

Austin, Texas: Managing For Growth, Healthy Landscapes, And Wildfire Risk Reduction

Leaders in Wildfire Adaptation

Introduction

Austin, Texas, the state capital, is the the fastest growing big city in the country. Between 2013 and 2014, Austin added more than 25,000 new residents, bringing the 2014 total population to 912,791 people.¹ Coupled with high growth, the city ranks third highest among 13 western urban areas for homes at risk for wildfire damage,² with more than 25 percent of its houses threatened by wildfires.

The City of Austin and surrounding Travis County are also home to a geographically unique region of Texas known as the Balcones Escarpment, which separates the Edwards Plateau from the Blackland Prairie. As a result, the region contains diverse ecological landscapes, which in turn brings particular considerations regarding how wildfire mitigation efforts are managed alongside other sustainability objectives, such as habitat management and endangered species preservation.



The Balcones Escarpment is a geologic fault zone several miles wide and appears from the plains as a range of wooded hills, separating the Edwards Plateau from the Coastal Plains. Photo Credit: Sylvia Jennette

OVERVIEW

Wildfires across the American West are increasing in frequency, size, and severity. The impacts from climate change and increasing growth within the region's Wildland-Urban Interface (WUI), further exacerbate the risks from wildfires.

Urban areas in the West are increasingly responding to the challenges of wildfire risk management through unique land use planning tools which affect the pace, pattern, and scale of development. Austin, Texas is one of five communities profiled by Headwaters Economics in a report identifying some of these innovative land use planning strategies, including:

- Close interdepartmental collaboration between the fire department and other city staff to conduct prescribed burns within the city limits, reducing fuel loading.
- A joint review process between the city and the county, allowing both jurisdictions to review all proposed development and ensuring the city inherits a better planned WUI, including adequate access, water supplies, defensible space, and other mitigation features.
- Implementation of "CodeNEXT," an initiative to promote compact development by directing new growth to existing areas rather than undeveloped "greenfield" sites.

As Austin grows, it must strike the right balance between development and wildfire safety, while also considering factors such as environmental protection and natural resource conservation. A combination of local stakeholders' creativity and commitment is steadily achieving that nuanced dynamic. Current and recent efforts with planning and regulatory updates are also providing opportunities for city officials to make a long-term difference in future land use outcomes.

History of Wildfire in Austin

Both Austin and Travis County have an active history of wildfire. Recorded wildfire incidents in Travis County date back to 1959, with more recent records documenting 7,885 wildfires in the county from 1998 to 2012. The most notable fire season was in 2011, when six large fires occurred during Labor Day weekend. In all, approximately 57 homes were destroyed in three of the fires and an estimated 7,000 acres were burned.³ The same day these fires took place, the devastating Bastrop County Complex Fire started in neighboring Bastrop County, which burned more than 35,000 acres.⁴

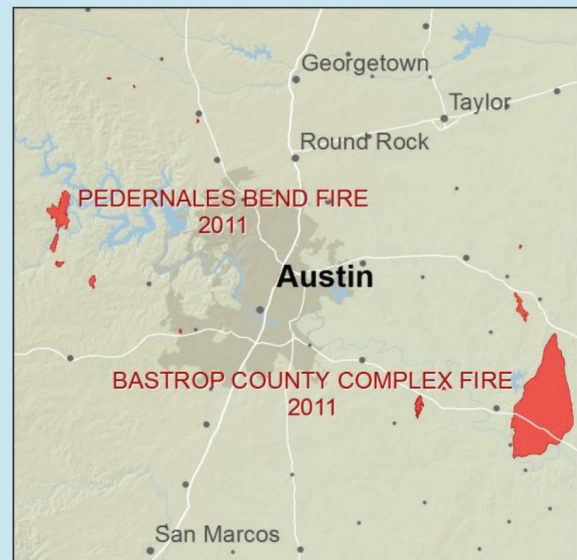
Impacts of Wildfire on the City of Austin

