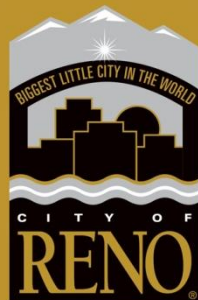


URBAN FORESTRY MANAGEMENT PLAN



ACKNOWLEDGEMENTS

Reno City Council

Hillary Schieve, Mayor
Jenny Brekhus, Ward 1
Naomi Duerr, Ward 2
Oscar Delgado, Ward 3
Paul McKenzie, Ward 4
Neoma Jardon, Ward 5
David Bobzien, At-Large

Reno Urban Forestry Commission

Brian Dean, Chair
Cynthia Albright
Kathleen Chandler
Ian Edge
Brian Eubanks
Ed Hawkins
Pamela Mayne (past)
Leah Madison (past)
Rod Haulenbeek (past)
Suzanne Adams (past)
David Gunter (past)
Jaime Souza (past)
Jonathan Bryn (past)
Ashley Turney (past)

Nevada Division of Forestry

David Howlett, Past State Urban Forester

Parks, Recreation and Community Services

Andy Bass, Director
Jeff Mann, Parks Manager
Steve Churchillo, Urban Forester

Adopted May 25, 2016



TABLE OF CONTENTS

VISION STATEMENT	4
EXECUTIVE SUMMARY	5
URBAN FORESTRY MANAGEMENT GOALS AND OBJECTIVES	6
GOAL 1 – <i>CREATE A HIGH QUALITY URBAN FOREST IN RENO</i>	6
GOAL 2 – <i>ESTABLISH PROACTIVE PUBLIC TREE MAINTENANCE AND MANAGEMENT PRACTICES</i>	6
GOAL 3 – <i>PROMOTE COMMUNITY PARTNERSHIPS AND EXPAND EDUCATIONAL OPPORTUNITIES TO EMPHASIZE THE BENEFITS OF THE URBAN FOREST</i>	6
BENEFITS OF THE URBAN FOREST.....	7
URBAN FORESTRY PROGRAM OVERVIEW	10
TREE CITY USA.....	12
RECOMMENDATIONS AND IMPLEMENTATION	13
BACKGROUND.....	17
URBAN TREE CANOPY STUDY.....	19
TREE CANOPY COVER.....	24
TREE INVENTORY - METHODOLOGY	25
TREE INVENTORY - RESULTS.....	28
PRUNING CYCLE	32
TREE CARE MAINTENANCE	35
WATER CONSERVATION AND TREE HEALTH.....	36
INTEGRATED PEST MANAGEMENT STRATEGY.....	37
WOOD WASTE UTILIZATION	37
RIPARIAN & RIVERBANK TREES; OXBOW NATURE STUDY AREA	38
INVENTORY AND PLAN UPDATES.....	39
FREQUENTLY ASKED QUESTIONS (FAQS) REGARDING TREES.....	40
PUBLIC INPUT	42
APPROVED STREET TREE SPECIES	45



VISION STATEMENT

Reno's Urban Forestry program is the oldest in the state of Nevada. As stated by the Reno Urban Forestry Commission, "our goal is to create, maintain, and promote a safe, healthy, and attractive urban forest for the enhancement of the natural environment of Reno." This vision reflects the community's desire to live, work, and play in a vibrant and diverse city which offers many opportunities for residents and visitors alike.

The Vision for the City of Reno as established by the Mayor, City Council, and City Manager is "to have a city government that works to enhance our quality of life by listening to and valuing the needs of all citizens." In order to achieve this vision, the Reno City Council established five priorities which parallel the goal of the Reno Urban Forestry Commission and the rationale for developing an Urban Forestry Management Plan. The Council's priorities are:

1. Vibrant Neighborhoods
2. Safe and Healthy Neighborhoods
3. Planning for Growth
4. Fiscal Stability and Sustainability Services
5. Healthy and Efficient Business Environment

Reno's appointed members of the Urban Forestry Commission and City's Urban Forestry program carry out this vision on the ground every day in efforts to maintain the City's publicly owned trees in 86 parks and along city street rights-of-way.

In Walter Van Tilburg Clark's 1945 novel, *The City of Trembling Leaves*, many references are made to the trees of Reno, particularly trees along Court Street and in Wingfield Park as to their universal importance.



EXECUTIVE SUMMARY

Reno has Nevada’s oldest recognized Urban Forestry Program, having been awarded “Tree City USA” status from the Arbor Day Foundation every year since 1982. Ask any resident about the value of trees in an urban environment, and they will probably tell you about the beauty they add to the landscape, how they provide habitat for birds and wildlife, they provide shade for their homes and streets, and they may even tell you about how trees add to their property value. In fact, trees provide many aesthetic, environmental, social and economic benefits to the City of Reno and these are crucial to the overall quality of life which Reno’s residents and visitors enjoy.

Although Reno has many large and mature trees along its streets and in our parks, our canopy coverage lags behind those of many other cities in the dry western U.S. In fact, Reno has been losing trees for reasons which include drought, development and insufficient care and watering by the community. Reno’s inventory of public trees (those in parks and along street rights-of-way) has declined about 10 percent over the past 10 years because of drought stress, age, pest infestation and other reasons. **Our tree canopy coverage now stands at 5.2 percent**, below many other western cities.

The Urban Land Institute highlighted the importance of trees for a great city in their recent presentation for the Virginia Street corridor. Their slides shown below highlight the impact trees have towards creating great streets and a healthy community aesthetic.



With the pace of private developing increasing and the City updating its Master Plan through the ReImagine Reno planning process, now is the time to take positive action towards growing Reno’s tree coverage over the next 20 years. Increasing canopy coverage takes time because new trees need time to grow and develop a mature canopy, so the plan suggests a community effort to **ReLeaf Reno** by planting **130,000 new trees** throughout Reno, increasing our canopy coverage to **10 percent in 20 years**.

In order to meet this challenge, the City will need to address not only the resources available for it Urban Forestry operation, but also will need to update its development standards for streets, commercial and industrial properties, and residential developments related to tree planting and preservation. The public must also embrace this goal because 71 percent of the available planting locations are on residential property while less than eight percent is on public lands, so publication and outreach to the community will be critical to success.

The purpose of the Urban Forestry Management Plan is to provide a long-range framework, through the Goals and Objectives, to coordinate the management and administration of not only the City’s inventory of public trees but also the entire urban forest for a comprehensive, sustainable and integrated approach to tree management. This plan, once adopted, shall provide a basic framework for managers to implement specific and attainable actions over the next 20 years. This will require a balance between tree canopy goals and other urban priorities.

URBAN FORESTRY MANAGEMENT GOALS AND OBJECTIVES

These Goals and Objectives, and the action steps identified later in the plan, are intended to provide overall guidelines and direction for City staff and its various boards and commissions to develop an integrated approach to forest management and tree canopy goals. Specific implementation steps and strategies which meet the goals and objectives should be established during the City’s annual business planning process consistent with overall City goals and resource levels. A select few targeted goals are enhanced for emphasis.

GOAL 1 – CREATE A HIGH QUALITY URBAN FOREST IN RENO

Objective 1.1 – *Protect, preserve and enhance Reno’s urban forest.*

- **Target 10 percent canopy cover in 20 years.**

Objective 1.2 – *Maximize tree canopy cover to expand Reno’s urban forest.*

GOAL 2 – ESTABLISH PROACTIVE PUBLIC TREE MAINTENANCE AND MANAGEMENT PRACTICES

Objective 2.1 – *Implement proactive pruning practices for all public trees to create stronger, safer tree structures and reduce long-term problems.*

- **Target a nine year pruning cycle**

Objective 2.2 – *Expand resources for scheduled tree maintenance activities.*

Objective 2.3 – *Protect the urban forest through private development and capital projects.*

- **Establish “Great Streets” which provide for maximum tree coverage, such as Virginia Street and East Plumb Lane**

GOAL 3 – PROMOTE COMMUNITY PARTNERSHIPS AND EXPAND EDUCATIONAL OPPORTUNITIES TO EMPHASIZE THE BENEFITS OF THE URBAN FOREST

Objective 3.1 – *Promote partnerships with residents, businesses and neighborhood groups to promote tree stewardship.*

Objective 3.2 – *Increase awareness of the Reno Urban Forestry Commission (RUFC) and engage the community in active stewardship.*



BENEFITS OF THE URBAN FOREST

Trees are a city's "green infrastructure" system and are as important to a community's overall quality of life as are its "built infrastructure" of streets and buildings. Trees in a street corridor enhance the urban scene while softening development, screening unattractive areas, blocking wind, cooling streets and buildings, and filtering air, noise and storm water pollution. These functions translate to direct cost savings for local government, businesses and residents.

Significant research has been done which shows the importance of trees in a community. Scientists and researchers have studied the effects of trees on human behavior, traffic patterns, crime rates, air quality, storm water runoff, and property values. Trees positively affect human and public health. The benefits that trees provide are commonly divided into three categories—economic, environmental, and social. Trees can add value to your home, help cool your home, break the cold winds to lower your heating costs, and provide food for wildlife.

Economic Benefits - Trees are an investment by the public, and they provide a positive return to the community. Trees increase property values, enhance shopping experience and reduce heating/cooling costs.

- Every \$1 spent by the City on its tree program returns \$2.02 in total benefits to the community. *USDA Forest Service i-Tree software*
- If you plant a tree today on the west side of your home, in five years your energy bills should be three percent less. In 15 years the savings will be nearly 12 percent. *Dr. E. Greg McPherson, Center for Urban Forest Research*
- Trees increase shopping. Shoppers in well-landscaped business districts are willing to pay more for parking and up to 12 percent more for goods and services. *American Forests National Urban Forest Conference*
- A mature tree can often have an appraised value of between \$1,000 and \$10,000. *Council of Tree and Landscape Appraisers*
- In one study, 83 percent of realtors believe that mature trees have a 'strong or moderate impact' on the salability of homes listed for under \$150,000; on homes over \$250,000, this perception increases to 98 percent. *Arbor National Mortgage & American Forests*
- Landscaping, especially with trees, can increase property values as much as 20 percent. *Management Information Services/ICMA*
- Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating. *USDA Forest Service*
- Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly,



tenants stay longer, and space in a wooded setting is more valuable to sell or rent. *The Arbor Day Foundation*

- Healthy, mature trees add an average of 10 percent to a property's value. *USDA Forest Service*
- Nationally, the 60 million street trees have an average value of \$525 per tree. *Management Information Services*

Environmental Benefits – Trees protect and enhance the environment. Trees help control “urban heat islands,” they improve air quality, attract wildlife, supply oxygen and filter rainwater.

- The net cooling effect of a young, healthy tree is equivalent to 10 room-size air conditioners operating 20 hours a day. *U.S. Department of Agriculture*
- Trees reduce air pollution by absorbing gaseous pollutants like ozone and filter particulate matter like dust, ash, pollen and smoke.
- One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people. *U.S. Department of Agriculture*
- Trees intercept rain and storm water runoff which improves water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. *USDA Forest Service*
- Trees stabilize hillsides by supporting soil with their root systems.
- Trees provide habitat for birds and other wildlife, even in urban areas. These often attract eco-tourists providing additional economic benefits.
- A tree with a 25 foot diameter canopy can reduce a homeowner's heating and cooling bills by eight to 12 percent. *Walkable Communities*



Social Benefits – Trees make a community livable and help give it character and a sense of “place.” Trees can reduce stress, beautify the neighborhood, promote human interaction and provide visual color.

- Health, mature trees help establish character and identity of a neighborhood.
- Trees in urban parks and recreation areas are estimated to improve outdoor leisure and recreation experiences in the United States by \$2 billion per year. *Journal of Arboriculture*
- Trees soften building lines and large expanses of pavement.
- Trees provide shade for people to gather and interact, reducing stress and strengthening personal relationships.
- In laboratory research, visual exposure to settings with trees



has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension. *Dr. Roger S. Ulrich Texas A&M University*

- Street trees can help bring speeds down seven to eight mph. *Walkable Communities*
- Trees and landscaping around apartment buildings had 52 percent fewer crimes than those without any trees. Buildings with medium amounts of greenery had 42 percent fewer crimes. *Environment and Crime in the Inner City.*
- Neighborhood tree planting projects foster a sense of community pride, cooperation and interaction among residents.



