

Getting Started

Welcome to
IFTDSS
Version 0.4

Prescribed Burn Planning

IFTDSS currently supports

- Prescribed burn planning for a point location (fire behavior and effects)
- Current condition fire hazard analysis across a landscape (fire behavior)

Follow these steps to walk through an example prescribed burn planning analysis



Prescribed Burn Planning

The prescribed burn planning tools in IFTDSS can help address the following types of questions:

- *What is the potential fire behavior within my stand under specific wind and moisture conditions?*
- *How does potential fire behavior vary with different wind speeds?*
- *How does the potential fire behavior vary within my stand across different fuel models?*
- *What are the potential fire effects (fuel consumption, emissions, tree mortality) within my stand given specific wind and moisture conditions?*

Overview of IFTDSS Home Page

The screenshot shows the IFTDSS beta home page. The top navigation bar includes links for Home, Collaborate, Projects, Data, and About. The 'About' link is circled in red, with a red double-headed arrow pointing to the text 'General information about IFTDSS.' in the top right. Below the navigation bar, there are two main sections: 'Actions' on the left and a welcome message on the right. The 'Actions' section is circled in red, and a large red arrow points from it to a list of capabilities. The welcome message section includes a 'Create your user profile' link, which is also circled in red, with a red arrow pointing to a note about creating a profile. The footer contains navigation links, version information, and logos for the Wild Fire Science Program and the Protecting Communities & Environments Fund Management Committee.

IFTDSS beta

Getting Started Feedback Sign Out

Home Collaborate Projects Data **About** General information about IFTDSS. Logged in as tamifunk

Actions

- Create a New Project
- Manage My Projects
- Manage My Datasets
- Search Published Projects
- Find Other Users
- Planning Resources
- What's New

Welcome tamifunk to IFTDSS!

tamifunk, before you get started, we recommend you do a few things.

- Create your user profile**
This will help other users identify who you are and what you are working on.
- Read the Getting Started Guide
This will help give you an idea of how to use IFTDSS to accomplish your goals.

From here you can:

- Create a new project
- Manage existing projects
- Manage data (coming soon)
- Search published projects and find other users (coming soon)
- Access planning resources and documents
- Learn about what is new in this version of IFTDSS

Create a user profile by clicking here

If you already have a user profile your information will appear here

Welcome | Home | Collaborate | Projects | Data | About
Version 0.4.15125.1328

Wild Fire Science Program
PROTECTING COMMUNITIES & ENVIRONMENTS
Fund Management Committee

Creating a New Project


IFTDSS beta Getting Started Feedback Sign Out
Home Collaborate Projects Data About Logged in as Tami Funk

Actions

- [Create a New Project](#)
- [Manage My Projects](#)
- [Manage My Datasets](#)
- [Search Published Projects](#)
- [Find Other Users](#)
- [Planning Resources](#)
- [What's New](#)

My Bio [Edit](#)

I am the Manager of the Environmental Data Analysis group at STI and the IFTDSS Project Manager. My primary duties at STI are project management and the development of technology-based tools to display and analyze environmental data.



A project is like a workspace in IFTDSS. A single project can contain multiple analysis objectives and analysis activities (Runs).

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Home Collaborate Projects Data About Logged in as Tami Funk

Create New Project

Name:

Description:

First Objective:

- Prescribed burn planning
- Hazard Analysis
- Spatially explicit fuels treatment assignment
- Fuels treatment effectiveness over time
- Risk assessment

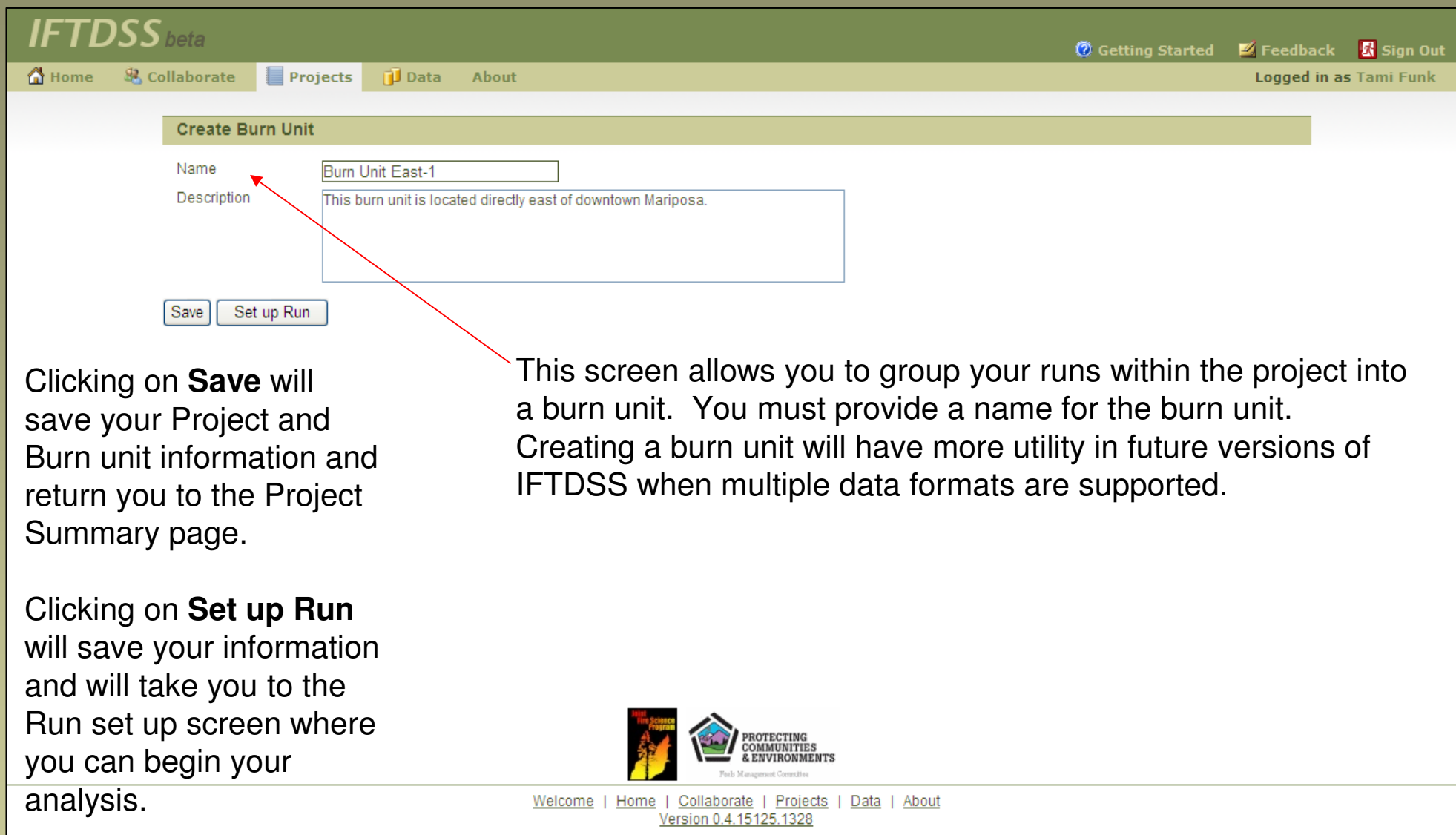
Clicking on the **Create a New Project** link will take you to the Create New Project page. This is where you set up the new project in IFTDSS.

