

Minnesota Firewise Handbook

Helping fire-prone neighborhoods adapt and reduce wildfire risk.



Contents

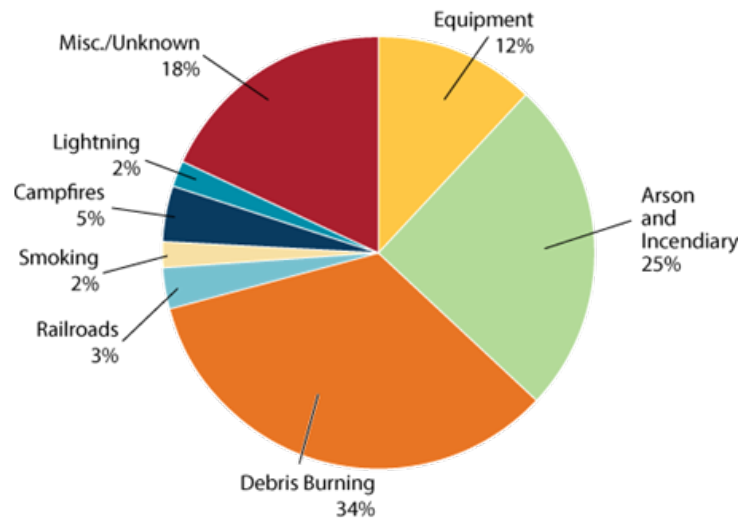
- Contents 1
- Background..... 2
 - Minnesota Wildfires 2
 - Firewise..... 2
 - Why is Firewise Important?..... 3
 - Wildfire Basics 3
- Homeowner Options 4
- Community Options 6
- Community Wildfire Protection Plan 7
- Path to successful mitigation..... 8
 - Chipper Days..... 8
 - Access improvements..... 9
- Become a Firewise USA® Site 9
- Firewise Community Grants 10
- DNR’s Role 11

Background

Minnesota Wildfires

1894 was like no other, with drought conditions prevailing for months and the heat of summer unrelenting. By the end of the day on September 1, towns and the surrounding countryside would lie in ashes. Entire communities vanished and 413 people died. The loss of life, homes, and property was staggering, but the story would repeat itself again when wildfires destroyed more communities in 1908, 1910, and 1918.

Since then, state laws regulating open burning, effective fire prevention, and control efforts have reduced the catastrophic effects, but the loss of life, homes, and property continues today. In 2021, the DNR and other wildfire agency partners responded to over 2,000 wildfires in one year. On average, the DNR responds to over 1,000 wildfires each year and over 90% are caused by people. Burning vegetative debris is the largest cause, but arson, equipment and vehicles, and campfires are also contributors.



While you can take steps to help prevent wildfires, such as composting instead of burning, supervising all fires, and making sure they're out cold, many wildfires start elsewhere and quickly spread across the landscape putting other property and homes in danger. Maintaining good defensible space around your home and neighborhood is key to survivability. To help protect people, property, and natural resources, the DNR participates in Firewise USA®.

Firewise

Firewise USA® is a national program helping neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of homes and communities and reduce wildfire risks at the local level. It is a cooperative, non-regulatory program administered by the National Fire Protection Association and co-sponsored by the U.S. Forest Service, U.S. Department of the Interior, and state forestry organizations. It emphasizes community responsibility for planning a safe community and effective emergency response, and individual responsibility for safer home design, construction, landscaping, and maintenance.

Firewise USA® was developed using breakthrough research and rigorous testing on home ignition, fuels, ember production, past wildfire events, and more. The developed strategies and practices are

continuously reassessed using new data from the field and risk assessment tools. By following protocols created by Firewise for new construction, or by assessing and removing hazards on a current home site, the threat of a house igniting during a wildfire is greatly reduced or eliminated.

Why is Firewise Important?

Development into natural areas has increased with population growth, creating a complex landscape known as the wildland-urban interface (WUI). These areas, where one or more homes are built adjacent to or within natural landscapes (i.e., prairies and forests), pose a higher vulnerability to the threat and impacts of a wildfire.



