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The City of Austin
Urban Forestry Board

Austin's Urban Forest Plan

2013

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Austin's urban forest is a healthy and sustainable mix of trees, vegetation, and other components that comprise a contiguous and thriving ecosystem valued, protected, and cared for by the City and all of its citizens as an essential environmental, economic, and community asset.

Looking north across Lady Bird Lake at downtown | Credit: Epperson Realty Group

Acknowledgements

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Community Voices

Invest in maintenance of public trees.

Please plant edible vegetation.

We need lots of trees!! Save the ones we have and plant everywhere.

All through the plan-writing process, we asked for public input to help guide and prioritize the results of Austin's Urban Forest Plan. Engagement began in Spring 2012 and culminated in 9 separate events. A few comments are captured here from a "leaf-the-tree" event where citizens placed their concerns on a model tree. We asked, "what the City of Austin should do for trees and vegetation in our public spaces." Throughout this plan you will see citizen comments as they relate to specific performance measures and policies. For a full list of public comments please visit/see ...

We asked, "what should be done for trees and vegetation in our public spaces?"

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Preserve older trees and protect their critical root zone.

More native vegetation.

Plant shade trees in public cemeteries, including large species.

Establish standards for tree care that are based on scientific principles and applied uniformly.

Letter from UFB Page

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Introduction

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Austin's Urban Forest Plan at a Glance

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To be added (executive summary).

Introduction

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This chapter serves to introduce Austin's Urban Forest Plan by providing information on why we care about our trees and vegetation and the benefits derived from them. In addition, this chapter lays out Austin's vision, goals, and guiding principles.

WHAT IS AN URBAN FOREST?

BENEFITS OF THE URBAN FOREST

THE NEED FOR A PLAN

GOALS OF THE PLAN

PROCESS

A VISION FOR AUSTIN'S URBAN FOREST

GUIDING PRINCIPLES

COMMUNITY VOICES

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Austin is a vibrant and active outdoor community whose residents appreciate its varied outdoor amenities. Trees and vegetation are vital to Austin's outdoor urban spaces, and without a functioning urban forest, Austin would be a different landscape all together. Our parks, trails, sidewalks, and natural areas would look and feel very different, and the public lands, which connect and provide access to so many areas of Austin, would be barren without trees and vegetation.

WHAT IS AN URBAN FOREST?

An urban forest is "the aggregate of all community vegetation and green spaces that provide a myriad of environmental, health, and economic benefits for a community" (Sustainable Urban Forests Coalition, 2013). The urban forest does not stop at the edge of our local parks, natural areas, and green spaces. It includes trees located in homeowners' yards, along streets, within street medians, and along our waterways. In the U.S., urban foresters primarily focus on trees situated on public lands even though, in many cities, the majority urban forest is situated on private land and forest ecosystems exist beyond political boundaries. Despite this reality, this plan focuses on trees located on public lands over which the City of Austin can exert its influence.

Credit: City of Austin, Urban Forestry Program

Kayakers on Barton Creek

BENEFITS OF THE URBAN FOREST

Today, urban forests are increasingly considered an element of a much larger green infrastructure (GI) network providing benefits to humans (Benepe, 2013, ImagineAustin, 2012; Young, 2011; American Planning Association, 2009). Within this network, the urban forest plays an integral role in the health and vitality of Austin by providing social, ecological, and economic benefits to the community and by enhancing the quality of life for Austin residents. The following are a few benefits commonly provided by trees:

Figure 1.1 |Tree Benefits

Environmental	Frequently Cited Sources
• Air pollution removal	Nowak et al. 2006; Nowak 2002; Akbari et al. 2001
• Noise pollution reduction	Nowak et al. 2006; Nowak 2002; Akbari et al. 2001
• Water quality enhancement	Cappiella et al. 2005
• Carbon sequestration	Nowak et al. 2002
• Rainfall/stormwater interception	Nowak et al. 2007; Raciti et al. 2006; Beattie et al. 2000
• Flood mitigation	Cappiella et al. 2005
• Urban heat island mitigation	Streiling & Matzarakis 2003; Akbari et al. 2001; Rosenfeld et al. 1998
• Shading/reducing energy usage	Donovan & Butry, 2009; Akbari et al. 2001
• Controlled stream channel erosion	Raciti et al. 2006; Cappiella et al. 2005
• Habitat provided for wildlife	Rudd et al. 2002; Fernandez-Juricic, 2000

Social	Frequently Cited Sources
• Crime reduction	White et al. 2011; Donovan & Prestemon, 2010
• Traffic calming	Naderi, 2008
• Increased public health	Bell et al. 2008; Mitchell & Popham, 2008; Lovasi et al. 2008

Economic	Frequently Cited Sources
• Increased property values	Donovan & Butry, 2011; Donovan & Butry, 2010; Crownover, 1991
• Improved business	Werner et al. 2001; Wolf, 2004

Many Austinites are aware of the benefits provided by trees, and have been concerned with the health of their urban forest. Accelerated land development, harsh environments brought on by climate change, recent drought levels, an increasingly more built environment, and public safety related to an aging tree population are but a few major tree-related concerns associated with our urban forest in Austin. In addition, the fact that trees traditionally do not propagate themselves in an urban area, like they do in natural ecosystems, means the urban forest will not replenish itself as successfully without human intervention.

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THE NEED FOR A PLAN

The need for a comprehensive urban forest plan was officially established in Austin's City Code in 1992 (§ 6-3-5). With population growth in Austin trending upward with each consecutive decade with a population change of over 30% over the last 4 decades (ImagineAustin, 2012) the need to strategically approach the care and replenishment of the urban forest has reached a decisive point. Impacts from continuing growth and development, combined with long term drought conditions have created an imperative to move forward with the development of a broad-scoped, comprehensive urban forest plan.

GOALS OF THE PLAN

- Establish a broad-scoped, long range vision for Austin's urban forest.
- Provide a road map to implementation to reach the vision for the urban forest.
- Provide a framework for City departments to use as a guide for managing their urban forest resources.

With a comprehensive plan in place to support Austin's urban forest the City will be able to better support the health and vitality of the community and its public spaces, and manage the needs of a dynamic component of the City's infrastructure. Of primary concern is to ensure public well-being and safety, and enhance the benefits of the urban forest through preservation, care and maintenance, and replenishment. A thriving, healthy urban forest is a reflection of the City's ability to preserve individual trees and vegetation communities, restore and/or repair degraded lands, protect lands for environmental services, encourage the removal of non-native, invasive species, and replant trees and vegetation.

PROCESS

The Urban Forestry Board, established by Austin City Code § 2-1-183, was tasked with developing and subsequently revising a comprehensive urban forest plan with administrative assistance from the City of Austin Urban Forester. The Urban Forestry Board is currently comprised of 7 City Council appointed

members and acts in an advisory capacity to the City Council, the City Manager, and the director of the Parks and Recreation Department in all matters related to the urban forest. The duties of the Urban Forester (Austin City Code § 6-3-4), include management of the public urban forest, oversight and supervision of City departments' work involving urban forest management, and ensuring preservation and replenishment of the public urban forest.

Since 1992 attempts were made to develop the code mandated plan but none resulted in a final product. Working collaboratively the Urban Forestry Board and Urban Forester took up the cause in February 2011 and kicked off the process to produce Austin's first Comprehensive Urban Forest Plan. With renewed support and energy the Urban Forestry Board working group met often over the next three years.

Two public engagement initiatives were utilized to reach out into the community with the goal of engaging the public in a discussion on the topic of Austin's urban forest. In April 2012 a public meeting was held for comment on the urban forest plan vision statement, vision components and guiding principles. A broad topic Urban Forest Opinion Poll was also conducted through an online survey tool and received 900 responses. July 2013 featured pop-up Leaf the Tree Activities around town to gather a broad sampling of input from the community, and three surveys were initiated under the topics of policy, funding and performance indicators. In August 2013 a second public meeting was held as a community workshop and open house to prioritize resources and encourage face-to-face discussion.

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A VISION FOR AUSTIN'S URBAN FOREST

Austin's urban forest is a healthy and sustainable mix of trees, vegetation, and other components that comprise a contiguous and thriving ecosystem valued, protected, and cared for by the City and all of its citizens as an essential environmental, economic, and community asset.

VISION COMPONENTS

Thriving

A thriving urban forest is one that is optimized according to site and ecosystem capacity.

Contiguous

A contiguous urban forest is composed of interconnected, forested corridors for transportation, community, recreation and wildlife throughout the city.

Healthy Ecosystem

A healthy urban forest is comprised of a diverse, native and uneven aged palate of species adapted to the unique growing conditions of ecosystem types.

Valued

A valued urban forest is recognized as an asset that is essential to the well-being of the community and the ecosystem.

Protected

Trees are protected through sustainable site design and land management practices so that long-term ecosystem health is maintained.

Cared For

A well cared for urban forest is proactively managed for health, longevity and safety.

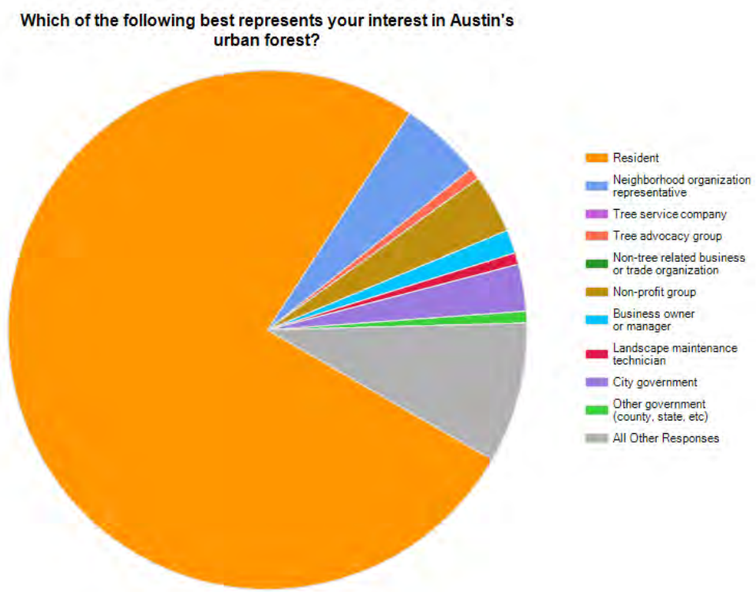
GUIDING PRINCIPLES

The guiding principles were established during the initial phase of the plan's development and apply to all areas of the plan and its development.

1. **Greatest Good Philosophy**
2. **Wise Use of Resources**
3. **Sustainable**
4. **Science-Based Decision Making**
5. **Public Safety**
6. **Industry Recognized Best Management Practices**

Trees and vegetation bring many benefits to the city and with thoughtful planning the generations to follow this one will have a beautiful, healthy and robust urban forest to shade their streets, clean their air and support Austin's unique culture and high quality of life.