The 2011 wildfire season, often referred to as the "Texas Firestorm," elevated public awareness about the potential impacts of wildfire. During that year, Austin residents witnessed areas within their city and surrounding lands burn, making wildfires a real and palatable threat. Specific impacts included:

- **Loss of life and property.** The Bastrop County Complex Fire (2011) was responsible for the deaths of two people and destroyed more than 1,700 structures. Total insured losses caused by the Bastrop Complex Fire were estimated at \$325 million.⁵
- **Disruption of services.** The Bastrop County Complex Fire shut down electricity and water utilities for up to two weeks in some locations. The Labor Day weekend fires in Travis and Bastrop Counties forced the evacuation of thousands of residents, and some schools had to temporarily suspend classes.
- **Critical habitat loss.** A couple of years earlier, in 2009, the Wilderness Ridge Fire burned in Bastrop County and destroyed 1,491 acres of habitat for the endangered Houston toad.⁶ The Houston toad was the first amphibian ever listed on the endangered species list in 1970, and lives solely within Texas.

In 2011, the Bastrop County Complex further destroyed Houston toad habitat when it burned through Bastrop State Park. Together with prolonged drought conditions, habitat loss remains the most

AUSTIN, TX Major Wildfires, 2000-2013



PEDERNALES BEND FIRE, 2011 6,500 Acres

Total Cost	\$54K	Structures Threatened	500+
Total Personnel	24	Structures Damaged	67
Firefighters Injured	0	Evacuations Caused	Yes

This brush fire was caused by electrical lines pushed together by high winds. Thousands were evacuated, an elementary school and major highway closed.

BASTROP COUNTY COMPLEX FIRE, 2011 35,070 Acres

Total Cost	\$8M	Structures Threatened	2000+
Total Personnel	1,210	Structures Damaged	1709
Firefighters Injured	8	Evacuations Caused	Yes

Classified as the worst wildfire in Texas history, the Bastrop fire left two dead and threatened private and public resources including a local hospital, essential communications infrastructure, major transmission lines, the California Aqueduct, and several highways. Over 5000 residents were evacuated.

significant threat to the Houston toad.

- **Air quality effects.** The Bastrop County Complex and Labor Day weekend fires in Travis County brought a thick cloud of smoke to the region. Doctors warned children with asthma and adults with chronic respiratory problems to take health precautions.⁷

How Austin Is Addressing Wildfire Risk Through Land Use Planning and Regulations

Following the 2011 fire season, the City of Austin significantly expanded its approach to wildfire management. As part of this, Austin and Travis County officials formed the Austin Travis County Wildfire Coalition (ATCWC) to increase the region's wildfire preparedness and help communities in the region become fire adapted. The coalition's first major undertaking was to lead the development of a comprehensive joint city-county Community Wildfire Protection Plan (CWPP), which was ultimately adopted by the Austin City Council and Travis County Commissioners Court in November 2014. In addition, the Austin Fire Department's Wildfire Division is working with other city departments to address the growing Wildland-Urban Interface (WUI) through interdepartmental collaboration and implementing development and regulatory mechanisms to actively integrate wildfire planning, as discussed below.

Elevating the Austin-Travis County Community Wildfire Protection Plan (CWPP)

CWPPs are local plans designed to address a community's unique



Wildfires in densely-populated WUI areas like Austin do not have to be large in size to have big consequences. As part of the “2011 Texas Firestorm,” for instance, the Pinnacle Fire in Oak Hill burned only 100 acres, but destroyed 10 homes, and threatened dozens more homes and businesses. Photo credit: Justice Jones, Austin Fire Department

conditions, values, and priorities related to wildfire risk reduction and community resilience. CWPPs can vary in scope, scale, and detail, but there are minimum requirements for their development and adoption.⁸

