



Buck Mountain Community
Wilkes County, North Carolina

Firewise USA® Project

Prepared For
Buck Mountain Community

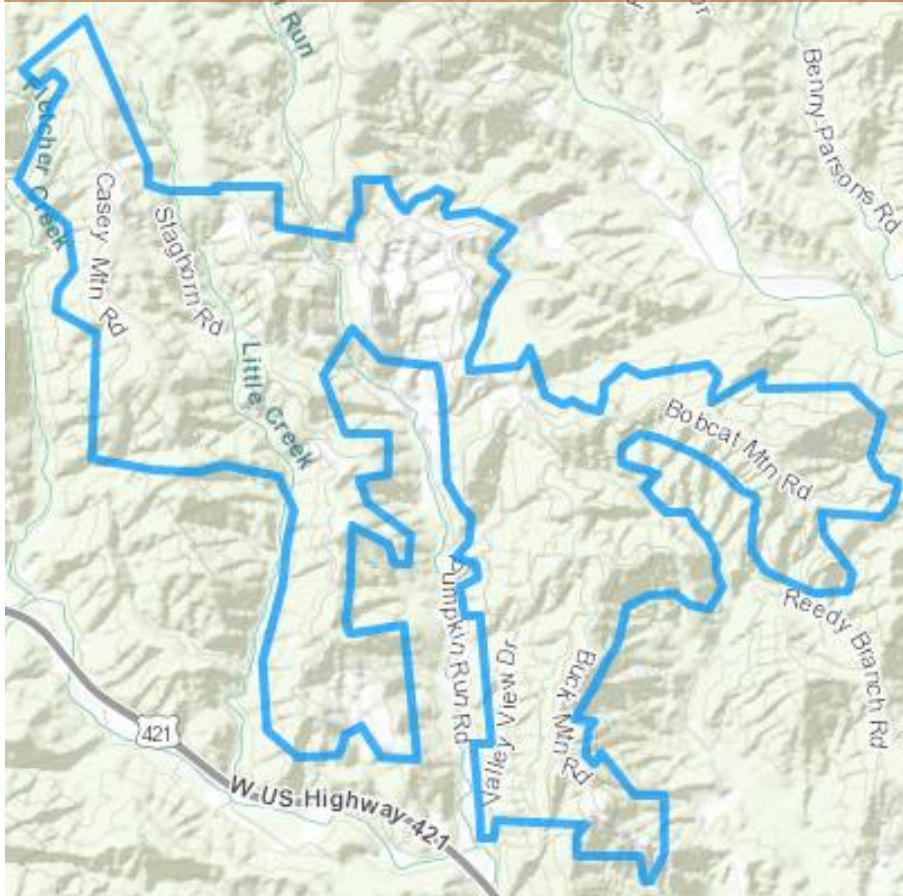
By the
North Carolina Forest Service
Firewise USA®

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**FIREWISE USA®
RECOGNITION PROGRAM
Buck Mountain (Wilkes CO, NC)
COMMUNITY ASSESSMENT**



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 Buck Mountain Community 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.

On February 23, 2018, NCFS employees Hannah Thompson-Welch and Justin Query met with members of the Buck Mountain Firewise Committee. We completed the NC Wildfire Hazard and Risk Assessment Scoresheet (based on the NFPA 1144).

2) Definition of the Home Ignition Zone

The Buck Mountain Community is in 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 Buck Mountain. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

A house burns because of its interrelationship with everything in its surrounding home ignition zone---the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire's path by clearing a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, flammable items such as dead vegetation must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

Included in this assessment are observations made while visiting Buck Mountain. 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. Buck Mountain residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. This zone principally determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings within 100 feet, and in some instances extended out to 200 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) DESCRIPTION OF WILDLAND FIRE CHARACTERISTICS THAT COULD THREATEN THE AREA

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior and during ignition, and the topography. Generally, the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. 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. In general, the steeper the slope, the higher the uphill fire spread and intensity.

