows:

> Current Level of Service (3): Eight-year inspection/pruning cycle: 2,971 trees/year at current average cost of $93.65/tree. Current budget: $278,500/fiscal year 2001.
>
> Level of Service 1 (minimal): City inspection/pruning only of 1,500 trees/year at $130/tree; this equates to a sixteen (16) year cycle. Budget impact: $195,000/year = **$975,000/ 5-year**
>
> Level of Service 2: City inspection/pruning of 1,500 trees/year at $130/tree ($195,000), and contracted services for inspection/pruning of additional 750 trees/year at $100/tree ($75,000). Total pruning of 2250 trees/year equates to a ten (10) year cycle. Budget impact: $270,000/year = **$1,350,000/ 5-year**
>
> **Recommended level (minimum):**
> Level of Service 3: City inspection/pruning of 1,500 trees/year at $130/tree ($195,000), and contracted services for inspection/pruning of additional 1425 trees/year at $100/tree ($142,500). Total pruning of 2925 trees/year equates to an eight-year (8) year cycle. Budget impact: $337,500/year = **$1,687,500/ 5-year**
>
> **Recommended level (as funds permit, work toward this LOS):**
> Level of Service 4 (optimal): City inspection/pruning of 1,500trees/year at $130/tree ($195,000), and contracted services for inspection/pruning of additional 3,180 trees/year at $100/tree ($318,000). Total pruning of 4680 trees/year equates to a five-year (5) year cycle. Budget impact: $513,000/year = **$2,565,000/ 5-year**

4. Young Tree Care

Young tree care and new tree planting are essential parts of community forest management. The health and stability of our future forest depends in large part on judicious tree selection today, as well as ongoing maintenance of young trees.

Conscientious care of young trees is a prudent and cost-saving measure in the long run, because trees that are frequently inspected and pruned in the first six years of growth need much less attention and costly maintenance when mature. Young trees are defined as trees newly planted to about four-inch (4") DBH, assuming the time frame encompassing planting through three years after planting. Regular watering and basin adjustment, mulching, stake adjustment and removal, pruning to remove broken and dead wood, establish central leader, select lowest permanent branch, establish scaffold branches, and other maintenance is provided to young trees. Davis has a Small Tree Program which provides planting and young tree care during these first three years.

The Society of Municipal Arborists (SMA) established a minimum standard for pruning young trees once every three years, or two prunes during the first six years. In practice, a more optimal goal is to create a two-year prune cycle, or four prunes in the first six years, which will more readily establish healthy, long-lived mature trees. The pruning sequence recommended by Dr. Larry Costello (UC Cooperative Extension) in his publication "Training Young Trees for Structure and Form" is to properly train young trees by inspecting/pruning at the time of planting, one year later, then three and five years after planting. To meet this goal will require starting newly planted trees on this program, as well as increasing pruning of existing young trees over the next five years to bring all trees to the same level of care.

Davis has about 9,325 trees sized 0-6" DBH. To reach the optimal two-year cycle approximately 4,766 trees will need to be inspected/pruned annually. City staff currently prunes 1,700 trees/year. TREE Davis, a volunteer organization that educates the public and trains volunteers to prune trees, currently prunes 350 trees/year. In FY 2001 city staff and TREE Davis combined to prune 2,050 trees/year at a cost of $64,000/year or about $31/tree. This works out to a 4.5-year cycle, with an annual backlog of 2,716 trees, assuming the optimal two-year pruning cycle. This includes staff costs and start-up volunteer costs for supervision, training, equipment and materials. At this time, interest in the volunteer program is high, and increasing numbers of volunteers and sustainability of the program seems assured, allowing for increased numbers of young trees that can be managed by the program. Once the TREE Davis program and/or other community based partners are solidly in place, the anticipated cost/tree is $20, compared to City staff cost of $35/tree for the next five years.