Even modern firefighting forces aren't always a match against a raging wildfire. They do what they can to save homes threatened by any type of fire, but there are not enough of them to protect every home. They must choose which houses to protect when many are threatened at the same time. If access is poor, combustibles are close to the building, the house is surrounded by evergreens, or other flammability factors are present, firefighters may have to bypass the home.

Thankfully, there are ways homeowners can help reduce their own risk and help their community. Those living in wildfire prone areas play an important role in making choices that helps reduce wildfire risk. Not only that, but they play a key role in their community's preparedness strategy as well. Through the Firewise program homeowners have an opportunity to learn how to protect their home. It also provides fire departments with resources to assess and recommend protective measures and offers community grants to assist with projects. These preventative measures can also help provide peace of mind when disaster strikes.

Wildfire Basics

Several factors affect the intensity of wildfires and their potential to damage or destroy structures. Once started, wildfires can travel at an amazing pace, faster if one or more conditions are present: low humidity, lots of fine fuels (i.e., thin grasses and other easily combustible vegetation), warm temperatures, or wind. Under the right conditions, a wildfire can easily outpace a fleeing person.

Fires ignite homes by increasing the temperature through one of four methods.

1. **Sparks or firebrands** from a convective column or transported by windy conditions can result in hot embers coming into direct contact with other fuels up to one mile ahead of the fire front.
2. **Radiation** occurs when burning objects release energy in the form of heat. A campfire is a good example of heat transfer through infrared radiation. Excessive radiation can cause a nearby material to ignite without the movement of air.
3. **Conduction** occurs when an object is heated through direct contact between materials. Some materials are better conductors of heat than others, such as metal. Example: Heat from a log raises the temperature of a house wall until its temperature reaches its ignition point.
4. **Convection** is the transfer of heat by the movement of a gas or liquid. In a wildfire, heat from the forest floor rises and preheats leaves and branches of trees above the fire.

Understanding how fires start and spread can help homeowners and communities assess their property and understand how their actions can reduce wildfire risk. Research shows that embers and small flames are the main cause of home ignition and that homes ignite due to the condition of the home and what's around it, up to 100' from the foundation.

Firewise provides assessments, methods, and plans to increase survival when a wildfire threatens and DNR Forestry staff is here to help.

Homeowner Options

Home protection begins with understanding the dynamics of fire, then using those principles to assess the home's surroundings and eliminate hazards that make a structure more susceptible to wildfire. The more hazards that can be eliminated, the better the chance a home will be able to survive a wildfire. All homes, regardless of age, benefit from being Firewise.

