

Colorado APCD Prescribed Fire Smoke Permits

Glossary

Each of the following terms has a meaning specific to Colorado prescribed fire smoke permits. All the definitions are included also in the broadcast or pile worksheet or guidance for non-standard permits as relevant. Definitions of some also are included on permits themselves. For a more general glossary of wildland fire terms, see <http://www.nwcg.gov/pms/pubs/glossary/index.htm>.

2 in 7 - Burn $\geq X$ acres per day on at most 2 days in any 7-day period, where X varies by condition category.

Blade - See 'Construction.'

Concurrent operations - Some pile projects are spread across long distances. For example, piles under an electric power line may stretch for several miles yet still all be on one permit. If concurrent operations are approved, then any group of piles that is at least 1.0 mile from any other pile being burned on the same project at the same time may be burned as if each group had its own permit that did not affect the other. A caveat is that the smoke plumes from the two groups must not merge, which amounts to not burning if the wind direction is parallel to a line between the groups. One group of piles and people may each burn up to the daily and wave limits shown on the permit.

Construction method for piles refers to what was used to build the piles. If no machinery was used to pile up the slash, they are categorized as 'hand piles' 'Rake' refers to use of machinery that lifts the material with tines, as a brush rake, grapple, or boom-delimber. If a bulldozer, front-end loader, excavator or other equipment with a blade or enclosed bucket was used to build the piles, including to push site surface clean-up into the pile edges, the piles are labeled as 'blade.' If more than one method was used, choose the more restrictive category.

Consult - consultation with the local NWS office's fire weather lead (or other forecaster that the lead names) at least 2 weeks before burning and after the forecaster has received the burn plan and project maps you send. Only a few non-standard permits include consults. Except for weather observations as described next, consultations must be completed before APCD finalizes a permit for which a consultation is required.

As part of a consultation, weather observations from within or very close to the project area must be provided to NWS for at least the 3 days soonest before ignition. Usually the simplest and best way to do this is by setting out a temporary weather station.

Dimensions, pile - Report typical or average size. Estimating a little generously is good, but the size need not be based on the largest pile in the project. Describe the variability in the notes section of the application if (a) any pile is more than a third larger than the average and/or (b) more than 20% of the piles fall in a larger size category. For piles over 25,000 ft³ each, instead provide dimensions of each pile. There is a [spreadsheet for calculating pile volumes](#).

Dozer, ready access - A bulldozer could be in use on-site within 30 minutes, including with an operator. This is a condition only of some non-standard permits.

End ignition time - the last time a torch is face down. More precisely, end of ignition is the very last time during a day when any ignition device is applied to wildland fuels, or when fuels are added to an existing burn. Fuels will continue to burn and fire may continue to spread after ignition ends.

Excellent - See 'Fair.'

Fair, good, very good, or excellent - The National Weather Service [forecasts the day's maximum dispersion adjective](#) to be the named adjective or higher.

Fuel moisture as a permit condition - the minimum value for 1000-hour fuel moisture measured or calculated on the day before ignition. This is a constraint only in some non-standard permits. The purpose of specifying heavy fuel moisture is to quantify and assure the plan that a particular burn's smoke mitigation will effectively include limiting fuel consumption.

Good - See 'Fair.'

Hand - See 'Construction.'

Holidays - no ignition on Friday through Monday on any federal holiday weekend. The condition's purpose is to minimize regional haze when visibility is most important.

Home, closest occupied - Measure in straight-line (air) miles. For a home to count as not occupied, a representative of the smoke permittee must have contacted a person in the individual household before burning, either in person or by a 2-way phone conversation, and ascertained that none of the people in the contacted household has unmitigated health concerns related to smoke. If distance to closest occupied home changes as a result, note this in the application narrative. Only for piles ≤ 300 ft³ each, if a home is vacant during the burn day it may be considered to be unoccupied.

Instrument - Set out a DataRam, eSampler, DustTrak or similar real-time particulate monitoring equipment at the nearest occupied downdrainage home or other location and timing as agreed with APCD. Only certain non-standard burns in smoke-sensitive areas have instrumentation as a standard permit conditions.