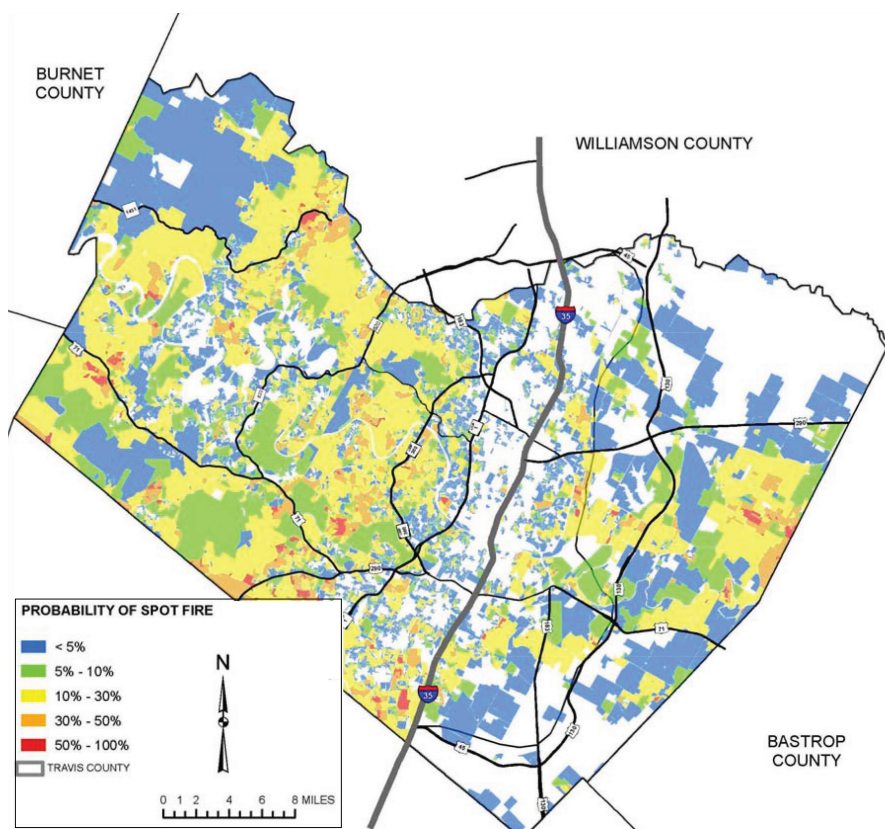
The Austin-Travis County CWPP is an impressive 900-page document that contains detailed fire history, local vegetation information, an analysis of community wildfire risk, and an exhaustive set of proposed mitigation measures. The plan makes a point to emphasize that all citizens, regardless of where they live, have a role in supporting wildfire risk reduction.

The CWPP will soon be included as an appendix to the city's Hazard Mitigation Plan, which was undergoing a review as of this writing. Integrating the CWPP into the Hazard Mitigation Plan will ensure implementation guidelines and recommended actions contained within the CWPP—such as the future development and adoption of wildfire regulations

and wildfire risk reduction projects supporting home retrofits which are more fire resistant—will have a higher likelihood of receiving administrative support and resources at the city and county level.

Working with Travis County on Subdivision Reviews to Decrease Future WUI Risk

In Texas, two types of governments have land use authority: counties and municipalities. Texas counties have fewer controls over development, typically limited to the ability to regulate subdivisions, on-site sewage systems, floodplain development, and water supply. Counties do not have the authority to enact building codes, a zoning ordinance, or impact fees. (Travis County does have the power to require stormwater management, impose fire codes, and develop standards for water wells to prevent groundwater contamination). Alternatively, municipalities are allowed to regulate development comprehensively within their city



The Austin-Travis County CWPP contains detailed risk assessments of neighborhoods, such as this spot risk map. Source: Austin-Travis County CWPP

boundaries, and they can also regulate some development in extraterritorial jurisdictions (ETJ)⁹ to ensure that the development meets minimum standards, aligns with infrastructure investments, and minimizes impacts on natural resources.¹⁰

Many Texas counties that surround large urban centers are expanding, and a large percentage of growth is occurring with limited restrictions on growth's location, quality, and development impacts—ultimately contributing to larger WUIs throughout an already drought-stricken and fire-prone state. This scenario is increasingly reflected in Austin as the surrounding population in Travis County grows. However, Austin has a vested interest in the county's current growth and development patterns because the city may annex some of this development in the future.