Figure 1.2 | Public Interest in Urban Forestry



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COMMUNITY VOICES

Public engagement efforts produced over 1,500 total responses, from online sources and multiple physical events that occurred throughout Austin. For more information on the public engagement process please see Appendix A. For a full list of comments please see Appendix B.

SURVEY RESULTS

Figure 1.3| Demographic Information from 2013 Community Surveys

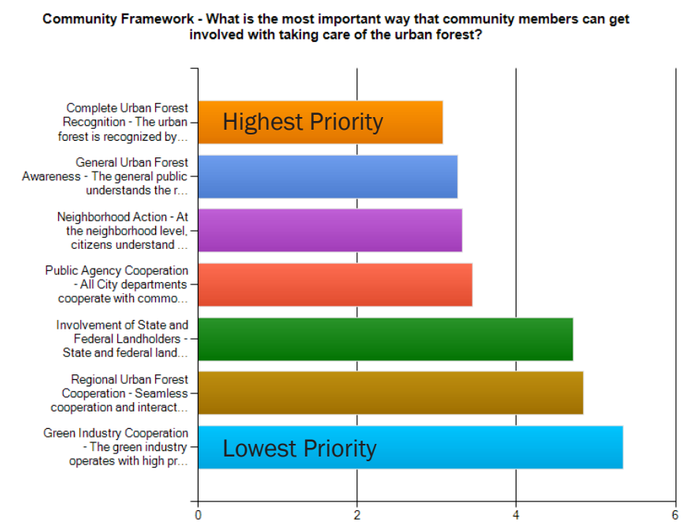

Figure 1.4 | Support and Planning Survey

"What is more important for the City to spend money on to keep the urban forest healthy?"

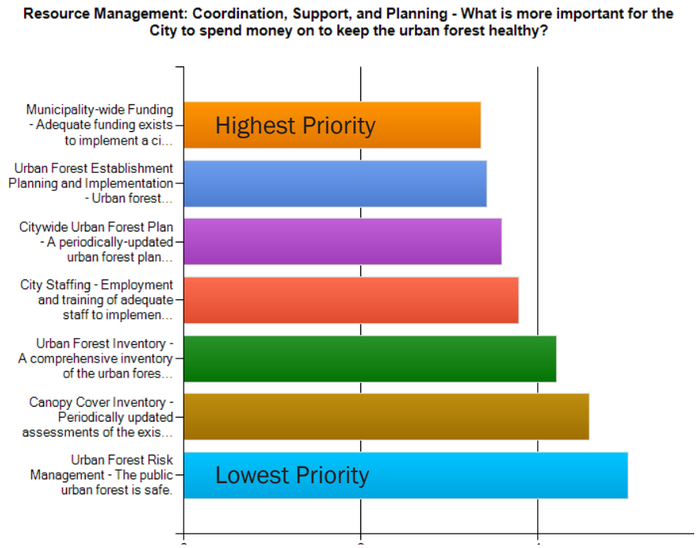

Figure 1.5 | Performance Indicator - Resource Management: Protection and Practices Survey

"What is more important for the City to focus on in order to protect our urban forest and manage it sustainably?"

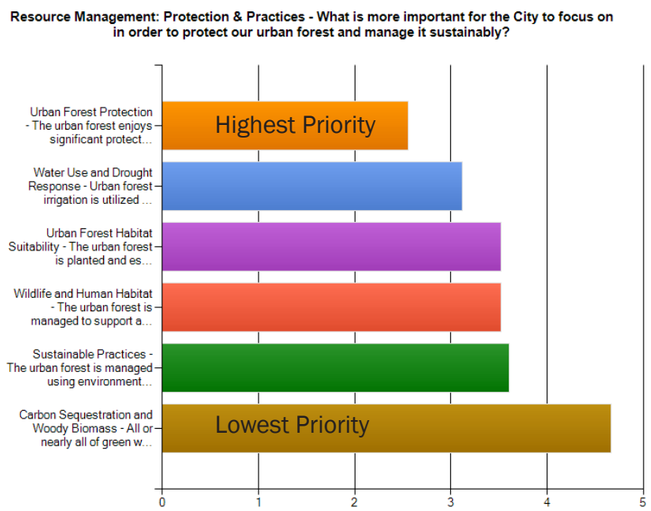

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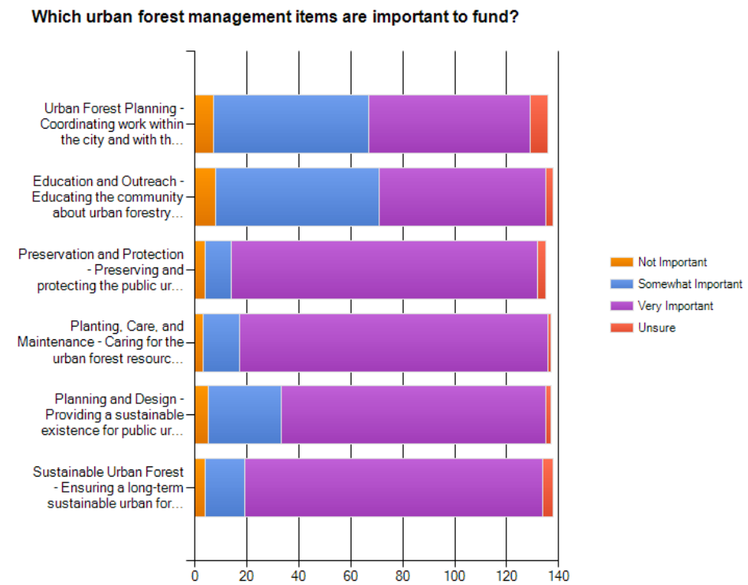
Figure 1.6 | Funding Prioritization Survey

"Which urban forest management items are important to fund?"



Goals for the Urban Forest

Figure 1.7 | Citizen Participant Goals

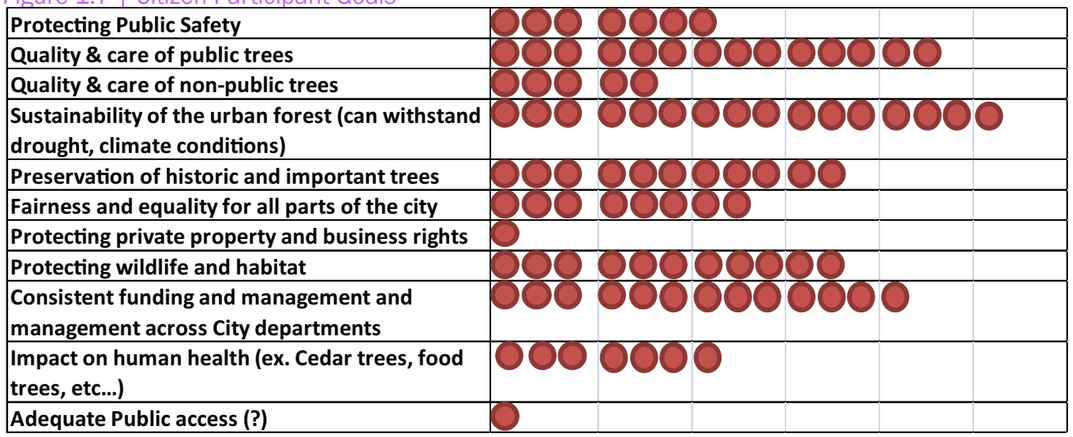
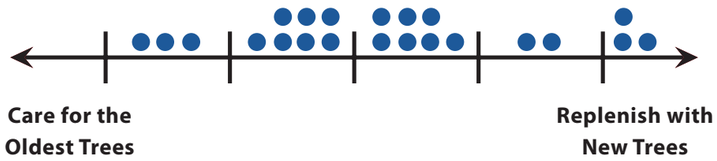


Figure 1.8 | Public Interest in Caring for Mature Trees vs. Planting New Trees

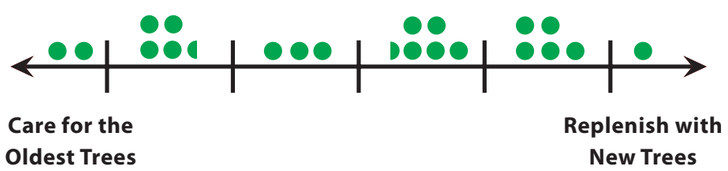
NOW



Care for the most mature trees	0	3	7	7	2	3	Replenish with new trees
	10			12			

Observation: On average people seem to feel that resources are evenly distributed with a slight resource distribution towards new plantings.

FUTURE



Care for the most mature trees	2	4.5	3	5.5	5	1	Replenish with new trees
	9.5			11.5			

Observation: Replenishment with new trees had a small, two point higher average than resources for mature trees.

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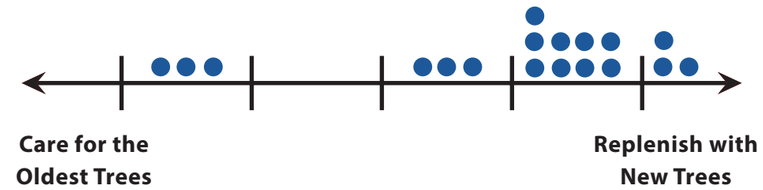
Figure 1.9 | Do a little (but not enough) for all trees versus Do enough for some (but not all) of the trees

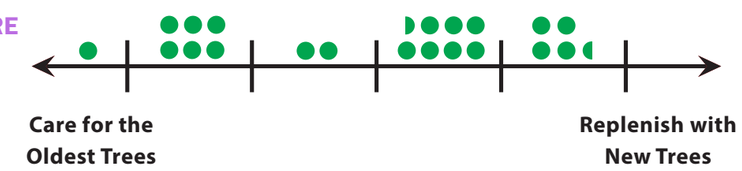
NOW



Do a little (but not enough) for all trees	3	0	3	4	9	3	Do enough for some (but not all) of the trees
	6			16			

Observation: There is a strong feeling that current resources are allocated to some trees but not all.

FUTURE



Care for the most mature trees	2	4.5	3	5.5	5	1	Replenish with new trees
	9.5			11.5			

Observation: On average people would like an even distribution of resources for all trees with a priority on some trees.

Speak Up Austin

- Top take-aways - TBA

Leaf the Tree Pop-Up Activity

- Top take-aways - TBA

State of Austin's Urban Forest

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This chapter serves to present baseline information regarding Austin's urban forest resources as they stand today. Such information helps in understanding our current situation and serves as a benchmark for monitoring present achievements against future goals.

