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FRCC Glossary of Terms – Version 1.1

Fire Regime Condition Class

Please see the FRCC Methods Document for more detailed information.

Biophysical Unit: a division of the landscape with similar biological and physical characteristics.

Box Model: a standardized PNVG dynamics model with vegetation-fuel classes (boxes or states) and defined pathways (transitions) that move vegetation-fuel from one class to another—via disturbance or succession. Based on state/transition modeling concepts. Utilizes the Vegetation Dynamics Development Tool (VDDT) software.

Characteristic/Uncharacteristic: characteristic conditions and processes are those similar to those occurring in the natural or historical regime, while uncharacteristic do not occur. See uncharacteristic.

Class: the box model vegetation-fuel class within each PNVG, based on successional (seral) stage, composition, and structure (see table below). Reference conditions for each PNVG are based on 5 characteristic classes (AESP, BMSC, CMSO, DLSC, ELSC); current conditions might have more classes (called “uncharacteristic”).

Seral Stage	Composition & Structure	
	Attribute (such as Open)	Attribute (such as Closed)
Post- Replacement	A (AESP)	
Mid- Development	C (CMSO)	B (BMSC)
Late- Development	D (DLSC)	E (ELSC)

Closed: a vegetation-fuel class characteristic based on upper layer vegetation canopy cover that is relatively closed. Default values for closed forest, woodland, or herbaceous classes are greater than 40% if based on canopy cover. Default values for closed shrub classes are greater than 15% if based on line intercept cover. These commonly are applied as structure attributes for classes B and E. (Percent canopy closure threshold values may be changed from default values for individual classes).

Coarse Scale FRCC Mapping: GTR RMRS-87 (Schmidt et al. 2001). This document outlines the methodology used to map Fire Regime Condition Class and associated attributes at a coarse scale (1 km pixel resolution) for the conterminous 48 states. Available at: <http://www.fs.fed.us/fire/fuelman/>

Cover: the percent of upper layer canopy. Commonly based on canopy cover estimate for forest, woodland, and herbaceous types and line intercept for shrub and grass types.

Condition Class: In FRCC methodology, a synonym for Fire Regime Condition Class. (NOTE: also see *fire regime condition class*)

Default Reference Values: results from national, regional, or subregional modeling of PNVG reference conditions using the box model and Vegetation Dynamics Development Tool (VDDT) modeling software. Includes an estimate of the average percent of the landscape in each of the 5 characteristic vegetation-fuel classes, the fire frequency, and the fire severity for the natural regime. Pathway, successional rates, and disturbance probability inputs to the modeling are derived from literature and expert opinion. These reference values are defaults in FRCC methodology and can be adjusted by the user when local data permits.

Desired future conditions (DFC): a characterization of future conditions commonly designed as a goal for management that integrates ecological and social factors. It is not synonymous with condition class or the end state of succession for PNVGs. DFC may not be the same as reference conditions or condition class 1 because of social and economic factors.

Departure: Is the inverse of similarity. For the vegetation-fuel classes and the fire frequency-severity variables, this is the percent difference between the current and reference. (NOTE: also see *similarity*)

Emulate, Mimic, Represent, or Simulate Natural Conditions and Processes various terms to indicate the use of management activities, such as timber harvest, thinning, grazing, prescribed fire, restoration, and wildland fire, to change landscape composition and associated disturbance regimes to be more similar to the natural reference conditions or trend towards the natural reference conditions.

Fire Frequency: for FRCC methodology, the average number of years between fires. In FRCC methodology, this is a measure of central tendency (average, midpoint, median) and will be entered both for reference fire frequency (default values will be used if the user does not specify a value) and for current fire frequency. In FRCC methodology frequency is years between all types of fires

(replacement, surface, and mixed) that change the landscape mosaic of vegetation-fuel classes. A fire must affect 5% or more of the fire perimeter to be counted.

Fire Regime: for FRCC methodology, the combination of fire frequency and fire severity. Natural or historical fire regimes may differ from current fire regimes, measured by Fire Regime Condition Class.

