Wildfire Risk Reduction Best Management Practices

Beware & Prepare

Studies have shown that a healthy forest with sufficient growing space for trees will be resilient, more drought tolerant and less susceptible to fire. Creating a forest stewardship plan is the first step in fire safe management of your property.

Wildfires do not respect property boundaries. Share this information with your neighbors and consider creating a neighborhood wildfire prevention and evacuation plan.

Purpose

Wildfire Risk Reduction Practices will help property owners:

- To evaluate vulnerability of property and structure's to damage or destruction by wildfire
- To choose protection measures which comply with the Critical Areas Ordinance.
- To identify a clear set of risk reduction practices, standards or guidelines property owners can use to reduce the threat of wildland fires on or near their properties.

Definitions

To help the reader the following acronyms or terms are defined. These terms are intended to relate to this specific section and are not intended to reference any other document.

CAO
King County Critical Areas Ordinance

Fuel Break
An area where brush, trees and other vegetation is removed or thinned out in order to stop or reduce the spread of fire.

Fire Protection District
A self-governed agency providing fire protection and emergency medical services within a specific geographical area in unincorporated King County.

Wildland Interface Area
Heavily forested area bordering an individual's property that may become a threat from a forest fire.

Evaluate Your Property's Vulnerability to Wildfire

How Homes Ignite

To understand a home's wildfire risk and what you can do to protect it, first consider how wildfires spread. Wildfires do not always burn everything in their paths — fire behavior is affected by fuel, weather, and terrain. Here is a look at the role these elements play:

Fuel: Fuel includes anything that burns – trees, shrubs, grass, homes, fences, sheds, and other vegetation and structures. Fine fuels, such as long dead grass and conifer needles, spread fire faster than coarse fuels, such as limbs and logs.

- *Surface fuels* include dry grass, shrubs, conifer needles, dead branches and twigs. Surface fires tend to be relatively low-intensity fires, but homes are at risk if there are continuous fuels that can burn right up to the house.
- *Ladder fuels* include tall brush, low branches, and other fuels that can carry fire from a low-intensity ground fire up into the tops of the trees, known as the crowns or canopies.
- *Crown fuels* are flammable tops of trees and tall shrubs, also called canopies. Once a wildfire becomes a crown fire, it spreads rapidly and reaches extreme intensity. Eliminating ladder fuels and keeping trees within the zones of defense thinned appropriately helps prevent a fire from reaching the canopy. Breaks in tree canopies, such as roads and utilities, can keep high-intensity crown fire from directly reaching communities. During a high-intensity wildfire, homes are far more likely to be threatened by firebrands (burning embers) that can be carried more than a mile by strong winds and land on roofs and landscape vegetation.

Weather: Dry, windy weather contributes significantly to the spread of wildfire. Drought conditions accompanied by low humidity lead to dry vegetation that burns easily. Wind can cause wildfires to grow quickly, to die down, or to change direction. Wind can also carry firebrands long distances — up to a mile or more.

Terrain: Generally, fire moves more quickly uphill and has longer flames than on level ground or when spreading downhill. Even the direction of the slope and how much sunlight or wind an area receives can impact fire behavior.

Hazard Assessment

There are a number of steps you, your family, and your community can take to prepare for potential wildfires. The first step is to look at climate, vegetation, and terrain of your community to determine the hazards facing your property. The following categories are general descriptions of hazards that will help guide you when deciding how to best protect your home. Not all characteristics must be present. The category that most closely resembles the characteristics of your area determines your hazard level.

Low Hazard Areas:

- *Vegetation:* Limited wildland. Forest and other heavy vegetation is not continuous and is interspersed with urban development. Area contains primarily short grass, low shrubs, light herbaceous (non-woody) plants, such as groundcover, bedding plants, and perennials, and deciduous trees, such as aspen, poplar, maple, oak, and beech.
- *Weather:* Humid climate with a short dry season. May experience hot, dry, windy conditions, but not necessarily every year.

Moderate Hazard Areas:

- *Vegetation:* Wildland continuous around and throughout the community. Tall, heavy grass; small, flammable shrub species; and broadleaf trees.
- *Weather:* Periods of dry, windy conditions at least once a year. Climate includes a dry season or is in a prolonged drought.

High Hazard Areas:

- *Vegetation:* Dense vegetation surrounding the community; high-flammability vegetation and tree canopies; medium to tall conifer trees and heavy shrubs.
- *Weather:* Multiple occurrences of dry, windy conditions throughout the year. Area in a prolonged drought, or dry climate with a dry season that lasts more than three months.