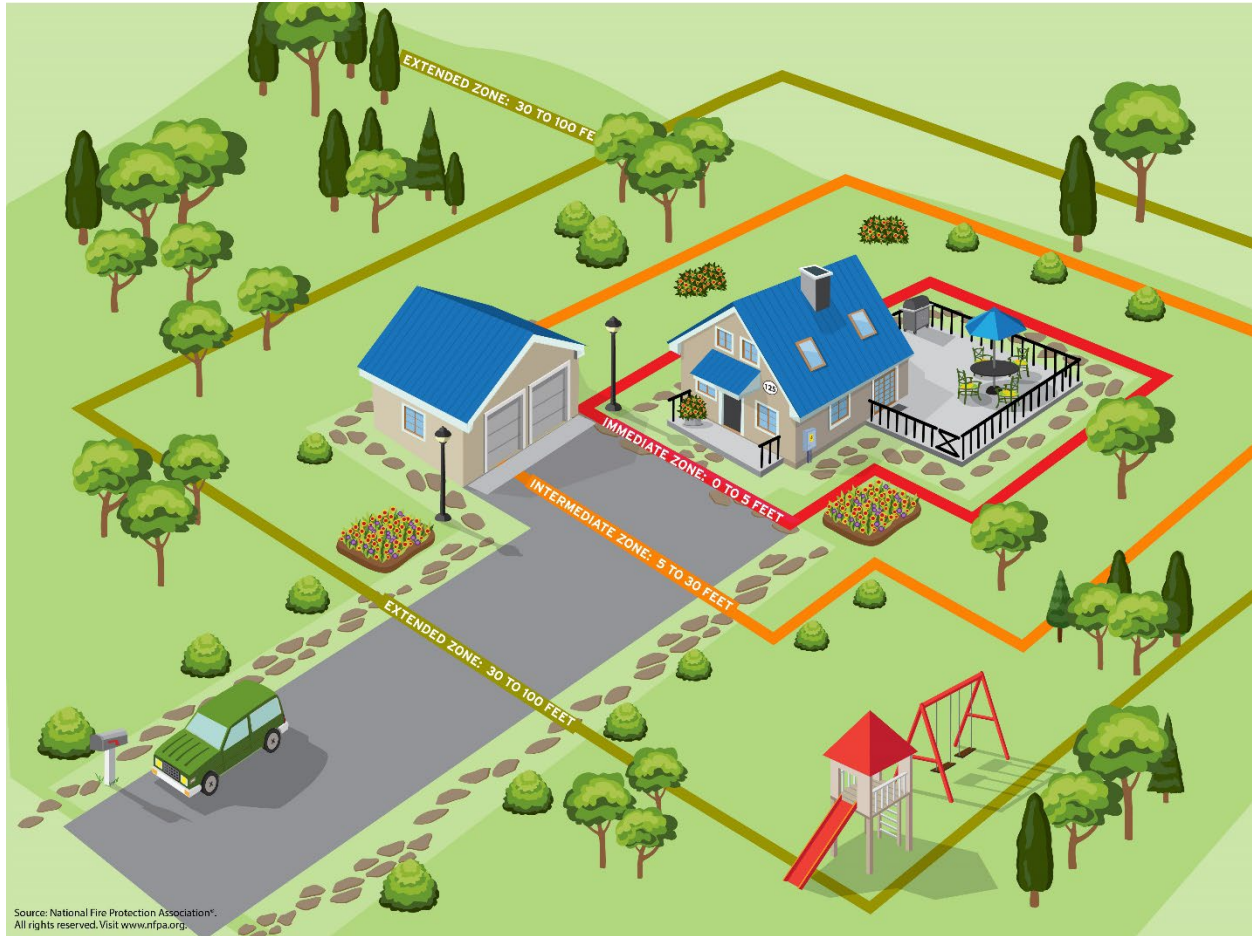


Three steps homeowners can do:

1. Complete a hazard assessment.
2. Create a defensible space around their home by completing Firewise practices.
3. Organize a minimum of ten different homeowners, or your greater community, and apply for a grant to help cover the costs of completing a community wildfire protection plan or wildfire mitigation work.

Creating a Defensible Space

Homeowners can help protect their home and property by creating a “defensible space.” This area has reduced fuels between your home and the untouched wildland and extends up to 100' in diameter around your home or cabin.



A [homeowner hazard assessment](#) guides homeowners through a series of questions designed to rate the ignition hazard and the defensible space around the home and outbuildings. This will help homeowners understand what improvements can be made. Once the assessment has been completed, homeowners may want to discuss options with a [Regional Firewise Specialist](#).

Homeowners can also contact their local forestry office to request a Level 2 assessment where a professional does an on-site assessment to determine the home's wildfire risk (see below, under Community Options, for more details).

Creating a defensible space around your home and community can also include:

- Organize or join a group focused on protecting homes from fire. Cooperatives have been formed to develop protection strategies to prevent future fires and the related losses.
- Review and choose mitigation projects to complete from [Will Your Home Survive? 50 Things You Can Do](#).
- Contact the local fire department to ask about the wildfire risk on the landscape or an overview of areas of concern in your community.
- Contact the local [DNR Regional Firewise Specialist](#) for information on how to reduce the threat of wildfires.

Community Options

Firewise offers various home risk assessments that can be completed by community members, organizations, schools, or fire departments, and can be supported through grants to the community from the Firewise program.

