City of Austin | Urban Heat Island Initiatives

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History of Heat Island Mitigation in Austin

In January of 2001, City Councilmembers Alvarez and Goodman sponsored a heat island seminar with community leaders and experts from the public, private and non-profit sectors. From this seminar a working group was formed to develop a set of recommendations for the City to undertake to combat the heat island effect in a comprehensive manner. In June of 2001 City Council passed a [Resolution](#) to implement a Heat Island Containment Policy based on the recommendations from the working group. The primary motivation behind implementation of the recommendations was stated to be a reduction in energy and peak summertime demand, air pollution and stormwater runoff and stormwater infrastructure.

Incentives for reflective roofs, requirements for increased private development shade tree plantings, and the Great Streets Tree planting initiatives were begun and recommendations made for future projects. Since then reflective roofs have become a code requirement for all new commercial roofs (financial incentive went away) and must follow the International Energy Conservation Code (IECC).   Strategies currently in place also include a tree planting programs, and outreach and education efforts.

2001 Heat Island Working Group Recommendations

1. Light-Colored Roof Strategies
2. Expand Program for Green Commercial Property
3. Light-Colored Pavement Strategies
4. Increased Funding for Commercial Energy Management Program
5. Incentive/Enforcement of City Tree-Saving Ordinance
6. Ordinance Mandating 50% Canopy Coverage Within 15 Years for All New Parking Lots
7. Landscape Ordinance Requiring 30% Shade Cover Within 5 Years for All Hardscape
8. Improve/Enforce the 1% Requirement for Trees in CIP Roadway Ordinance
9. Bus Stops Tree Shade Policy
10. Change Billing Method for Tree Planting Donations
11. Expand City Tree Planting Programs
12. Tree Mapping and Inventory Project
13. Protection of Urban Forest as Part of City Infrastructure
14. Landscape Easement Policy

Since 2001 many of these recommendations have been incorporated into different sectors of the City via code requirements, focused initiatives, and subsequent plans such as the Austin Climate Protection Plan, Imagine Austin Comprehensive Plan, and the Austin Urban Forest Plan: A Master Plan for Public Property.

RELATED PLANNING EFFORTS

Austin Climate Protection Plan

In 2007, Austin City Council passed a resolution which established a Climate Protection Plan to significantly reduce greenhouse gas emissions. In 2011, Council approved the Austin Energy Resource, Generation, and Climate Protection Plan, which updated goals to more aggressively mitigate emissions through 2020 (2011 update).

Imagine Austin Comprehensive Plan

Adopted by City Council in June 2012, Imagine Austin is a 30-year plan that lays out a vision for how the city can grow in a compact and connected way while addressing quality of life issues beyond land use, like investing in our creative economy and advancing healthy, affordable living. The City of Austin is organizing its operations, core services, decisions, and investments around Imagine Austin. Eight priority programs provide the structure and direction to implement the plan. These programs build on some existing initiatives and are guided by community input provided during the process to create Imagine Austin. Priority program 4 is Use Green Infrastructure to Protect Environmentally Sensitive Areas and Integrate Nature Into the City. "Green infrastructure is a strategically planned and managed networks of natural lands, parks, working landscapes, other open spaces, and green stormwater controls that conserve and enhance ecosystems and provide associated benefits to human populations."

Related Objectives Outlined in Imagine Austin:

- **CE A16** | Create a green infrastructure plan for public land or in public rights-of-way.

- **CE A22** | Create an urban forest plan that identifies tree canopy goals, establishes a budget, and presents implementation measures.

- **CE A1** | Implement the City of Austin Climate Protection Plan.

- **CE A18** | Create a regional task force to address inter-jurisdictional environmental sustainability issues.

- **CE A20** | Create a heritage tree inventory and monitoring system to create stronger mechanisms for protecting heritage trees.

- **CFS A5** | Ensure adequate funding for the maintenance of parks and trees on City of Austin property through Best Maintenance Practices.

- **CFS A6** | Expand partnerships between local organizations and the City of Austin to maintain and improve local parks and open spaces.

- **CFS A7** | Revise tree planting and tree care standards to be more sustainable and reduce tree mortality.

- **CFS A8** | Restore trees and vegetation along degraded waterways, especially in eastern watersheds.