Rate of Spread

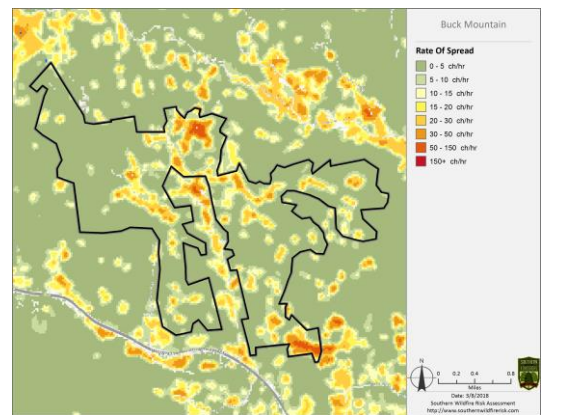
Rate of spread is a fire behavior output, which is influenced by three environmental factors - fuels, weather, and topography. Weather is by far the most dynamic variable as it changes frequently. To account for this variability, four percentile weather categories were created from historical weather observations to represent low, moderate, high, and extreme weather days for each weather influence zone in the South. A weather influence zone is an area where, for analysis purposes, the weather on any given day is considered uniform. The majority(62%) of Buck Mountain can expect a 0-5 chains per hour (0-5 feet per minute) rate of spread. 17% of Buck Mountain can expect a 5-10 chains per hour rate of spread (5-10 feet per minute). 21% can expect greater than 10 chains per hour rate of spread (10+ feet per minute).

Flame Length

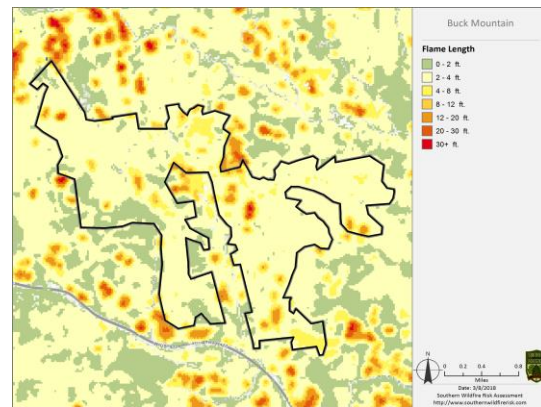
Flame Length is defined as the distance between the flame tip and the midpoint of the flame depth at the base of the flame, which is generally the ground surface. It is an indicator of fire intensity and is often used to estimate how much heat the fire is generating. Flame length is typically measured in feet (ft). 76% of the Buck Mountain community can expect flame lengths of 2-4 feet, with 15% greater than 4 feet.

Characteristic Fire Intensity Scale

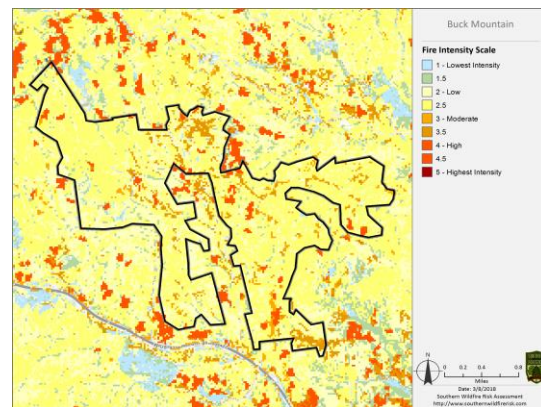
Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very



Rate of Spread – SouthWRAP pages 25-27



Flame Length – SouthWRAP pages 28-30

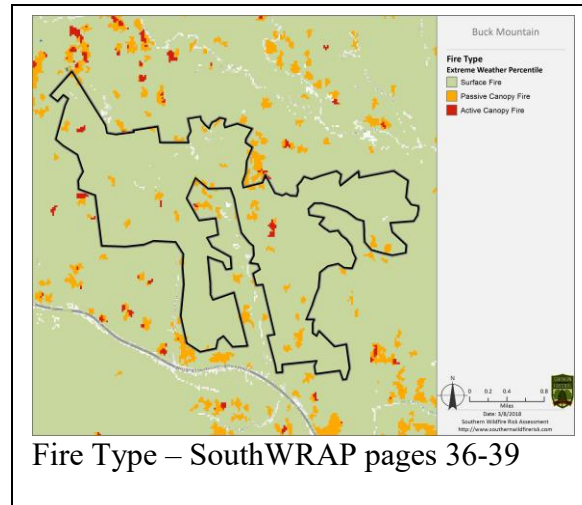


Characteristic Fire Intensity Scale – SouthWRAP pages 31-34

high wildfire intensities. Buck Mountain is nearly 90% in the 2-3. Category 3 is defined as flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