Level 1 Assessment

Level 1 assessments use map analysis and aerial photos to make a quick and coarse assessment of wildfire risk. If a school or community wants to pursue Level 1 assessments, they can contact the local [DNR Regional Firewise Specialist](#) for assistance. Level 1 assessments are scored from 1 to 5:

1. No risk - the structure has no or very few trees near the building.
2. Low risk - there are trees nearby but are at least 30 feet from the structure.
3. Moderate risk - structures have trees within the 30-foot defensible zone.
4. High risk - trees are not only within the 30-foot zone, but they obscure at least part of the building on at least one side.
5. Extreme risk - trees within the 30-foot zone obscure the view of the structure on multiple sides, but particularly the south and west sides.

Once completed, the assessment team can present the findings to the local community.

Level 2 Assessment

Level 2 assessments are completed onsite by your local Firewise representative, fire department, or local volunteer organization using an application called Survey123. Survey123 assesses an individual homeowner's wildfire hazard and associated risk. It creates and manages Firewise assessments, exports the collected data, then analyzes and sends the individual homeowner the assessment results. Homeowners can use these results to decide how to mitigate their risks.

Grant funds may be available to cover the cost of assessments and possibly some of the mitigation projects for communities. For more details, see the Firewise Community Grant information below.



Community Wildfire Protection Plan

A Community Wildfire Protection Plan (CWPP) is a roadmap for mitigating wildfire risk and becoming Firewise. This plan can take a variety of forms based on the needs of the community. CWPPs may address issues such as wildfire response, hazard mitigation, community preparedness, and structure protection. The plan can be a stand-alone product or an addendum to a hazard mitigation plan.

The process of developing a CWPP can help a community clarify its priorities for the protection of life, property, and critical infrastructure in the WUI. It can lead community members through discussions regarding management options and its effects on the surrounding community. A facilitator can be hired to oversee the process. They can be a member of the community or from an outside organization.

The minimum requirements for a CWPP are:

1. Collaboration: The plan must be developed by local and state government representatives, in consultation with federal agencies and other interested parties.
2. Prioritize Fuel Reduction: It must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.
3. Treatment of Structural Ignitability: It must recommend measures that homeowners and communities can take to reduce the ignitability of structures addressed by the plan.

Creating A Plan

The first step in [preparing a CWPP](#) is to assemble a diverse planning team. When possible, the team should include federal and state land management agency employees and a broad range of stakeholders (e.g., forest management groups, city council members, resource advisory committee members, water districts, recreational and environmental groups, watershed councils, and forest products industries).

Once members are identified, a base map showing locations of the WUI is developed. From this, the committee develops a community risk assessment identifying fire hazard areas within the community. Then hazard reduction priorities and recommendations are created. The final step is to develop an action plan that identifies the roles and responsibilities of the committee members so the plan can be implemented.

With regular meetings and planning, the development of a CWPP could take 12-18 months. If the plan is an addendum to a hazard mitigation plan, there is no need to repeat information.

Once completed, the plan requires three entities agree to the final contents:

- Applicable local government such as the county, city, township, or Tribal government
- Local fire department(s)
- State Forester

Grant funds may be available for communities to help plan, develop, or update a CWPP. Eligible expenses may include in-kind time, travel reimbursement, printing and postage, and expenses associated with the creation of the final product, as described in the grant application budget. See Firewise Community Grants below for more information.

A CWPP is required prior to receiving further funding for hazard mitigation and recovery work through the National Fire Plan, FEMA mitigation grants, and other resources.

Path to successful mitigation

Mitigation can take many forms. Unfortunately, fires do not have to be huge to destroy structures. All it takes is the right combination of temperature, wind, humidity, and fuels. Just as there are many ways a home can ignite from a wildfire, there isn't one correct way to reduce hazards, but mitigation can help prevent the unthinkable.