The recommended Level of Service for young tree care is LOS 4, representing the optimal two-year pruning cycle, including elimination of the backlog in five years. This requires doubling the current pruning rate to 4,766 trees/year. The budget reflects City staff pruning 2,000 trees/year at $35/tree ($70,000) and TREE Davis and/or other community based partners pruning 2,766/year at $20/tree ($55,320) for a total of $125,320/year. These costs are just under twice as much as currently budgeted, but prune 60% more trees than currently pruned, bringing the standard up to the recommended two-year cycle.

Therefore, to summarize the matrix, the levels of service identified for young tree care are as follows:

> Current Level of Service (3): Four and one-half year cycle, 2,050 trees/year. Current budget: $64,000/fiscal year 2001.
>
> Level of Service 1 (minimal): No young tree care. Budget impact: **$0**
>
> Level of Service 2: Only TREE Davis prunes young trees: thirteen-year cycle, 350 trees/year at $20/tree. Budget impact: $7,000/year = **$35,000/ 5-year**
>
> Level of Service 3: Only TREE Davis prunes young trees at 50% of optimal goal: four-year cycle, 2,383 trees/year at $20/tree. Budget impact: $47,660/year = **$238,300/ 5-year**
>
> **Recommended level:**
> Level of Service 4 (optimal): Two-year prune cycle, with backlog elimination in five years, City and TREE Davis both prune young trees. City prunes 2,000 trees at $35/tree ($70,000), TREE Davis prunes 2,766 trees/year at $20/tree ($55,320). Budget impact: $125,320/year = **$626,600/ 5-year**

5. Tree Planting

New tree planting on an annual basis is an important element of perpetuating the community forest. Failure to plant trees on a regular basis will reduce age diversity and leave gaps in canopy cover. For new residences and development projects in Davis, the City Municipal Code requires developers/homeowners of remodels or new subdivisions to purchase, plant and initially maintain street trees. The minimum requirement is to have one street tree per residential property. For existing residential areas, homeowners without a street tree may request a city-provided and planted street tree within the street tree easement on their property. Replacement of removed trees and filling in vacant street tree sites are the major goals of new tree planting.

Standards for new tree planting vary city to city and by community commitment to trees. In a community such as Davis, maximizing the opportunity for tree placement on streets and in parks has an extremely beneficial impact on microclimate and other environmental and aesthetic measures. Cities such as Vancouver, Spokane, Modesto and Santa Monica are known for their commitment to a managed urban forest. They report having a range of 60%-90% of all inventoried street tree planting sites filled with trees, so 80% full stocking is a reasonable standard (100% full stocking implies that all planting sites are filled).

The projected inventory completed in 2000 (Maco 2001) showed a current range of 79% to 92% full stocking based on samples from each of the neighborhood zones studied. The

inventory showed that 2,500 trees need to be planted in the next five years (500 trees/year) to fill in vacant street tree locations and to approach 100% full stocking. In addition to vacant tree locations, approximately 125 trees/year (625 trees in five years) are removed and replaced due to damage or health concerns. Therefore, to achieve full stocking, levels of service analysis must provide for 3,125 trees in the next five years.

Current Level of Service in Davis approaches the optimal level 4. The City plants 480 trees/year at $75/tree, for an annual budget allotment of $36,000. A current proposal to the City from TREE Davis offers tree planting over the next five years at $50/tree. Planting under both these options includes planting, staking, mulching and pruning a bare root tree.

The optimal LOS 4 plants 3,125 trees in five years (625 trees/year). To save funds, the matrix shows 50% planting by TREE Davis (313 trees at $50/tree or $15,650/year) and 50% planting by City staff (312 trees a $75/tree or $23,400/year) for a total budget of $39,050/year. In the short-term, due to relatively high existing stocking levels, higher priority of hazard tree removal and mature tree care, it is acceptable to slightly reduce tree planting funds as necessary if budgetary constraints demand. Therefore, the recommended Level of Service is between 3 and 4, which replaces all trees that are removed and plants on request as tree stock is available and budgeted. It also suggests partnering with TREE Davis on neighborhood tree planting projects that rely on grants and other outside funding sources.