REGIONAL CONTEXT

OUR URBAN FOREST'S HISTORY

INDICATORS OF SUSTAINABLE URBAN FORESTRY

- VEGETATIVE RESOURCE
- COMMUNITY FRAMEWORK
- RESOURCE MANAGEMENT

URBAN FORESTRY CHALLENGES

REGIONAL CONTEXT

The Austin metropolitan region is nested within multiple ecosystems delineated by similarities and differences in biotic and abiotic traits such as geology, vegetation, climate, soils, land uses, wildlife, and hydrology. When a small area's local ecosystems exhibit enough similarities in these traits over a larger geographic region, the area is deemed an ecoregion. Austin lies at the confluence of three ecoregions as defined by the Environmental Protection Agency (EPA) and the Texas Parks & Wildlife Department (TPWD). These regions include the Northern Blackland Prairie (including the Floodplains and Low Terraces of the Colorado River), the Edwards Plateau (including the Balcones Canyonlands and Live Oak-Mesquite Savanna subregions), and the Oak Woods and Prairies. A survey of Austin's local ecoregions serves as a base understanding of quality, quantity, and type of environmental resources existing within Central Texas. Such an understanding establishes and informs ecosystem management principles and policies contributing to a healthy and sustainable urban forest. In an attempt to contextualize Austin's regional forest resource, the following surveys the physical and cultural landscape of Austin that has historically shaped the state of our urban forest.

BALCONES ESCARPMENT

Austin straddles a major geologic formation—the Balcones Fault—an inactive yet distinct fault zone stretching north to Waco. The surface expression of the fault is the Balcones Escarpment which impacts local climate patterns and greatly influences east-west spanning ecosystems creating unique variation in vegetation types, soils, topography, species biodiversity, and climate patterns throughout the region.

Culturally speaking, the Balcones Escarpment is the natural feature influencing human settlement throughout Central Texas' history (Palmer, 1986; City of Austin, Community Inventory Report, 2011). Early European economies in Central Texas were delineated by arable soils. In the west, shallow clay soils covering limestone bedrock discouraged farming yet promoted cattle grazing, while the fertile black soils to the east promoted agriculture (Johnson). As a result, most of Austin's agricultural lands exist today east of Austin.

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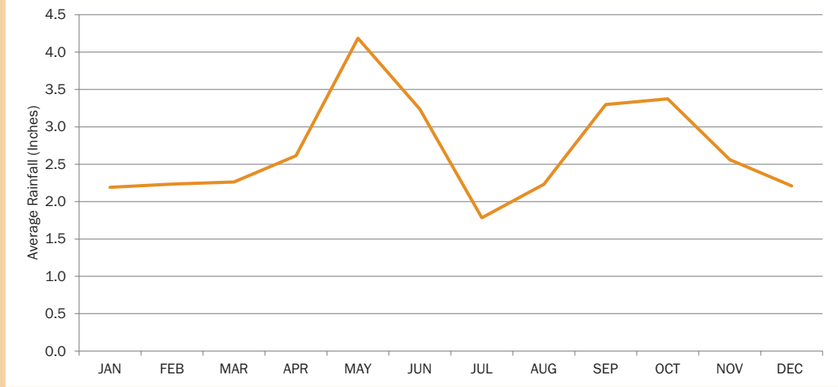
Case Study | Climate

Austin spans the climatic transition zone between the humid subtropics of east Texas and semiarid lands in west Texas. Weather patterns stem from Mexico's Atlantic and Pacific coasts. Occasional Arctic cold fronts intrude from the north. Summers are hot with temperatures exceeding 90°F most summer days, while winters are mild with daytime temperatures hovering around 50°F (NOAA, 2010). Austin experiences unreliable precipitation with peak rainfall typically occurring in May and September. Average yearly rainfall is near 30 inches, with periodic droughts and occasional flooding impacting normal precipitation levels. Because Austin sits between climatic regions, water levels are variable, which ultimately influences vegetative species growing throughout the Central Texas region.

Figure 2.1 | Average Monthly Precipitation in Austin (1942-2012)



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AUSTIN ECOREGIONS

Edwards Plateau | West of the Balcones Escarpment lies the Edwards Plateau. The plateau is an uplifted geological region and the largest of Austin's ecoregions. As one moves east in this region, the terrain becomes rugged with eroded limestone and granite rock forming what is known as the Texas Hill Country. Historically, the Edwards Plateau was a grassland savanna with intermittent forest patches. Originally, fire played a heavy role in determining vegetation types within the Edwards Plateau until wildfire suppression and overgrazing converted this area from grassland to brushland (Texas A&M Forest Service, 2008; Texas Parks & Wildlife, Edwards Plateau ecological region). As a result, Ashe juniper and mesquite dominate the landscape today as cattle avoid the juniper's bitter-tasting seed allowing for selective removal of other plant and tree species. Current land management practices have reintroduced controlled burns and employed "cedar choppers" to selectively eradicate the invasive cedar attempting to achieve grassland regrowth.

Balcones Canyonlands & Live Oak Mesquite Savanna | The Balcones Canyonlands and Live Oak-Mesquite Savanna subregions provide variation on the plateau. The Live Oak-Mesquite Savanna dominates most of the western and northern portion of the Edwards Plateau although intermittent finger-like portions exist in the eastern portion of the Plateau. The Live Oak-Mesquite Savanna subregion is dominated, as its name suggests, by mesquite shrubland and live oak trees. On the other hand, limestone canyons cut by tributaries of the Colorado River, identify the Balcones Canyonlands. Karst topography further characterizes the terrain—the result of acidic rainfall reacting with limestone bedrock, which creates Swiss cheese-like formations in the ground. Water percolation through the porous limestone contributes to recharge of the Edwards Aquifer below. Slopes are particularly steep along stream courses with soil depth varying by topography slopes and hilltops usually have thin soils whereas flat areas and lowlands have thicker soils. Vegetative cover in the Canyonlands consists of evergreen woodlands and deciduous forests composed of Texas mountain laurel, Lacey oak, black cherry, bigtooth maple, Ashe juniper, sumac, acacia, and honey mesquite.

Blackland Prairie | The Blackland Prairie is a grassland ecoregion covering the eastern portion of Austin. Its boundaries form a thin strip spanning from the Red River in the north to San Antonio in the south. Its Cretaceous chalk, marl, and limestone formations created productive black clay soils suitable for farming. Initially the prairie consisted of tallgrasses however agricultural production converted much of the terrain into cropland and grazing pastures (Texas Parks & Wildlife, Blackland Prairie ecological region). The region is identified as the most altered ecoregion in Texas with 1% of the native Blackland Prairie remaining today (Ramos & Gonzalez, 2011; Clymer Meadow Preserve website, 2013). Like the Edwards Plateau, this region was historically influenced by natural fires however human settlement has introduced woody vegetation including pecan, cedar elm, hackberry, mesquite, and various oaks.

Floodplains & Low Terraces | The Floodplains and Low Terraces subregion is part of the Blackland Prairie and includes the broad floodplains of the Colorado River. Historically, bottomland forests contained bur oak, Shumard oak, sugar hackberry, elm, ash, eastern cottonwood, and pecan although most forested land has been converted to agricultural land.

Oak Woods & Prairies | The Oak Woods and Prairies region is characteristic of savanna grasses, brushlands, and forest patches. Originally a diverse savanna of native grasses and patches of Post Oak trees, the region has given way to denser undergrowth due to fire suppression, farming, overgrazing, soil disturbance, and land parcelization beginning in the 1800s. Today, common species found in the region consist of blackjack oak, water oak, winged elm, hackberry, yaupon, and concentrations of loblolly pines near Bastrop.

Ashe juniper, *Juniperus ashei*

Native to Edwards Plateau. Provides habitat for the endangered Golden-cheeked Warbler. Major allergy irritant.

TX mountain laurel, *Sophora secundiflora*

Native to Edwards Plateau. Ornamental flowers give off grape-scented fragrance.

Honey mesquite, *Prosopis glandulosa*

Aggressive spreader native to both Edwards Plateau and Blackland Prairie. Produces nectar and thorns.

Lacey oak, *Quercus laceyi*

Native to Edwards Plateau. Resistant to oak wilt. Largest known specimen grows 50 miles west of Austin in Blanco, Texas.

Bigtooth maple, *Acer grandidentatum*

Native to Edwards Plateau. Leaves turn red and gold in fall.

Pecan, *Carya illinoinensis*

Native to Blackland Prairie. Official Texas state tree. Nut producing.

Southern live oak, *Quercus virginiana*

Native to Edwards Plateau and Blackland Prairie. Susceptible to oak wilt. Very popular shade tree.

Cedar elm, Ulmus crassifolia

Native to Edwards Plateau and Blackland Prairie. One of the most common species in Austin.

Figure 2.2 | Austin Ecoregions

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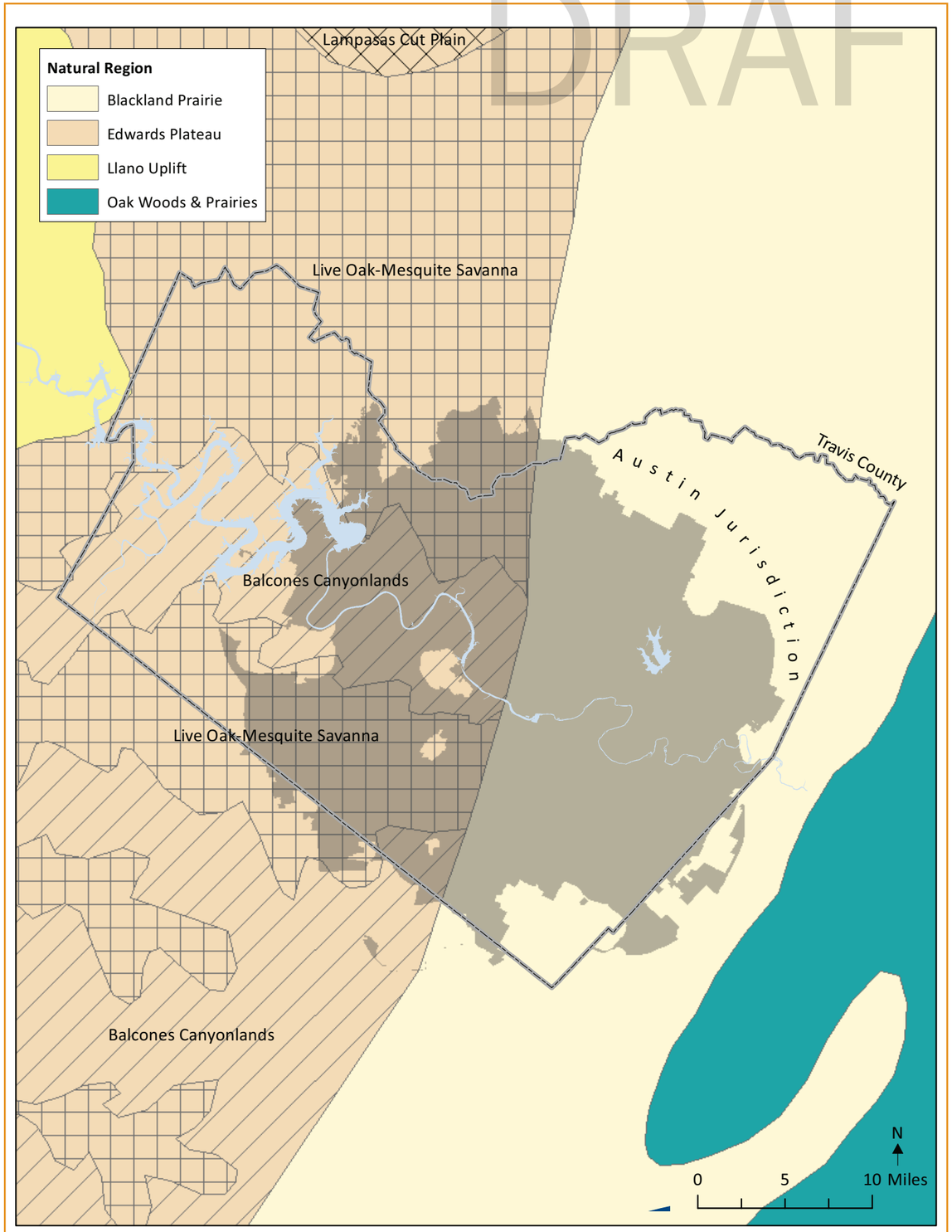