Fire Regime Condition Class: A classification of the amount of departure of conditions at a given time period (such as current or future) from the ecological reference conditions. Reference conditions include the amounts for the 5 characteristic vegetation-fuel classes, the fire frequency, and the fire severity in the absence of modern Euro-American influence for the climate of the period being assessed (such as historic, current, or future). Historical conditions are commonly used as a best estimate for the reference conditions. Native American or anthropogenic influences are commonly included. Fire regime condition class is a relatively complete measure of the departure from the natural system. Named “fire regime” because of the keystone nature of fire.

Fire Regime Condition Class Characteristics: A measure of departure from natural or historical ecological reference conditions that typically result in alterations of native ecosystem components. These ecosystem components include attributes such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused departures: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or diseases, or other management activities. There are three classes:

Class	Description
1	Fire regimes are within the natural or historical range and risk of losing key ecosystem components is low. Vegetation attributes (composition and structure) are intact and functioning.
2	Fire regimes have been moderately altered. Risk of losing key ecosystem components is moderate. Fire frequencies may have departed by one or more return intervals (either increased or decreased). This may result in moderate changes in fire and vegetation attributes.
3	Fire regimes have been substantially altered. Risk of losing key ecosystem components is high. Fire frequencies may have departed by multiple return intervals. This may result in dramatic changes in fire size, fire intensity and

severity, and landscape patterns. Vegetation attributes have been substantially altered.
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Fire Regime Condition Class Field Methods: designed for on the ground assessment and reporting of projects, field assessment of management strategies, or mapping ground truth. They can be conducted at two scales. The **landscape FRCC** for assessment of departure of the vegetation-fuel class composition and fire frequency-severity, and the **stand or small project FRCC** for assessment of restoration difficulty in the context of landscape scale FRCC. The landscape scale FRCC must be conducted first in order to generate context inputs for the stand FRCC. Two procedures are available for FRCC field determination, the **standard** (quantified) **FRCC** method and the **scorecard** (nomogram) **FRCC** method.

Fire Regime Condition Class Mapping Methods: designed for assessment, prioritization, and planning. These methods follow the same process as the field procedures, but in a mapping environment. FRCC can be summarized for a PNV across its extent or stratified by hydrologic units of different scales, management area, ownership, or other delineations.

Fire Regime Group: A categorization of historical fire regimes to describe the frequency and intensity of fires (based on Heinselman 1973). There are five fire regime groups:

Group	Frequency	Severity
I	0-35 years	Low and Mixed
II	0-35 years	Replacement
III	35-100+ years	Mixed and Low
IV	35-100+ years	Replacement
V	200+ years	Replacement and other fires occurring within this frequency range

Fire Severity: for FRCC methodology, this is the effect of fire within the fire perimeter of replacing/removing the upper layer vegetation and burning the surface. Replacement/removal may or may not cause a lethal effect on the plants. For example, replacement fire in grassland removes the leaves, but leaves resprout from the basal crown, while replacement fire in most conifers causes mortality of the plant. A fire must affect 5% or more of the fire perimeter to be counted.

Severity Class	Effects
No Fire Effects	< 5% replacement or surface
Surface or Low	≤ 25% replacement Surface - > 50% surface burned Low - ≤ 50% surface burned
Mixed	≥ 5% replacement or surface & < 75% replacement
Replacement	≥ 75% replacement

Historical Conditions: See reference conditions.

Historical (or historic) Range of Variability (HRV):
See natural range of variability for comparison.

LANDFIRE: a multi-agency, inter-disciplinary research and development activity designed to develop a consistent mid-scale inventory of current vegetation and fuel conditions, and the associated natural or historical reference conditions, for forest and rangeland biophysical settings. LANDFIRE geospatial data will be fine resolution (30 m² pixels), wall-to-wall for the entire U.S., and will include a Fire Regime Condition Class layer. For more information, visit www.landfire.gov.

Late-Development: the stage in a PNVG where vegetation is in late successional or mature stage for a given successional path. Ages will vary greatly depending on individual PNVGs. Typically associated with classes D and E in FRCC methodology.

Map or Method Consistency/Accuracy: consistency for FRCC is a measure of agreement between the departure measure and class assignment across different geographic areas given the same combinations of inputs. Accuracy for FRCC is a determination of input similarity to ground truth.

Mid-Development: the stage in a PNVG where vegetation is in mid successional or immature stage for a given successional path. Ages will vary greatly depending on individual PNVGs. Typically associated with classes B and C in FRCC methodology.