Forests of King County: For the most part King County forests have a high fuel hazard, dense conifer forests, and a moderate ignition and rapid spread rate due to our prevailing weather patterns. Several years of droughty spring and summer conditions have added to the high fuel concerns and could elevate the ignition risk.

All Areas*:* Regardless of vegetation, weather, and terrain, the following conditions put any home at risk if a wildfire ignites in the area:

- Flammable roof.
- Flammable materials within five feet of the home such as high-flammability plants or dried leaves and pine needles.
- Continuous path of fuels within 10 feet of the home. More materials burning close to each other will lengthen the flames and cause a higher risk of igniting the home.
- Firewood piles within 30 feet of the home.

- Flammable attachments, such as wood boardwalks, decks, fences, utility buildings. If it is attached to the house, consider it part of the house.

Access

Firefighters can't defend a home against a wildfire if they can't find or reach the home. The driveway is an important factor in helping firefighters in their endeavor to protect your home. Make sure your address is clearly marked at the beginning of your driveway, and that overhanging branches are trimmed up 15 feet above the driveway.

Is your driveway able to accommodate a fire truck? Make sure driveway width and curve radius is sufficient to allow emergency vehicles to pass. Assure that any bridges and/or culverts on your driveway or private road will support fire trucks. Check with your local fire protection district to verify standards.

The driveway is also important for residents. Often, when a large wildfire threatens homes, the residents are asked to evacuate the area. Once an area is evacuated, firefighters are able to perform their tasks without having to worry about residents becoming trapped by the flames. However, if residents are unable to leave their homes because escape routes are blocked or otherwise unusable, then residents may have little choice but to stay home.

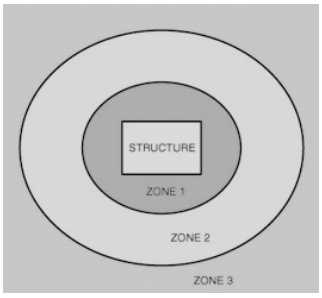
Local Preparedness and Firefighting Capability

Assess your community's emergency preparedness, including evacuation planning, safety zones and fire assistance agreements, as well as the response capability of your fire protection district.

- How long will it take emergency response vehicles to reach your home after you call?
- Does the local department know where your house is?
- Is your address clearly visible from the road?
- Does your community have a plan in place to deal with pets and livestock?

Wildfire Risk Reduction Practices

As you plan for wildfire risk reduction visualize your property as a target with your home as the bull's eye, the yard as the next ring (or zone), and additional zones with varying levels of fuel management as you move further from the structure.



Fire-Resistant Construction

To create your firewise structure, reduce fuel and exposure to your home.

Roof Construction: Fire-resistant roof construction materials include Class-A asphalt shingles, metal, tile, slate and concrete products.

- Construct a fire-resistant sub-roof for added protection.
- Keep your gutters, eaves and roof clear of leaves and other debris.

Exterior Construction:

- Use construction materials that are fire resistant or non-combustible when possible.
- Use exterior wall materials that resist heat and flames.
- Consider window size and materials. Smaller panes hold up better than larger ones; double pane and tempered glass are more effective against fire than single pane glass; and plastic skylights can melt.
- Cover exterior attic and under floor vents with wire mesh to prevent sparks from entering your home through vents. Use 1/8 inch mesh or smaller.

Note: *Although some vinyl will not burn, vinyl soffits can melt, allowing embers into the attic space.*

Attachments: Attachments are structures connected to your home, such as decks, porches or fences. If an attachment to a home is not fire resistant, then your home is not firewise.

- If you are attaching a wood fence to your house, use masonry or metal as a protective barrier between fence and house.
- Use non-flammable metal when constructing a trellis and cover with high-moisture, fire resistant vegetation.
- Don't let combustible materials and debris accumulate under patio decks or porches. Screen areas below the deck or porch with 1/8 inch wire mesh.

Zone 1 – Survivable Space

Maintain a **Lean**, **Clean** and **Green** safety zone of wildfire defense 30 feet around your home, reducing fuels and providing space for fire fighting equipment.

Lean:

- Cut back tree branches over-hanging structure, especially within 15 feet of your chimney.
- Keep trees and shrubs pruned. Prune trees 10 feet from the ground while keeping live tree canopy at least 1/3 of total height of the tree.
- Individual trees or small groupings of trees and shrubs can be retained as long as they are healthy; arrange to avoid creating ladder fuels.