Fire Type

There are two primary fire types – surface fire and canopy fire. Canopy fire can be further subdivided into passive canopy fire and active canopy fire. 97% of Buck Mountain is most likely to experience surface fire. Surface fire is a fire that spreads through surface fuel without consuming any overlying canopy fuel. Surface fuels include grass, timber litter, shrub/brush, slash and other dead or live vegetation within about 6 feet of the ground. The remaining 3% can expect passive and active canopy fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods (Scott & Reinhardt, 2001).



For more detailed information, including maps and charts, please refer to the SouthWRAP report provided.

4) SITE DESCRIPTION –

Community – Buck Mountain is a community that was established in 1995 in Wilkes County, North Carolina, consisting of 236 dwelling units and 353 undeveloped lots. Most Lots range from 1-5 acres each. Of these 236 dwelling units, around 58 are primary homes, housing around 87 people. The others are part time residents or rental units. An average of 5 new homes are built per year.

Structures – Community structures are built with a high variety of building materials; some fire resistant, others not so much. Structures consist of wood, brick, hardy-board, and vinyl siding.

Adjoining Lands – Buck Mountain adjoins private ownership on all sides.

Roads – There are around 30 miles of road throughout Buck Mountain, of which, only 2 miles are paved. Some roads include turns, narrow loops, and small cul-de-sacs that would decrease the use of large emergency vehicles. Some areas are difficult to access due to the network of roads.

Vegetation types – The community has a diversity of vegetation, everything from dense wooded lots to well-maintained lawns with minimal trees and shrubs. Undeveloped lots and common areas are predominantly hardwood litter, along with Rhododendron and Mountain Laurel cover.

Topography – The topography of the area ranges from 30-60% slope with varying aspects.

Fire history – The Buck Mtn. Fire burned over 800 acres in 1999 within its boundary. The Summit Ridge Fire burned over 400 acres on adjoining property. Over the past 6 years, they have had only 2 fires.

5) ASSESSMENT PROCESS

Hannah Thompson-Welch, Justin Query, and Nathan Gatlin gathered Buck Mountain information to complete the NC Wildfire Hazard and Risk Assessment Scoresheet (based on the NFPA 1144). The Buck Mountain Firewise Committee provided valuable information on the development of the community, the landowners involved, concerns of the community, and continuation of maintaining recognition as a Firewise USA® site. We completed a drive through the community. We completed 3 NC Firewise Individual Home Owner Assessments. Most structures assessed scored in the Moderate to High Hazard range. The scores were mainly affected by the proximity of shrubs and landscaping to the structures, the lack of 30 feet of defensible space, and deck construction.

6) IMPORTANT CONSIDERATIONS

The Firewise USA® program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a WUI setting. Homeowners already balance their decisions about fire 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 directly relate to the ignitability of their home ignition zones during a wildfire.



Defensible space must expand beyond 30 feet as slope increases. The Buck Mountain community should consider starting at 50 feet due to the topography of the community.

Litter Clean Up

Keeping roofs and gutters clean and clear of leaves or needles is critical to minimizing ignition from embers. Flammable attachments (e.g., untreated wooden decks) are very vulnerable to ignition and can carry fire to the main structure. Keep flat surfaces clear of debris. Clean out any leaves, needles or stored material that could burn from under decks or porches. During this high fire danger season, remove large potential heat sources such as piles of firewood, spare building materials, vehicles - anything that could catch embers or ignite by flames in the grass needs to be as far away from dwellings as possible.

