

Firewise USA™ Site Recognition Program



Sun City Texas Community Association

Wildfire Risk Assessment

Williamson County, Texas

September 2022



FIREWISE USA™
Residents reducing wildfire risks



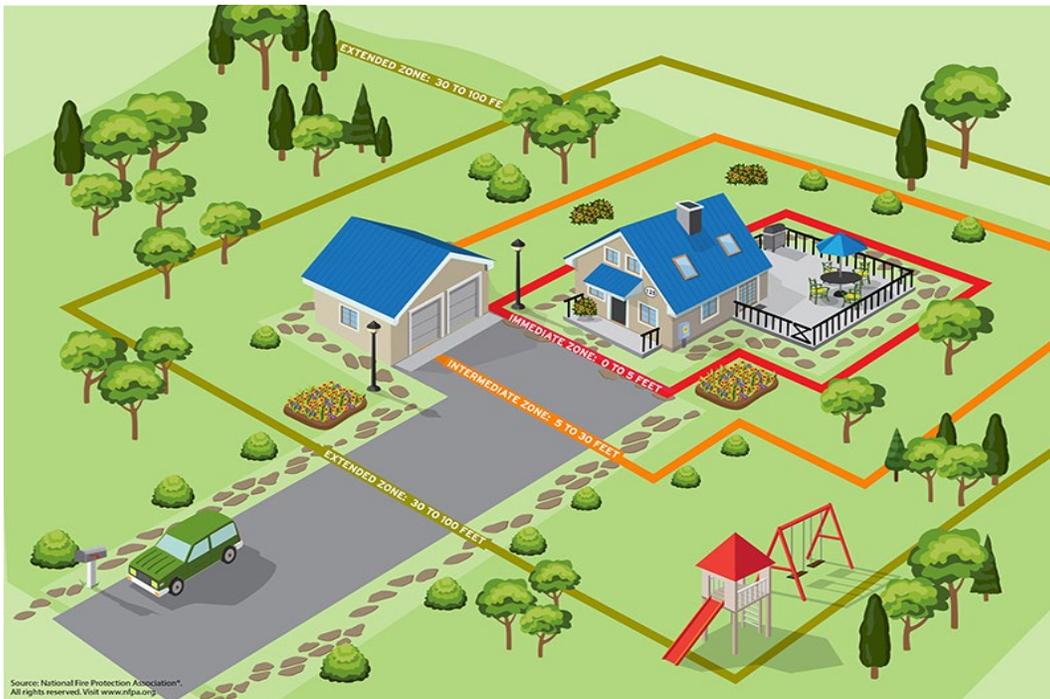
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1) Introduction

The Firewise USA™ program is designed to provide an effective management approach for preserving wildland living aesthetics. The program can be tailored for adoption by any community and/or neighborhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following community assessment is intended as a resource to be used by the Sun City residents for creating a wildfire safety action plan. The plan developed from the information in this assessment should be implemented in a collaborative manner, and updated and modified as needed, and no less than every three years.

2) Definition of the Home Ignition Zone

Sun City is within a wildfire environment. Wildfires will happen--exclusion is not a choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of Sun City. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes but provides an assessment at the community level.



The home ignition zone (HIZ) was developed by fire scientist Jack Cohen in the 1990's. The HIZ is split into three zones. Research has shown that acting on the structure itself and the first five feet around a structure is the most important zone to take immediate action in order to reduce risk.

A home burns because of its interrelationship with its immediate surroundings. To avoid a home ignition, a homeowner must prepare their home to withstand ember attacks and minimize the likelihood of flames or surface fire touching the home or any attachments. The home ignition zone (HIZ) determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings up to 100 to 200 feet from the home's foundation. Diverting a fire's path through modification of the HIZ is a simple task that can result in avoiding home loss. To accomplish this, flammable items must be modified or removed from the area immediately around the structure to prevent flames from contacting it. Reducing the volume of live vegetation and ladder fuels will affect the intensity of the wildfire as it enters

the home ignition zone. Included in this assessment are observations made while visiting Sun City, Texas. The assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Sun City residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. These zones principally determine the potential for home ignitions during a wildland fire; they include a house and its immediate surroundings within 100 to 150 feet.

The result of the assessment is that wildfire behavior will be dominated by the residential characteristics of this area. The good news is that by addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in wildfire safety.

3) Definition of Wildland Urban Interface

The Wildland Urban Interface is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Wildland Urban Interface is dependent on many factors such as housing density, population density, historical wildfire frequency, climate, and vegetation type. Wildland urban interface is not an inherent negative, rather a navigable relationship between homeowners and the natural surroundings they choose to inhabit to avoid loss from wildfires.