Clean:

- Remove all dead plant material from around your home; this includes dead leaves, dry vegetation and even stacked firewood.
- Take out "ladder fuels," vegetation between grass and tree tops. These fuels can carry fire between foliage and structures.

- Maintain your lawn. If brown, mow to 2 inches high. Mow dry grass and weeds.
- Remove dead or dying plant material. Mulch plant material away from structures. Dispose of cuttings and debris by recycling. For recycling locations, see www.metrokc.gov/dnrp/swd/wdidw/material.asp.
- Remove flammable plants that contain resins, oils and waxes: ornamental junipers, yaupon holly, red cedar, and young pine. For plant recommendations, go to dnr.metrokc.gov/topics/forestry/FORtopic.htm.
- Keep potentially flammable (dry) mulch and landscaping well away from structures. Use a 3-foot wide swathe of crushed rock, gravel or other non-combustible materials around structures.

Green:

- Plant fire-resistant vegetation that is healthy and green throughout the year.
- Space the trees and shrubs you plant in small groupings or individually and leave enough room between them to reduce spread of fire.
- Use native plants; they are adapted to our area and usually remain healthier and are often more fire resistant. For more information, visit "Going Native" at dnr.metrokc.gov/wlr/PI/Go-Native or the King County Forestry Program Web site at dnr.metrokc.gov/wlr/lands/forestry.

Zone 2 – Space Trees and Eliminate Ladder Fuels

In the next 20 feet surrounding Zone 1 the goal is to reduce fire intensity and keep it from reaching the tree canopy.

- Break up continuous fuels; space trees so that canopies are separated by 10 feet; broadleaf trees or mixed conifer and broadleaf trees are preferable.
- Trim lower tree branches 6 to 10 feet from the ground while keeping live tree canopy at least 1/3 of total height of tree.
- Maintain space between individuals or groups of shrubs twice as wide as their diameter.
- Cut or mow any grass that is over 8 inches in height.
- Remove all dead plant material.

Zone 3 – Remove Highly Flammable Vegetation

In the next 50 feet surrounding Zone 2 the goal is to maintain a healthy forest while reducing potential fire intensity.

- Dead trees for wildlife are important; occasional dead and down large woody material or standing dead trees can be retained, but should be kept to a minimum; continuous accumulations of fine and medium dead woody debris should be eliminated.

- Trim lower tree branches 6 to 10 feet from the ground while keeping live tree canopy at least 1/3 of total height of tree.
- Thin trees to a spacing that provides for healthy canopy growth.
- Reduce or eliminate ladder fuels.

Zone 4 – Healthy Forest

The remainder of your forest outside of Zones 1, 2 and 3 will be healthier, more drought tolerant and less susceptible to fire if the trees are native to the area and are maintained at optimum spacing for growth.

- Spacing needs vary depending on species, age and size of trees, topography, soils, weather, and landowner goals.
- Developing a forest plan will help guide management of a healthy forest; a plan can also provide flexibility with CAO regulations and may qualify for a tax incentive program.
  - Complete a forest plan by attending Forest Stewardship Class with personalized coaching from natural resource professionals. Classes are offered in cooperation with Washington State University Cooperative Extension, King County Department of Natural Resources and Parks, and Washington State Department of Natural Resources
  - Retain a consulting forester to prepare a plan
  - Write your own plan with technical assistance from King County foresters to evaluate your resources

Fire Hazard Reduction Permits

Permits for Vegetation Removal to Reduce Fire Hazards in Zone 1

The 30-foot wide zone that surrounds a structure, often referred to as the defensible space, is often comprised of lawns, landscaping, parking, or other developed areas, so implementing many of the vegetation management activities described in Fire Safety Tips for Rural Homeowners (421K PDF) can be done without the need to obtain permits from the Department of Development and Environmental Services (DDES). In general, managing landscaped areas does not require a permit.

However, if you need to alter native vegetation to establish this 30-foot wide defensible zone or to improve horizontal clearance along your driveway, a permit is required from DDES. To apply for a fire hazard reduction permit, either:

- Use our Online Fire Hazard Reduction Permit Application Form, www.metrokc.gov/ddes/permits/firehazard/index.htm or
- Call DDES Site Development Services at 206-296-6759.