URBAN FORESTRY PROGRAM OVERVIEW

Urban Forestry is defined as the art, science, and technology of managing trees and natural systems in and around urban areas for the health and well being of communities. Urban Forests are often referred to as “green infrastructure” to emphasize the value trees have as public assets to communities, just as are buildings, roads, bridges, street lights, and sewer systems. As such, trees require regular care and maintenance to insure that they do not decline prematurely, remain safe thus avoiding injury to people and damage to property, and provide the maximum return on investment throughout their useful lives.

The City’s Urban Forestry program is housed within the Department of Parks, Recreation and Community Services and is a division within Parks Maintenance. Currently, there is one Urban Forester and three Tree Maintenance Workers. In 2010, city-wide budget reductions reduced staffing from seven positions to its present level. The impact of this reduction of force has caused the program to limit its systematic grid pruning program and focus more on individual requests and response pruning. Under the current City Tree Ordinance it is the City’s responsibility, not the adjacent homeowner’s, to prune trees along the publicly owned planting strips and city rights-of-way. Systematic Grid Pruning is a process by which all trees along a street, neighborhood, or management grid are pruned on a rotational basis every five to seven years, which is the industry standard. The process is much more efficient than individual request pruning and allows for many more trees to be pruned each year and at a lower cost per tree.

Prior to the recent budget reductions, street trees were pruned approximately every 13 years. Hazardous tree identification and tree removal still remains the top priority of the program thus a greater percentage of time is now allocated to this function given the limited staff available. Tree replacement and new tree planting has not occurred along city streets for the past several years due to the budget reductions for tree acquisition. Homeowners may plant trees within the public right-of way only after a site inspection and tree planting permit is issued by the Urban Forester to make sure the “right tree species is planted in the right space”. Site inspection and proper tree selection ensures that sidewalks do not become tripping hazards from intrusive roots, curbs and gutters do not become damaged, public utilities are not impacted, and vehicle sight-lines and traffic control devices do not become obstructed.

In addition to regular tree maintenance activities, the Urban Forestry program provides services in other areas.

- **Planning** – Review site development plans through the Community Development Department for landscaping within public rights-of way and conformance to tree ordinance and traffic safety standards.
- **Management** – Manage park and street tree inventory, including tree work records, tree history, insect and disease monitoring, hazard tree identification, response to service requests by residents, commercial property managers, contractors and developers regarding tree care, tree planting, and tree protection/preservation information. License local tree care and landscape companies, nurseries, and issue permits for the pruning, removal, and planting of trees within street right-of way,



parks, and other city properties. Enforce City codes and regulations pertaining to the protection of City trees.

- **Emergency Response** - Respond to tree related emergencies 24/7 for downed trees and limbs that have obstructed city streets and sidewalks, or have fallen on homes, cars, and other structures.
- **Capital Project Support** - Assist the Public Works/Engineering Department and contractors in identifying and implementing tree root mitigation strategies for the protection of trees and replacement of city sidewalks, curbs, gutters, sewer, and water service lines. Review capital projects for new construction and re-construction of city buildings, bridges, sewer lift stations, parks, and other facilities for tree related impacts.
- **Code Enforcement Support** - Provide support to Code Enforcement Officers in identifying dead, dying, and nuisance trees on private properties which pose public safety hazards.
- **NV Energy** - Inspect and permit NV Energy's line clearance tree trimming sites and operations for trees along city street rights-of-way and city owned properties. Coordinate joint efforts for the removal of trees near and beneath power lines which may pose a public safety hazard. Meet with individual homeowners and neighborhood groups to discuss tree issues and concerns.
- **Special Project Assistance** - Assist other departments and organizations in providing resources to complete projects not directly related to the urban forestry program. Projects have included installing safety nets at Rosewood Golf Course, assisting Building Technical Services with repairs to city facilities with the use of our aerial lift truck and assisting other agencies when needed with the removal of hazardous trees on publicly owned properties.
- **Partnership Development and Coordination** - Work with the Reno Urban Forestry Commission to provide educational programs, events, and support to local partners for environmental efforts. Ongoing annual programs, events, and projects include chipping nearly 3,000 Christmas trees in support of Keep Truckee Meadows Beautiful's (KTMB) Christmas tree recycling program, coordinating arborist training and certification program with the Nevada Landscape Association and the Nevada Shade Tree Council, and providing opportunities for continuing education credits for local Certified Arborists.
- **Public Education and Outreach** - Organize and participate in numerous events throughout the year with the RUFC. Through its annual Arbor Day Celebration in the spring, and Nevada Shade Tree Week/Make a Difference Day in the fall, the community participates in planting trees at local schools, parks and neighborhoods. Hundreds of trees have been planted by volunteers of all ages which also increases the awareness and importance of trees in our community while also giving people a sense of pride and accomplishment in helping to improve their neighborhoods and the environment. During the month of Artown, Commission members conduct tree walks through Idlewild Park where participants learn about landscape photography and tree identification. In March during the Spring Home and Garden Show held at the Reno Sparks Convention



Center, Commission members staff an educational booth for three days answering questions and handing out tree care informational brochures to attendees. The booth typically receives over 200 visitors each year.

TREE CITY USA

The Tree City USA program is a national movement to promote sound forestry management practices. Sponsored by the Arbor Day Foundation, the US Forest Service and the National Association of State Foresters, the program has been in existence since 1976 and currently has over 3,400 community members. Reno is Nevada's first and longest continuous recipient, having first attained Tree City status in 1982.

In order to receive Tree City USA status, local agencies each year must meet these four standards:

1. Have an official Tree Board or Commission.
2. Have a Community Tree Ordinance.
3. Budget at least \$2 per capita for Community Forestry operations.
4. Hold an Arbor Day Observance and Proclamation.

Reno has continuously met these standards and received the award for 34 consecutive years. However, without additional resources the city is in danger of dropping below the \$2 per capita budget requirement as the population grows. In 2010, Reno budgeted \$3.42 per capita for its Urban Forestry program; as of 2015 has declined to \$2.29.



RECOMMENDATIONS AND IMPLEMENTATION

The Urban Forestry Management Plan provides multiple action items to develop a comprehensive and sustainable management approach to Reno's urban forest. After analyzing the results of the tree inventory and the Urban Tree Canopy Study, and the public comments from Phase I of the ReImagine Reno effort pertaining to trees, staff recommends the following Goals, Policies and Action Items to guide Reno's urban forestry efforts over the next five to 10 years.

Urban Forestry Plan Goals are the general statements of desired objectives, or the direction the City will follow to achieve a particular outcome.

Urban Forestry Plan Objectives are more specific statements which identify a desired result or definitive course of action. The policies identify the City's position in regards to the Goals.

Urban Forestry Plan Action Items are the implementation strategies. These will guide staff during the City's annual business planning process to develop specific steps and targets leading towards development of the Annual Budget.

Of the action items listed on the following pages, these below are those recommended for priority in the first three years, depending on staff resources in the near term.

- 1.1A. Review, update and modify tree codes in conjunction with the ongoing ReImagine Reno Master Planning effort to promote a growing and sustainable urban forest. This may include new landscaping requirements for public street projects, especially for major streets and gateways.
- 1.1B. Develop a program to promote tree retention and tree planting, especially on private property. Secure a partnering 501c(3) non-profit agency and establish program to implement "tree planting grants" to fund tree planting.
- 1.2D. Review and update minimum tree planting requirements in planned unit developments, multi-family housing projects, and commercial development. This may include changes to minimum planting requirements for new residential developments, parking lots and commercial or industrial properties.
- 2.1A. Develop a target pruning cycle for routing, scheduled pruning for all public trees. Initial target of a nine year cycle; develop block pruning schedule and determine annual requirements and timeline to meet target.
- 2.2B. Develop funding sources for replacement tree planting to attain canopy cover goals. Seek out and apply for grants from specific granting agencies which may further economic, environmental and social benefits.
- 2.3B. Develop protocols for design phase and preconstruction coordination for projects affecting trees in the public view. Develop tree preservation and planting plan for commercial development impacting street trees and those in the public view.
- 3.2A,B,C. Increase awareness of the Reno Urban Forestry Commission (RUFC) and engage the community in active stewardship.

GOAL 1 – CREATE A HIGH QUALITY URBAN FOREST IN RENO

Objective 1.1 – *Protect, preserve and enhance Reno’s urban forest.*

Action Items	Staff Demand	Timeline
<p>A. Review, update and modify tree codes in conjunction with the ongoing ReImagine Reno Master Planning effort to promote a growing and sustainable urban forest.</p> <p>This may include new landscaping requirements for public street projects, especially for major streets and gateways.</p>	High	1-3 years
<p>B. Develop a program to promote tree retention and tree planting, especially on private property.</p> <p>Secure a partnering 501c(3) non-profit agency and establish program to implement “tree planting grants” to fund tree planting.</p>	Medium	1-3 years
<p>C. Promote proper tree care by residential and commercial property owners to improve tree health, longevity and reduce potential hazards.</p>	Medium	1-3 years
<p>D. Develop and implement a tree mitigation program for removal of large trees in the public interest.</p>	High	2-3 years

Objective 1.2 – *Maximize tree canopy cover to expand Reno’s urban forest.*

Action Items	Staff Demand	Timeline
<p>A. Develop meaningful and attainable tree canopy coverage goals for all land uses throughout the City.</p>	High	3-5 years
<p>B. Help neighborhoods achieve distinct identities through use of targeted species selection in various areas of the City based on the specific ecosystem of the neighborhood and available planting spaces.</p>	High	3-5 years
<p>C. Promote use of the largest canopy trees feasible for the planting space.</p>	Medium	Ongoing
<p>D. Review and update minimum tree planting requirements in planned unit developments, multi-family housing projects, and commercial development.</p> <p>This may include changes to minimum planting requirements for new residential developments, parking lots and commercial or industrial properties.</p>	High	1-3 years

GOAL 2 – ESTABLISH PROACTIVE PUBLIC TREE MAINTENANCE AND MANAGEMENT

Objective 2.1 – Implement proactive pruning practices for all public trees to create stronger, safer tree structures and reduce long-term problems.

Action Items	Staff Demand	Timeline
A. Develop a target pruning cycle for routing, scheduled pruning for all public trees. Initial target of a nine year cycle; develop block pruning schedule and determine annual requirements and timeline to meet target.	Medium	1 year
B. Using the pruning cycle, develop and implement block pruning schedules using a grid system to address all tree pruning needs on a block by block basis, with annual targets.	High	2-3 years
C. Implement a pruning schedule for young trees three years after planting.	Medium	2-7 years

Objective 2.2 – Expand resources for scheduled tree maintenance activities.

Action Items	Staff Demand	Timeline
A. Expand internal staffing resources and/or implement a contract pruning program to provide additional resources to meet annual tree pruning targets (through annual budget process).	Medium	Ongoing
B. Develop funding sources for replacement tree planting to attain canopy cover goals. Seek out and apply for grants from specific granting agencies which may further economic, environmental and social benefits.	Medium	2-3 years

Objective 2.3 – Protect the urban forest through private development and capital projects.

Action Items	Staff Demand	Timeline
A. Provide technical arborist expertise to assist with development review and public works construction.	Medium	Ongoing
B. Develop protocols for design phase and preconstruction coordination for projects affecting trees in the public view. Develop tree preservation and planting plan for commercial development impacting street trees and those in the public view.	High	2-3 years
C. Implement best management practices with utility companies to for tree pruning and replacement program.	Medium	2-3 years

GOAL 3 – PROMOTE COMMUNITY PARTNERSHIPS AND EXPAND EDUCATIONAL OPPORTUNITIES TO EMHASIZE THE BENEFITS OF THE URBAN FOREST

Objective 3.1 – Promote partnerships with residents, businesses and neighborhood groups to promote tree stewardship.

Action Items	Staff Demand	Timeline
A. Partner with service organizations to conduct regular tree planting projects for public and private property. Foster and promote public and private tree planting projects	High	2-3 years
B. Implement and coordinate educational opportunities with tree care industry professionals.	Medium	2-3 years
C. Develop and implement a volunteer “Tree Steward” program to train citizens to conduct minor pruning, planting and other tree maintenance activities.	High	2-3 years
D. Develop a Storm Response Guide to educate private property owners on proper tree care after major storm events causing widespread tree damage.	Medium	2-3 years
E. Develop a recognition program for tree care companies which adhere to recommended tree care practices and possess appropriate ISA licenses.	Medium	2-3 years

Objective 3.2 – Increase awareness of the Reno Urban Forestry Commission (RUFC) and engage the community in active stewardship.