Therefore, to summarize the matrix, the levels of service identified for tree planting are as follows:

> Current Level of Service 4: 480 trees planted/year at $75/tree. Current budget: $36,000/fiscal year 2001.
>
> Level of Service 1 (minimal): No new plantings. Budget impact: **$0**
>
> Level of Service 2: Replace removals only by TREE Davis. 125 trees/year at $50/tree. Budget impact: $6,250/year = **$31,250/ 5-year**
>
> Level of Service 3: Replace removals and plant on request (125 trees/year) and approach 100% full stocking in ten years (250 trees/year) by TREE Davis. 375 trees/year at $50/tree. Budget impact: $18,750/year = **$93,750/ 5-year**
>
> Level of Service 4 (optimal): Replace removals and plant on request (125 trees/year) and approach 100% full stocking in five years (500 trees/year) 625 trees/year at $50-$75/tree. 50% (313) by TREE Davis ($15,650) and 50% (312) by staff ($23,400). Budget impact: $39,050/year = **$195,250/ 5-year**

Recommended level:
Level of Service 3/ 4 with modification: Replace removals, and plant on request (125 trees/year). Approach 100% full stocking in ten years (250 trees/year) by TREE Davis. Total 375 trees/year at $50/tree; plus one-time funds to re-plant 250 removed hazard trees by TREE Davis. Budget impact: $18,750/year + one time funds $12,500 = **$106,250/5-year**

6. Administration

Administration refers to activities overseen by supervisory city arborists such as supervision, coordination, planning and education. Currently there is the equivalent of 1.5 full time supervisory arborists in Davis responsible for managing 30,000 trees, although there is no full-time position dedicated solely to arborist duties.

Current tasks performed by the City Arborist are numerous and varied, and include coordinating with other City departments such as Public Works, Planning and Building, various commissions including the Tree Commission, community based partners such as TREE Davis and other organizations. Part of this responsibility is to review proposed development and construction plans to ensure that adequate existing tree preservation and protection measures are taken and that tree planting follows city guidelines. During construction, the City Arborist supervises contractors working on or near City and/or private property trees and enforces ordinances for tree-related work.

The City Arborist schedules crews, fills job orders, supervises pest management and staff training. Additionally, the City Arborist educates developers, contractors, designers and residents concerning tree-related policies and benefits of healthy trees. As part of his/her interactions with the public, the City Arborist is responsible for replying to phone requests, inspections, monitoring projects and diagnosing tree problems.

There is no national standard for this service, however, these activities are fundamental to effective implementation of street tree programs. Our standard of 1 FTE supervisory arborist for every 20,000 street trees is based on an informal analysis of 22 programs in California (1999 Berkeley Benchmarking Survey). Assuming typical salary and benefits of $75,000/FTE, the standard is $3.75/tree.

Davis' 1.5 FTE supervisory arborists translate into a current Level of Service of one full time supervisory arborist for 20,000 public trees at a rate of $3.75/tree, or $112,500/year. In the long-term, the City supports LOS 4, which will provide the desired level of oversight needed to enforce ordinances, educate stakeholders, and guide a model program by increasing administration/management to 1.17 supervisory arborists per 20,000 trees. However, for the next five years the goal is to maintain the current LOS 3.

Current Level of Service (3): One supervisory arborist per 20,000 trees, or $3.75 per tree. Current budget: $112,500/fiscal year 2001.