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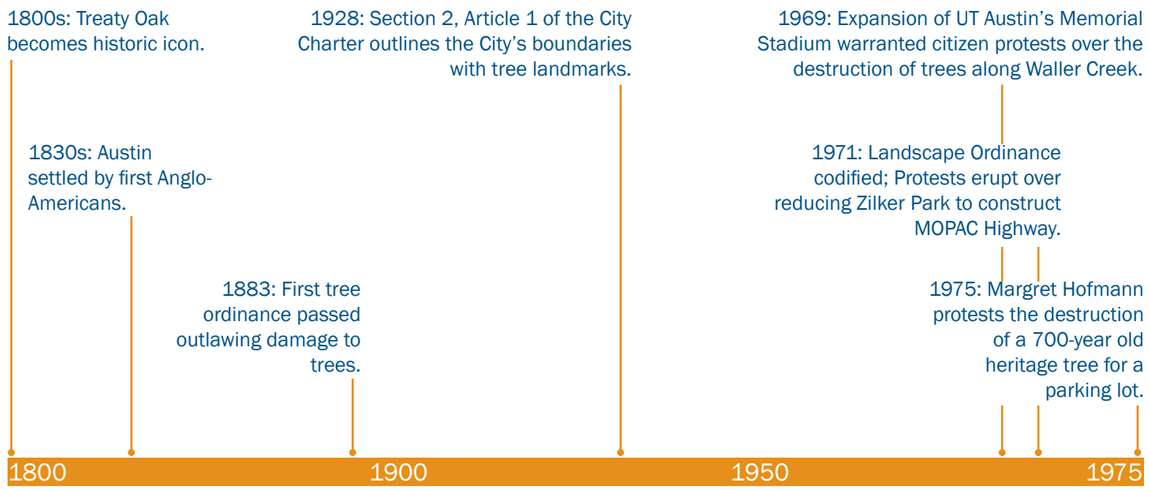

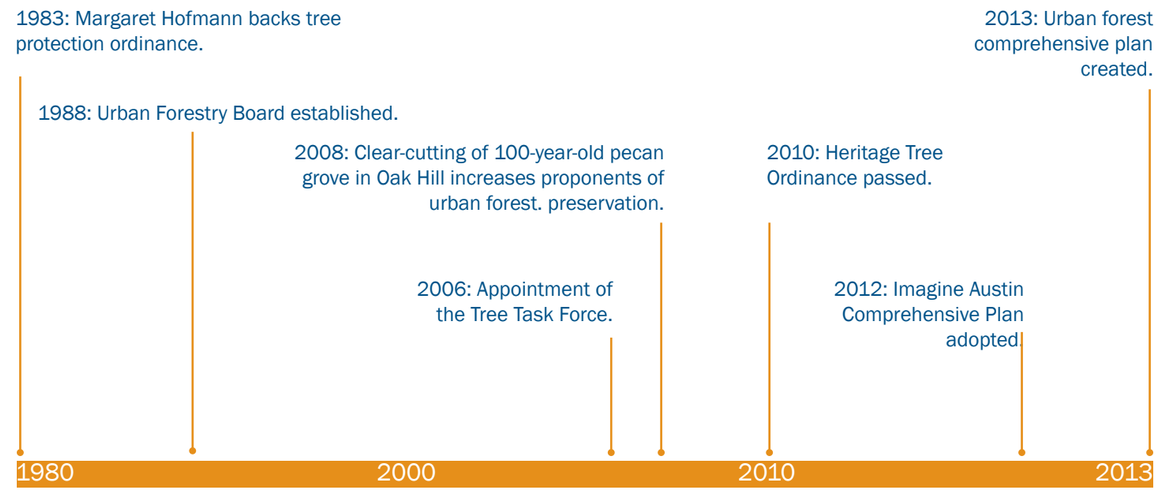

Treaty Oak

Austin 1873

MOPAC Construction 1960's

OUR URBAN FOREST'S HISTORY

Traveling to Austin in the 1850s, the legendary landscape architect Frederick Law Olmsted wrote, "the country around the town is rolling and picturesque, with many agreeable views of distant hills and a pleasant sprinkling of wood over prairie slopes" (Olmsted, 1978). Since then, Austin's natural landscape has changed greatly from a "sprinkling of wood over prairie slopes" to a forested city. This forestation is a result of the human activities and level of support for our urban forest throughout history. The importance of trees to Austinites is largely solidified in historical events and City rules initiated by local residents. These human actions continue to impact local policies and goals in preserving a healthy urban forest citywide. The following timeline details important historical events impacting Austin's urban forest over the years. City rules initiated by local residents. These human actions continue to impact local policies and goals in preserving a healthy urban forest citywide. The following timeline details important historical events impacting Austin's urban forest over the years.

Case Study | Austin's Tree Lady

Margret Hofmann was Austin's most well-known tree advocate. Hofmann's stardom as Austin's "Tree Lady" began in 1973 when she challenged the removal of an ancient Live Oak on South First Street establishing her "Think Trees" campaign. Soon after, Hofmann served a short-lived but influential City Council term from 1975 to 1977 in which she advocated protecting trees from destruction in the face of new development. Her efforts materialized in Austin's first major heritage tree registry and the passage of Austin's first modern tree protection ordinance in 1983. Hofmann's tree-minded legacy persists today, influencing local environmental activism and City decisions. In 2010, the City passed its Heritage Tree Ordinance to further protect Austin's aged urban forest; owing its formation to Hofmann. Her legacy is honored in the Margret Hofmann Oaks standing across from City Hall at the intersection of South 1st Street and Cesar Chavez Street.

Credit: Austin Chronicle

Margret Hofmann

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TBA

Augustus Koch's hand drawn map of Austin 1887 | Credit: Amon Carter Museum

INDICATORS OF SUSTAINABLE URBAN FORESTRY

The remaining three sections serve to present baseline information regarding Austin's urban forest resources. Such information helps in understanding our current situation and serves as a benchmark for monitoring present achievements against future goals. This analysis follows a nationally-recognized framework for evaluating strategic urban forest planning and management through the implementation of urban forestry criteria and indicators proposed by Kenney et al. (2011). This framework was born out of the Montréal Process in 1994 and modified from Clark et al. (1997). The following three sections mirror the Kenney et al. approaches to urban forestry sustainability: vegetative resource, community framework, and resource management. Each approach houses a set of criteria and performance indicators for measuring urban forestry management success. The following sections provide a snapshot of Austin's urban forest in terms of the most comprehensive indicators available at this time. The full list of Austin's performance indicators can be found in the ... matrix in Appendix ...

VEGETATIVE RESOURCE

The vegetative resource refers to the physical components of an urban forest related to vegetative growth. These components include but are not limited to trees, plants, grasses, soils, and water. Managing these physical resources by monitoring criteria such as tree canopy cover, age structure, and species diversity may ensure a healthy and resilient urban forest well into the future. This section covers the following indicators:

- Tree canopy distribution
- Species composition
- Age structure
- Tree condition
- Tree values and benefits

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Tree Canopy Distribution | Tree canopy is a simple measurement of an urban forest's spatial distribution. Canopy refers to a tree's aboveground layer of leaves, branches, and stems. When tree canopy density is high, we receive various benefits. These benefits include cleaning our air, cooling our homes through shading, and providing habitat for wildlife. Monitoring tree canopy distribution is one way to measure the health of our urban forest over time and to ensure we continue receiving benefits.

The percent of land covered by tree canopy provides a baseline indicator of an urban forest's extent, and is easily acquired with relatively little cost. Tree canopy covers an estimated 31% of Austin's land area (City of Austin's full purpose and 5 mile ETJ area) and has consistently decreased since the 1970's as shown in figure .... above (This percentage represents findings from 2006 aerial imagery. The 2010 drought has most likely decreased canopy cover across the city although the magnitude is unknown.). Recent declines in canopy cover are most likely attributed to natural factors such as extended drought periods, as well as human impacts such as urban development. To put these numbers into perspective, American Forests recommends 30% tree canopy cover within arid cities and 40% cover within humid cities. Since Austin lies at a climatic transition zone between humid and dry, identifying appropriate canopy levels for Austin proves difficult. Furthermore, establishing percent canopy goals can defeat the purpose of truly sustainable urban forestry practice and can place unnecessary resources (i.e. time, money, labor) in well-intentioned but poorly planned endeavors. Nevertheless, measuring tree canopy distribution helps to identify forest loss over time and to inform tree planting programs in underserved communities.

At the neighborhood level, variations in tree canopy distribution are more complex. Many areas with high population density actually contain some of the highest tree canopy cover (e.g. Hyde Park). In fact, residences and open space areas contain the largest shares of tree canopy cover in Austin. Map ... shows a clear distinction between east and west Austin with greater tree canopy cover occurring in west Austin, and lower tree canopy cover occurring in east Austin. For instance, the Edwards Plateau region to the west contains the

majority canopy coverage at 165,595 acres while the Blackland Prairie region to the east contains only 44,148 acres of tree canopy cover. This pattern is consistent with the natural and cultural histories of Central Texas, and reflects the domination of agricultural practices resulting in fewer trees, occurring in far east Austin. Additionally, the prevalence of high canopy cover reflects distributions of wealthier neighborhoods in west Austin while lower canopy cover percentages reflect distributions of less affluent neighborhoods in east Austin. Studies show a positive relationship between income and the demand for trees as rich communities have larger budgets and larger private lot sizes for trees to grow (Zhu & Zhang, 2008).