Action Items	Staff Demand	Timeline
A. Review the roles and responsibilities of the RUFC in Reno Municipal Code and Bylaws; update as necessary.	High	1 year
B. Increase visibility of the City’s Arboretum at Idlewild Park through new signage and expanded use of Tree Walks.	High	2-3 years
C. Update and expand the information on the City’s website related to urban tree care and benefits of health trees.	High	Ongoing



BACKGROUND

The City of Reno sits in a high desert valley at the foot of the Sierra Nevada Mountain Range on the western edge of the Great Basin. The climate is semi-arid (also called a steppe climate), which describes regions that receive precipitation below potential evapo-transpiration rates. The native vegetation typically is dominated by grasses and shrubs with Cottonwood, Willow, and Alder trees found in riparian areas along the Truckee River. The tens of thousands of non-native trees which form a canopy in our “Tree City USA” are the result of decades of tree planting efforts by residents, businesses, developers, landscapers, and local governments. With an average annual rainfall of only 7.48 inches, trees are truly challenged in this environment.

In 2012, an Urban Tree Canopy Assessment (UTC) was completed for the Truckee Meadows region with a grant provided by the Nevada Division of Forestry in cooperation with the USDA Forest Service. The assessment analyzed current tree canopy coverage and possible planting area in the urbanized areas of Reno, Sparks, and Washoe County using geographic information systems. The data were used to assess environmental and economic benefits of existing and future tree canopy scenarios. Results showed that there is 4.6 percent existing canopy coverage in the Truckee Meadows. Within the City of Reno, canopy coverage is slightly higher at 5.2 percent. Of interest it was also found that 80 percent of the urban tree canopy in Washoe County is on residential property. The total environmental and economic benefit provided by our urban forest in Reno was calculated to be \$20,635,296 in annual storm water and air pollution offset. Additionally, trees provide shade during our hot summers, help to block chilling winds in winter, provide visual buffers and soften buildings and structures, provide habitat for a variety of birds and wildlife, and improve air quality. Unlike other infrastructure items, trees appreciate in value over time. The bigger they are, the greater the benefits they provide. Given these many benefits, it is apparent that the need to preserve and expand our urban forest is vital to the health and well being of our community.

The public education and outreach efforts of the Reno Urban Forestry Commission and the Urban Forestry Division of the Parks, Recreation and Community Services Department greatly support the need for getting information out to the general public on proper tree care including planting, watering, and pruning. Several recommendations from the UTC assessment included the need to create an urban forest master plan, increase tree planting efforts, explore all partnerships, and promote proper tree care. The information provided in this Urban Forest Management Plan presents a compelling reason to support Reno’s Urban Forestry program by allocating the resources necessary to preserve, protect, and enhance our City trees. The benefits that tree provide certainly outweigh the costs for their care.



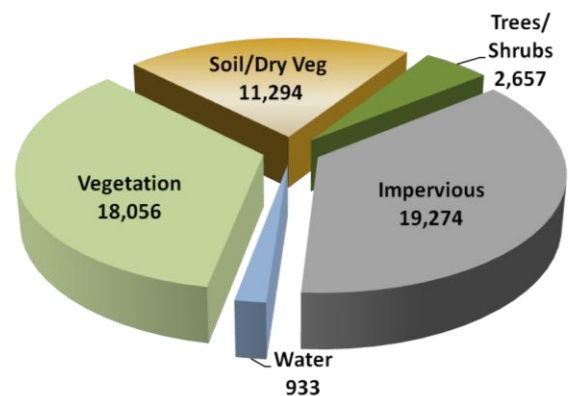
In 1998, the City conducted its first public tree inventory and began using a computerized maintenance management system (TRIMS Software LLC) for management and tracking of its trees. The original inventory collected important information on nearly 13,000 city trees. Data fields included location, species, size, height, condition, as well as site attributes such as the presence of overhead utilities, irrigation, and grow space area. Maintenance information is entered tree by tree on a daily basis and reports are generated quarterly in regard to maintenance history. TRIMS can also provide profiles on the entire population or portions of the population in regard to species distribution and frequency, tree diameter statistics, and tree conditions as they relates to health and safety. The results of this Urban Forest Management Plan includes a re-inventory of the original data and a comparison over a 22 year period of the changes to the tree population that have occurred as well as trends and future projections. The primary goal of this plan is to create a road map for the long term care of Reno's trees by identifying current resource conditions, ongoing maintenance needs, and recommendations for Goals and Policies to preserve and enhance our City trees, both on public and on privately owned properties for future generations.



URBAN TREE CANOPY STUDY

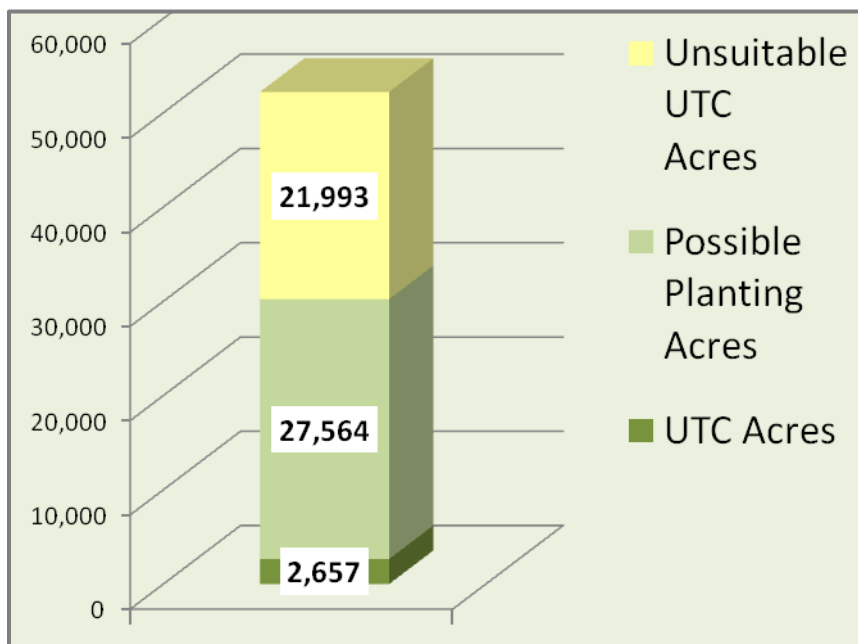
In 2012, the Nevada Division of Forestry, through a grant with the USDA Forest Service, hired a consultant to conduct an urban tree canopy (UTC) Assessment for the Truckee Meadows and the Cities of Reno and Sparks and Washoe County. The UTC Assessment provides an analysis of tree canopy cover by land use type and a recommendation for future canopy cover goals. This section is the excerpt of the final report for the City of Reno.

Figure 9: Reno Land Cover in Acres



Reno's Urban Tree Canopy

At 5.2 percent, the City of Reno has a slightly higher percent tree cover than Sparks or outlying Washoe County areas. It was also found to have a higher percentage of potential planting space in non-tree vegetation such as turf grass. The table on the next page shows that canopy cover ranged from one percent to 9.7 percent in land use types with each having a high proportion of possible planting area, even in the public rights of way along streets.



Overall Urban Tree Canopy Results for Reno

Land Use	Total Acres Excluding Water	UTC Acres	UTC %	Percent of Total UTC in Reno	Possible Planting Acres	Possible Planting %	Unsuitable UTC Acres	Unsuitable UTC %
Agriculture	1,350	16	1.1	0.6	1,064	78.9	281	20.8
Commercial	8,498	257	3.0	9.7	5,523	65.0	2,815	33.1
Industrial	5,637	76	1.3	2.9	3,506	62.2	2,112	37.5
Public	1,860	77	4.2	2.9	1,180	63.4	714	38.4
Residential	19,374	1,883	9.7	70.9	9,677	49.9	7,986	41.2
Right of Way	7,439	275	3.7	10.4	2,684	36.1	4,608	61.9
Vacant	7,124	73	1.0	2.7	3,930	55.2	3,477	48.8
TOTALS	51,281	2,657	5.2	100.0	27,564	53.8	21,993	42.9

UTC Results by Land Use in Reno

Urban Tree Canopy Results by Neighborhood Advisory Boards (NABS as of 2012)

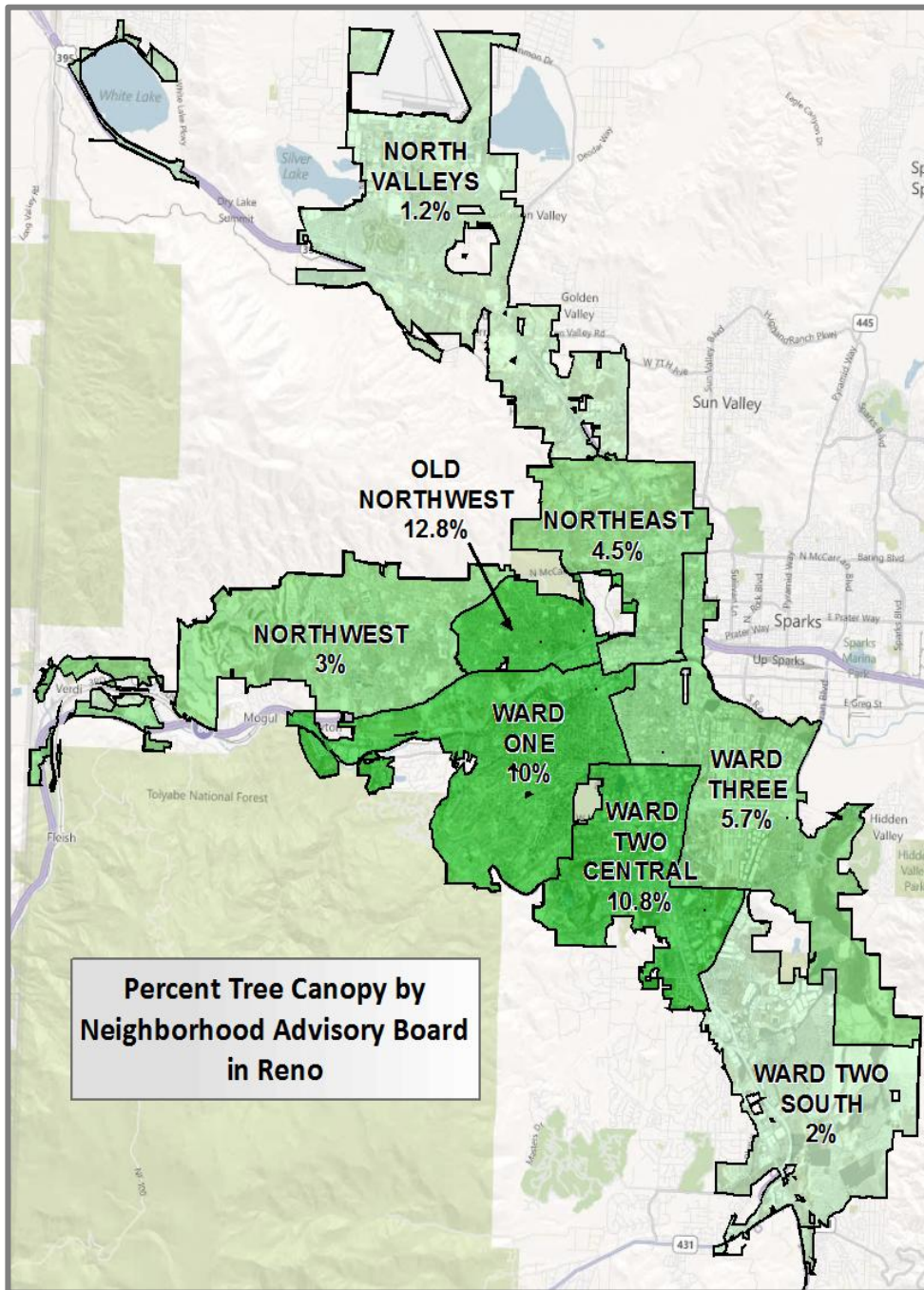
Reno had eight Neighborhood Advisory Boards (NABs) composed of resident volunteer members appointed by the Reno City Council for two-year terms. Meetings provide an arena for residents to voice concerns and the NABs advise the City Council on policy affecting neighborhoods throughout the community. Each NAB was assessed for existing, possible, and unsuitable UTC.