4) Description of Severe Case Wildland Fire Characteristics that Threaten the Area

Fire intensity and spread rate depend on the species and fuel moisture content, the weather conditions prior to and during ignition, and the topography. Generally, the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fine fuels, defined as fuel with a diameter less than 1/4in (ex. grasses, pine needles, twigs), ignite more easily and spread faster with higher intensities than coarser fuels, generally fuels greater than 1/4in in diameter (ex. large branches, logs, shrubs). For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.
- The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower will be the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.
- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.
- Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread and intensity.

Anticipated wildfires in the Hill Country region of Texas are expected to be driven by the combination of high wind speeds, low relative humidity, and long periods of time with elevated temperatures. The combination of these weather characteristics with dry fuels such as grasses, shrubs, and trees, especially those near a house, can often lead to structure loss. Due to the rugged terrain common in this area, access for structural and wildland firefighters is often an issue. Fire in the hill country can be expected to move quickly uphill in vegetated canyons and will often have unpredictable movement due to shifting wind patterns manipulated by changing topography.

Embers are another characteristic of a wildfire that are not often considered by homeowners. Embers are small burning pieces of vegetation or wood that are carried by the wind ahead of a wildfire. An ember shower can be carried over a mile away from a wildfire and creates spot fires, which ignite vegetation on the roof, gutters, and garden beds. Ember showers lead to structure loss even if the wildfire is not within the boundaries of the neighborhood. Wildfire researchers know that embers are the leading cause of home loss in a wildfire due to post fire assessments.

5) Site Description

Sun City, Texas is in Northern Williamson County in the city limits of City of Georgetown. There are 8,784 single family residences, as well as numerous mixed-use amenity centers and public buildings. Georgetown Fire Station 3 is located in the community. Construction and expansions have been in progress since the community was established in the early 1990's, therefore construction type and builder vary throughout. However, fire resistant construction methods are followed throughout.

The most dominant vegetation cover categories are juniper/deciduous forest and developed open space. Undeveloped greenbelts along riparian corridors transect the community, as do maintained golf courses and other recreation amenities. Sun City lies along the Balcones escarpment at the intersection of the Hill Country and Blackland Prairie. Habitat in these areas is characteristic of Eastern Edwards Plateau/ Balcones Escarpment vegetation. Native Ashe juniper, live oak, red oak, post oak, mesquite, huisache, and Texas persimmon are the most dominant trees, intermixed with pocket savannahs of native grasses. Sun City lies within the watershed of Berry Creek, which transects the center of the community from North to South. This area is forested with riparian hardwood trees such as sycamores, bald cypress, pecan, bur oak, and black willow. Berry Creek is a perennial stream with surface flow during normal rainfall conditions. Riparian corridors and wildland urban interface often are synonymous in Central Texas, as they are undevelopable due to flood risk, and therefore are less managed to avoid negatively influencing water movement.



Sun City Community overview map, as of September 2022.

Developed lots have mixes of some native trees as well as a mixture of ornamental varieties of native trees and non-native trees, shrubs, and ground cover. Lawns are watered and mowed turfgrass.

Home construction features both two-story and single-story structures built with mostly fire-resistant construction materials. Most residences are built with stone, stucco and brick exteriors, with some cement board siding. Roofs are a mixture of asphalt shingle and metal.

6) Assessment Process

The site assessment was completed by Walter Flocke, Wildland Urban Interface Coordinator with the Texas A&M Forest Service on September 14th, 2022. The assessment included discussing local conditions, issues the homeowners might face, and a drive through the community to assess road and home conditions. Since the initial establishment, NFPA (National Fire Protection Association) rules have changed to recognize the importance of a neighbor-to-neighbor aspect of this program. Due to that, the maximum size has decreased to 7,500 homes for grandfathered communities and Sun City will split into five Sites to retain the community driven feel. This assessment will cover the full Sun City development due to the continuity of overall wildfire related assessment points such as topography, vegetation and structure construction.

7) Observations

Many of the homes built in the Sun City exhibit many Firewise USA™ principles. These include:

- Construction materials that are “fire resistant”, including roofing material.
- Visible 911 street addresses and highly visible street signs.
- Fire resistant landscaping techniques and materials.
- Fire department connections and hydrants within the community.

