

Chapter Six—Conclusion

This analysis describes structural characteristics of the street tree population and uses tree growth and geographic data for Boulder to model the ecosystem services trees provide the city and its residents. In addition, the benefit–cost ratio has been calculated and management needs identified. The approach is based on established tree sampling, numerical modeling, and statistical methods and provides a general accounting of the benefits produced by street and park trees in Boulder that can be utilized to make informed management and planning decisions.

Boulder’s 35,500 street and park trees are a valuable asset (*Figure 16*), providing approximately \$2.7 million (\$77 per tree) in annual gross benefits. Benefits to the community are most pronounced for increased local property values, which enhance property tax revenue for the city. Less tangible, but perhaps just as important are the effects of Boulder’s tree-lined streets on attracting and retaining businesses and increasing commercial activity in shopping areas. Stormwater runoff reduction and energy savings are also significant benefits. Thus, street and park trees are found to play a particularly important role in maintaining the environmental, economic, and aesthetic qualities of the city.

Boulder spends approximately \$750,000 maintaining its trees or \$21 per tree. Expenditures for pruning and tree removal account for about one-third of total costs, and infrastructure repair associated with tree roots costs the City approximately \$160,000 per year.

After costs are taken into account, Boulder’s municipal tree resource provides approximately \$2 million, or \$56 per tree (\$19 per capita) in net annual benefits to the community. Over the years, Boulder has invested millions of dollars in its municipal forest. **Citizens are seeing a return on their investment—receiving \$3.64 in benefits for every \$1 spent on tree care.** The fact that Boulder’s benefit–cost ratio of 3.64 exceeds ratios reported for five comparable cities (3.09 in Bismarck

to 1.37 in Berkeley) indicates that the program is not only operationally efficient, but capitalizing on the functional services its trees can produce. As the resource matures, continued investment in management is critical to insuring that residents will receive this level of return on investment in the future.

Boulder’s municipal trees are a dynamic resource. Managers of this resource and the community alike can delight in knowing that street and park trees do improve the quality of life in the city. However, the city’s trees are also a fragile resource that needs constant care to maximize and sustain production of benefits into the future. The challenge will be to continue to increase the city’s canopy cover as the tree population structure changes and the city continues to grow, putting space for trees at a premium.

Management recommendations derived from this analysis include the following:

- Diversify new plantings by developing a list of species that includes trees proven to perform well in most conditions, some species that are more narrowly adapted, and a small percentage of new introductions for evaluation.
- Increase age diversity in neighborhoods with low diversity by planting empty sites and replanting in sites where trees have been removed.
- Conduct a windshield survey to count and categorize planting sites, then develop and implement a Street Tree Planting Master Plan to increase street tree stocking with a diverse mix of well-adapted species.
- Develop a list of tree species that cannot be planted because their maintenance costs exceed benefits. Review this list, as well as the list of trees that can be planted, with the Planning Department, landscape architects, and developers. Update both lists on a regular basis.

- Continue to insure adequate space for trees in newly developed areas. Encourage the use of structural soils when appropriate.
- Review and revise parking lot shade guidelines and enforcement to increase canopy cover.
- Develop a strong young-tree care program that includes regular watering, early adjustment of stakes, and inspection and pruning on at least a four-year cycle.
- Sustain the current level of inspection and pruning for older trees, as they produce substantial benefits but require intensive care to manage shallow roots, brittle wood, and weediness associated with some species.
- Review the adequacy of current ordinances to preserve and protect large trees from development impacts, and strengthen as needed to retain the benefits that these heritage trees can produce.
- Identify and implement cost-effective strategies to reduce conflicts between tree roots and hardscape in order to prolong the useful lifespan of mature trees.



Figure 17—Trees line the median of Mapleton Avenue in the historic Mapleton neighborhood in the 21st century. For a comparison with the late 19th century, see Figure 1 on page 11.