Map, smoke - shows (1) burn units, (2) expected path of both lofted (daytime, showing pie-shape of acceptable wind directions + 30°) and (3) night (drainage) smoke out at least 25 miles.

Mechanical treatment - Chips or other products of mechanical work remain on site and that the work was done on at least 20% of a unit's acres. Mechanical treatment does not include work accomplished only with saws and/or shears, such as pile burning with or without harvest.

Occupied - see 'home.'

Poor - See 'Unrestricted Ventilation.'

Public comment - APCD solicits public comment on proposed smoke permit conditions for a specific project. For details, see APCD's smoke program [manual](#).

Rake - See 'Construction.'

Rural - See 'Smoke-sensitive area.'

Smoke-sensitive area, mapped - any area within a formal and informal PM-10 maintenance area, a 5-mile buffer around those U.S. census tracts with population density of more than 500 people per square kilometer, or a 3-mile buffer around a residential health care facility. These three criteria overlap heavily. All are incorporated into the [mapped](#) smoke-sensitive areas on APCD's website. 'Rural' is any area not within a mapped 'sensitive community.'

Snowing - Ignition occurs while it is snowing as indicated by visibility through falling snow of 1 mile or less.

Storm - Probability (PoP) of snow is forecasted to be at least 60% for at least 6 of the 18 hours following ignition OR good (+) ventilation is forecasted all night at least until the next sunrise. Good or better ventilation all night typically means high winds, so may not be a useful option. Probability of precipitation is an element included in [NWS' hourly tabular forecast](#), but may have to be requested to be included in a spot forecast.

Unrestricted ventilation - Unrestricted ventilation means permission to ignite when the burn period's forecasted ventilation is only poor. Generally, an NWS forecast of 'poor' dispersion all day means a no-burn day in Colorado. The expectation of poor dispersion nearly every night also is why next to no night broadcast burning is permitted.

One routine exemption to the prohibition of a burn conducted start-to-finish during poor dispersion is that small piles may be burned if they meet weather criteria based on wind, snowing, or storm. Please see those definitions.

There is no intent that most broadcast burns be able to meet the criteria for unrestricted ventilation. For more information about broadcast burning at poor ventilation, please see [guidance for non-standard permits](#).

Ventilation - A forecast element that combines mixing height and windspeed to yield an index of the atmosphere's capacity to dilute pollutants at a given time and place. See 'Fair' and also 'Unrestricted ventilation.'

Wave - the maximum number of small piles producing smoke at any one time. A pile has burned down long enough no longer to be counted as part of a wave after it has been burning for at least two hours.

Wind - If 'wind' is an acceptable weather criterion, ignition may occur if the one-minute average on-site eye-level wind speeds are 4(+) mph measured before ignition and also 4(+) mph measured at least 15 minutes later, during which delay one test pile may be burned.

Wind constraints - permit limitations on the wind direction during ignition. Wind direction constraints refer to forecasted transport wind direction(s) during ignition. Wind limits are especially situation-specific and typically protect receptors rather than individual homes. If no reasonable wind direction(s) will keep smoke out of communities, alternative limitations such as using only the most favorable dispersion days must be considered.

Related Documents

Pile Burn

Broadcast Burn

pile worksheet	broadcast worksheet
pile application	broadcast application
pile non-standard supplement	broadcast non-standard supplement

Basic instructions are embedded in the forms as hover hints and should suffice for most burns. The [hints are available also as a .pdf](#).

[Detailed Instructions for Smoke Application Forms](#). Not needed for most basic permit applications

[Glossary](#) (this document). Consolidated list of terms specific to Colorado's smoke program. Each term's definition also appears in some other place where the term is used.

[Guidance for Non-Standard Permits](#). For experienced burn bosses working with especially complex projects

Smoke program [manual](#). Addresses in detail formal requirements, program concepts, and background about individual permit conditions. The manual might be useful if you have a specific question or are terribly interested in Colorado's smoke program.