Some of the most successful efforts have been chipper days and access improvements. Communities should consider taking advantage of group efforts when possible. Uncoordinated efforts have higher costs, as do contracted services completed individually rather than collectively.

Chipper Days

A neighborhood can efficiently coordinate hazard fuel reduction efforts through "Chipper Day" events. When groups of at least 5-10 neighbors plan and hire a chipping contractor, either independently or through a Firewise coordinator, the effects are multiplied and the entire community benefits.

A helpful tip for success is finding an individual to organize the day and provide information to others in the neighborhood, as well as working with a local organization or fire department to act as the financial officer.



When using grant funds, the process to complete a chipper day may look like this:

1. Residents meet with a Firewise Specialist or Fire Department member for an on-site Home Risk Assessments, or Level 2 Home Assessment to identify priority fuel hazards within the 30-foot and 100-foot home ignition zone.
2. Neighbors coordinate plans to complete work and encourage other neighbors to participate.
3. Participants work to remove brush, dead trees, and other fuel hazards from their property, by a pre-set date. Work time can be tracked for the in-kind match.
4. Materials are stacked at a predetermined location- either central within the neighborhood, or along the roadway,

5. A community-hired chipping vendor collects and chips the debris, either leaving chips on site, or hauling away.
6. Project expenses are submitted to DNR for reimbursement, per the executed grant contract.

Access improvements

Better access creates efficient evacuation of residents and effective deployment of firefighting resources. Replacement of substandard culverts to permit passage of fire engines and clear signage are important factors when a wildfire threatens. Mutual aid agreements require clear signage, both during the day and at night, which is critical if firefighters from other communities need to find homes.

Completing an access project benefits many homeowners when it coincides with other road maintenance projects. All the planning and work is completed at the community level with little to no cost to homeowners.



Become a Firewise USA® Site



FIREWISE USA®
RESIDENTS REDUCING WILDFIRE RISKS

Firewise USA® provides communities with the knowledge to maintain fire readiness, while ensuring firefighters can use equipment more efficiently during a wildland fire. The program draws on a community's spirit, resolve, and willingness to take responsibility for ignition potential.

Activities under Firewise USA® involves assisting individuals, neighborhoods, and residential communities with actions to help prevent home ignitions from wildfire. These may include construction, landscaping, maintenance, and helping communities become recognized Firewise USA® sites. Communities can apply for grant funds to become a registered site and to create a CWPP.

To become recognized, communities complete five actions:

1. Form a Firewise board or committee and nominate a lead community contact.
2. Complete a community wildfire risk assessment.
3. Use the risk assessment plan, develop a multi-year action plan to prioritize actions that reduce wildfire risk in the community.
4. Hold a Firewise education event and risk reduction event in the community.
5. Work with your Regional Firewise Specialist or County Firewise Specialist to apply through Firewise USA®.
6. Once a community becomes a Firewise USA® site, it must renew its status annually.

While counties are not eligible for recognition, they can assist in all aspects of a community's recognition process, including assisting with community assessments, helping create an action plan, participating in an annual Firewise Day, and guiding local wildfire mitigation projects. Counties can also act as a liaison with the state and federal programs.

Firewise Community Grants

The Minnesota Firewise Program works with communities by granting funds for CWPP development and wildfire risk reduction projects and activities.

Community groups such as fire departments, organized townships, cities, counties, and nonprofit groups with 501(3)(c) status can apply for project funding. A community qualifies for Firewise grants by having:

1. Be recognized or use part of the requested grant funds to become a Firewise USA® Community.
2. A Wildfire Action Plan such as a CWPP*.
3. Advanced preparation in the event a wildfire threatens.
4. Community education programming on fire prevention.

*At a minimum, a community should have a Wildfire Emergency Action Plan. In most cases, Emergency Operations Plans (EOP) prepared by emergency management agencies or fire departments/districts can be used if it contains specific information on wildfire emergencies, preparations, and education.

If no plan exists, the grant request should be for the development of a CWPP, or modifications and additions to an EOP to address wildfire concerns.