Neighborhood Advisory Boards	Total Acres Excluding Water	UTC Acres	UTC %	Percent of Total UTC	Possible Planting Acres	Possible Planting %	Unsuitable UTC Acres	Unsuitable UTC %
NAB NORTH VALLEYS	10,094	125	1.2	4.7	6,600	65.4	3,500	34.7
NAB NORTHEAST	4,485	203	4.5	7.6	2,407	53.7	1,880	41.9
NAB NORTHWEST	7,390	224	3.0	8.4	3,477	47.1	3,719	50.3
NAB OLD NORTHWEST	2,112	271	12.8	10.2	882	41.8	969	45.9
NAB WARD ONE	7,167	715	10.0	26.9	3,380	47.2	3,195	44.6
NAB WARD THREE	8,113	459	5.7	17.3	4,412	54.4	3,458	42.6
NAB WARD TWO CENTRAL	4,812	519	10.8	19.5	2,486	51.7	1,892	39.3
NAB WARD TWO SOUTH	7,110	142	2.0	5.3	3,920	55.1	3,380	47.5
TOTALS	51,281	2,657	5.2	100.0	27,564	53.8	21,993	42.9

UTC Results in Reno by Neighborhood Advisory Board



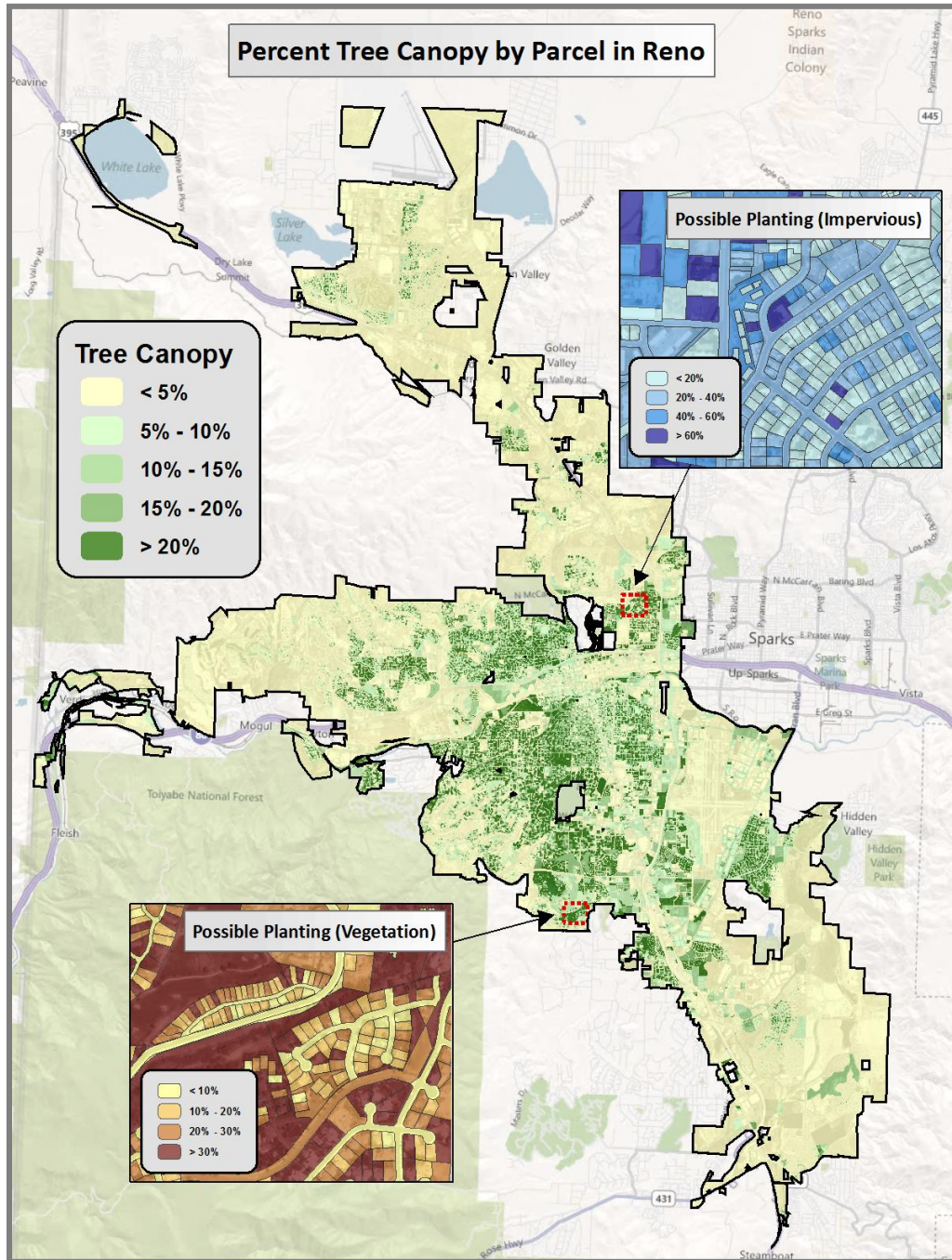
Percent of Existing Tree Canopy in Reno by Neighborhood Advisory Board



- Existing canopy cover ranged from 1.2 percent to 12.8 percent for NABs.
- In order to look at tree cover at a finer scale, one precinct (1033) in Reno with visibly high canopy cover was found to have 22.3 percent UTC. This offers an achievable target for smaller sub-areas in Reno and in the region.
- Possible planting area ranged from 41.8 percent to 65.4 percent. Parcel-level results (next page) provide a closer scale for identifying specific tree planting opportunities.

Reno Urban Tree Canopy Results by Parcel

Tree canopy metrics were mapped in Reno at the individual tax lot, or parcel boundary. Figure 12 illustrates current tree canopy percent per parcel citywide and inset maps of percent possible planting in vegetated areas such as turf grass and impervious areas such as parking lots.



Percent UTC by Parcel including Inset Map Examples Showing Percent Planting Potential for Vegetated Areas and Impervious Areas such as Parking Lots

Reno Ecosystem Benefits

CITYgreen modeling quantified some of the environmental and economic benefits of existing canopy cover and for future scenarios citywide in Reno and by land use type. Summary level results can be found in Tables 10 and 11 below. Complete results can be found in the detailed CITYgreen reports delivered separately from this assessment report.



Reno Urban Tree Canopy Benefits by Land Use, Current Conditions

Land Use	Area	Tree Canopy	Air Pollution Removal	Air Pollution Removal	Carbon Stored	Carbon Sequestered	Total Stormwater Value	Total Stormwater Quantity
	acres	acres	lbs/yr	\$	tons	tons	\$	cu.ft.
Agriculture	1,360.7	15.5	1,466	4,025	668	5	77,597	25,866
Commercial	8,594.9	257.0	24,283	66,657	11,059	86	2,370,930	790,310
Industrial	5,693.4	75.7	7,150	19,627	3,256	25	595,980	198,660
Public	1,970.5	77.3	7,308	20,061	3,328	26	486,486	162,162
Residential	19,454.4	1,883.2	177,941	488,444	81,036	631	14,233,691	4,744,564
Right of Way	7,567.8	275.6	26,039	71,477	11,859	92	2,412,967	804,322
Vacant	7,479.6	72.5	6,853	18,812	3,121	24	457,645	152,548
Total	52,121.3	2,656.8	251,040	689,103	114,327	889	20,635,296	6,878,432

Reno Urban Tree Canopy Benefits, Future Scenarios

Reno	UTC Acres	Annual AQ Benefit	Annual SW Benefit	Total Annual Benefit	Total Stormwater \$-Benefit
Existing	2,656.8	689,103	1,799,207	2,488,310	20,635,296
10%	5,221.3	1,354,244	2,129,325	3,483,569	24,421,723
15%	7,831.9	2,031,366	2,405,237	4,436,603	27,586,415
20%	10,442.5	2,708,488	3,367,976	6,076,464	38,628,947

UTC Goals in Reno by Land Use including Acres and Trees Needed

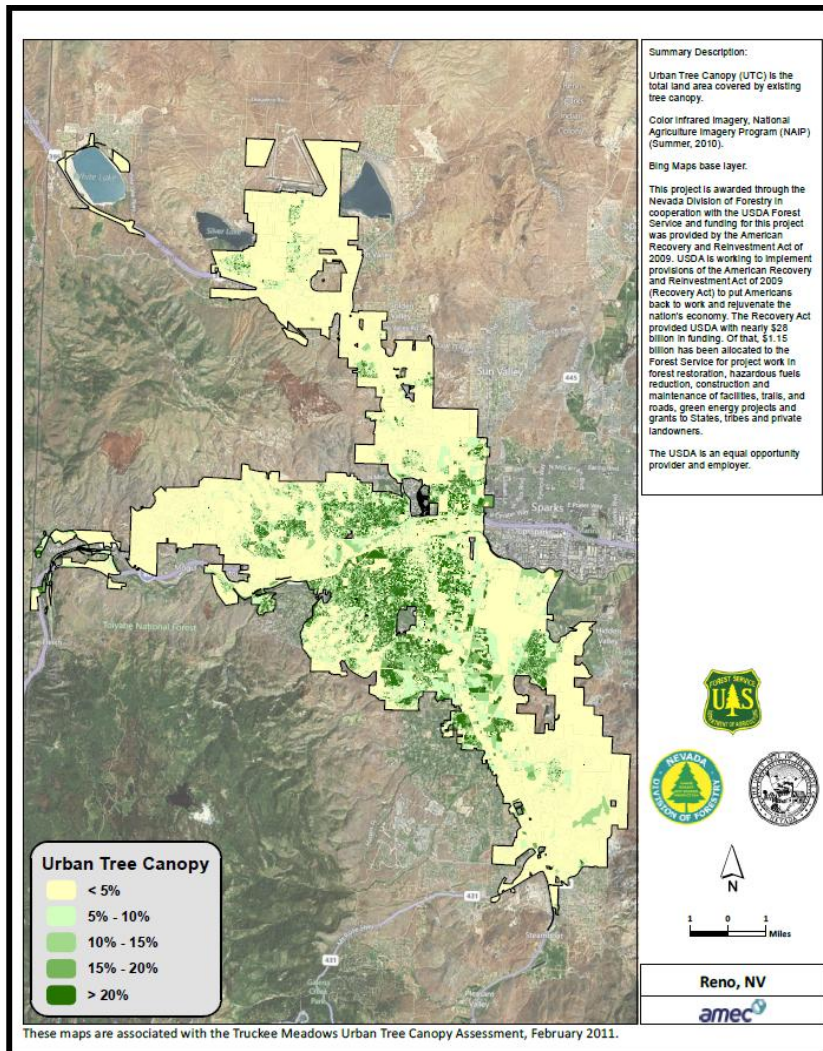
Entity	Land Use	UTC %	75th Percentile Goal	% Below Goal	Acres of UTC Required to Meet Goal	# of Trees Needed to Meet Goal	Total Possible Planting Acres
Reno	Agriculture	1.1%	4.9%	-3.8%	51	3,120	1,064
	Commercial	3.0%	7.5%	-4.5%	380	23,454	5,523
	Industrial	1.3%	3.4%	-2.1%	116	7,146	3,506
	Public	4.2%	11.5%	-7.3%	137	8,416	1,180
	Residential	9.7%	21.5%	-11.8%	2,282	140,705	9,677
	Right of Way	3.7%	4.4%	-0.7%	52	3,200	2,684
	Vacant	1.0%	7.4%	-6.4%	455	28,029	3,930
	Total	5.2%	12.0%	-6.8%	3,472	214,070	27,564

TREE CANOPY COVER

The Urban Tree Canopy study reported Reno’s canopy cover at 5.2 percent. For comparison, other cities mentioned included Sparks at 4.3 percent, Albuquerque at six percent, Henderson at seven percent and Las Vegas at 13 percent. Although listing other cities has some comparative value, they should not be used to set canopy cover goals because of the unique geographical and land use characteristics for each agency. For example, 18.2 percent of Reno’s land area is classified as Arid/Semi-Arid rangeland while only 6.9 percent is classified as such in Las Vegas. Additionally, 40.4 percent of Reno’s land use is Impervious (paved and unpaved) while only 26.4 percent in Las Vegas is impervious. These two categories provide the least opportunities to enhance tree cover.