- **CFS A35** | Create a green infrastructure plan for public land or in public rights-of-way to preserve Austin's ecosystem, improve the water cycle, reduce the urban heat island effect, improve air quality, enrich public space, and provide for traffic calming. Examples include open space, trails, wetlands, community gardens green streets, infiltration facilities, and the urban forest.

Austin's Urban Forest Plan: A Master Plan for Public Property

Today, urban forests are increasingly considered an element of a much larger green infrastructure network. Within this network, the urban forest is an invaluable resource that plays an integral role in Austin's health and vitality by providing social, ecological, and economic benefits to the community and by enhancing the quality of life for Austin residents. The impacts from continuing growth and development, combined with long term drought conditions and intense summer heat events create an imperative to develop a plan to support the long term health and vitality of our public urban forest resource.

The *Austin Urban Forest Plan: A Master Plan for Public Property* establishes a broad scoped, long-range vision for Austin's public urban forest. It provides a framework for the City of Austin to use as a guide for managing the public urban forest over the next 20 years. Implementation will roll out in 2014 after Council adoption and includes a road map to reach the comprehensive vision. Each City department that interacts with trees on public property will develop their own tailored Departmental Operational Plan to address specific issues such as existing tree care, new plantings, and canopy coverage goals. There will also be an annual State of the Urban Forest Report which will track the overall health of Austin's public urban forest.

The Austin Urban Forest Plan was developed in response to City Code sections § 6-3-5 and ordinances 031023-10 and 031211-11. In February of 2011 the Urban Forestry Board and City of Austin Urban Forester initiated the development of the Comprehensive Urban Forest Plan. Upon adoption this will be the first Comprehensive Urban Forest Plan since its creation was directed by City Charter in 1992. The City of Austin Urban Forester is responsible for administering the Plan. The development of the Austin Urban Forest Plan is a direct implementation of ImagineAustin via the Green Infrastructure Priority Program and 20 Priority Actions, including Priority Action CE A22 which directs the City to create an urban forest plan. www.austinurbanforestry.org

CITYWIDE DEVELOPMENT PROGRAMS

Building code requirements for light-colored, or green roofs

The City of Austin adopted 2012 IECC with local amendments. Exceptions to the reflective roof requirements include vegetative roofs, roof top pools, or integrated solar PV permanently adhered to the roof surface.

Shaded Parking and Properties

Currently in place is an ordinance mandating 50% Canopy Coverage within 15 years for all new parking lots. A minimum of 80% of the trees required for parking lots are to be large shade producing trees from the list of designated list of Native Shade Trees. Ordinance requirements include a tree planted within 50-feet of a parking space. Additionally a minimum of 50% of the trees in non-parking lot areas are to be shade-providing trees. (Environmental Criteria Manual Section 2.4.2(C) Trees in Parking Lots, 2.4.1D)

Tree and Natural Area Preservation Ordinance

Proposed development projects are evaluated on a case-by-case (and tree-by-tree) basis. The goal of each review is to assure that, through a combination of preservation and re-forestation, a final product is achieved which results in a diversified and sustainable urban forest. Visit the City of Austin Tree Regulation website for more information.

Heritage Tree Ordinance

The Heritage Tree Ordinance was approved by City Council to provide stricter requirements for the preservation of Austin's most valuable trees.

EDUCATION AND OUTREACH PROGRAMS

Cool Spaces: Website and Educational Materials

A heat island mitigation brochure and poster were created in 2004 as part of an EPA grant. The collateral was designed to engage and educate City employees and citizens on the cause of elevated temperatures in the city, how it impacts our quality of life, and ways to reduce urban heat. They have both been retired and a new pamphlet has been developed through the City of Austin's Grow Green Program. It is distributed at nurseries throughout Austin, and like the website, features 6 cooling strategies.

The Cool Spaces website supports the education and awareness goals for the program, and presents consolidated information about strategies people can take to reduce urban heat onsite.

Cool Spaces website

Cool Spaces Pamphlet

Cooling Strategies Include:

GO GREEN with...

1) Trees
2) Green Roofs
3) Green Walls

LIGHTEN UP with...

4) Light colored, reflective roofs
5) Light colored, and pervious pavement
6) Shade structures

Green Roof Initiative

Green (vegetated) roofs add value to structures, providing insulation, green space, sanctuary for wildlife, a place for ecology education and food production. They can reduce storm water runoff and the urban heat island effect. Austin uses policy tools as well as outreach and education to increase the number of green roofs on commercial, industrial and residential buildings.