Grant requests can include activities in one or more of the following categories:

1. Planning and Assessment Activities

- a. **Planning Activities** should also current, existing conditions and future concerns posed by continued development. Activities may include community staffing, printing, materials, distribution, etc.
- b. **Assessment activities** include a detailed assessment of structures either independently or with direct support from the DNR. Communities can include Level 1 and 2 or only Level 2 assessments. Applications can also include the improvement of an existing assessment as part of their planning activities.

2. Mitigation Activities can include hazardous fuel reduction practices and risk mitigation activities.

- a. Hazardous fuel reduction modifies the fuel complex near structures so a wildfire will not exhibit erratic, aggressive behavior. Practices including tree removal, stand reduction, reduce vertical fuels (i.e., pruning low conifer branches), fire behavior reduction treatment, fuel break construction and maintenance, piling and burning slash, and brush disposal.

- b. Risk mitigation activities focus on the reduction of damage to structures and other assets when a wildfire occurs. Activities center on making the suppression response more effective or to making the structure self-defensible by mitigating specific risks. Activities include the creation of defensible space, relocation of permanent flammable assets, access improvement, and signage.
- 3. **Information and Education Activities** are a large component of creating a self-sustaining program. These types of activities may include:
 - a. Materials preparation, procurement, and distribution
 - b. Public meetings and special events (e.g., fairs, shows, school visits)
 - c. Improved wildland fire training for firefighters

Grant Details

The [Firewise Community Grant webpage](#) has eligibility requirements, project examples, application, and timeline.

In addition to Firewise grants, fire departments can also apply for [Volunteer Fire Assistance grants](#) or [other assistance](#) such as low-cost equipment, technical assistance, and wildland fire training.

DNR's Role

Forestry staff are a critical component of the Firewise program. The DNR Division of Forestry is responsible for protecting Minnesota's natural resources and DNR foresters and fire staff are the experts in wildland firefighting. Being involved in Firewise is a part of forestry's job and it helps reduce or eliminate fire prone properties, ensuring higher safety in local communities. Communities, fire departments, and others look to the Division of Forestry for advice, assistance, and leadership.

Staff may work with homeowners, fire departments, realtors, cities, counties, and other governmental units such as the U.S. Forest Service. They can provide information to community members and organizations such as Rotary, Lions, and Masonic clubs; schools; real estate businesses; homeowners, lake, and resort associations; and other community groups. Staff can also attend scheduled events, place ads in local newspapers, request appearances on radio talk shows, and make presentations at elementary schools.

Potential vendors should also be made aware of Firewise. They can be a big asset when implementing mitigation projects. Once informed of the requirements and reasoning behind being Firewise, they'll be able to tackle projects and complete the work more quickly. Having a list of vendors can make hazard mitigation projects easier to start and complete on-time.

Firewise Resources

Every community has unique needs and requirements, but the basis of the Firewise program is very similar throughout the state. Many resources are already available to help pave the path to a Firewise community.

Websites and Brochures

[Firewise USA](#)[®] website highlights successful Firewise educational efforts, provides tips, and training.

The [DNR's Firewise page](#) provides Minnesota specific information, Firewise grant opportunities, brochures, homeowner assessment form, and additional resources such as creating a CWPP and landscaping tips.

Presentation and Videos

A [Firewise presentation template](#) can be used as is or modified to meet a specific situation or audience. The presentation topics include Firewise tips for homeowners, risk assessment, fire ecology and behavior, and building a Firewise Program in your community.

Videos on communities in Minnesota who have used Firewise principals and been impacted by wildfire.

- [Rooted in the Future](#) Understand the importance of caretaking of our lands and waters and how landowners are a part of the solution.
- [Prepare for Wildfire: The HWY 1 Fire Wake-Up Call](#) Address community preparedness in the face of the 2012 Hwy 1 wildfire in Ely, Minnesota. It provides residents the tools they need to prepare for this kind of event.
- [Living with Fire: Why and How?](#) Information and useful tools for residents who live in a fire prone environment to reduce their risk of property and loss.