The final report recommends an overall canopy cover goal of 12 percent for Reno based on “possible planting acres.” As defined in the report, Possible Planting Acres are those which are biophysically possible to plant trees, but does not take into account the actual use these areas. In the case of public property (defined as parks and utility property) and street rights-of-way, a one percent increase in canopy cover requires 1,207 park trees and 5,059 street trees (6,266 total), a **35 percent increase** in total public trees over the current inventory. To meet their

recommended goal, the City would need to add 8,416 park trees and 3,200 street trees to its existing property, a 65 percent increase over existing levels. For parks alone, this would require eliminating nearly all athletic fields to allow space for tree planting. This is not desired or practical. Also, as shown in the map below, many of the areas with low canopy cover are former agricultural lands where tree cover is incompatible with prior land use, or open spaces on hillsides which do not have any natural tree cover.



Proposed target is 10 percent canopy cover in 20 years.



TREE INVENTORY - METHODOLOGY

The City of Reno received a \$75,000 grant through the Urban and Community Forestry Program of the Nevada Division of Forestry to update its original tree inventory, completed in 1998, and to add GPS coordinates for mapping purposes. The City's forestry staff maintains the tree inventory using a third party maintenance management program from TRIMS® Software LLC. The program allows staff to track and record tree inventory data and log maintenance activity, including physical characteristics and workload data, for each tree.

Since 1998, the City's forestry staff has logged maintenance activities by tree, added new street and park trees, and recorded tree removals. However, during the growth period in the mid 2000s, several new parks and many replacement street trees were not added to the inventory. In addition, there has not been a systematic effort to update tree sizes and condition of existing trees since the original inventory.

Staff issued a request for proposals to conduct the inventory and issued a contract to a local consulting arborist. The arborist and his staff used printouts and maps of our existing inventory and a listing of parks and streets to conduct a new inventory.

The inventory **does not** include trees on public property that are maintained by private homeowner or commercial property associations. This includes right-of-way trees in planned unit developments (Double Diamond, Damonte Ranch, Curti Ranch, Cyan, Caughlin Ranch and Somerset) as well as public parks maintained by the homeowner associations (Center Creek, Comstock, Horizon View and Somerset East). Staff had inventoried some of the trees along Double Diamond Parkway and at Comstock Park with the original development, but the records became quickly outdated as the property associations continually removed failed trees, replanted different species or reconfigured the landscapes. Since City staff does not maintain the trees and therefore cannot keep updated records on removals and replacements, they were not included in the inventory.

The new tree inventory includes the following demographic and condition information:

Tree Identification: Each tree was identified by genus and species as well as common name.

Sidewalk Damage: Surveyors collected information on adjacent sidewalks that may be impacted by root intrusion, and degree of damage if any.

Overhead Wire Conflicts: Surveyors collected information on potential for conflict with overhead utility wires.

Diameter at Breast Height (DBH): This is a standard measurement of tree size, taken by measuring the diameter of the trunk 4 ½ feet above ground level. Reno uses six standard categories for DBH:

DBH 1: 0 to 3"

DBH 2: 4 to 6"

DBH 3: 7 to 12"

DBH 4: 13 to 24"

DBH 5: 25 to 36"

DBH 6: 37" and greater



Our prior inventory combined trees in DBH 1 and 2. With this update, staff separated these into two classes to better differentiate newly planted trees from those which have been in place for several years.

Tree Condition: Trees were evaluated based on the overall condition of roots, trunk, branches and foliage. Surveyors categorized trees as Dead/Dying, Poor, Fair and Good condition. The analysis is based on the guidelines published by the International Society of Arboriculture (ISA) for valuation of trees and developed by the Council of Tree and Landscape Appraisers (CTLA).

Land Use: The land use for the property was identified. Land Use types include:

1. Single Family Residential
2. Multi-family Residential
3. Small Commercial
4. Industrial/Large Commercial
5. Park/Open Space

Maintenance Requirements: Each tree was examined to determine needed maintenance as of the date of inspection. This determination is based on the visual inspection from the ground, and may not reflect any hidden hazards or otherwise non-observable hazards. The maintenance requirements form the basis for estimating staffing requirements and for developing a tree pruning cycle, and include a pruning priority and specific task.

For each tree, a recommendation on pruning priority and specific task was identified. The pruning priorities are:

Pruning Priority	Description
1. Critical Concern	Pose a potential safety hazard. These trees require pruning to remove hazardous deadwood, hanging limbs or other structural defects and failure poses a critical concern to public sidewalks, structures or park patrons. This may include removals for trees with hollow trunks. <i>Note: Staff has already inspected and addressed all trees identified as Priority 1.</i>
2. Large Tree Immediate	Large trees (DBH 3 or higher) with deadwood, hanging limbs or other defects, but do not pose a critical hazard to the public based on location.
3. Small Tree Immediate	Small trees (DBH 1 or 2) with deadwood, significant sucker growth, blocking signs, or have other structural defects which should be addressed to prevent future problems.
4. Large Tree Routine	Large trees which will require routing structural pruning within 3-5 years to maintain overall health.
5. Small Tree Routine	Small trees which will require training pruning or other structural pruning within 3-5 to maintain overall health.
6. None	Trees which are not likely to require routing pruning for more than 5 years based on current conditions.



Task	Description
1. None	No specific task required at time of inspection.
2. Stake/Train	Stake young trees and/or prune for future growth.
3. Crown Cleaning	Remove deadwood and minor structural defects in crown.
4. Crown Raise	“Elevate” tree canopy for vehicular and pedestrian clearance, sign clearance.
5. Crown Reduction/Thin	Remove significant deadwood and major structural defects; reduce crown size for public safety.
6. Remove	Remove tree. Trees with significant deadwood, have hollow trunks or central leaders, previously topped, or pose other long term maintenance or safety issues.
7. Insect pests or disease	Tree has significant infestation of pests or disease.

GPS Location

Each tree was also plotted using a Trimble® GEO 7X handheld computer to collect position data (*X-Y coordinates*) for eventual upload to the City’s GIS map server. Once completed and uploaded, the general public will be able to see the distribution of the City’s trees with the ability to see general identification data for each tree point. This will also help local contractors identify potential tree conflicts for projects requiring an excavation permit.



The adjacent map shows public trees plotted in a portion of Virginia Lake Park. The map below shows street trees in the Wells Avenue area of southeast Reno. Each tree is indicated by a data point.



TREE INVENTORY - RESULTS

Tree Count

The inventory recorded 17,960 public trees along streets and in parks. Staff searched records for the number of trees in the original inventory, completed in 1998, but was unable to find an accurate count. Our computerized management system records each inventoried tree as a separate record, including those trees that have been removed. Although this is beneficial because it allows us to maintain historical work records on every tree in the system at any time, it makes it impossible to determine the number of trees at any given point in the past. In 2001, staff had students from the University of Nevada, Reno conduct a mapping survey of all trees on the inventory, which showed 13,430 public trees. In 2005, a listing of tree records downloaded from the management software contained 21,278 records, which included 1,282 trees shown as removed, for an estimated inventory count of 19,996 trees.

Tree Identification

A general rule for species diversity used for urban forestry management plans is the 10-20-30 rule. This rule states that no single species shall be more than 10 percent of the forest; no single genera should comprise more than 20 percent of the forest, and no single family should total more than 30 percent of the forest. Reno's forest is well within the recommended species diversity. The two most common genera, *Pinus* (Pine) and *Quercus* (Oak) each comprise less than 12 percent of the total forest, with 16 different pine species and 19 different oak species represented. The Austrian Pine makes up half of all pines, whereas oaks are more equally distributed among five different species with the Pin Oak (18 percent) comprising the single largest number of all oaks.

In an analysis from 2001, Reno had 62 different genera of trees on public property. Of these, six comprised nearly half of the entire tree inventory and 13 comprised 75 percent of the total inventory. The 2015 inventory identified 61 genera, still with six comprising half of the public inventory and 12 genera comprising over 75 percent. The single largest change was the increase in Callery Pear (*Prunus calleryana*), which doubled from 4.2 percent to 8.5 percent of total trees, moving from ninth most planted to third on the species list. This tree is used extensively in the downtown area and in smaller parkway strips because of its small size and suitability to poor soils and challenging growing conditions.

The chart below shows all species which comprise at least two percent of the inventory in 2001 or 2015.

Genus	Common Name	2001	2015
Pinus	Pine	11.8%	11.8%
Quercus	Oak	9.8%	11.1%
Pyrus	Callery Pear	4.2%	8.5%
Acer	Maple	7.0%	7.2%
Fraxinus	Ash	6.8%	6.6%*
Ulmus	Elm	8.7%	6.4%
Juniperus	Juniper	4.9%	5.5%
Prunus	Flowering Peach/Pear/Plum/Cherry	5.0%	5.1%



Genus	Common Name	2001	2015
Platanus	Sycamore	3.8%	4.1%
Malus	Apple/Crabapple	2.4%	3.8%
Gleditsia	Honey Locust	3.4%	3.6%
Robinia	Idaho/Black Locust	4.2%	3.3%
Cedrus	Cedar	2.0%	2.6%
Crataegus	Hawthorne	2.4%	2.2%
Celtis	Hackberry	2.2%	2.2%
Catalpa	Catalpa	2.3%	2.1%
Elaeagnus	Olive	2.9%	1.6%

* Actual percentage is lower, as a significant number of ash trees have been removed since the inventory was taken because of ash borer infestations.

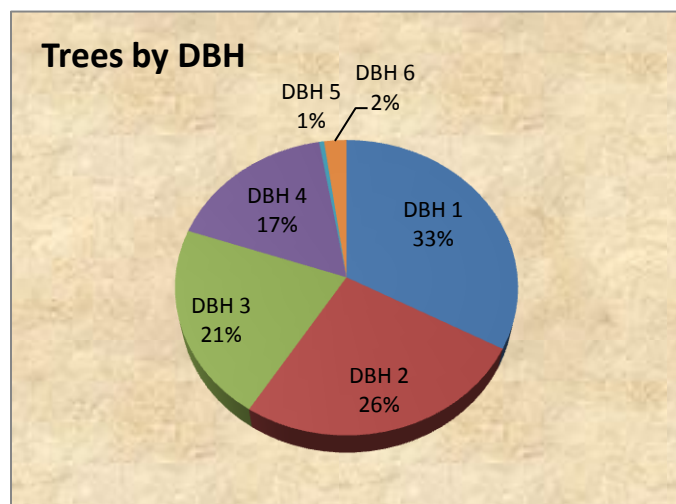
Tree Size

The distribution of size classes can be used to estimate the relative age of the tree population. The size classes (DBH) are also used to make planning decisions on pruning needs and maintenance practices. The recommended distribution for an urban forest is to have approximately 40 percent of the forest as younger trees (DBH 1 and 2), with the largest trees (DBH 5 and 6) making up less than 10 percent, especially in street rights-of-way. It is important to have trees in all size classes to ensure a consistent growth pattern and canopy cover, to maximize the environmental benefits of trees, and to spread out maintenance costs. Age and size diversity reduces losses of large numbers of trees within a given period because there will not be large numbers of trees all maturing and eventually dying off at the same time. This situation would have a devastating effect on limited resources by having to focus resources on tree removal rather than also allocating needed resources on tree pruning and planting

Reno’s public trees trend towards younger and/or smaller species, reflective of the growth in the City over the years and the addition of new streets and parks. This leads to a greater number of young trees, indicated by the chart showing 59 percent of Reno’s public trees are in the two smaller size classes. This is good for the long term growth of the urban forest.

However, of the 20 most prevalent genera of trees, only two (Elms and Sycamores) have an average DBH of Class 4 or larger. Other large trees predominant in the inventory include Silver Maple, Green Ash and Black Locusts, all of which have a recent history of management issues and represent a significant portion of the tree removals over the years.

Since the original tree inventory in 1998, Staff has removed 2,967 inventoried



trees. The table below shows those trees comprising two percent or more of total trees removed during this period. The list excludes those trees on public property but not individually inventoried, primarily those along the banks of the Truckee River and within the Oxbow Nature Study Area, and those removed by development along streets or by storm damage.