Lack of Defensible Space

Remove fuel sources close to the house. The perimeter of the home and attachments out to about 5 feet is vulnerable if there is anything there - organic mulch, woody shrubs and

plants- that could ignite and thus allow flames to touch the house. Wind-driven fire will create a blizzard of embers that will pile up in corners where you might normally find accumulations of leaves or needles around your home. These corners, nooks and crannies should be clear of any flammables. If there are any limbs or branches overhanging the roof, or any branches close to/touching the house, trim back to at least 10 feet from the house. Keep grass mowed low and well-watered if possible.

Rhododendron and/or Mountain Laurel Thickets

More than a century of fire suppression has resulted in the increased abundance of Rhododendron throughout the Appalachian Mountains. Rhododendron has historically been most frequently associated with mesic sites, but can now be found proliferating toward drier mid-slope and ridgetop areas. The increased presence of Rhododendron in understories of the Appalachian Mountains has negatively affected forest health. Two such negative effects are the stunted growth or absence of over-story tree regeneration and the creation of dangerous fuel complexes. (Harrell, Chuck; Zedaker, Shep; U.S. Department of Agriculture, Forest Service, Southern Research Station; 2010)

7) OBSERVATIONS AND RECOMMENDATIONS

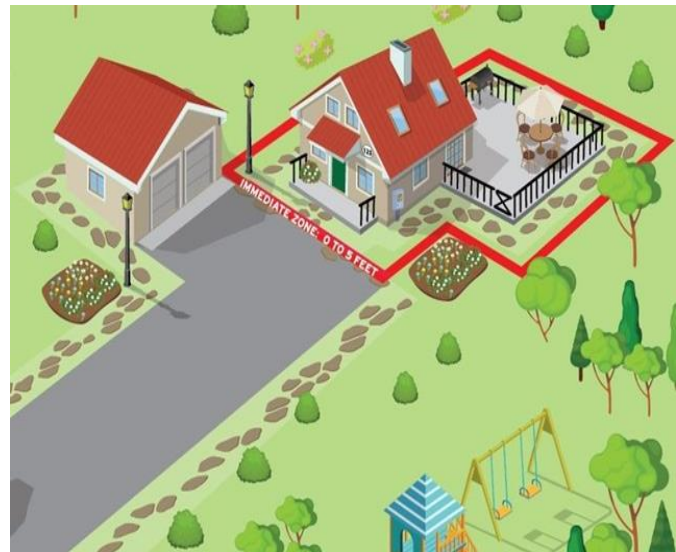
Ignition resistant building materials, construction techniques, along with vegetation and debris removal, play a vital role during wildfires. Limiting the amount of flammable vegetation and materials surrounding the home and increasing the moisture content of remaining vegetation is vital to increase the survivability of a home. The home itself and everything around it up to 100 feet is known as the ‘home ignition zone.’ In areas across the country where the risk of wildfire is high, the home ignition zone extends up to 100 feet beyond the actual home structure. Within this 100-foot area, there are three zones:

The Immediate Zone includes both the home and the area of 0 to 5 feet out from the furthest attached exterior point of the home (including wooden decks, fences, and boardwalks) for at least 5 feet on all sides. In this area:

- Dead vegetation, dried leaves, pine needles, and ground debris accumulation should be frequently removed from this area.
- Hardscaping components should be installed around the perimeter of the home – keep them free of ground litter and debris. Concrete, stone, or gravel walkways are great additions to the immediate zone.

Remove trees and shrubs from this area or replace with succulents. Water plants, trees and mulch regularly.