Mixed Severity Fire: any fire that does not qualify as a replacement fire or as a surface or low intensity fire. Mixed fires can open or maintain a vegetation-fuel class. A general category of fire severity that excludes surface and replacement fires, but includes mosaic and other fires that are intermediate in effects.

Mosaic Fire: any landscape scale mixed fire that has scattered patches across the fire perimeter, resulting in a mosaic of burned and unburned patches.

National Fire Plan Operations & Reporting System (NFPORS): NFPORS is an interagency system designed for submission and reporting of accomplishments for work conducted under the National Fire Plan and other agency fuels and resource programs.

Natural Conditions: see reference conditions.

Natural Fire Regime: the fire regime of the natural system in absence of modern human interference. Assumed to include native anthropogenic influences that may have contributed to development of native species fire adaptations.

Natural Range of Variability (NRV): the variability and central tendencies of biophysical, disturbance, and climatic systems, across landscapes and through time, in the absence of modern human interference. Natural disturbances include native anthropogenic influences that have contributed to development of native species adaptations and natural disturbance regimes. In comparison, the historical range of variability (HRV) refers to the same measure, but for a historical (or historic) time period with associated historical climate. NRV is preferred as it provides the reference most applicable to current or future climates, but HRV can be more easily characterized by studies of historical vegetation and disturbance.

Open: a structural class where the upper layer of vegetation canopy is relatively open. Default values for open forest, woodland, or herbaceous classes are less than 40% if based on canopy cover. Default values for open shrub classes are less than 15% if based on line intercept cover. These commonly are applied as structure attributes for classes B and E. (Percent canopy closure threshold values may be changed from default values for individual classes).

Patch: see stand.

Post-Replacement: the stage in a PNVG where vegetation is in early successional or a young stage. In forested and woodland PNVGs, this type will typically have less than 10% tree canopy cover and less than 5% canopy cover in shrubland PNVGs. Ages will vary greatly depending on individual PNVGs. Typically class A in FRCC methodology.

Potential Natural Vegetation (PNV): the land area with potential to support a type of natural vegetation and associated disturbance processes. This is the biophysical classification used by the FRCC handbook based on Kuchler's Potential Natural Vegetation (1964). It refers to the composition of successional stages that would occur in the absence of modern human interference in response to natural disturbances, such as fire and anthropogenic burning, for a given climatic period. The PNV is

typically named by the plant species, complex of species, or life forms that occupy the majority of the landscape through the successional cycles (See PVT for comparison of difference)

Potential Natural Vegetation Group (PNVG): a grouping of ecologically similar PNV types for coarse-scale assessment.

Potential Vegetation Type (PVT): the land area with potential to support one or a group of climax plant associations. This is based on identification of land that will support climax plant association indicator species. This plant association concept is based on the traditional Clementsian view of succession continuing to an end climax condition in the absence of disturbance. The plant association is typically named by the climax plant indicator species. (See PNV for comparison of difference).

Potential Vegetation Type Group (PVTG): a grouping of PVTs for coarse-scale assessment.

Project Area or Landscape: for FRCC methodology this area encompasses a minimum dynamic area adequate to sustain the natural vegetation mosaic and disturbance regime.

Reference Conditions: an estimate of the central tendency of natural or historical (or historic) vegetation-fuel class composition, fire frequency, and fire severity for a biophysical unit or landscape area. Reference conditions are the basis for calculating the ecological departure used to determine the Fire Regime Condition Class. Reference conditions characterize the central tendency of the natural range of variability (NRV) when they are determined for a time period (such as current or future) with the associated climatic regime. Reference conditions characterize the central tendency of the historical range of variability (HRV) when they are determined for a historical time period with the associated climatic regime. NRV is preferred as it provides the reference most applicable to current or future climates, but HRV can be more easily characterized by studies of historical vegetation and disturbance.

Reference Condition Model: the box model of succession and disturbance pathways calibrated to characterize the natural or historic range of variability (NRV or HRV) and central tendencies for reference conditions for a PNVG. Reference Condition Models are used to determine the default reference values for Reference Percent Composition in classes A-E, Fire Frequency, and Fire Severity in the FRCC methodology, although users may customize these values using local information and modeling.

