



PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET

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Introduction

This Prescribed Fire Complexity Worksheet is intended for prescribed fire practitioners to help them assess the complexity of implementing a specific prescribed fire. The Worksheet was adapted from complexity analysis tools used by the Nature Conservancy fire program and the National Wildfire Coordinating Group.

The Worksheet can be useful for:

- Fire practitioners to evaluate their own burn units.
- Burn bosses to assess what types of burns they are qualified to implement and what their limits are.
- Instructors to illustrate to trainees and practitioners how fire complexity varies across the Midwestern landscape.
- Training organizations as a method for stratifying training program complexity, and for identifying the level and types of training that may be necessary.
- Burn plan reviewers seeking to assess escape risk in relation to burn complexity

The Worksheet is designed to assess the inherent characteristics of a burn unit, such as size, shape, topography, etc. Day-of-burn considerations, such as the acceptable range of weather conditions, predicted fire behavior, fuel moisture parameters, etc., should be addressed in the burn plan. Note that conditions such as very dry or windy weather, extremely dry fuel, or drought will significantly increase the complexity of burning a given unit. Conversely, higher humidity, higher fuel moisture, and increased soil moisture can reduce the complexity.

Complexity is not necessarily a function of the amount of equipment being used. Even a relatively small burn using only hand tools can be complex if there are issues with topography, shape of unit, changing fuel types, or long distance to nearest wheeled vehicle access.

Remember that every burn situation is unique and can change quickly. It is not possible for this worksheet to account for everything that might happen between the time the form is filled out and the time the fire is started. The go/no-go decision process should always include an assessment of whether the combination of conditions on the day of the burn will increase the complexity beyond the capabilities of the available personnel. Users should not rely on the complexity analysis to guarantee a safe burn.

The Worksheet contains fifteen Complexity Elements, each of which is assigned a complexity value from 1 (low complexity) to 5 high (complexity). The complexity value for each element is multiplied by the appropriate Weighting Factor to arrive at the Total Points for that element. The sum of all the elements' totals is the overall Complexity Score for the burn unit.

The Evaluation Examples provide guidance for determining the complexity values for each element. Note that examples are given for complexity values of 1, 3, and 5. Values 2 and 4 represent conditions that are intermediate to those described in 1, 3, and 5.

Some of the Complexity Elements include multiple considerations that can be used to arrive at a score for that element. Often, some of these considerations may have lower complexity ratings while others may have higher ratings. The user should use their judgment of the relative ratings of the various considerations to select the score for that element. The following approach could be used to decide on the specific value of 1-5 to be applied to a given element: If two of the bulleted items apply to an element, score it at that level. If many or most of the bulleted items apply, consider raising the value by one unit; for example, from 3 to 4. If only one of the bulleted items applies, consider lowering the value by one unit; for example, from 3 to 2.

Note that the Evaluation Examples are not necessarily comprehensive. There may be other issues not explicitly listed.

Complexity scores can range from a low of 55 to a high of 275 with lower scores expected to be rather simple burns and the highest scores expected to be very complex burns that are rarely seen in Wisconsin. Scores have been divided into only four categories: Low, Moderate, High, and Very High. As a result, you should expect that a burn unit that scores at 85 will be significantly easier to execute than a burn unit that scores at 134, even though both are categorized as "Moderate". The score for a given burn unit will also be somewhat "fuzzy" rather than absolute. Different people scoring the same unit will likely arrive at scores of plus or minus 5 points from each other.

Our expectation is that individuals who have met the requirements to become a Wisconsin Certified Prescribed Fire Burn Boss should have the training and experience to lead a burn with a score of 135 or less.

Every burn boss is always responsible to honestly assess their own capabilities relative to a given burn unit. They should accept leadership responsibility only for those burns that they are qualified to lead. The worksheet is useful for highlighting the interaction among various factors that can combine to make a burn more or less complex.

For example, a burn unit that scores 3 for every single complexity element would have an overall score of 165, which rates as High complexity, just one point away from Very High. This reflects that a large number of moderately complex factors combine to greatly increase the overall complexity.

On the other hand, if a unit has only one or two very complex elements, the overall rating will not be as high. For example, a unit that is very large with complex topography, but with scores of 1 and 2 for the other elements, would score around 118, which rates as Moderate complexity.

Please send your comments on the draft Worksheet to WPFC Standards Committee Chair Jim Elleson at jim@hickoria.com.