The permit is free as long as the work is done according to the permit conditions and best management practices. *This permit is restricted to the 30-foot zone immediately adjacent to the structure or to the area within five feet of the edge of an existing driveway. To work beyond this zone may require other permits for which permit fees would be charged.*

Permits for Fire Hazard Reduction in Zones 2 and 3

Removal of vegetation and other actions necessary to reduce fire hazard or improve safety will likely require a permit from DDES. The thresholds for determining if a permit is required is covered in detail in Chapter 4 of the CAO Users Manual, but generally any clearing on a developed rural lot will require a permit as well as any grading that exceeds any of the following:

Creates 2000 square feet or more impervious surface;

Exceeds 100 cubic yards of cumulative excavation and/or fill outside of a critical area or within a coal mine, erosion or seismic hazard area or critical aquifer recharge area;

Any grading within a flood, channel migration, landslide or steep slope hazard area or aquatic area, wetland or wildlife area or buffers.

Depending on the scope of the proposed work, most fire hazard reduction efforts within zones 2 and 3 would qualify for a short form permit. The short form is a field issued permit for projects that generally meet the following criteria:

The work is either located outside of critical areas or involves minor miscellaneous clearing or grading within critical area buffers provided the alterations are allowed under the Critical Areas Ordinance.

The work is exempt from State Environmental Policy Act (SEPA) review.

The proposal does not include any permanent drainage facilities or exceed the thresholds requiring preparation of a drainage plan.

To obtain a short form permit, you will need to complete a site plan and brief description of the proposed work and then contact the department at (206) 296-6600 to arrange an onsite meeting with a site development specialist. Fees will be assessed during the onsite meeting.

Permits for Vegetation Removal to Reduce Fire Hazards in Zones 4

Removal of vegetation, particularly harvesting of trees, from Zone 4 may be regulated as a Class I, II, III or IV Forest Practice Permit under the jurisdiction of Washington State Department of Natural Resources (DNR) or by King County DDES. The distinction between the two is a function of how the property was created or developed and what the long term goals of the landowner are. Lands that are logged under a State issued permit will normally be subject to a six-year development moratorium.

Acquiring an approved forest management plan is one way to get relief from the six-year development moratorium on the designated managed forest portion of your property, and may also provide flexibility under CAO. A Conversion Option Harvest Plan will also provide relief from the development moratorium.

Additional information on the forest practice rules and regulations and permits and/or approvals for forest practices over which the Forest Practices Board and DNR have retained jurisdiction is available through the DNR Web page www.dnr.wa.gov/forest practices or through the DNR regional offices. Most of King County is included in the South Puget Sound Region located in Enumclaw. Their office number is 360-825-1631; e-mail is southpuget.region@wadnr.gov.

DDES permit information is available on the web or call DDES Site Development Services at 206-296-6759; our office is located at 900 Oaksdale Ave. SW, Renton, WA 98055-1219. Staff is available every morning between 8:30 and 10:30 to answer any questions you may have regarding fire hazard reduction permits.

Community Wildfire Protection Planning

Wildfires do not respect property boundaries. King County and communities can work together to prevent the loss of lives, property and resources to wildfire while ensuring forest stewardship among landowners. Consider creating a community wildfire prevention and evacuation plan with your neighbors.

Wildfire protection practices are far more likely to be implemented if they are supported by a community plan. Community Wildfire Protection Planning can build a strong sense of community, and will help in efficient response to any emergency.

Fire Safe Forests Initiative 2006

The King County Fire Marshall and Forestry Program will assist a rural, forested community to develop and act on a community wildfire protection plan.

The Initiative will:

- Promote community-wide responsibility to use practices that minimize the potential for wildfire;
- Promote/Support leadership by community residents to develop and implement community fire plans;
- Instruct landowners in site-specific assessment and analysis methods;
- Share information about fire safe planning guidelines and practices among residents, businesses, and community leaders; and
- Coordinate agencies, organizations, and partners to provide training, and technical assistance for forest landowners developing community fire plans.

The King County Fire Marshall will serve as liaison to local fire districts regarding the Initiative.

The Initiative will involve small forest landowners and forest residents in developing a community wildfire prevention and implementation plan. A King County forester will work directly with community residents through consultation sessions and visits to their forest properties. The forester will also work with community members to develop forest stewardship plans for their individual properties, a first step in implementing fire safe forest management practices.

For questions or additional information, please contact the King County Forester, at 206-296-7820; or the King County Fire Marshal, at 206-296-6675.