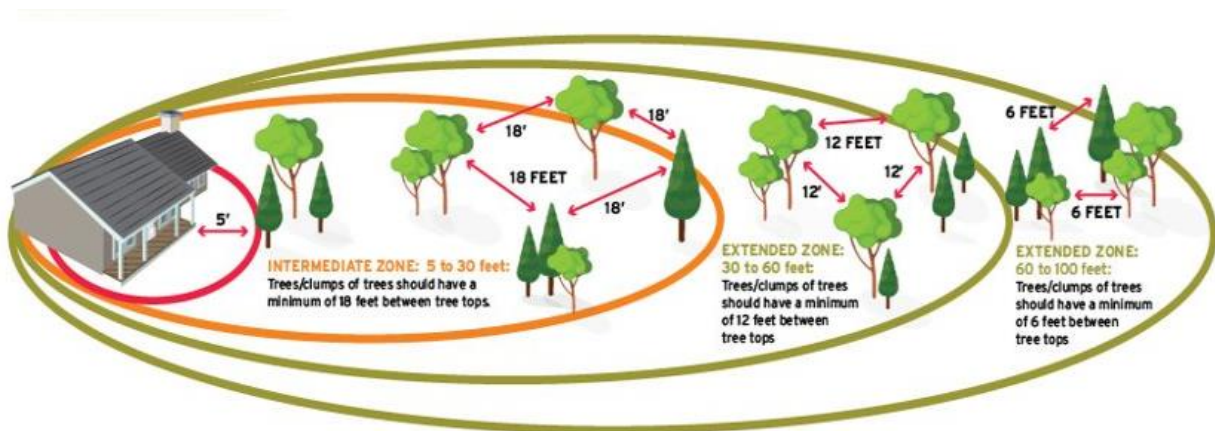
- Use ignition resistant building materials for walls/roofs. Seal gaps and crevices.



- Keep roofs clean from leaf litter and pine needles.
- Metal roof gutters do not ignite, only the debris that accumulates in them – that's why keeping them clean is so important.
- Place 1/8-inch metal mesh screening between low profile decks to the surface of the ground to prohibit embers from collecting underneath.
- Cover vents with 1/8-inch metal mesh screening to prohibit ember intrusion.
- Use non-flammable fencing material when attaching directly to the siding.
- Remove combustible materials from crawl spaces, elevated decks/porches, and carports.
- Choose multi-paned tempered glass for windows and glass doors.

The Intermediate Zone is 5 to 30 feet from the home, and plants in this zone should be low-growing, well irrigated and less flammable. In this area:

- Clear vegetation from under large stationary propane tanks.
- Keep lawns and native grasses mowed to a height of 4 inches.
- Create fuel breaks with driveways, walkways/paths, patios, and decks.
- Remove ladder fuels (vegetation under trees) so a surface fire cannot reach the crowns. Prune trees 6 to 10 feet from the ground; for shorter trees do not exceed 1/3 of the overall tree height.
- Trees/clumps of trees should have a minimum of 18 feet between tree tops.
- Water plants, trees, and lawns to keep them from becoming dry.



The Extended Zone extends out from 30 to 100 feet, keep in mind your property line may end prior to 100 feet. In these instances, working collaboratively with your neighbor is important to helping protect multiple properties. Property owners with more than 100 feet of land that extends beyond the home should consider additional actions up to 200 feet into the Extended Zone to provide additional benefits in protecting the home and outbuildings.

In this area:

- Dispose of Heavy accumulations of ground litter/debris.

- Remove dead plant and tree material.
- Remove small conifers between mature trees.
- Remove vegetation between storage sheds or other outbuildings within this area.
- Trees 30 to 60 feet from the home should have at least 12 feet between the canopy tops. Trees 60 to 100 feet from the home should have at least 6 feet between canopy tops.

8) SUCCESSFUL 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 Firewise 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.

A homeowner must focus attention on the home ignition zone 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 mesh on this foundation vent will help prevent embers from entering under the house.

Buck Mountain residents are reminded to be conscious of keeping high-intensity fire more than 100 feet from their homes. It is important for them to avoid fire contact with their structures. This includes firebrands. The assessment team recommends the establishment of a 'fire free zone', allowing no fire to burn within ten feet of a house by removing fuels located there. It is a bad idea for fire to touch a house during a wildfire. Remember that, while wildfire cannot be eliminated from a property, it can be reduced in intensity.

Homeowners are reminded that street signs, addresses, road widths and fire hydrants do not keep a house from igniting. Proper attention to their home ignition zones does. They should identify the things that will ignite their homes and address those.