Figure 2.3 | Historic Tree Canopy Cover

Year	% Tree Canopy Cover	Source
1977	39%	Rodgers & Harris, 1983
1982	37%	Crownover, 1991
1990	34%	Crownover, 1991
1996	34%	American Forests, 1996
2006	31%	City of Austin, 2006
2010	...%	City of Austin, 2010

Austin Tree Canopy Map (Right) | Austin's tree canopy varies across the city. The map at right shows a clear distinction between east and west Austin with greater tree canopy cover occurring west of IH35 in the Edwards Plateau region, and lower tree canopy cover occurring east of IH35 in the Blackland Prairie region. Intuitively, many areas adjacent to or near water features show high tree canopy percentages.

Open space, single family, and undeveloped lands contain the highest distribution of tree canopy cover in the city. In open space park areas, the amount of land covered by tree canopy (37,705 acres) is substantial—roughly 50 times the size of Central Park in NYC.

Figure 2.4 | Percent Tree Canopy Cover in Austin, 2006

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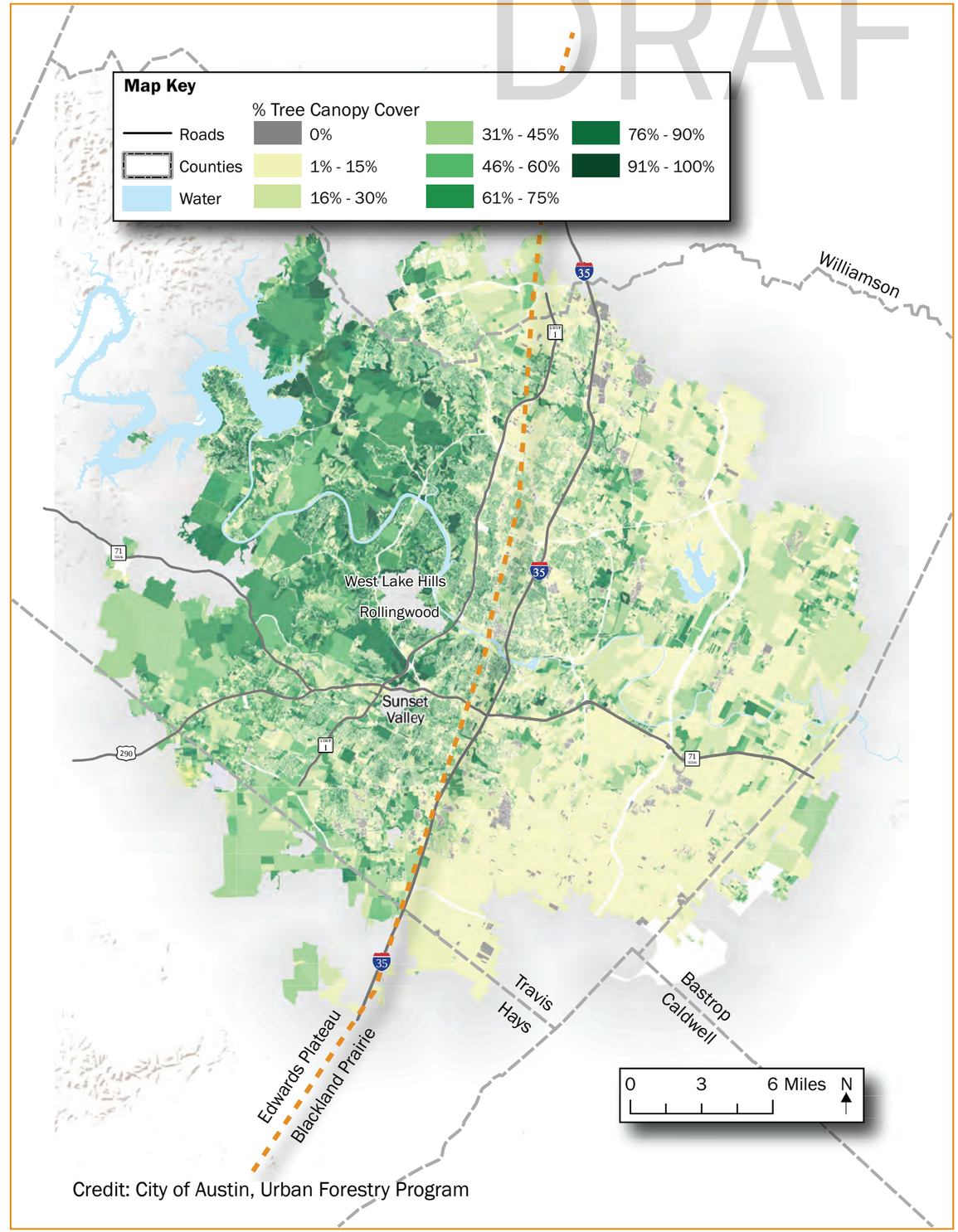

Credit: City of Austin, Urban Forestry Program

Case Study | Tree Inventory Assessment (2008)

Examining the characteristics of a city's tree population helps to understand the urban forest resource as it stands today and helps to prioritize future management focus. Species composition, age, condition, and tree values and benefits indicate the relative importance of individual tree species to Austin's urban forest.

A 2008 tree inventory sampled 14,925 park and ROW trees in Austin to gather information on tree attributes. The inventory estimates Austin's total public tree population at 325,000 trees comprising approximately 200,000 trees growing on Austin's developed park lands, and 125,000 trees growing adjacent to city streets. The inventory also indicated 190,940 planting spaces available in street ROWs. The 2008 inventory was limited by cost and time, so the true number of Austin's public trees is likely much higher.

Species Composition | Within transit corridors and parks, Austin's public tree population consists of 166 different species mostly comprised of deciduous trees. Cedar Elm (Ulmus crassifolia) is the dominate species followed by Southern Live Oak (Quercus virginiana) and Crape Myrtle (Lagerstroemia indica).

Over-mature oaks and semi-mature "weedy" trees thrive in many areas of Austin as well. Weedy trees, such as Glossy Privet (Ligustrum lucidum), were not surveyed in 2008 and are therefore not discussed in this section although it is important to mention they pose a significant challenge in park management as they crowd out native plants.

Species diversity ensures forest resiliency against arboreal diseases (i.e oak wilt) and devastating insect infestations (e.g. nitidulid beetle) for which certain tree species are sensitive. Figure ... shows the top 10 species represent 75% of the total tree population. According to recommended urban forestry standards (10/20/30 rule) concerning species diversity, no single species should comprise more than 10% of the total tree population, no single genus should comprise more than 20%, and no single family should comprise more than 30% (Clark et al, 1997). As shown in the graphs at right, the top 3 species each comprise over

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10% of the total tree population, while no single genus represents greater than 20% of the population (Chinaberry is listed as one of Austin's top 24 invasive species. The graph above shows its prevalence as Austin's eighth most common tree species within street right of ways and parks).

Figure 2.5 | Top 10 Species (ROW and Parks)

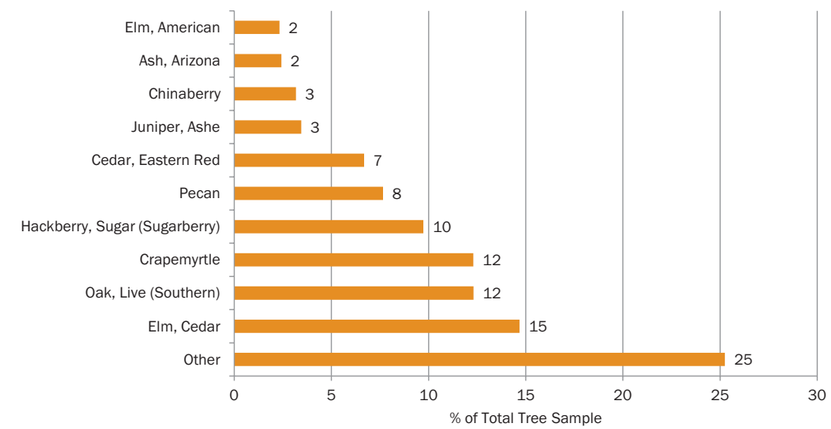
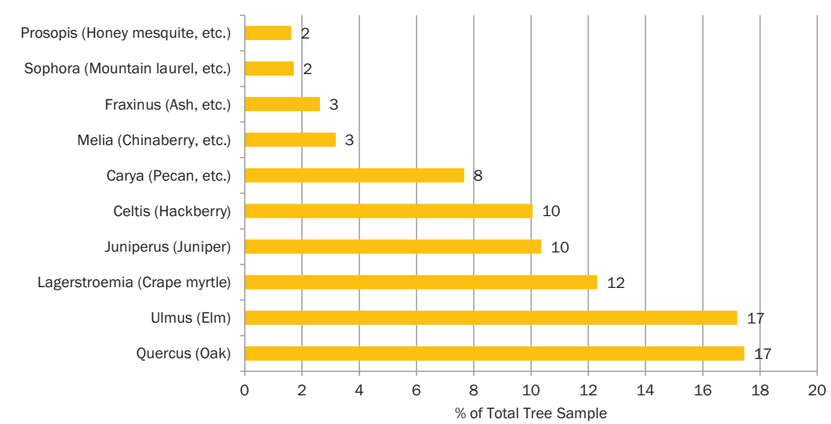


Figure 2.6 | Top 10 Genus (ROW and Parks)



Age Structure | Age structure refers to the abundance of individual trees in a population according to their age. Documenting a tree population's age structure provides insight into the overall age of trees, the value of individual tree species, and future maintenance costs. A diverse age structure of young to old trees ensures new generations replace older generations thus reducing the possibility that all trees in a forest will die simultaneously.

There exist multiple avenues for determining tree age. Measuring a tree's diameter at breast height (DBH), at 4.5 feet above the forest floor, is the easiest technique. A healthy urban forest consists of uneven age distributions where young trees (less than 8" in diameter) comprise a larger share of the total tree population relative to larger diameter classes (greater than 24 inches in diameter) to compensate for tree mortality. Richards (1983) suggests 40% of a tree population less than 8" DBH, 30% at 8"-16" DBH, 20% at 16"-24" DBH, and 10% greater than 24" DBH. Austin's street and park tree population follows closely to the Richards recommended DBH shares. Overall, Austin's tree age structure is skewed towards younger established trees, with 45% of the population consisting of young trees (less than 8 inches DBH), 49% of the population consisting of established trees (8-24 inches DBH), and roughly 6% of the total population representing mature trees (greater than 24 inches DBH).

Of the top 10 public tree species in Austin, Crape Myrtle (Lagerstroemia indica 92%), Sugarberry (Celtis laevigata 51%), and Chinaberry (Melia azedarach 52%) all have their largest share of trees in the small size class (<8 inches DBH). Considering large-stature trees, Pecan (Carya illinoinensis 23%) and Southern Live Oak (Quercus virginiana 19%) represent the largest single shares in the large class size (>24 inches DBH).