Current standards for all new or remodeled commercial buildings in Austin require cool roofs, but exceptions to the reflective roof requirement include vegetative roofs, roof top pools, and integrated solar PV permanently adhered to the roof surface. See Ordinance 20130606-091 for more information on the 2012 International Energy Conservatione Code with local amendments (See section C402.2.1.1 Roof solar reflectance and thermal emittance).

In February of 2014 The Downtown Density Bonus incentive program was adopted and includes green roofs (Ordinance 20140227-054). Additionally, green roofs that provide stormwater retention are eligible for a 20% discount on the site's monthly drainage fees. Green roofs must meet criteria for performance outlined in the Environmental Criteria Manual Appendix W: Vegetated Green Roof Performance Standards. Inspections for compliance occur every three years. Green roofs also contribute to the Austin Energy Green Building rating system.

The Green Roof Advisory Group (GRAG), sponsored by Council Member Chris Riley in 2009 and initiated by Council resolution, developed a policy implementation plan to support the

development of green roofs in Austin. An interdepartmental working group supported by the Office of Sustainability tracks the activities called for within the GRAG five year plan.

Green Roof Website

Existing Credits for Green Roofs in Austin

Environmental Criteria Manual Appendix W: Vegetated Green Roof Performance Standards

TREE PLANTING PROGRAMS

The City recognizes that urban trees provide a range of ecosystem and economic services for the City of Austin. There are many on-going tree planting programs in Austin which are supported by City of Austin departments such as Austin Energy, Watershed Protection, Parks and Recreation, and Planning and Development Review. Plantings occur in parks, rights-of-ways, and on private property.

Austin's Planting Priority Areas

The Tree Planting Prioritity Map tool serves to identify and prioritize which areas of Austin should receive tree plantings in the near future. Information was gathered from 31 "planting factors," from tree shade to crime rates, in order to determine where we should plant trees on public property. This tool can be used by City of Austin planting crews, local tree planting non-profits, and citizens to figure out the "biggest bang for your buck" when it comes to where we are planting our trees across the city.

Austin's Urban Forest by District

Austin's Urban Forest Profiles tell the story of Austin's urban forest using an interactive webmap and data collected by the City of Austin. It contains a series of City Council District profiles displaying various tree info within each District.

NeighborWoods Program

The NeighborWoods program plants trees on public and private property with an emphasis on shading streets and buildings. The program is administered by a local non-profit organization, TreeFolks, whose mission is to grow Austin's urban forest through tree planting, education, and community partnerships. Recipients must agree to follow Right Tree, Right Place guidelines and learn how to properly plant and maintain their trees. NeighborWoods plants 3,600 trees a year.
Trees available to the public

Austin Community Trees Program

Austin Community Trees (ACT) is a collaborative neighborhood tree planting program in which participating neighborhoods partner with the Neighborhood Planning and Development, Parks and Recreation Department, Watershed Protection, and Austin Energy. This program is volunteer driven, and plants trees out of the right-of-way to reduce a future burden on PARD and potential tree maintenance. The goal of the program is to help qualifying neighborhoods increase their canopy cover to 40 percent or higher. Homeowners agree to plant the trees in a pre-determined location that maximizes shade cover. Through shading and evapotranspiration it is estimated that the immediate area is cooled by up to 9 degrees F increasing comfort, and reducing air conditioning needs as well as providing a long list of ecosystem benefits.

Trees for Austin Planning Areas

Urban Forest Grant Program

The Urban Forest Grant Program has been established to promote conservation and improvement projects that benefit Austin's urban forest. It is supported by the Urban Forest Replenishment Fund, which was created to mitigate the impact of tree removals. The UFGP will enhance the urban forest through projects associated with tree planting, education, public service announcements, award programs, disease control, inventorying, and other related efforts.

Urban Forest Inventory

In the summer of 2008, PARD completed a partial tree survey of 16 of the City's main arterial streets, 24 City parks, and select representative neighborhood zones. The survey identified nearly 150 different tree species throughout the City. Based on the tree survey results, PARD has estimated that the City's urban forest reduces annual energy use by approximately 10,000 Megawatt-hours (MWh) and has the potential to store approximately 106,000 tonnes of CO_2 per year. PARD is developing a master plan for how it will provide long-term care and maintenance to maximize the life of Austin's urban forest.