There are also some characteristics of the site that residents are unable to change:

- Topographical features that could adversely affect wildfire behavior.
- Predominate vegetation characteristics of the natural ecosystem.
- Fire breaks created by bodies of water, roadways, golf courses, and other developed lands.

One of the main goals of the Firewise USA™ program is for residents to focus on those items they can control. Becoming aware of the threat wildland fire presents is the first and most important step any landowner can take. After that, trying to work on the items that the owner does have control over, whether big or small, can reduce the chance of a home loss in a wildland fire. Thankfully, the Firewise USA™ program offers risk reduction efforts of all complexity for homeowners to choose from when looking to reduce their chance of loss. Risk reduction efforts are covered in Section 8 of this assessment: Successful Firewise USA™ Modifications.

Special Observations:

The majority of WUI in Sun City is occluded or surrounded by developed land on all sides. Many areas undeveloped bordering the community are slated for development soon, excluding protected habitat areas. Community shared areas have heavy usage by community members for recreation, and serve important ecosystem services for flood water control, and wildlife habitat. Sun City maintains undeveloped lands within the community with a strategic management system for fuel reduction performed on the area. This system is classified by three zones:

The Community Association (CA) is responsible for the management of all non-residence property guided by a set of maintenance classifications. The classifications covered by the Firewise USA™ plan are Maintenance Levels I II, III, IV, and V.



An example of a level IV landscape within Sun City's natural areas. The area in this photo is slated to be mulched to create a fuel break.

LEVEL I: Highly Maintained Landscape: These areas typically include irrigated turf grass and planted beds in locations of high visibility to the community. Expect regular mowing of the turf during the growing season and less frequently when the grass is dormant.

LEVEL II: Lesser Maintained Landscape: These areas typically include turf grass that may or may not be irrigated and planted beds in locations visible to a limited part of the community on a regular basis. Expect an average of twelve mowing's annually adjusted based on growing season.

LEVEL III: Cultivated Texas Landscape: These areas typically include non-irrigated areas where revegetation with native grasses and/or wildflowers has occurred. Tree canopy heights will be raised to six feet above ground level elevation. Seasonal mowing of these areas, to a height of not less than 6 inches, will occur 2-3 times annually and will include a strip of not less than 10 feet in width adjacent to residential lot lines.

LEVEL IV: Native Texas Landscape: These areas will be, for the most part, left in their natural condition. These areas will not be irrigated. Tree maintenance will be performed for safety to remove hazardous conditions as determined by CA.

LEVEL V: Special landscape Zones: Generally associated with commercial or CA amenity areas. Special Landscape Zones include a combination of the above Levels of Maintenance. Included are Karst Protection Areas for Endangered Species



An example of Level III in Sun City along the Berry Creek floodplain. These areas are mowed seasonally after the grow season to promote grass and wildflowers, while preventing dead fuel accumulation.



Homes that are adjacent to greenbelts play a vital role in reducing the threat of structure ignition from a wildfire. Managing the space between homes and greenbelts gives more defensible space and firefighter access. Homeowners can improve defensible space by breaking the continuity of fuel by landscaping with rock or gravel, limbing up trees to reduce ladder fuels, and removing vines and other vegetation in direct contact with structures.

Other relatively cost effective and simple techniques that can be done by the community on an annual basis include:

- Limbing up branches that are on the bottom quarter of the tree stem to reduce ladder fuels.
- Keeping grass areas along property boundaries adjacent to undeveloped areas routinely mowed.
- Reducing overall number of trees by removing young juniper saplings.
- Offering vegetation removal or chipping days to avoid residents dumping in greenbelts.

8) Important Considerations

The Firewise USA™ program seeks to create a sustainable balance that will allow communities to reduce risks from wildfire while maintaining environmental harmony in a WUI setting. Homeowners often already subconsciously balance their decisions about wildfire protection measures against their desire for certain flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices relate to the ignitability of their home ignition zones during a wildfire.

Moving forward, property owners at Sun City should take a few things into consideration. First, homeowners will need to pay special attention to the “Immediate Zone” within their home ignition zone. This Immediate Zone includes the home and the area within five feet surrounding it. This is the most critical area to take immediate action as it is the most vulnerable to embers. Both research and firefighter’s first-hand accounts tell us that a well-prepared structure and the Immediate Zone around that structure make the biggest difference in home survivability and first responder safety.

As a general recommendation, the spaces underneath wooden decks, porches, and patios should be kept clear and cleaned of debris often, as those areas are vulnerable to debris accumulation. It is also recommended that those spaces be screened in where applicable with a wire mesh to prevent debris and combustible materials from accumulating. In addition, the use of fire-resistant materials around the base of homes is recommended, including keeping vegetation healthy and low to the ground.