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Figure 2.7 | Top 5 Most Common Species by DBH Class

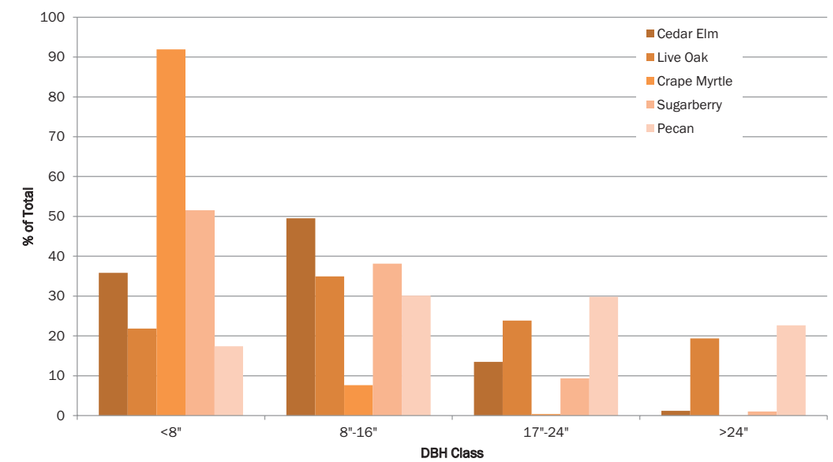
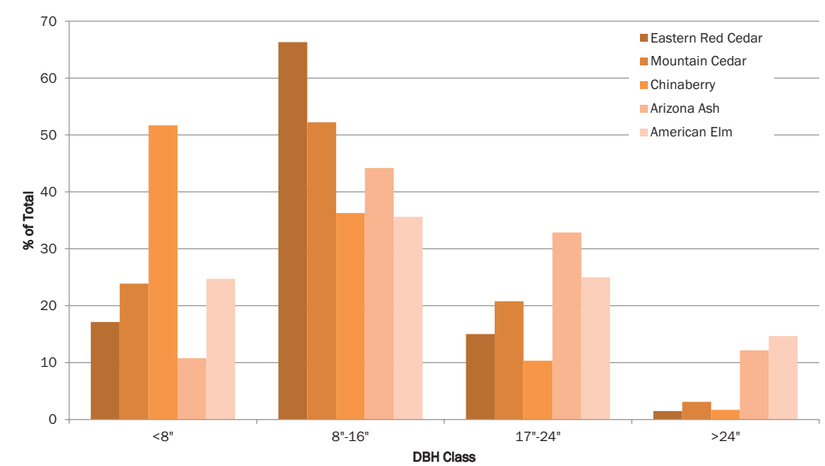


Figure 2.8 | Top 6-10 Most Common Species by DBH Class



Tree Condition | Tree condition refers to the general health of a tree and provides insight into hazardous risks to the community. By evaluating the condition of the urban forest we are then able to determine cost effective methods for improving and enhancing overall forest health and risk. Determining overall condition of tree structure (wood), functional (leaf) health, and assigning risk factor ratings can be accomplished by ground-level sight inspections. Austin trees are assessed and grouped into the following 4 categories of condition: good, fair, poor, and dead or dying. The following figures show the majority of structural (wood) health of trees is fair to poor whereas the majority of functional (leaf) health is good to fair.

Figure 2.9 | Structural (Wood) Condition by Percentage

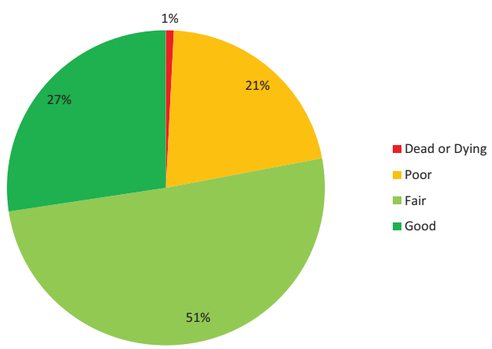
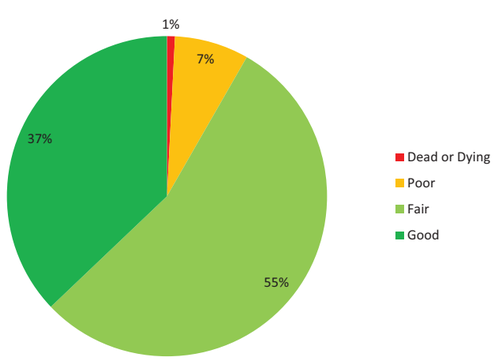


Figure 2.10 | Functional (foliage) Condition by Percentage



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From this information, it was determined in 2008 that many trees, in poor health (Sugarberry, Chinaberry Southern Live Oak, Pecans, and Cedar Elm), required priority removal in 2008. Southern Live Oaks and Cedar Elms, in the street ROW, and Pecans, in parks, required high priority trimming. Though the trends initially point to Cedar Elm and Southern Live Oak being categorized as troublesome, these species also represent 15% and 12% of trees in the survey and therefore understandably exhibit these high numbers.

Tree Values and Benefits | Today, urban forests are increasingly considered an element of a much larger green infrastructure network providing benefits to people (Benepe, 2013, ImagineAustin, 2012; Young, 2011; American Planning Association [APA], 2009). Cities are increasingly suffering cut backs in state and federal funding coupled with lack of political leverage to raise taxes. Simultaneously cities face increased demands for more and more projects (e.g. roadway repair, affordable housing, and expansion of public safety facilities). Consequently urban greening projects must compete for funding. Thus the case for tree planting campaigns, for example, must be made through quantitative arguments assigning dollar values to the benefits and costs associated with trees as green infrastructure elements. This translates to the economic language for which citizens and policy makers most immediately understand. The Figure 9 displays the most recent cost/benefit analysis of Austin's public ROW trees (The financial values of Austin's public street trees were calculated using i-Tree Street (formerly STRATUM)—a nationally-recognized software developed by the U.S. Forest Service. The software calculates costs and benefits of trees in dollar values according to species type, condition, size, and benefit prices (e.g. cost of electricity per kWh) according to local market conditions. Public park trees were omitted in this analysis because i-Tree Street only calculates cost/benefit statistics for street trees.). These numbers prove Austin's public trees as valuable green infrastructure elements regarding the ecosystem services they provide.

Figure 2.11 | Cost-Benefit of Public Street Trees

Benefits	Total $ Value	$ value/tree	$ value/capita
Energy	1,318,664	8.47	1.78
CO2	308,729	1.98	0.42
Air Quality	147,872	0.95	0.20
Stormwater	2,948,331	18.93	3.99
Aesthetics	5,528,383	35.49	7.48
Total	**10,251,979**	**65.82**	**13.87**

Costs	Total $ Value	$ value/tree	$ value/capita
Planting	25,314	0.16	0.03
Contract pruning	429,099	2.75	0.58
Pest mgmt.	0	0.00	0
Irrigation	125,816	0.81	0.17
Removal	183,899	1.18	0.25
Administration	69,634	0.45	0.09
Inspection/service	90,195	0.58	0.12
Infrastructure repair	0	0.00	0
litter clean up	114,916	0.74	0.16
liability/claims	0	0.00	0
Other costs	0	0.00	0
Total	**1,038,873**	**6.67**	**1.40**
Net Benefits	**9,213,106**	**59.15**	**12.46**
Benefit-cost ratio	**9.87**		

Case Study | Deadwood

This refers to dead trees and limbs such as standing, yet no longer living, "snag" trees or downed logs. Although often regarded as a nuisance or threat to public health, deadwood provides an essential role in supporting wildlife and enhancing biologic processes. Birds, mammals, reptiles, amphibians, invertebrates, and various decomposers seek refuge in, on, or underneath deadwood. The presence of deadwood not only provides habitat but also facilitates the release of vital nutrients back into the urban forest ecosystem. Deadwood is a prime example of an essential yet often overlooked benefit of the urban forest.

Log near Lady Bird Lake Trail

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Implementation

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Chapter 3 outlines implementation—the process of fulfilling goals and visions of the community. It involves policy measures to effect positive change within our urban forest. Our policies parallel the broad scope of this plan, as they are general and strategic, intending to change departmental urban forestry management.

IMPLEMENTATION GOALS

POLICY ELEMENTS

URBAN FORESTER IMPLEMENTATION RESPONSIBILITIES

IMPLEMENTATION GOALS

In order for a comprehensive plan to be effective and produce change implementation of the plan must spell out clear, measurable objectives. These objectives must be broad to accommodate the broad scope of the Plan, the strategic purpose (as opposed to a tactical purpose) of the plan, and because implementation is the first step in a transformation of public urban forest management. The success of the Plan will be measured in terms of the City's response to addressing the items laid out in the form of the Departmental Operational Plans and in making strides in advancing the Urban Forester functions. If implementation goals are met, there should be a marked change in the Performance Indicators, which, as a whole, can be considered a report card on the City's urban forest resource management.

GUIDELINES

Time Frame: The time frame for the AUFP is 10 years. Ten years from when the Plan is adopted, a revised Comprehensive Urban Forest Plan will be created to reflect broad changes in the community that occur during that time.

Reporting: An annual State of the Urban Forest Report will be developed by the Urban Forester to report on the status and trend of the Performance Indicators as well as Departmental progress on developing Departmental Operational Plans to address the Policy Elements.

Public Input: Much of the public input received for Austin's Urban Forest Plan is tactical in nature. In many instances, specific geographic areas or management practices are mentioned. Because the AUFP is a broad, strategic document that is not intended to spell out specific changes to operations performed by City Departments, much of the public input received for the AUFP will be shared with City Departments and will be used to guide the development of Departmental Operational Plans.

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IMPLEMENTATION STRATEGIES

Based on feedback from the community, Urban Forestry Board, and staff, these implementation strategies will be turned into goals for the Plan.

Overall strategies:

- City Departments to develop tactical Departmental Operational Plans based on the AUFP and addressing the Policy Elements
- Citywide follow-up items are implemented by the Urban Forester
- Improvement of Performance Indicators
- Mechanism established for interdepartmental coordination on urban forest decision-making
- City of Austin alignment with national standards or benchmarks for urban forest management, especially related to management structure and funding

GOALS

TBD

POLICY ELEMENTS

The Policy Elements are the guiding framework of Austin's Comprehensive Urban Forest Plan. Individual Policy Elements are seeds of change, which, collectively, provide an overall strategy for achieving the vision for Austin's urban forest. In conjunction with the other parts of this Plan they provide a comprehensive approach to urban forest planning and will ultimately guide the management of Austin's public urban forest resource. However, since the municipal functions that affect the urban forest, both directly and indirectly, are so varied and widespread across numerous City departments, each single Policy Element must be broad enough to encompass all of those functions. Accordingly, the tactical approach to addressing each Policy Element will be the responsibility of each City department, documented in a Departmental Operational Plan (DOP) developed in consideration of their mission(s), limitations and constraints, and opportunities.