Homeowner Takeaway Message: Neighbors helping neighbors

The program goal is to reduce the loss of lives, properties, and resources to wildland fire by building and maintaining communities in a way that is compatible with our natural surroundings. One of the most important things Firewise USA® participants learn is neighbors can help neighbors and they are often inextricably linked together in their wildfire safety solutions.

Landowners understandably prefer to make choices related to their surroundings. But we often believe there's nothing we can do, that wildfire mitigation is too difficult or prohibitively expensive. Firewise USA® provides up-to-date information for homeowners and communities to help change this situation. Residents who participate in the Firewise process create an action plan that commits them to a sustained program of wildfire mitigation, which is generally both physically doable and cost-effective. Ultimately, by creating your own plan, you'll be able to develop unique solutions to your wildfire mitigation challenges.

9) NEXT STEPS –

After reviewing the contents of this assessment and its recommendations, the Buck Mountain Firewise Committee will create agreed-upon, area-specific solutions to the Firewise recommendations and create an action plan.

Assuming Buck Mountain will continue national Firewise USA® recognition status, it will integrate the following standards into its plan of action:

- Continue to sponsor a local Firewise Committee that maintains the Firewise USA® program and status.
- Update their wildfire risk assessment document **at least every five years.**
- Oversee the risk assessment and uses it as a tool to determine risk reduction priorities within the defined site boundary, and as a guide for developing the action plan. Action plans are a prioritized list of risk reduction projects/investments, suggested homeowner actions, and education activities that participants will strive to complete annually, or over multiple years. **The action plan must be updated at a minimum of every three years.**
 - Some achievable goals might include:
 - Set goals and measure cooperating homeowners working on their Home Ignition Zones (HIZ)
 - Complete individual home assessments
 - Encourage the use of home inventory programs like knowyourstuff.org
 - Quarterly community Firewise newsletter
 - Reflective Signage
 - Email Blast list
 - Scheduled clean up days
 - Chipper programs (brush disposal)
 - Mitigation work in common areas
 - Assisting neighbors that need help in the HIZ
 - Annual Fire Safety workshop
- Each participating site is required to have a minimum of one wildfire risk reduction educational outreach event, or related activity annually.

- The number of **dwelling units** and the number of residents living within the site's boundary must be updated annually in the renewal application. The number of dwelling units within the site must be included in the renewal application and updated annually. For explanation purposes, a single dwelling unit is a household/residence built for occupancy by one person, a family, or roommates; for all types of housing including cabins, mobile homes, apartments, condominiums, etc.; i.e., an apartment building with 10 units would be counted as **ten** dwelling units.
- **Invest a minimum of \$24.14 per dwelling unit**, in wildfire risk reduction actions annually (based on the 2017 annual National Hourly Volunteer Rate). The rate will be updated in April of every year when the new hourly rate is published.

As of January 8, 2018, the **calculation for the investment requirement** will no longer be based on the number of residents, it will be based on the number of dwelling units within a site's boundaries and the national hourly volunteer rate.

- A renewal application must be submitted by November 15, every year, through the Firewise USA® Portal. Renewal applications will be reviewed to ensure they meet the annual criteria. Each approved renewing site will receive a Certificate of Renewal during first quarter of the following year.

NCFS Assistance

The NCFS is committed to active forest protection of North Carolina's forests, both traditional and those in the wildland urban interface. Assistance in forest and community protection can be obtained through your local NC Forest Service county office. Your NCFS county staff can assist with Firewise Site Visits and identify areas where grant monies may be available. For assistance in forest protection and becoming a Firewise USA® site, interested individuals may contact the local NCFS county office or contact the local Mitigation Specialist direct.

For more Firewise information please visit:

- The NFPA Firewise USA® Website: <http://www.firewise.org/>
- The NC Firewise Website: <http://www.ncfirewise.org/index.htm>

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Attachments

- Firewise Home Owner Assessment
- How to Prepare Your Home for Wildfire
- Wildfire Service Project Ideas
- Firewise Guide to Landscape and Construction
- Landscaping Guidelines to Protect from Wildfire
- Selecting Firewise Shrubs
- Firewise Landscaping in NC
- SouthWRAP report