Level of Service 1 (minimal): 0.67 supervisory arborist per 20,000 trees, or $2.50 per tree. Budget impact: $81,824/year = **$409,120/5-year**

Level of Service 2: 0.83 supervisory arborist per 20,000 trees, or $3.13 per tree. Budget impact: $94,696/year = **$473,480/5-year**

Level of Service 3: 1.00 supervisory arborist per 20,000 trees, or $3.75 per tree. Budget impact: $117,673/year = **$588,365/5-year**

Level of Service 4 (optimal) 1.17 supervisory arborist per 20,000 trees, or $4.37 per tree. Budget impact: $143,246/year = **$716,230/5-year**

Recommended level:

Level of Service 3: 1.00 supervisory arborist per 20,000 trees, or $3.75 per tree. Budget impact: $117,673/year = **$588,365/5-year**

D. Future Program Priorities

The following community forestry program projects have been identified for selection as long-term management goals. The first five projects are the highest priority for funding in the next five years, described in order of importance.

1. Create job description(s) for and maintain City Arborist position (and/or professional Urban Forester). The role filled by this professional is of invaluable service to the City of Davis and the perpetuation of the community forest. Maintaining this position with a professional, highly qualified arborist (and/or urban forester) is critical to building upon the program's successes.

    - Budget Impact: No additional cost to City.

2. Conduct a comprehensive public tree inventory and develop a master street tree plan. An improved public tree GIS database will support cost-effective contracting, work scheduling, reduce liability and allow for more efficient use of available funds. The GIS database should be updated continuously as work is performed on trees. Once an inventory has been conducted a master street tree plan should be developed. Development and implementation of a master street tree plan can enhance species diversity, promote sense of place, and maximize net benefits. The master plan directs future planting efforts by identifying types of species, spacing and patterns for streets neighborhoods and historic areas.

    - Budget Impact: An inventory is estimated to cost $1- $4 per tree ($30,000 - $120,000) depending who does the work and the

amount of data collected. A master street tree plan is expected to cost about the same amount as the inventory.

3. Develop neighborhood canopy cover targets. Approximately 75% of Davis' tree canopy is on private property, where residents are responsible for management. Based on the amount of existing cover/vacant tree planting sites obtained using remotely sensed images, establish reasonable canopy cover targets for Davis neighborhoods. Once canopy cover targets are established, the City can work with community based partners, the Davis Joint Unified School District, and UC Davis to implement coordinated tree planting and management activities on public and private lands.

    - Budget Impact: $10,000 - $20,000.

4. Develop tree removal and replacement programs for targeted areas. There are areas of Davis where many of the street trees are nearing the end of their lifespan or creating conflicts with sidewalks and other paving. A comprehensive approach that involves local residents in the planning process for tree removal and replacement is an asset to long-term tree survival and has proven successful in previous projects of this type in Davis, such as in projects on Miller Drive and Rutgers. Projects should focus on selectively removing only trees that pose the greatest problems, while establishing an understory of newly planted replacement trees for older trees as they are gradually removed.

    - Budget Impact: No additional cost if conducted by City staff, otherwise $5,000 per area.

5. Conduct a tree failure survey to identify potentially hazardous, dead or dying trees and schedule removal and replacement.

The following projects are needed but are a lower priority in the short-term:

- Expand and further define the historic and landmark tree program.
- Implement monitoring and evaluation process for parking lot shading requirements. Establish street tree shading guidelines
- Pursue new sources of revenue for the Community Forestry program. (See alternative funding sources below.)
- Expand public education programs and work with community partners for outreach and education.

- Research and monitor tree survival and growth under different conditions in the city (i.e., structural soils, parking lots, bare root vs. container, cut-outs).

- Prepare guidelines for restoration plantings in newly acquired open space.

- Support the need for and work with research agencies such as U.S. Forest Service, universities including U.C. Davis, etc. to develop, plant and assess improved street tree varieties. If possible, assist with grants and other funding sources to this end.