CITY STAFF INPUT

Interdepartmental staff provided feedback and edits to the Policy Elements prior to final editing by the Urban Forestry Board. The following departments provided feedback:

Parks and Recreation Department
Planning and Development Review Department
Austin Fire Department
Austin Water Utility
Watershed Protection Department
Austin Bergstrom International Airport
Office of Sustainability
Public Works Department
Austin Transportation Department

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PUBLIC INPUT

Public input was sought in determining which topical categories are most important for the Austin community. The order in which the Policy Element Categories will appear indicates the order of importance to the Austin community based on the input collected. City departments should note which Categories are most important to the community and prioritize those in the course of implementing the Departmental Operational Plans (DOP's). With guidance and support from the Urban Forester, each City department the interfaces with the urban forest will be required to report on their annual progress in addressing each Policy Element.

Figure 3.1 | Funding the Urban Forest Exercise

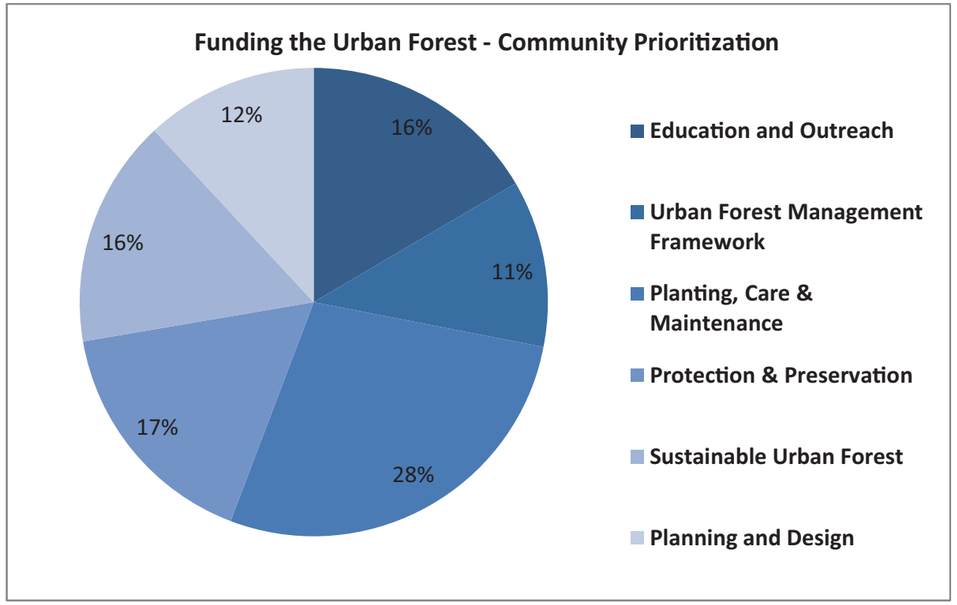
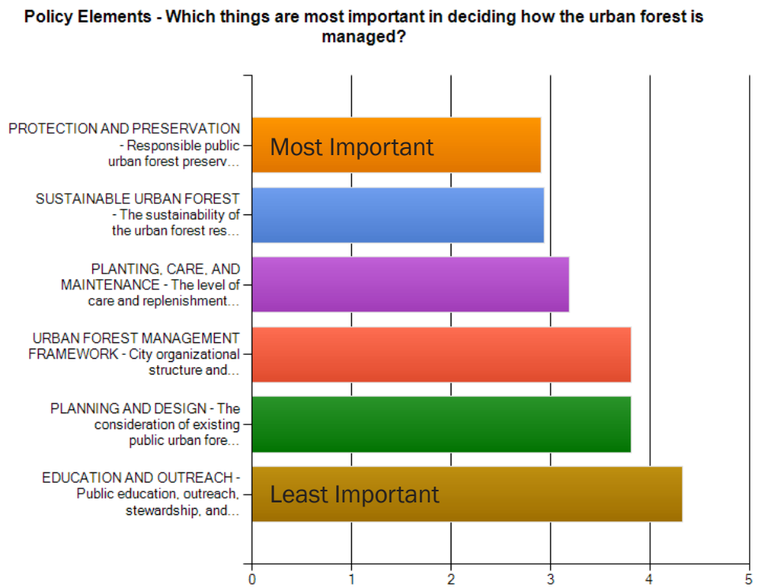


Figure 3.2 | Policy Element Prioritization Exercise



The Policy Element "Test" | Policy Elements are grouped into categories based on their urban forest topical category. The following questions were considered in determining the relevance and appropriateness of including each Policy Element:

- Does this policy element support the CUFP vision?
- Does this policy element support the guiding principles?
- Is this policy element pertinent to public trees and vegetation?
- Is this policy element comprehensive?
- Does this policy element say "what" and not "how"?
- Is this policy element strategic and not tactical or operational?
- Will this policy element be relevant for the next 10-20 years?

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THE POLICY ELEMENT CATEGORIES (Prioritized from public input)

- PROTECTION AND PRESERVATION
- SUSTAINABLE URBAN FOREST
- PLANTING, CARE, AND MAINTENANCE
- URBAN FOREST MANAGEMENT FRAMEWORK
- PLANNING AND DESIGN
- EDUCATION AND OUTREACH

PROTECTION AND PRESERVATION

Policies related to preservation of public urban forest resources through regulation and other approaches that enhance preservation.

PR-1 Flexible Regulatory Approaches

In consideration of differing land uses and characteristics, develop and implement regulatory approaches in a manner that provides flexibility in the preservation of the urban forest. Examine regulations to identify and modify disincentives for urban forest preservation.

PR-2 Protection of Trees During Development

Evaluate and enhance current policies for public urban forest protection during and after development to promote the long-term health and survival of trees and vegetation retained during development.

PR-3 Protect Steep Slopes

Increase retention of existing trees and vegetation that help stabilize steep slope areas in order to increase public safety, maintain slope stability, decrease soil erosion, and retain environmental function and natural character.

PR-4 Partnerships

Partner with federal, state, regional, and local governmental jurisdictions, community non-profit organizations, other City departments, the private sector and others to increase preservation and protection of the urban forest.

PR-5 View Obstructions

Establish incentives, regulations and education efforts to reduce conflicts between public and private interest and prioritize the urban forest in decisions regarding eliminating scenic or commercial view obstructions, except with regard to public safety or in established view corridors.

PR-6 Vegetation Valuation
Support and update tree valuation methods to closely reflect the complete functional value of vegetation for use when assessing fines, determining damages or estimating loss.

PR-7 Recovering Vegetation Value
When preservation of trees and vegetation is not feasible, recover the complete functional value of the lost resource and mitigate the loss as close in proximity to the loss and as soon as possible.

PR-8 Prominent Rare Urban Forest Elements
Provide additional protection for prominent, sensitive, native, and/or rare urban forest elements during and after development. Protect trees based on species type/habitats.

SUSTAINABLE URBAN FOREST
Sustainable Urban Forest policies are related to sustainability of the urban forest resource itself and the resources related to its management, such as water (and city assets).

S-1 Species, Age, and Geographic Diversity
Increase species diversity, a regionally-appropriate mix of vegetation, mixed-age populations and a varied distribution of species throughout the City to protect and improve the vigor and the resilience of our urban forest. Align urban forest composition with consideration of predicted climate patterns.

S-2 Urban Wood Utilization
Recycle green waste generated by urban forest maintenance and encourage the highest and best sustainable uses of removed trees and woody material, including reuse on site. Strive for 100% green waste recycling or reuse.

S-3 Integrated Pest Management
Incorporate Integrated Pest Management principles into land management practices.

S-4 Wildlife Habitat
Enhance wildlife habitat to the maximum extent based on site use through urban forestry policies, design and management practices.

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S-5 Wildfire Risk
Achieve a balance between community desires for wildfire risk reduction and responsible vegetation management especially within the Wildland Urban Interface

S-6 Invasive Species Management
Identify and suppress non-native invasive species. Provide public education about the detriment of non-native invasive species to the urban forest particularly when related to other management policies.

S-7 Water Conservation
Minimize the need for supplemental irrigation of public trees and vegetation during design and maintenance planning. When utilizing water for supplemental irrigation of public trees and vegetation, maximize the use of non-potable sources (e.g., stormwater, reclaimed water) and adopt practices that conserve potable sources.

S-8 Urban Forest Pests
Using the principles and practices of Integrated Pest Management, identify, plan for, and respond to critical urban forest pests to reduce their impact on the community's urban forest.

S-9 Partnership
Partner with federal, state, regional, and local governmental jurisdictions, community non-profit organizations, the private sector and others to accomplish the sustainability goals of Austin's urban forest ecosystem.

PLANTING, CARE, AND MAINTENANCE
Planting, care and maintenance policies are related to the consideration of existing public urban forest resources and proactive planning for sustainable future urban forest resources, understanding inherent conflict between active site use and healthy forests.

PCM-1 Planting Priorities
Prioritize tree planting and landscaping on public property particularly in highly visible locations such as business districts and major corridors to maximize environmental, social and economic benefits. Avoid and/or minimize conflicts with existing public infrastructure.

PCM-2 Species Selection
Encourage the selection of appropriate native species based on project, location, site conditions, and potential future changes in climate patterns.

PCM-3 Urban Forest Planting and Maintenance Plan and Program
Establish and maintain a strategic planting and maintenance program based on national standards and best management practices. Promote the long-term survival of the urban forest through proactive maintenance to reduce resources expended on reactive or emergency response, to maximize urban forest benefits, and reduce urban forest mortality.

PCM-4 Planting Stock
Utilize high-quality planting stock originating from Central Texas region seed-sources and grown in nurseries that simulate Central Texas growing conditions.

PCM-5 Tree Canopy Cover
Identify canopy goals according to site and ecosystem capacity and develop a plan to achieve them.

PCM-6 Landscape Maintenance Management Plans
Ensure that trees and vegetation are properly cared for and survive, both during the plant establishment period and in perpetuity through such means as landscape management plans, maintenance agreements, and/or monitoring.

PCM-7 Partnerships
Partner with federal, state, regional, and local governmental jurisdictions, community non-profit organizations, City of Austin departments, the private sector and others to increase the replenishment, maintenance and care of Austin's urban forest.

PCM-8 Public Safety
Take reasonable measures to reduce risk of urban forest elements that impact public health and safety.

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URBAN FOREST MANAGEMENT FRAMEWORK
Policies related to City organizational structure and staffing levels, staff qualifications, involvement of City forestry staff in other City disciplines and functions, and funding for urban forest programs and efforts.

