

Job Aid 12. Fire Business Thresholds (UPDATED)

Introduction

Fire Business Thresholds use both weather and fire occurrence data to determine where each decision point occurs. Unlike Climatological Breakpoints (Job Aid 6), they are not mathematically calculated. Fire Business Thresholds are more subjective.

Determining Fire Business Thresholds

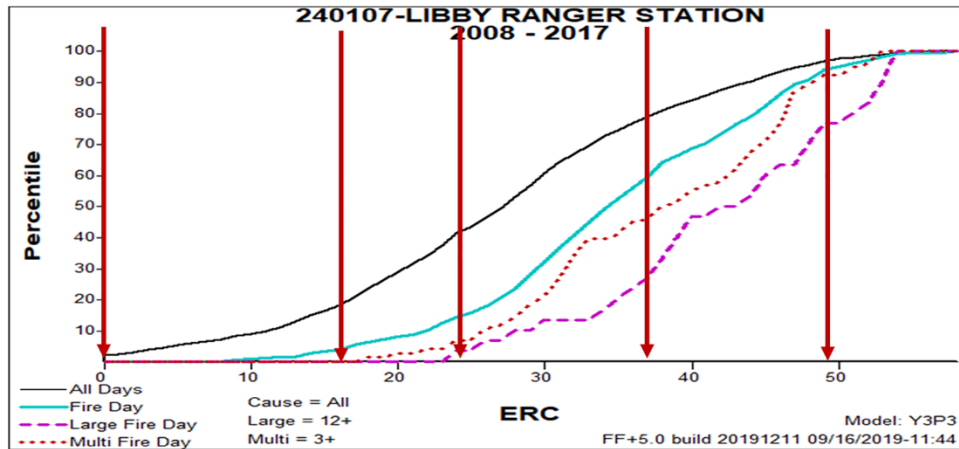
When making your decisions, consider the statistics, the range of probability, and the range of the index. If live fuel is an important component of the vegetation in the FDRA, ensure the selected fuel model contains live fuel. Each tool can have a separate candidate, or you can use the same candidate for several tools.

Note: *The fuel model/index combination with the best statistics may not provide the information needed for your management decision. Use your best judgment to make your selection. The reasoning behind your selection should be described in the Fire Danger Operating Plan.*

Here are some thoughts related to the graphs and decision points in an ideal world.

- You have the appropriate number of classes needed to support decisions and actions.
- Define classes so that the decision you make for fire business is different for the class above and below it.
- Ideally, there is a large (maybe double) increase of fire potential (for example, a large fire day) with each class.
- If your area has a lot of managed fires, they affect class distributions by shifting large fires to lower classes (e.g., Class 3). This is a result of using discovery day in analyses.
 - If your area has a lot of human caused fires under moderate conditions, this can also shift the class distribution.
 - Ideally, the percentage of large fire days and multiple fire days increases when moving from class 3 to 4 to 5. **However, when using year-round data**, this is not the case. You would expect classes 1 and 2 to have more days simply because you are looking at the entire year, many of which days have no fires.
- Take a few minutes to review your graphs before continuing. There is a lot of information in these graphs, and all of it is interconnected. A small change in a Class Lower Limit can have large impacts on the graphs if there is a large change in fire occurrence.

The following example is used to describe the things to look for when selecting Fire Business Thresholds. The first step in the process is to manually select Fire Business Thresholds using the following techniques. In this example, you have been asked to develop 5 classes. You need 5 Fire Business Thresholds to mark the lowest value in each class.



- The 1st threshold is always 0.

It is then easiest to define the two ends: Where do fires start? Where is nearly every day a Fire Day?

- Where do you think you might put the 2nd Fire Business Threshold (low end)? In other words, where do fires start? *In this example, the line is drawn at an ERC value (17) where about 5% of all fires occur and where multiple fires begin.*
- Where do you think you might put the 5th Fire Business Threshold (high end)? Where do all the fire lines start to flatten out? In other words, every day is a Fire Day. *In this example, there are a lot of fires, and the lines are beginning to taper off. Nearly every day in the Working Set is a Fire Day at an ERC of about 49.*

We need to add two more lines to get 5 decision classes, so we need to add two more lines to the middle of the graph.

- For Fire Business Threshold 3, look for a start to Large or Multiple Fire Days AND the point at which the teal Fire Days line starts to take off. *In this example, Threshold 3 is drawn where there is a sharp increase in the number of Fire Days (sharp turn in the teal line) at an ERC of about 26.*
- For Fire Business Threshold 4, look for the point at which there is a sharp turn or inflection in the teal line. *In this example, Threshold 4 is drawn about halfway up the curve of the Fire Days line (teal line) or an ERC of about 36.*

In summary, converting these to fire business thresholds by looking at either the histogram or fire percentiles graph to visualize where you might want to put breakpoints. Look for values at which

- fire activity starts,
- large or multiple fire days begin to occur,
- there is a large increase in fire activity, and
- fire activity peaks.

Draw lines on the graphs to visually break it into the desired number of classes.