# of Trees	Common Name	Pct of Total Removals	Cum Percent
313	Siberian Elm	10.6%	10.6%
293	Green Ash	9.9%	20.4%
188	Cottonwood	6.3%	26.8%
165	Silver Maple	5.6%	32.4%
143	Russian Olive	4.8%	37.2%
84	Black Locust	2.8%	40.0%
76	Callery Pear	2.6%	42.6%
75	Scotch Pine	2.5%	45.1%
73	Western Catalpa	2.5%	47.6%
68	Juniper	2.3%	49.9%
65	Paul's Scarlet Hawthorn	2.2%	52.1%
61	White Birch	2.1%	54.1%
60	White Ash	2.0%	56.1%
59	Purple Leaf Plumb	2.0%	58.1%

The removal figures above do not include trees destroyed by storms, or removed through private development of adjacent properties.

Tree Location

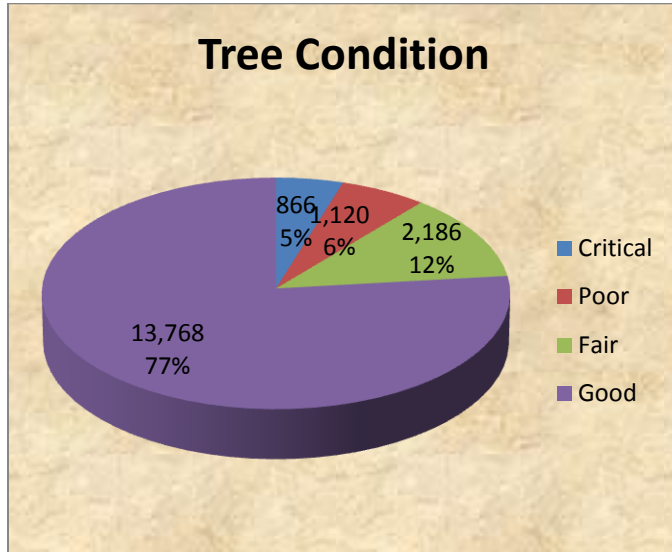
Of the City's trees, approximately 48 percent are located in parks and 52 percent are located in the public rights-of-way. The park trees are more evenly distributed among DBH 1, 2 and 3 trees, while the streets have a much larger percentage of trees in DBH 1.

DBH Class	Parks	Streets
1 (1-3")	2,647	3,244
2 (4-6")	2,548	2,156
3 (7-12")	2,018	1,796
4 (13-24")	982	2,076
5 (25-36")	85	4
6 (>36")	399	5
Total	8,679	9,281



Tree Health and Condition

Over three-quarters of the tree population was recorded to be in Good condition, with 11 percent in poor or worse condition. Of those recorded as Critical, approximately half are actually stumps or trees already removed since the inventory was taken.



A breakdown between parks and streets shows that park trees tend to be in slightly better condition, with ten percent more trees recorded in Good condition, and six percent fewer trees in Poor or Critical condition.

Location	Critical	Poor	Fair	Good
Park	4%	4%	10%	82%
Street	6%	8%	14%	72%
Total	5%	6%	12%	77%

A further examination of tree condition by class size reveals that Reno’s youngest trees (DBH 1), while overall very healthy, have the lowest percentage of trees in Good condition and the highest percentage in Poor or Critical condition.

DBH	Percent of Trees in Good Condition	Percent of Trees in Poor/Critical Condition
1	70%	17%
2	80%	10%
3	80%	8%
4	78%	7%
5	89%	8%
6	86%	3%



PRUNING CYCLE

Forestry programs differentiate between scheduled maintenance practices and reactive maintenance. Scheduled maintenance refers to a proactive and routine pruning cycle for all trees, emphasizing scheduled structural pruning for health and aesthetics, and is often referred to as “block pruning” because staff prunes all trees in a block on a scheduled basis. Reactive maintenance, however, is driven primarily by customer service request for individual pruning of specific trees to address a perceived safety issue, sign clearance, aesthetic or other issue.

How often to prune?

The goals of a regular pruning cycle are to assess and prune trees on an established schedule to improve health and reduce risk, and to update tree characteristics in the database. Studies have shown that overall health of a tree is directly related to the amount of time since its last prune. The pruning cycle recommended in scholarly literature is five years, while the pruning cycle recommended and implemented by a majority of members in the Society of Municipal Arborists is seven to nine years.

There are many benefits to an urban forest from a routine pruning program. These include:

- Improved cost effectiveness by pruning trees when younger to prevent more extensive problems as the trees mature.
- Lower liability from potential tree-related hazards.
- Fewer calls for service.
- Improved overall tree health, leading to increase economic, environmental and social benefits.
- Reduced potential for storm related damages.
- Lower tree mortality through earlier identification of problems.

The inventory identified the following pruning needs by priority and task. The priority, numbered 1 through 6, reflect the urgency of the work required. The task is the specific type of pruning or other activity required for each tree. The priorities and tasks are independent of each other. The following table outlines the results by priority and task.

Current Pruning Needs

Pruning Priority	# of Trees	Task	# of Trees
1. Critical Concern	33	1. None	3,678
2. Large Tree Immediate	83	2. Stake/Train	84
3. Small Tree Immediate	95	3. Crown Cleaning	11,551
4. Large Tree Routine	6,411	4. Crown Raise	1,528
5. Small Tree Routine	7,583	5. Crown Reduction/Thin	624
6. None	3,755	6. Remove	489
		7. Insect pests or disease	6

In 2000, an analysis of pruning data reported that City staff was pruning on a 13 year cycle based on inventory and staffing levels. After changes in operations and addition of a fifth position, staff reduced the pruning cycle to nine years by 2003, however continued staff turnover beginning in 2005 and the eventual elimination of three positions in 2010 reduced our block pruning program by an average of 60 percent per year, with most time spent on responding to service requests or other reactive pruning.

Based on these results, and applying our historical time spent on pruning activities since 1999, the current maintenance requirements will require over 26,000 labor hours to complete. The chart below breaks down this work by Pruning Priority and tree size (DBH).

DBH	Labor Hours by Pruning Priority					Total
	1	2	3	4	5	
1			9		2,318	2,328
2	1		20		2,680	2,701
3	7	18	26	7,592		7,643
4	36	89		10,924		11,049
5		8		388		396
6		11		1,933		1,944
Total	44	126	55	20,837	4,998	26,061

Note: Labor hours represent actual work time less a standard allowance for leave time and other non-work time, not FTE hours.



From 2010 through 2015, the three person tree maintenance crew has spent 24percent of their total time on scheduled pruning activities. The breakdown of work is shown below:

Task	Pct of Time
Work on Inventory Trees	
Scheduled Pruning	24%
Response Pruning	2%
Tree Planting	7%
Tree Removals/Stump Grinding	22%
Other Tree Work	
Storm Cleanup	4%
Truckee River Bank/Oxbow/Sky Tavern Trees	3%
Wood Disposal/Wood Chips	3%
Non Tree Work	
Equipment Maintenance	9%
Utility Locates/Job Site Inspection	14%
Holiday Tree & Lights	2%
Snow Removal	1%
Meetings & Training	6%
Irrigation Repairs	2%
Miscellaneous	1%

TREE CARE MAINTENANCE

Tree pruning, planting and removal activities comprise the majority of the Urban Forestry staff's workload. These tasks require a high degree of physical endurance, technical expertise, and can pose numerous potential hazards often working at heights above 50 feet. In addition, the specialized equipment needed to perform such skilled work can pose significant risks to the operator, co-workers and general public in the vicinity of operations. Much of this work is performed along public streets, where concerns with vehicular traffic are a high priority. The majority of both public and private sector tree operations throughout the United States is typically performed by a minimum of three crew members for safety reasons. In 2013, there were 128 occupational tree care accidents reviewed by the Tree Care Industry Association. Of these, 84 involved fatalities. The majority of tree industry related accidents and fatalities are the result of electrocutions, falls from a tree, getting struck by a tree or limb, and getting caught in equipment.

Trees in urban areas face considerably more stress than natural trees in the forest. Urban soils are often compacted and low in nutrients. Water sources are reduced because of impervious surfaces. Ambient temperatures are higher from reflected heat from streets and buildings. Downtown trees are often planted in small tree boxes without sufficient soil volume, and with tree grates and tree cages which damage trees as they mature.

Additionally, having a three member tree crew is essential in meeting operational efficiency standards and scheduling work activities requiring tree rigging, use specialized lift equipment and for traffic control. Reno's staff regularly participates in monthly safety training sessions and performs daily equipment inspections and on-site job briefings in order to avoid potential hazards associated with urban forestry operations. Staff has also conducted safety training classes for Public Works and Reno Fire department staff who occasionally operate forestry related equipment.

Like other City operations, the staffing and operational resources of the forestry section has seen an overall reduction in resources over the past 10 years. Former and current staff and operating supplies budgets are shown below.

Position	FY 2007/08	FY 2015/16
Urban Forester	1	1
Tree Inspector	1	0
Sr Tree Maintenance Worker	1	1
Tree Maintenance Worker	4	2
Maintenance Assistant (seasonal)	0.5	0
Total FTEs	7.5	4
Services & Supplies (less Fleet charge)	\$68,650	\$24,845

Based on the current workload data and using a target of 30 percent of total available crew time for scheduled pruning, staff estimates that the current maintenance needs identified in the tree inventory will require **18 years** to address. This target will continually increase even without the addition of any additional trees to the inventory, as trees will continue to age and require other work not currently identified. In order to meet this demand in a nine year pruning cycle, the City would need to direct 2,900 hours per year on scheduled pruning activities, which is nearly 2.5 times the average amount of time previously spent on scheduled pruning.

In order to achieve a seven year cycle for scheduled pruning, Reno will need to add the equivalent of two full-time equivalent employees and allocate 50 percent of the total time towards scheduled pruning activities. The other crew time will be directed towards tree planting, removals, response pruning, riverbank tree maintenance, and other activities.

In-House & Contract Tree Maintenance: Given the current budget challenges facing municipalities throughout the United States, some communities have looked toward privatizing some tree care operation to reduce costs or target specific maintenance requirements. There are advantages for using a combined approach using both in-house staff and contractors for urban forest management. Many progressive urban forestry programs use a combination of both to ensure services are not only provided at the lowest cost, but also as efficiently as possible and with the greatest level of expertise. Reno has not contracted out any portion of tree pruning activities since FY 1998/99. In the Reno area, one impediment to significant outsourcing of tree maintenance activities is that the Reno market is comprised primarily of small tree care companies with limited equipment and staffing resources. The large regional or national tree care companies do not operate in the Truckee Meadows because there is not sufficient demand for major block pruning operations, even on a seven year pruning schedule.

However, given current budget limitations, staff believes that in the short term that it would be more cost effective to issue limited contracts for specific tree pruning activities. These could be targeted pruning in specific areas or targeting specific tree size classes that would provide the best economy of scale.

WATER CONSERVATION AND TREE HEALTH

Recent concerns over annual precipitation amounts and water conservation efforts can have an impact on the health of both public and private trees. As people significantly cut back on water use, either from a desire to conserve water or to save money (or both), trees can become stressed and may eventually die. Since the City does not water residential street trees, it is up to adjacent property owners to voluntarily perform this task. This leaves individual trees to the mercy of both owners and renters of residential properties. Although trees do require regular watering in our arid climate, the benefits they provide far exceed the costs and available supply of water. It is extremely important that residents know proper and regular tree watering is an acceptable practice in Reno.

Each year, Code Enforcement sends out dozens of tree removal notices to private property owners regarding trees which pose a public safety hazard to citizens. Many of the notices are



sent to owners of rental properties who are not aware of tree watering needs or who simply see it as an additional cost. Therefore it is left up to renters who do not have an interest in the property and do not want to spend the extra on their monthly water bill to water trees. This also affects public trees, as City crews spend considerable time each year removing street trees which have died due to lack of water. This creates many undesirable results such as spending additional City resources across several departments, loss of tree canopy, increase in carbon release into our local climate, and diverting City tree crew resources to removal of trees rather than to preventative trees care and planting new trees.

Trees (even mature trees) in a landscape which have been accustomed to regular lawn watering will continue to need regular, deep watering to survive. However, mature trees can survive with only a couple deep watering per month, rather than two or three times weekly watering for lawns.