UF-1 Management Priorities
Evaluate and document the ecosystem services and benefits of the urban forest and consider the value of those services and benefits when seeking a balance between multiple and potentially competing needs of the environment, utilities and infrastructure, safety, the rights of property owners, budget priorities, and the desires of the public.

UF-2 Resource Needs
Ensure adequate resources are dedicated to the management of Austin's urban forest and its ecosystem functions to support the City's vision for its urban forest. Identify and quantify gaps in urban forest management funding compared with national benchmarks and incorporate those needs in the Departmental budgeting process.

UF-3 Urban Forestry Funding Allocation
Allocate an appropriate proportion of funding for urban forest management.

UF-4 Funding Sources for Maintenance
Utilize existing or develop new funding sources such as assessment districts, user fees, fundraising, donations, grants, tax benefit financing, and/or an urban forest utility fee to fund urban forest management.

UF-5 Departmental Urban Forest Management Plan
Create a Departmental Operational Plan (DOP) for departmental urban forest management, consisting of an analysis of existing conditions and regulatory framework, desired future conditions, and a work plan based on the DOP Action Matrix. Update the DOP to reflect changing policies and regulations, standards of care, best management practices, and accomplishments.

UF-6 Standards of Care for Trees and Plants
Incorporate City of Austin Standards of Care for Trees and Plants into Departmental Operational Plans. Regularly contribute recommendations to City of Austin's Standards of Care for Trees and Plants revisions, coordinated by the Urban Forester, according to the best available science and current best management practices, accepted standards and guidelines to support the DOP.

UF-7 Coordination of Efforts and Partnerships
Develop partnerships between other City departments and coordinate with federal, state, regional and local governmental jurisdictions, local community non-profits and the private sector, to preserve, restore, manage, and design our urban forest.

UF-8 Staff Qualifications & Training
For all staff engaged in urban forest management, care and maintenance, employ qualified individuals and provide regular training to maintain qualifications up to and above -recognized standards and best practices and ensure that decisions are being made and maintenance is being performed according to City of Austin Standards of Care and industry best practices.

UF-9 Contracts
When out-sourcing tree care and maintenance, retain contractors that have demonstrated qualifications to perform urban forest management according to City of Austin Standards of Care and industry best practices. Incorporate such standards and best practices into contract specifications.

UF-10 Urban Forester Support
Provide support to the Urban Forester and other departments to meet mandated directives assigned to the Urban Forester.

UF-11 Data Collection and Management
Collect data regarding Austin's urban forest, such as quantity of canopy cover, forest condition and diversity of species, to support the creation of Departmental Operational Plans (DOP) and inform urban forest management decisions. Collaborate with federal, state, regional, and local governmental jurisdictions, community non-profits, and the private sector to collect and manage data.

UF-12 Urban Forest Risk Management
Consider and incorporate urban forest risk into city functions related to emergency management planning.

UF-13: Land Classification
Develop and adopt a common land classification system for properties owned/managed by the City. The classification system will provide the framework for development of class-specific Standards of Care for Trees and Vegetation.

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UF-14: Regulatory Review
Identify and modify City regulations that are conflict with or otherwise hinder achievement of the vision for the urban forest. Where possible, work with intra and inter-departmental partners and external stakeholders to better align the City regulations with the City's urban forest vision.

PLANNING AND DESIGN
Policies related to the consideration of existing public urban forest resources and planning for sustainable future urban forest resources on a site level scale.

PD-1 City Design Coordination
Establish coordination among City departments and utility providers when planning and designing public projects that include landscaping, urban forest protection, planting, supplemental irrigation, maintenance, and urban forest impacts.

PD-2 Infrastructure Design
Design streets, sidewalks, utilities and other infrastructure with a thorough consideration of existing and proposed vegetation, site use, and standards of care during the planning, design and construction processes.

PD-3 Soil Quality
Encourage retention and use of native soils for areas in new developments. Where native soils and growing conditions are not sufficient or optimal encourage use of soils engineered to be supportive of long-term urban forest health and provide a sustainable growing environment for the urban forest.

PD-4 Soil Volume
Increase the dedicated airspace and root volume available for urban forest elements to account for long-term desired growth and to assist with achieving the canopy coverage and maintenance goals.

PD-5 Reduce Soil Compaction
Avoid the compaction of soils and encourage soil protection and enhancement during and after development to increase or maintain infiltration of stormwater on-site and reduce run-off. Design for site uses that minimize soil compaction in critical areas.

PD-6 Landscaping and Stormwater Management
Align the City's landscape regulations and specifications with the integration of landscaping elements and low impact development stormwater management approaches. Incentivize use of techniques that can effectively achieve multiple urban forestry and stormwater management objectives. Some examples include native vegetation preservation, native soil retention and soil amendment, stormwater dispersion and bio-engineering.

PD-7 Partnerships
Partner with federal, state, regional and local governmental jurisdictions, community non-profit organizations, the private sector and others to enhance the planning and design of public and private development and improvements in Austin.

PD-8 Planning Infrastructure Maintenance
Consider the needs and benefits of Austin's urban forest in conjunction with other infrastructure systems when planning for the long-term maintenance of infrastructure and utilities.

PD-9 Tailored Incentives
Develop incentives, programs and/or regulations that are tailored to the needs and characteristics of differing land uses.

PD-10 Urban Forest and Transportation
Utilize or enhance urban forest elements in transportation designs to improve flow and safety of traffic and encourage alternative transportation.

PD-11 Designing for Human Health
Establish or retain urban forest elements during planning and design to maximize physical and mental human health as well as social health benefits

PD-12 Design with Maintenance in Mind
Incorporate pre-planning site assessments and design vegetation plans with consideration for long-term maintenance and resource use. Design for minimal long-term maintenance and resource use while still meeting site use goals.

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EDUCATION AND OUTREACH
Policies related to public education, outreach, stewardship, and training of citizens, private entities, and non-profit organizations for urban forest promotion to achieve the vision for the urban forest.

EO-1 Education
Provide appropriate resources (e.g., staff, technical, and educational materials) to communicate with the public about the vision, goals, objectives, policies, incentives, standards, and regulations related to the management of Austin's urban forest. Increase awareness of urban forest ecosystem issues and support citywide urban forest education efforts.

EO-2 Promote Stewardship
Develop capacity programming that leverages the commitment of citizen volunteers to engage in stewardship of Austin's urban forest.

EO-3 Incentives
Develop voluntary and incentive-based programs to build broader community support for the urban forest.

EO-4 Partnerships
Partner with federal, state, regional, and local governmental jurisdictions, community non-profit organizations, the private sector and others in education and outreach efforts to improve collaboration, leverage resources, and ensure consistent messaging.

EO-5 Records and Information
Collect and make available urban forestry information to the public.

EO-6 Education of Urban Forest Service Providers
Ensure that private urban forest service providers, individuals that wish to provide professional urban forest maintenance services and others whose work may impact the urban forest are educated about Austin's policies, regulations, and Standards of Care.

EO-7 Public Demonstration Projects
Develop and support publicly accessible pilot projects that demonstrate sound urban forest management. Document and implement effective strategies.

URBAN FORESTER RESPONSIBILITIES

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Public engagement efforts produced over 1,500 total responses, from online sources and multiple physical events that occurred throughout Austin.

Public Engagement was encouraged through the following mechanisms:

- Education Component
- Online Participation
- "Pop-Up" Events
- Public Meetings
- Media Outreach

Education Component

The Urban Forestry Board working group and staff targeted their audience through news articles, stakeholder organizations, online social marketing, newsletters, the distribution of bookmarks, flyers and the installation of "Tree Tags". Books marks made from 100% recycle content were passed out at pop-up events, at 22 libraries, and 24 park facilities. Flyers asking people to Get Involved in Austin's Urban were also distributed to the libraries and park locations. Approximately two feet tall, and one-and-a-half feet wide, the tree tags contained the value of Austin's urban forest in relation to energy use, carbon sequestration, watershed protection and air quality. The idea behind these price tags was to demonstrate the value trees bring to the community beyond the traditional value of shade and beauty. The tags were hung from prominent public trees throughout the city.

Online Participation

Online participation played a critical role in the ability to reach out to a large number of stakeholders. Several tools were created to allow people to participate remotely at any time during the two phases of the engagement process.

Phase 1 - Spring of 2012

An online survey called the "Tree Beliefs Survey" was distributed to over forty internal and external stakeholders and generated over 900 responses. The survey was designed to address broad topics related to Austinites and their tree values. Additionally, four Spanish-Language surveys were taken capturing a small audience of a hard-to-reach population.

Phase 2 - Summer of 2013

SpeakUpAustin.Org hosted a discussion board yielding over 120 individual comments. Three surveys were created for feedback concerning performance indicators, policy elements, and funding prioritization. The surveys yielded over XXX responses.

Appendix A. Public Engagement Process Summary

In addition to specific discussion and survey questioning, an email account was created that allowed people to submit comments that were broad in topic and specifics. Community members had access to the online tools twenty-four hours a day, seven days a week so that people who could not attend a public meeting had the opportunity to make their voices heard.

"Pop-Up" Events

Community meetings have no problem attracting the people most passionate about the topic at hand. The challenge comes when trying to involve people who would not normally take the ten minutes required to engage in conversation or fill out a survey. The "Pop-Up" events were intended to capture a random sampling of those hard-to-reach people. Instead of them having to come to us or take time to go online and find the surveys, we went to them and asked them a basic question: What should be done for trees and vegetation in our public spaces? Community members were invited to answer this question on leaf-shaped sticky notes, and place those notes on a five-foot tall 3D tree model. These events yielded over five-hundred leaf-notes with individual comments.

Public Meetings

Two meetings were hosted for this process and both featured Urban Forestry Board members, Urban Forest Program staff, and staff members from other City of Austin departments. The first public meeting was hosted April 2012 at the Emma S. Barrientos Mexican American Cultural Center. The public was invited to review and comment on Urban Forest Plan Vision Statement, Components, and Guiding Principles. Concurrently the Urban Forest Opinion Poll "Tree Beliefs Survey" was being conducted online with 900 responses generated

The second public meeting was hosted on Aug. 13, 2013 at the Daniel E. Ruiz Branch Library. The event was set up in two parts; a public workshop and an open house. The public workshop portion was organized around specific parts of the plan. Participants were asked to rank the plan's policy categories using paper money to demonstrate which of the policy programs should receive the most City resources. Additionally, attendees were able to plot where the City is now compared to where it should be in the future for urban forest care, and mark which of the plan's policy sections are a priority for them. This prioritization will help structure the plan so that prioritization of resources is a clear part of implementation. The open house portion of the meeting allowed for free-flowing conversation between Board Members, staff and the community members.

Appendix B. Record of Public Comment

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To Be Added

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