



# Strategic Long Term Fuels Option FL\_029\_WP

## Introduction

Shaping landscape-level fire behavior requires many years of strategically placed fuel treatments. Consequently, FPU's develop fuels management plans for the long term and include multiple years of fuels treatments. This paper describes how a Fire Planning Unit (FPU) develops<sup>1</sup> a strategic long-term fuels option in FPA, and how this information is used in the analysis.

## Background

FPA is a single year budget and planning tool that does not model the dynamic effects of fuels treatments over time. However, for single year fuel treatments to compete effectively with the immediate results of preparedness, FPA must address, at least to some degree, the future benefits of the smaller single year treatments typical in most FPU's.

To model the long-term benefit of each fuels option, FPA considers two pieces of information:

- The difference in performance measures for the strategic long term fuels option and the current fuels option, and
- How many years it takes all of the fuels options to treat the same number of acres as the strategic long-term option.

## Terms

**Investment Options** – Preparedness and fuels options make up an investment alternative. A preparedness option is an initial response organization in combination with a prevention program. A fuels option is a set of fuels treatments in combination with the fuels program resources. Preparedness and fuels options have leadership and support costs, as well as the costs of the "production" personnel and equipment required to staff the option.

**Investment Alternatives** - A combination of a preparedness and a fuels option. Alternatives are defined by the FPU partners to accomplish national budget analyses, or to evaluate other FPU fire management organizations to meet local needs.

**Discount (v)** - To reduce the value of the future benefit of the strategic long-term fuels option.

**Discount Rate** - The interest rate used to discount the future benefit over the time it takes each fuels option to treat the same number of acres in the strategic long-term fuels option. This is typically somewhere between 3% and 7%.

**Goal Programming** - An analysis used to determine the way to achieve the best outcome given a list of requirements and multiple, often conflicting, objective measures.

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<sup>1</sup> The FPA user interface for developing the strategic long-term fuels option will be available in the FPA system in Version 2.06 scheduled for release February 18, 2009.



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## How to Build the Strategic Long Term Fuels Investment Option

The FPA Project has created a simple spreadsheet tool<sup>2</sup> for the FPU to use to determine the total number of acres that should be included in the 20-year strategic long-term fuels option. This tool requires the FPU to enter four pieces of information:

- Per-acre cost of the typical “first entry” fuels treatments,
- Per-acre cost of your typical maintenance treatment,
- Number of years until first entry treated acres require maintenance, and
- Total cost of fuels treatments in the .Current fuels option.

The spreadsheet tool then calculates the target number of acres for the strategic long term fuels option and the number of years it would take each of the fuels options to treat the same number of acres.

For example, in Figure 1, a 20-year strategic long-term fuels landscape would treat 47,000 acres, as indicated by the red horizontal line. Note the top curve, which is created from the +20% fuels option achieves the 20-year number of acres in about 15 years. The bottom curve, created from the -20% Fuels option, achieves the .LongTerm number of acres in roughly 39 years.

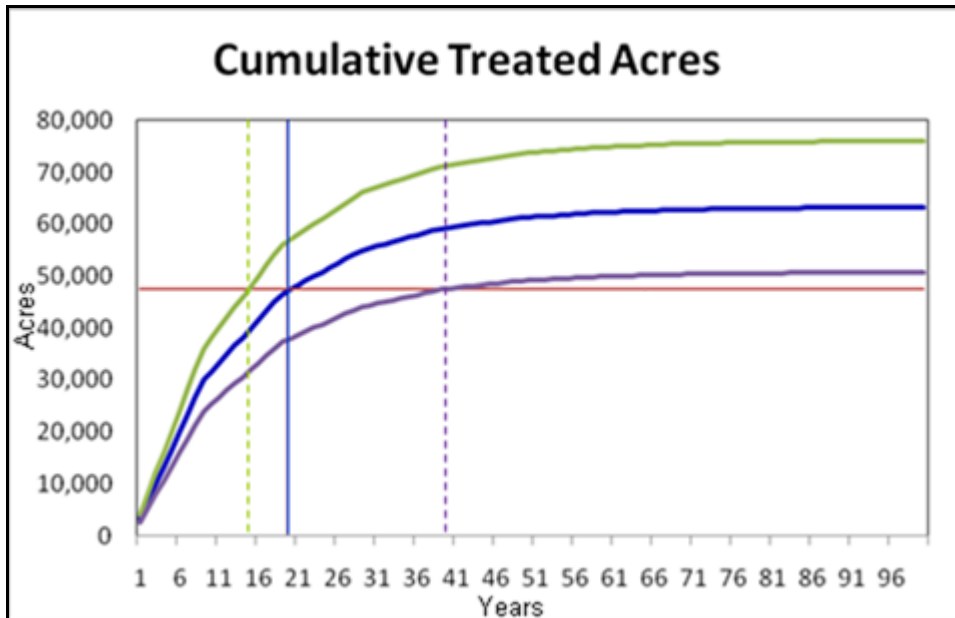


Figure 1 – Example of the rate at which a 20-year long term fuels landscape would be accomplished at three different fuels option investment levels (top green curve is +20%, middle blue curve is current, and bottom purple curve is -20%).

<sup>2</sup> The spreadsheet tool is available for FPU planners to download from [http://www.fpa.nifc.gov/Implementation/TechInfo/Docs/LTF\\_Quick\\_Tool.xls](http://www.fpa.nifc.gov/Implementation/TechInfo/Docs/LTF_Quick_Tool.xls).



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The FPA system automatically creates an empty strategic long-term fuels option for each FPU and names it “.LongTerm.” The FPU populates this fuels option with fuels treatments in the same manner that they create other fuels options. FPUs specify “To” and “From” fuels models for each type of treatment typically done within the FPU, along with the number of acres treated.

The FPU must enter into the FPA system the number of years calculated by the spreadsheet for each FPA fuels treatment option created.

There is no need for the FPU to associate costs to the treatments in the strategic long-term fuels option since costs are not used. This option is not sent to goal programming for consideration in the national analysis. It is used only for determining the strategic value of the other fuels investments options, and in turn contributes to the calculation of all five performance measures for each investment alternative.

Once the strategic long term fuels option has been created, it is paired with the .current preparedness option and run through IRS and Large Fire Module to calculate performance measures. To capture the effect of the strategic long-term fuels option, FPA discounts<sup>3</sup> the difference between performance metric values in the .current fuels option and the .LongTerm fuels option. This difference is then discounted for the number of years (entered in the UI) for each of the other fuels options and added to their calculated performance measures.

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<sup>3</sup> We use the discounting formula:  $\frac{LT - 1yr}{1 + i^t}$  where LT is the performance metric value for the .current

preparedness/ long term fuels and 1yr is the performance metric value for the .current preparedness/current fuels and the interest rate  $i = .03$  and  $t$  is the time it takes for each alternative.