INTEGRATED PEST MANAGEMENT STRATEGY

Our climate and species diversity, along with tree health, affects both insect and disease presence and pressure on our trees. Fortunately, we have very few problems with both insect and disease problems in Reno therefore not much is spent to control problems. In recent years, limited funding has been available to control the Elm Leaf Beetle which poses little direct affect to the health of elm trees. This insect annually defoliates elm trees causing premature leaf drop in mid to late summer. Elm trees typically can put out another set of leaves later in the growing season. Some trees however are affected if they are already stressed and are repeatedly defoliated year after year. This past year, the Urban Forestry program eliminated the use of a contracted licensed pesticide applicator to control the elm leaf beetle on selected elm trees in parks and streets. Instead, funds have been diverted to purchase more trees for parks and streets. In recent years, the Emerald Ash Borer has become an issue, attacking many of Reno's ash trees. There is no effective control for this insect, and trees typically must be removed as soon as possible to prevent spread of the insects.

Integrated Pest Management is a program based on prevention, monitoring, and control of insects and diseases which offers the opportunity to drastically reduce or eliminate the use of pesticides. IPM does this by using a variety of methods and techniques including cultural, biological, and structural strategies to limit pest problems. Regular and proper tree watering is the biggest factor in keeping trees pest resistant along with good tree selection, soil preparation, and proper planting techniques.

WOOD WASTE UTILIZATION

Reno has two wood chippers which are capable of chipping limbs up to eight inches in diameter during tree removal and pruning operations. Staff reuses the wood chips throughout park properties to cover bare areas for reducing weed proliferation and erosion. The public can purchase wood chips for home projects as well as larger wood for burning in wood stoves and fireplaces. Some local woodworkers also purchase logs for milling and specialty products such as bowls and tables. Residential owners may also purchase logs for firewood.



RIPARIAN & RIVERBANK TREES; OXBOW NATURE STUDY AREA

The Truckee River is subject to diverse water regimes and a variety of flow rates. The original riparian vegetation has been altered by these variable flow rates and human disturbance. Native Cottonwoods typically regenerate from seeds deposited in areas that experience natural flooding events. The construction of dams, diversions and other development along the river has virtually eliminated any natural regeneration of Cottonwood trees. Impacts by local beaver populations have also resulted in the loss of Cottonwood trees although these impacts are not significant and are not confined to any particular section of the river.

There are however, miles of trees and vegetation lining the riverbanks along the Truckee River as it winds through Reno. Fremont Cottonwood is the dominant native tree species in size and distribution. Black Cottonwood is found in lesser numbers. Other native tree and shrub species include Sierra Alder, Black Willow, Incense Cedar, Wild Rose and a variety of forbs and sedges. Some invasive species such as Siberian Elm, Black Locust and Ailanthus have also taken root along the riverbanks.

Trees along the riverbank are crucial to fish, bird and wildlife habitat. Tree cover directly affects water quality and temperature. Tree canopies intercept rain and help to significantly reduce soil erosion, while tree roots help to stabilize steeper banks during heavy rain events and floods. For public safety, the City does remove dead and hazardous trees directly adjacent to greenbelt pathways. Snags which are away from the pathway and park users are left for nesting habitat.

Oxbow Park and Nature Study area is located along the Truckee River one mile from downtown Reno. It is jointly managed under a cooperative agreement by the City and the Nevada Department of Wildlife (NDOW). Reno provides basic site maintenance while NDOW staff provides interpretive programs, assists with maintenance and works with volunteer groups. Students on school field trips often use the park for education purposes. The Oxbow Nature Study area is home to the Great Blue Heron, California quail, Cooper's hawk, Mule deer, and Beaver. Black bear have also been spotted in Oxbow Park. In 2008, a fire burned through the site which killed many of the large Cottonwood trees. Staff has removed most of the burned trees through the years, but those which do not pose a hazard remain standing to provide habitat for birds and other wildlife. The City has conducted two major replanting efforts with new Cottonwoods through grants provided by the Truckee River Fund through the Community Foundation of Western Nevada.

INVENTORY AND PLAN UPDATES

To remain effective, the inventory should be updated as trees are added, remove or pruned, while the Plan should be updated periodically so that Reno can sustain its program and accurately project future program and budget needs:

- Inspect trees after all severe weather events to record tree damage information, maintenance needs and to update tree condition. Update the schedule based on new demands. Schedule work based on risk.
- Conduct “windshield surveys” to stay current regarding changing conditions. Update the maintenance schedules as necessary based on changing conditions.
- Modify maintenance schedules and budgets accordingly.
- Update the inventory database as work is performed. Add new tree work to the schedule when work is identified through inspections or a citizen call process.
- Revise the Public Tree Management Plan after five to seven years with updated tree information, current budgets and updated resource requirements.

FREQUENTLY ASKED QUESTIONS (FAQS) REGARDING TREES

- **Do I need a permit to remove a tree on my property?** No, however a Tree Work Permit is required before removing, pruning or planting trees within City Rights-of-Way or on other City property. Call the City of Reno Urban Forestry at 775-321-8371 to request an inspection, which is required before we can issue a permit. Keep in mind that we may not issue a permit to remove a tree unless the tree is dead, diseased or poses a public safety hazard.
- **When do I need to hire a Certified Arborist?** A Certified Arborist is required for the removal, pruning, or planting of trees on City Rights-of-Way or other City property. You may also hire a Certified Nursery Worker or Certified Landscape Technician if you are going to have any tree(s) planted on public property. You are **not** required to hire a Certified Arborist for work on private property, but we highly recommend that you do. Call the Urban Forestry Office at 775-321-8371 for a list of Certified Arborists who own or work for tree companies in our area.
- **There is a City tree along the street that has dead limbs, when will it be pruned?** We try to prune neighborhood street and parks trees on a rotational schedule, however it is a challenge for us to keep a schedule given the number of trees we have to maintain and the limited staff we have to accomplish the task. After we inspect the tree(s) in question, we will determine its condition and pruning priority in relation to other trees requiring pruning. If the tree needs immediate attention, we will dispatch our tree crew to the site.
- **My sidewalk is cracked and being lifted up by tree roots; will the City repair or replace it?** The City does budget to repair and replace sidewalks damaged by tree roots if the damage is caused by a City tree. If the damage is caused by a tree on private property, the property owner is then responsible for the cost of the repair or replacement. Call the Urban Forestry Office at 775-321-8371 to determine if a tree is on either on public or private property.
- **My neighbor's tree is growing over my side of the property line; can I prune the branches on my side of the fence?** The best advice is to talk with your neighbor first. It may also be a good idea to contact a Certified Arborist to evaluate the overall condition of the tree and then recommend a course of action. If you prune tree limbs hanging over your property and the tree is damaged or dies, you may be held liable. If your neighbor is not willing to cooperate in any fashion, you should contact your homeowner's insurance agent for assistance in the matter.
- **There is a dead tree on my neighbor's property that I am worried will fall onto my house or in my backyard where my children play. Can the City remove it?** The City does not remove trees on private property but may require property owners to do so if a tree poses a public safety hazard. Call Reno Direct at 775-334-4636 to report the problem.
- **Does the City sell firewood to the public?** Yes, firewood is available for sale. Our wood yard is open on Wednesday and Thursdays year round from 7:30 am to 2:00 pm. Customers should be prepared to cut their own rounds, which require a chainsaw and personal protective equipment. Customers must pay in advance by check or cash only and must sign a waiver of liability in order to enter the wood yard. Waivers can be obtained at the Park Maintenance Office at 2055 Idlewild Drive in Idlewild Park. The wood yard is located at 190 Telegraph, which is off of Greg Street just behind the Grand Sierra Resort. The cost for the firewood is \$75 per cord.
- **My elm tree is losing leaves, does it have Dutch elm disease and should it be removed?** It is



likely that your elm is infested with elm leaf beetles. Adult elm leaf beetles and worm-like beetle larvae feed on elm leaves which cause leaves to turn brown and prematurely fall from the tree in mid to late summer. Although elm leaf beetles cause a mess, elms seem vigorous enough to put on new sets of leaves each spring. The beetles can be controlled with the foliar sprays or systemic insecticides, although these may negatively impact other beneficial insects such as honeybees. Contact a Licensed Pesticide Applicator for control recommendations and services.

- **Why is topping bad for my tree?** Topping trees is not an accepted practice for several reasons and is not allowed on City trees. Topping trees creates bigger problems for trees when major limbs are stubbed back. This causes a flush of growth which has very weak attachments, leading to more limb breakage. Most trees will die within a few years because the majority of the leaf canopy has been removed. Without enough leaves, trees cannot manufacture the sugars and carbohydrates needed to sustain growth. You will likely end up having to pay again to have your tree removed. If your tree has major dead limbs or simply has outgrown its space, better to have it removed and replant with a tree that will fit the site. An alternative to topping which can reduce the size of a tree within injuring the tree is called “Drop Crotching”. Certified Arborists are familiar with this method of pruning and can professionally evaluate the condition of your tree in order to suggest the right course of action.
- **Where can I find information about caring for trees in the Truckee Meadows area?** You can find a host of information about proper tree care in our local area at the Truckee Meadows Community Forestry Coalition website at www.communityforestry.org. You can also call the University of Nevada Cooperative Extension at 775-784-4848, local nurseries, or a Certified Arborist in our area. For a list of Certified Arborists in Nevada visit the International Society of Arboriculture Website at www.isa-arbor.com. For a list of Approved Street Trees or other information call the Urban Forestry Office at 321-8371.
- **Will the City chip tree limbs from trees growing on my property and/or can I hire the City to chip, prune, or remove my trees?** The City cannot perform any tree work on privately owned trees; that is against the law because it’s considered a gift of public funds. That responsibility is up to individual property owners. The only exception is during an emergency such as a winter storm or major wind/rain event. In those events, City crews may clear the obstruction from the right-of-way regardless of who owns the tree(s). The City may pick up those limbs at that time that are on the street or within public rights-of-way but homeowners are responsible for any other limbs that are hanging over streets.

PUBLIC INPUT

The following comments regarding trees were received from the ReImagine Reno online survey from Phase I of the Master Plan Update process. In the survey, "landscaping and street trees" was ranked highly by the 4,025 survey participants, with an average score of 3.1 on a -5 to +5 scale. This is in 12th place among 31 attributes polled.

Trees and street landscaping were mentioned frequently in the write-in free responses. Many people cited increased street trees as critical to improving the appearance of the City, particularly downtown. Some noted additional environmental and social benefits such as clean air, shade and wildlife habitat. Some also expressed concerns for watering needs in a desert environment.

Free responses related to trees from the "Street Features" portion of the survey. (Note: these taken directly from the survey form without edits other than spelling).

- Drought and desert safe landscaping needs to be a priority. Reno needs to quit pretending it's the tropics!
- We need Edible, pollinator-friendly, soil enriching landscapes (permaculture principles).
- We need Fruit trees in parks for free grazing.
- I would like to see more cactus shrubs, flowers and trees and low water desert shrubs in our environment and city.
- It's important we keep street signs visible, especially for night drivers, as we have a tendency in Reno to let foliage overgrow and hide the names of the streets.
- We need landscaping that reflects the desert environment which we are in, as opposed to non-native trees, etc. The public landscaping seems to be denying that we're in a desert! I'd like to see more xeriscaping, less lawns, fewer trees.
- Landscaping & street trees as long as it's xeriscaping.
- We need mature trees.
- More trees please.
- No trees in medians. Medians are useless and do nothing but interfere with the flow of traffic.
- Planting trees that are not fruit is useless.
- Please incorporate native/drought tolerant landscaping. Reduce lawns and grass medians.
- Public areas not used for recreation should have xeriscaping
- Removal of all dead trees on private property owners needs to be enforced. It's horrible and it's unhealthy; bark beetle is taking over my NW neighborhood. Also it's a hazard we need to reduce the fuel of hot spots on private property in Reno City Limits. These laws need to be changed! I'm surrounded by neglected landlords that have all these dead trees in their backyard and beside my property line. Just drive all over the NW Reno and you will see what I'm talking about.
- Reno is not pedestrian friendly, and its streets are hot, need more shade trees and good sidewalks.
- Some city trees and plants but also xeriscape.
- The Urban Forester needs to wake up and allow larger trees adjacent to roads.

- Trees, trees and more trees!!!
- We need more Low Impact Development for stormwater runoff and more xeriscaping with LID.
- We were a tree city. We need to be again. Seedling trees are available from the Arbor Day society as are seeds our city foresters can grow here.
- Xeriscape and veggie gardens preferred.