E. Potential Funding Sources for Community Forestry

Expanding funding for Community Forestry make it possible to increase the number of projects accomplished and reduce reliance on limited municipal funds. Leveraging municipal funds with other sources of funding from state, federal, and local organizations will increase the number of partners with a vested interest in sustaining a healthy community forest. Potential sources of additional revenue are identified as follows:

- Tree planting grants: California ReLeaf, the National Tree Trust, and American Forests offer tree planting grants to local governments and partnering non-profits. The California Department of Transportation includes landscape improvements in its state highway renovations and funds tree planting as mitigation for highway projects. The recently passed Proposition 40 includes $10 million for urban forestry that will augment existing funds from Proposition 12. Other potential funding sources include the Yolo-Solano Air Quality Management District for parking lot tree planting as an ozone reduction measure, CALFED for stormwater runoff reduction and groundwater recharge, PG&E/SMUD for energy conservation, and other funding organizations.

- Public awareness and volunteer training. In 2002 California ReLeaf awarded $120,000 to grassroots groups across California for education, public awareness, tree-care, and volunteer development. These types of funds can augment municipal efforts to increase public participation and support for community forestry.

- Local measures and funding for tree planting and maintenance. City bonds, infrastructure costs paid by property owners, and other local measures could increase revenue for the community forest management program. One possible way to expand support for street and park tree maintenance is to create a Municipal Tree District. This approach assumes that street and park trees are commodities that produce essential services/benefits that can be retailed.

- Tree planting and stewardship. Developers are currently required to plant street and parking lot shade trees with new projects. The city then inherits these trees to maintain. Local businesses, industry, UC Davis, and the City may consider investing in tree planting and stewardship to obtain the resulting carbon dioxide emission reduction credits. Long-term tree care is required to maximize carbon credits for investors.

- Other revenue-generating sources. When considered creatively, there may be other sources for revenue and program cost reduction, in order to increase the program benefits and decrease reliance on municipal funds.

If we represent knowledge as a tree we know that things that are divided are yet connected. We know that to observe the divisions and ignore the connections is to destroy the tree.
--Wendell Berry