Next, homeowners should continue following fire resistant landscaping principles. This means cleaning out plant beds near their homes and removing flammable materials such as dead leaves and needles. In addition, plants within the immediate zone are recommended to be pruned away from near windows and other higher risk points, such as near wooden structures or when touching the house directly. Ladder fuels should be removed or trimmed so that fire cannot reach the crowns of trees. It is recommended that trees be pruned up six to ten feet from the ground depending on age and species of the tree. Pruning shorter trees should not exceed one-third of the overall tree height.



This landscaping uses fire resistant principles. Spacing is in place to prevent continuous horizontal fuels, and trees are pruned at the base to prevent vertical fuel continuum. Ground cover is minimal underneath trees, and landscaping rocks and gravel are used to break up continuity of fuels.

These examples are not intended to cover all potential considerations property owners should be aware of when moving forward with the Firewise USA™ program. The immediate zone, vegetation management, and fire-resistant landscaping are simply items that were noted during the onsite assessment.

9) Successful Firewise USA™ Modifications

When adequately prepared, a house can likely withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both fire resilient and compatible with the area's ecosystem. The Firewise USA™ program is designed to enable communities to achieve a high level of protection against WUI fire loss even as a sustainable ecosystem balance is maintained. Homeowners and the community must focus attention on the home ignition zones and eliminate the fire's potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low-intensity fire that could occur around it. The following photographs were taken in Sun City and are examples of good fire resiliency practices.



This community park space acts as a fuel break. Short grass with mulched landscaped beds, and trees limbed to a minimum of six feet. Areas like this can also potentially act as staging areas or safety zones during incidents, as well as surface water sources for fire apparatus and aircraft.



This structure has good defensible space and has fire-resistant construction. Although some vegetation encounters the house, risk of flame impingement is lowered by limbing up surrounding trees, keeping ground cover below windows low, maintaining a healthy lawn and using landscaped beds and sidewalks as fuel breaks to break up continuity of surface fuels.



This trail has had the vegetation along it modified to improve access and serve as a fuel break. Pruning techniques and selective removal of Ashe juniper and other ladder fuels has been used to keep flame lengths low. These junipers are native, and are well-adapted to the Hill Country region, however when unmanaged by succession events like grazing and fires, they can quickly outcompete other species and create a dense monoculture of fuels, increasing the potential for higher flame lengths and extreme fire behavior. Reducing the density of fuel here allows a healthy forest to persist while reducing the risk of high intensity wildfire disturbing this ecosystem.

For more examples of proper principles, please visit [Firewise USA™.org](https://www.firewiseusa.org)

10) Next Steps & Final Thoughts

After reviewing the contents of this assessment and its recommendations, the Sun City Firewise USA™ Board will determine whether it wishes to continue seeking Firewise USA™ recognition. If the site assessment and recommendations are accepted, the Sun City Firewise USA™ Board will update their action plan to include agreed-upon, area-specific solutions based on the risk assessment recommendations. To maintain national Firewise USA™ recognition status, it will integrate the following standards into its plan of action:

1. Maintain a local Firewise USA™ board/committee comprised of residents and other applicable wildfire stakeholders. This group will collaborate on developing the site's risk reduction priorities, develop a multi-year action plan based on the risk assessment, and oversee the completion of the annual renewal requirements needed to retain an "in good standing" status. Action plans are a prioritized list of risk reduction projects/investments for the participating site, along with suggested homeowner actions and education activities that participants will strive to complete annually, or over a period of multiple years. Action plans are developed by the board/committee and need updating at least every three years.

2. At a minimum, each site is required to invest the equivalent of \$28.54 per dwelling unit in wildfire risk reduction actions annually (the rate is based on the 2021 annual National Hourly Volunteer Rate, which is updated every year in April when the new amount is published). Qualifying expenditures include contractor costs, rental equipment, volunteer activities, grants, etc. Residents completing select home modifications, along with any qualifying work performed at their home and in the adjacent home ignition zones can contribute related hours and/or costs towards meeting the sites collective investment amount.
3. Each participating site is required to have a minimum of one wildfire risk reduction educational outreach event, or related activity annually.
4. Every year participating sites must submit an annual renewal to maintain their “In Good Standing” status. The annual renewal application can be accessed through the Firewise USA™ online management portal ([http://portal.Firewise USA™.org/](http://portal.FirewiseUSA.org/)).

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