Free responses related to trees provided in the general comments section at the very end of the survey:

- Pervious, or permeable, pavement and pavers along with cobble stones replacing asphalt and cement roads and walkways in order to allow for groundwater recharge and watering of trees.
- Plant and maintain many, many more trees. Avoid tendency for Las Vegas like xeriscaping.
- Downtown needs to be inviting, clean, beautifully cared for with lots of blooming flowers, vines, trees.
- Downtown needs to be cleaned up, street closed, and turned into pedestrian area with trees
- Encourage high rise buildings, tree lined streets and facilitate street art!
- The trees are important and the river is a gigantic influence but the drought has made that an issue to be considered.
- Close off portions of Virginia downtown to be a walking mall with trees, gardens and electric street cars for those that need transportation.
- I think we need to invest in bike lanes, safe walking areas and trees.
- We should make street lighting more attractive and plant more trees near the streets! We should introduce new trees to our town and make it greener!
- I want more trees and landscaping of walkways and around buildings, and on sides of streets.
- We should have more green space, pocket gardens and trees.
- More trees preserved or planted on building sites, especially new housing developments.
- There needs to be something done with home owners property owners to take responsibility to remove all DEAD trees on their property regarding if it's in the front yard or not. These diseased trees are spreading and no one is taking that into consideration! Bark beetle infected with dwarf mistletoe, plus these dead trees are fuel for a fire. Please address this ASAP.
- Walkable streets with boutiques, restaurants, and lots and lots of landscaping and trees.
- We need lots of trees on the Virginia Street corridor.
- More landscaping downtown, trails, trees, walkways, paintings.
- Consider native plants and trees to reduce water use, improve urban wildlife habitat, and create open spaces that showcase the beauty of the West.
- Love Reno for its trails (fabulous river walk), parks, trees and access to longer distance mountain hiking and biking.
- Plant more trees foliage, but decrease turf cover.



- More effort to take care of Virginia Lake, what wetlands are left, and the large trees in the whole valley. Let's not lose sight of the larger picture of nature.
- More local business downtown, focus on outdoor life, more trees, bike/ walking paths more emphasis on keeping downtown clean, and get rid of the scary riff-raff
- More trees downtown, clean up the river near Wingfield
- More trees, more parking downtown, better sidewalks. Although Midtown is finding itself, it needs to be pulled together better with parking, walking and TREES.
- Plenty of well-maintained green trees, respect for the riverfront.
- Neighborhood trees add a lot to attractiveness and quality of life.
- Suggest first phase is to clean up all aspects of city, that is graffiti removal, litter removal, plant drought resistant trees/bushes/flowers, remove blight, enforce current ordinances. Reno downtown needs to look like downtown Des Moines, Iowa... beautiful!
- Support robust landscape requirements and budget street tree planting/replacement.
- We need to get rid of all tall signs, digital signs, and billboards that clutter our commercial areas, reduce property values and act as deterrent to new business, residents and shoppers. It would also help very much if we could underground utilities and plant hundreds of new trees. As it is, when friends and relatives come for a visit I don't take them to Midtown or downtown. We go out of town to Truckee, Donner, Lake Tahoe, which is very sad for Reno.
- Trees beautify...plant them EVERYWHERE.
- We need more trees that can take the new climate. We need to use our waste water more efficiently and effectively. More trees will bring us more rain!
- We need more trees!!! :)
- Stop spending money on putting trees and plants in downtown Reno to increase the appeal, why don't you start helping the PEOPLE of Reno by empowering them to create a second chance. No matter how many trees you plant, Reno will always have a bad name if you do not help its population thrive.
- With the growing heat, I suggest an emphasis on trees which provide elegance, shade, wildlife habitat, and leisure.

APPROVED STREET TREE SPECIES

Tree species from the following list are approved by the RUFCA for planting in the City of Reno on parkways and other street locations. They are grouped by size class as determined by trunk diameter, height, and crown spread at maturity. The list below is in alphabetical order by scientific name; common names are also shown on the left. Other tree species not found on the approved list **may** be allowed for planting upon approval from the Urban Forester. For additional tree selections that may be appropriate for use on one’s own property, please visit the **Water Efficient Landscape Guide** located on the Truckee Meadows Water Authority (TMWA) web site.

Class I. Small Trees: Small trunk diameter (25’ or less in height), good for planting beneath power lines.

<u>Common Name</u>	<u>Botanical Name</u>
Trident Maple	<i>Acer buergeranum</i>
Hedge Maple.....	<i>Acer campestre</i>
Amur Maple	<i>Acer ginnala</i>
Tatarian Maple.....	<i>Acer tataricum</i>
Eastern Redbud.....	<i>Cercis canadensis</i>
Chitalpa	<i>Chilopsis linearis</i>
Turkish Hazel (Filbert).....	<i>Corylus colurna</i>
Smoke Tree	<i>Cotinus coggygria</i>
Thornless Cockspur Hawthorn.....	<i>Crataegus crus-galli ‘Inermis’</i>
Flowering Dogwood (Pagoda Dogwood)	<i>Cornus alternifolia</i>
Golden Raintree	<i>Koelreuteria paniculata</i>
Crabapple (non or small fruit bearing only).....	<i>Malus spp. (many varieties)</i>
Kwansan Cherry	<i>Prunus serrulata ‘Kwanzan’</i>
Columnar Sargent Cherry.....	<i>Prunus sargentii ‘Columnaris’</i>
Purple Leaf Flowering (non-fruit bearing) Plum	<i>Prunus cerasifera ‘Krauter Vesuvius’</i>
‘Canada Red’ Chokecherry.....	<i>Prunus virginiana ‘Canada Red’</i>
Japanese Tree Lilac	<i>Syringa reticulata</i>

Class II. Medium Trees: Moderate trunk diameter (30-50 feet in height)

<u>Common Name</u>	<u>Botanical Name</u>
Autumn Blaze Maple.....	<i>Acer x freemanii ‘Jeffersred’</i>
Norway Maple.....	<i>Acer platanoides</i>
Crimson Sentry Norway Maple	<i>Acer platanoides ‘Crimson Sentry’</i>
Sycamore Maple	<i>Acer pseudoplatanus</i>
Armstrong Maple	<i>Acer rubrum ‘Armstrong’</i>
October Glory Maple	<i>Acer rubrum ‘October Glory’</i>
Red Sunset Maple	<i>Acer rubrum ‘Franksred’</i>
Redpointe Maple	<i>Acer rubrum ‘Frank Jr.’PP</i>
Legacy Sugar Maple	<i>Acer saccharum ‘Legacy’</i>
Heritage River Birch	<i>Betula nigra ‘Cully’</i>
European Hornbeam.....	<i>Carpinus betulus</i>



Common Hackberry	<i>Celtis occidentalis</i>
Ginkgo – Maidenhair Tree	<i>Ginkgo biloba</i> ‘Magyar’
Honeylocust	<i>Gleditsia triacanthos</i> ‘Shademaster’
Sweetgum	<i>Liquidambar styraciflua</i> ‘Moraine’
Amur Corktree	<i>Phellodendron amurense</i> ‘His Majesty’
Chinese Pistache	<i>Pistacia chinensis</i>
Flowering Pear	<i>Pyrus calleryana</i> ‘Capital’ or ‘Chanticleer’
Chinkapin Oak	<i>Quercus muehlenbergii</i>
Columnar English Oak	<i>Quercus robur</i> ‘fastigiata’
Yellowwood	<i>Cladrastis lutea</i>
Japanese Zelcova	<i>Zelcova serrata</i>
American Hophornbeam	<i>Ostrya Virginia</i> (Birch Family)

Class III. Large Trees: Large trunk diameter (can reach heights over 50’)

<u>Common Name</u>	<u>Botanical Name</u>
Red Horsechestnut.....	<i>Aesculus x camea</i> ‘Briotii’
Ohio Buckeye	<i>Aesculus glabra</i>
Northern Catalpa	<i>Catalpa speciosa</i>
Hardy Rubber Tree.....	<i>Eucommia ulmoides</i>
European Beech	<i>Fagus sylvatica</i>
Kentucky Coffeetree	<i>Gymnocladus dioicus</i>
Tulip Tree	<i>Liriodendron tulipifera</i>
Japanese Pagoda Tree.....	<i>Sephora japonica</i>
London Planetree.....	<i>Platanus x acerfolia</i> ‘Bloodgood’
Linden spp	<i>Tilia spp.</i>
Swamp White Oak.....	<i>Quercus bicolor</i>
Scarlet Oak	<i>Quercus coccinea</i>
Shingle Oak	<i>Quercus imbricaria</i>
Valley Oak	<i>Quercus lobata</i>
Bur Oak.....	<i>Quercus macrocarpa</i>
Pin Oak	<i>Quercus palustris</i>
Northern Red Oak.....	<i>Quercus rubra</i>
Chinkapin Oak	<i>Quercus muehlenbergii</i>
Blue Oak	<i>Quercus douglasii</i>

Other species may be considered with the prior approval of the Urban Forester.



SPECIAL SELECTION OF APPROVED TREES

Columnar Trees – These selections have an upright growth form and are intended for narrow spaces with minimal setbacks so as not to conflict with pedestrian/vehicular travel or advertising signs near adjacent businesses. They may also be used for planting in 5'x5' tree pits for streetscape projects. Several selections on this list have been used in Reno to date and have shown good success. Planners and Landscape Architects are encouraged to use these selections in designing streetscapes and commercial properties. Columnar trees also make good screens or buffers along driveways or in backyards. Local nurseries are also encouraged to stock and promote the use of these tree types to clients and customers.

Columnar Norway Maple – Height 35' Spread 15'	<i>Acer platanoides</i> 'Columnar'
Crimson Sentry Maple – Height 25' Spread 15'	<i>Acer platanoides</i> 'Crimson Sentry'
Armstrong Maple – Height 45' Spread 15'	<i>Acer rubrum</i> 'Armstrong'
Apollo Maple – Height 25' Spread 10'	<i>Acer saccharum</i> 'Barrett Cole' PP
Frans Fontaine Hornbeam - Height 35' Spread 15'	<i>Carpinus betulus</i> 'Frans Fontaine'
Dawyck Purple Beech – Height 40' Spread 12'	<i>Fagus sylvatica</i> 'Dawyck Purple'
Fastigiata Beech – Height 45' Spread 15'	<i>Fagus sylvatica</i> 'Fastigiata'
Princeton Sentry Ginkgo – Height 40' Spread 15'	<i>Ginkgo biloba</i> 'Princeton Sentry'
Emerald Sentinel Sweetgum – Height 30' Spread 12'	<i>Liquidambar styraciflua</i> 'Clydesform'
Columnar Tulip Tree – Height 50' Spread 15'	<i>Liriodendron tulipifera</i> 'Fastigiatum'
Capital Pear – Height 35' Spread 12'	<i>Pyrus calleryana</i> 'Capital'
Green Pillar Oak – Height 50' Spread 15'	<i>Quercus palustris</i> 'Pringreen' PP
Crimson Spire Oak – Height 45' Spread 15'	
.....	<i>Quercus robur</i> x <i>Q. alba</i> 'Crimschmidt'
Corinthian Linden – Height 45' Spread 15'	<i>Tilia cordata</i> 'Corzam'

SPECIES NOT APPROVED FOR STREET TREES OR PARKWAYS

Box elder - box elder bugs and seeds are a nuisance	<i>Acer negundo</i>
Silver maple - weak/brittle wood	<i>Acer saccharinum</i>
Russian Olive - thorns and invasive species.....	<i>Eleagnus angustifolia</i>
Walnut – fruit and insects.....	<i>Juglans spp.</i>
Goldenchain tree – poisonous.....	<i>Laburnum anagyroides</i>
Aspen – not adaptable, shallow roots, diseases.....	<i>Populus tremuloides</i>
Cottonwood – weak/brittle wood, invasive roots, diseases	<i>Populus spp.</i>
Black Locust/Purple Robe Locust – limb failure high, borers	<i>Robinia spp.</i>
Willow – weak/brittle wood, invasive roots.....	<i>Salix spp.</i>
Tamarisk (Salt Cedar) – invasive/noxious weed listing.....	<i>Tamarix spp.</i>
Elm – Elm leaf beetle infestations, limb failures	<i>Ulmus spp.</i>
Ash spp – borers and disease.....	<i>Fraxinus spp.</i>

Fruit trees are not allowed along City streets.