To ensure the city inherits a “better planned WUI,” including adequate access, water supply, and other wildfire risk-reduction features, the City of Austin has an agreement with Travis County to give both the city and county shared authority in the design review process. In doing so, Austin is able to guide future development in a way that minimizes exposure to wildfire threats.

Austin has designated nearly 30 percent of city land as conservation areas, limiting the number of new structures within the WUI.

Leveraging Conservation and Compact Development Opportunities

Austin has designated nearly 30 percent of city land as conservation lands. Protecting this space for

conservation purposes also limits the number of future structures at risk within high hazard areas. In addition, the city is undergoing an initiative called CodeNEXT that will revise its current Land Development Code (the code regulating development within the city's planning and zoning jurisdiction). Through the CodeNEXT process and previous planning policies promoted in Imagine Austin (the city's comprehensive plan), the city is emphasizing bringing nature back into the city and promoting compact development by directing new development to existing areas rather than on “greenfield” sites (raw land that has never been developed). Encouraging redevelopment of existing areas and infill development carries secondary benefits by managing growth and reducing the presence of structures within an expanding WUI.

Coordinating Wildfire Activities with Environmental Objectives

“One of our biggest challenges is that existing codes do not orient themselves to wildfire,” says Justice Jones, Wildfire Division Program Manager for the Austin Fire Department. Jones and others within the fire department view existing city regulations that call for the retention of native vegetation

to occasionally be at odds with wildfire risk reduction objectives. Yet, rather than choosing wildfire risk reduction treatments over environmental regulations, or vice versa, the fire department is working to modify internal



The Austin Fire Department emphasizes wildfire education and outreach through a variety of public programs. Photo credit: Justice Jones, Austin Fire Department.

operational guidelines to ensure vegetation management practices seeking to reduce wildfire risk are compatible with environmental regulations intended to protect endangered species and critical habitat. For example, the fire department recently paid for ecological assessments at five sites in the city prior to starting any fire mitigation work. The fire department is also initiating a new land management template for use on city owned property such as parks and nature preserves. This tool will be used to evaluate properties at risk for wildfire by tracking factors such as access points, fuel mitigation breaks, and the number of treatment acres needed to address existing hazardous vegetation.

In addition, the fire department is working with other city staff to conduct prescribed burns within the city. While the primary objective is to reduce hazardous vegetation, this practice also helps restore native vegetation and reduces the future likelihood of large catastrophic wildfires. It also provides firefighters with a keen understanding of local geographies and the fire

landscape they are tasked with protecting. Ultimately Jones believes these and other efforts will build credibility and trust with other city departments and set a precedent for future work in ecologically sensitive areas.

Austin Prepares for Wildfire Risks and the Impacts of Climate Change

Texas has been experiencing shorter, wetter winters, and hotter, drier summers.¹¹ Climate change, including prolonged periods of drought and altered precipitation patterns, is influencing the composition and distribution of local vegetation, which is predicted to have an effect on where and how wildfires will burn across central Texas. Landscapes that have traditionally not experienced wildfire events in the past are more likely to burn due to the availability of fuels, such as grasses and brushes. Correspondingly, fire behavior will reflect altered vegetation patterns and when combined with increased drought periods, may become more frequent and severe, as witnessed during the 2011 Texas Firestorm.¹²

To address climate-related concerns, the Austin City Council passed a resolution on November 21, 2013 directing the Office of Sustainability to work with nine departments to determine how planning efforts integrate anticipated climate change impacts and to identify a process for performing local and regional vulnerability assessments. On June 4, 2015, the City Council passed a resolution to adopt the Austin Community Climate Plan. This plan provides guidance for the city to achieve net-zero communitywide greenhouse gas emissions by 2050. These efforts are intended to abate or halt the local environmental

damage incurring from climate change and its side effects, such as increased drought, wildfire risk, watershed degradation, and habitat loss.