Reference Condition Refinement: a consistent process for refinement of the PNV classification and

the associated reference conditions. Involves a systematic procedure of gathering together area vegetation and fire ecology experts for an initial workshop, reviewing literature and area data, developing written descriptions of the PNV vegetation-fuel classes and disturbance regime, attributing and sensitivity testing using the “box model”, informal internal peer review and consensus, and finalization of the reference conditions.

Reference Condition State/Transition Model: see box model.

Replacement Severity Fire: Any fire that causes greater than 75% top removal of a vegetation-fuel type, resulting in general replacement of existing vegetation. May or may not cause a lethal effect on the plants. For example, replacement fire in grassland removes the leaves, but leaves resprout from the basal crown, while replacement fire in most conifers causes mortality of the plant.

Scale: there are two types of scale. **Scale of map** pixels or polygons, ranging from coarse at 1 square kilometer (250 acres) or more, to fine ranging from 30 meter by 30 meter (900 square meters or .22 acres) to 1 meter by 1 meter (1 square meter or .0002 acres). **Scale of classification map legend.** For example vegetation mapping can range from coarse-scale lifeform to fine-scale plant community types. For fire regime condition class mapping the scale of determination of departure from reference conditions has a sliding scale that depends on the application.

Similarity: A comparison of one set of conditions to another set of conditions. The FRCC methodology compares time period (historic, current, future) conditions across a landscape to a central tendency estimate for the natural or historical reference conditions of the PNV. In FRCC, this is determined for the vegetation-fuel class composition across the landscape and for changes in fire frequency and fire severity. The method used to determine vegetation-fuel class composition similarity was developed by Clements (1934) and is a relatively simple formula that can be hand calculated in the field. The method used to determine fire frequency and severity similarity is a simple ratio of the smallest to the largest (Mueller-Dombois and Ellenberg 1974) that can also be hand calculated in the field. (Note: also see *departure*)

Small Area: see stand.

Stand: a delineated fine-scale area too small to contain the natural variation of the veg/fuel mosaic and disturbance regime. It is often dominated by one vegetation-fuel class that can range in size from as little as 1 hectare (2 acres) to 100 hectares (250 acres) or more in size.

Stand Scorecard: method for determining Fire Regime Condition Class in a stand, patch, or small area that does not meet the Project area/Landscape definition. Requires input from the surrounding landscape Fire Regime Condition Class determination.

Standard Landscape Method: quantified landscape assessment for determining Fire Regime Condition Class. Provides the most accurate and consistent estimate of FRCC for field procedures. Used as the ground truth for calibrating the landscape scorecard.

Strata (Stratum): a division of the landscape based on biophysical or management criteria.

Succession: the natural progression of change in the composition, structure, and processes of a community through time.

State/Transition Model: see box model.

Surface or Low Severity Fire: any fire that causes less than 25% upper layer replacement/removal in a vegetation-fuel class, but burns 5% or more as replacement or surface within the fire perimeter. Surface and low intensity fires can open or maintain a vegetation-fuel class. Surface fire burns more than 50% of the surface, while a low intensity fire burns 50% or less of the surface.

Sustainability Risk/Abundance Class: the sustainability risk is an index based on difference of Vegetation-Fuel Class amount from the reference amount. This index indicates the level of key ecosystem component risk from unplanned disturbances, such as wildfire, or of having already been lost from the landscape, such as large old trees. Classified into low, moderate, and high risk. The abundance class is the amount of a vegetation-fuel class compared to the reference condition amount. Classified into rare, similar, moderate, and high. The management implications of recruit for rare, maintain for similar, and reduce for moderate and high have may be applied where the DFC is a shift or trend to FRCC 1.

Uncharacteristic: a vegetation class that would not have been found within the natural or historical range of variability. Uncharacteristic classes include invasive plants, timber or grazing management that doesn't emulate the natural regime, and fire effects, soil disturbance, insects, or diseases that are more or less severe than the natural regime.

VDDT: Vegetation Dynamics Development Tool. A public domain software program created by the company ESSA. This tool provides software for

reference condition modeling. Available at: <http://www.essa.com>

Vegetation-Fuel Class: for FRCC methodology, a standardized type classification based on description of vegetation and fuel composition, structure, process, and pattern. Classes are grouped into those that are characteristic of the natural or historical conditions or uncharacteristic of these conditions.