Program Area:	**Current (2000) Levels of Service** for Davis Street Trees (in $FY01)		**Potential Level of Service 1** (inflated to FY04 dollars)		**Potential Level of Service 2** (inflated to FY04 dollars)		**Potential Level of Service 3** (inflated to FY04 dollars)		**Potential Level of Service 4** (inflated to FY04 dollars)		**RECOMMENDED** (Davis Tree Comm '01--inflated to FY04 dollars)	
Tree Planting	Level of Service: 4 (480 / yr by City at $75 / tree)	Budget Impact: $36,000	No new plantings	Budget Impact: $0	Replace removals only (125 trees / yr)	Budget Impact: $6,250 / yr (TREE Davis @ $50/tree)	Replace removals, plant on request, and achieve > 90% full stocking in 10 years (375 trees / yr)	Budget Impact: $18,750 for 10 yrs (TREE Davis @ $50/tree)	Replace removals , plant on request, and achieve > 90% full stocking in 5 years (625 trees / yr)	Budget Impact: $39,050 for 5 yrs, City = $23,400 ($75/tree), TREE Davis = $15,650 ($50/tree)	**Level of Service 2**: Replace removals (125 / yr by TREE Davis at $50 / tree) and one-time funds to re-plant 250 removed trees.	Budget Impact: $6,250 for five years, and one-time capital expenditure of $12,500 to re-plant removed trees.
Young Tree Care	Level of Service: 3 (4.5-yr cycle, 2,050 / yr by City and TREE Davis at $31 / tree)	Budget Impact: $64,000, City = $54,000, TREE Davis = $10,000	No young tree care	Budget Impact: $0	Only TREE Davis prunes (13-yr cycle, 350 trees / yr @ $20/tree)	Budget Impact: $7,000 / yr	Only TreeDavis prunes at 50% of goal (4-yr cycle, 2,383 trees / yr @ $20/tree)	Budget Impact: $47,660 / yr	TREE Davis prunes 2,766 / yr and City prunes 2,000 / yr (2-yr cycle, 4,766 / yr)	Budget Impact: $125,320 for 5 yrs, City = $70,000 ($35/tree), TREE Davis = $55,320 ($20/tree)	**Level of Service 4**: (2-yr cycle, 4,766/yr, 2,766 / yr by TREE Davis at $20 / tree, 2,000 by City at $35 / tree)	Budget Impact: $125,320 for 5 yrs, City = $70,000 ($35/tree), TREE Davis = $55,320 ($20/tree)
Mature Tree Care	Level of Service: 3 (8-yr cycle, 2,971 / yr at $94 / tree)	Budget Impact: $278,500, City = $178,500, Contractor = $100,000	City prunes 1,500 trees / yr (16-yr cycle)	Budget Impact: $195,000 / yr ($130/tree)	City prunes 1,500 / yr and West Coast Arborist (WCA) prunes 750 / yr (10-yr cycle, 2,250 trees/yr)	Budget Impact: $270,000 / yr, City = $195,000 ($130/tree), WCA = $75,000 ($100/tree)	City prunes 1,500 / yr and WCA prunes 1,425 / yr (8-yr cycle, 2,925 trees / yr)	Budget Impact: $337,500 / yr, City = $195,000 ($130/tree), WCA = $142,500 ($100/tree)	Prune on 5-yr cycle (4,680 trees / yr), City prunes 1,500 / yr and WCA prunes 3,180 / yr	Budget Impact: $513,000 /yr, City = $195,000 ($130/tree), WCA = $318,000 ($100/tree)	**Level of Service 3**: (8-yr cycle, 2,925 / yr)	Budget Impact: $337,500, City = $195,000, Contractor = $142,500
Hazard Tree Abatement	Level of Service: 1 (125 / yr by City at $252 / tree)	Budget Impact: $31,500	On request only (City removes 125 trees / yr)	Budget Impact: $34,375 / yr ($275 / tree)	Remove on request (125 / yr) and eliminate backlog of trees in 10 yrs (25 trees / yr)	Budget Impact: $41,250 /yr for 10 yrs ($275 / tree)	Remove on request (125 / yr) and eliminate backlog in 5 yrs (50 trees / yr) total 175 /yr @ $275 / tree)	Budget Impact: $48,125 / yr for 5 yrs, then $34,375 /yr	Remove on request (125 / yr) and eliminate backlog in 1 yr (250 trees / yr @ $275 /tree)	Budget Impact: $34,375 / yr for five years, and one-time capital expenditure of $68,750 to remove 250 trees	**Level of Service 4**: (125 / yr by City at $275 / tree and one-time removal of 250 trees to eliminate backlog)	Budget Impact: $34,375 / yr for five years, and one-time capital expenditure of $68,750 to remove 250 trees.
Admin-istration	Level of Service: 3 (1 FTE supervisory arborist for 20,000 public trees, $3.75 / tree)	Budget Impact: $112,500	0.67 Supervisory Arborist / 20,000 trees, $2.50 / tree	Budget Impact: $81,824	0.83 Supervisory Arborist / 20,000 trees, $3.13 / tree	Budget Impact: $94,696	1 Supervisory Arborist / 20,000 trees, $3.75 / tree	Budget Impact: $117,673	1.17 Supervisory Arborist / 20,000 trees, $4.37 / tree	Budget Impact: $143,246	**Level of Service 3:** (1 FTE supervisory arborist for 20,000 public trees, $3.75 / tree)	Budget Impact: $117,673
Total Budget Impact	City = $412,500, TREE Davis = $10,000, Contractor = $110,000	$ 522,500	City = $311,199	$ 311,199	City = $330,946, TREE Davis = $13,250, WCA = $75,000	$ 419,196	City = $360,798, TREE Davis = $66,410, WCA = $142,500	$ 569,708	City = $466,021, TREE Davis = $70,970, WCA = $318,000, plus one-time capital expenditure by City of	$854,991 plus one-time capital expenditure by City of $68,750	City = $417,048, TREE Davis = $61,570, Contractor = $142,500, Capital Exp: City = $68,750, TREE Davis = $12,500	$621,118, plus one-time capital expenditure of $81,250 to remove and replace 250 trees.