Key Takeaways

Partnerships pay dividends now and in the future. Although the Austin Fire Department may be seen as the primary champion for wildfire risk reduction efforts, partnerships are a hallmark of the community's successes. The city's commitment to coordinate with Travis County, preemptively addressing issues related to an expanding WUI, demonstrates foresight and creativity. The fire department also recognizes where other city departments may enable better success with the delivery of WUI-related messages. For example, the fire department is looking to the Office of Sustainability as a potential department for housing future "umbrella" programs addressing the environment, WUI, and climate-associated activities.

Tackling a mitigation strategy in small bites can be effective. Rather than adopting wildfire regulations in full, the Austin Fire Department is tackling different topics such as structural hardening (e.g., requirement of ember resistant vents and fire-resistant decking materials) and the implementation of vegetation management practices on high-risk properties throughout the city. The Department believes that by proactively familiarizing residents and land managers with these types of wildfire mitigation approaches, the foundational groundwork will be laid for a more successful outcome when future wildfire regulations are proposed for adoption.

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Austin Codes & Regulations (includes Land Development Code)	https://austintexas.gov/departments/development-services/codes-and-regulations
City of Austin Master Plans (Comprehensive Plan, Climate Plan, and the Sustainability Action Agenda)	https://austintexas.gov/page/city-austin-master-plans
CodeNEXT	http://www.austintexas.gov/codenext
Other Resources	
Austin Urban Forest Plan	https://austintexas.gov/page/urban-forest-plan
Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure	http://austintexas.gov/sites/default/files/files/Sustainability/Climate/CAMPO_Extreme_Weather_Vulnerability_Assessment_FINAL.pdf
Texas Forest Service Assessment	http://www.texaswildfire-risk.com/
Wildfire Ready Austin – Before and After the Fire (Environmental Best Management Practices for Wildfire Risk Reduction and Recovery)	https://www.austintexas.gov/sites/default/files/files/Watershed/wildfire/Firewise-before-and-after-the-fire.pdf

Key Resources

Websites	
Fire Department	http://www.austintexas.gov/departments/fire
Development Services Department	https://austintexas.gov/departments/development-services
Office of Sustainability	https://www.austintexas.gov/departments/sustainability
Documents	
Austin/Travis County Community Wildfire Protection Plan	http://www.austintexas.gov/wildfireprotectionplan
City of Austin Hazard Mitigation Plan Update	https://www.austintexas.gov/sites/default/files/files/hsem/HMAP-Update-for-website.pdf

References

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3. Austin/Travis County Community Wildfire Protection Plan. 2014. Available online: <https://www.austintexas.gov/wildfireprotectionplan>.
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6. Texas Forest Service, Wilderness Ridge Fire Case Study. 2009. Available online: <http://txforests-service.tamu.edu/uploadedFiles/FRP/2WildernessRidgeCaseStudy.pdf>.
7. Available online: <http://www.foxnews.com/us/2011/09/08/smoke-from-texas-fires-have-doctors-concerned-for-at-risk-citizens/>.
8. As described in Title I of the Healthy Forest Restoration Act (HFRA) of 2003 that authorizes communities to draft and implement a CWPP.
9. Extraterritorial jurisdiction is the legal ability of a government to exercise authority beyond its normal boundaries.
10. Imagine Austin, Comprehensive Report. Available online: <http://www.austintexas.gov/sites/default/files/files/Planning/ImagineAustin/webiacpreduced.pdf>.
11. Cambridge Systematics, Inc. Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure. January 2015. Available online: http://austintexas.gov/sites/default/files/files/Sustainability/Climate/CAMPO_Extreme_Weather_Vulnerability_Assessment_FINAL.pdf.
12. Texas A&M Forest Service. 2011 Texas Wildfires. Available online: http://texasforests-service.tamu.edu/uploadedFiles/TFSMain/Preparing_for_Wildfires/Prepare_Your_Home_for_Wildfires/Contact_Us/2011%20Texas%20Wildfires.pdf.