When creating a new project you must select your first analysis objective. Once you have set up a project you may add more objectives in subsequent screens. Choose the **Prescribed burn planning** objective.

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Welcome | Home | Collaborate | Projects | Data | About
Version 0.4.15125.1328

Creating a Burn Unit



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Home Collaborate Projects Data About

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Create Burn Unit

Name



Description

Save Set up Run

Clicking on **Save** will save your Project and Burn unit information and return you to the Project Summary page.

Clicking on **Set up Run** will save your information and will take you to the Run set up screen where you can begin your analysis.

This screen allows you to group your runs within the project into a burn unit. You must provide a name for the burn unit. Creating a burn unit will have more utility in future versions of IFTDSS when multiple data formats are supported.

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Fuel Management Committee

[Welcome](#) | [Home](#) | [Collaborate](#) | [Projects](#) | [Data](#) | [About](#)
Version 0.4.15125.1328

Setting Up a Project Run

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Getting Started Feedback Sign Out

Home Collaborate Projects Data About

Logged in as Funk, Tami

Rx Burn Planning - Mariposa > Burn unit 1 > Create New Run

Create Run

Run Name

Model

- FlamMap Surface Fire Behavior
- FOFEM Consumption and Emissions
- FOFEM Tree Mortality

The run will be associated with Burn unit 1.

The Create Run screen allows you to select the type of analysis you would like to perform and the model(s) that you would like to run.

In this example, we are going to choose the **FlamMap Surface Fire Behavior** model.

Click **Next** to continue.

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Welcome | Home | Collaborate | Projects | Data | About
Version 0.4.15192.1375

Setting Up a FlamMap Model Run

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Getting Started Feedback Sign Out
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Home Collaborate Projects Data About

Rx Burn Planning - Mariposa East » Prescribed Burn » Run 1 - FlamMap

Configure Inputs Outputs

Click here for Information About the FlamMap model



FlamMap Surface Fire Behavior - Run 1 - FlamMap

FlamMap is a fire behavior mapping and analysis program that computes potential fire behavior characteristics (spread rate, flame length, fireline intensity, etc.) over an entire landscape for constant weather and fuel moisture conditions.

Number of stands or simulations

Enable variable winds

Number of variable wind steps



Crown fire calculation method

Enter the number of FlamMap model runs, or simulations, you would like to perform.

Enabling variable winds allows you to run FlamMap for different wind speeds.

Select the crown fire calculation method you would like to use.

Click **Next** to go to the FlamMap input data screen.



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Welcome | Home | Collaborate | Projects | Data | About
Version 0.4.15125.1328

Setting Up a FlamMap Model Run

	Simulation #1	Simulation #2	Simulation #3	Simulation #4	Simulation #5	Units
Fuel Model	FM1: Short grass	FM1: Short grass	FM1: Short grass	FM1: Short grass	FM1: Short grass	
Elevation	1949	1949	1949	1949	1949	feet
Slope	7	7	7	7	7	percent
Aspect	327	327	327	327	327	degrees
Canopy coverage	0	0	0	0	0	percent
Canopy height	0	0	0	0	0	feet
Canopy base height	0	0	0	0	0	meters
Canopy bulk density	0	0	0	0	0	kg/m ³
Moisture of 1-hr fuels	6	6	6	6	6	percent
Moisture of 10-hr fuels	7	7	7	7	7	percent
Moisture of 100-hr fuels	8	8	8	8	8	percent
Live herb moisture	60	60	60	60	60	percent
Live woody moisture	90	90	90	90	90	percent
Wind direction	290	290	290	290	290	degrees

Variable Winds

	Wind Speed #1	Wind Speed #2	Wind Speed #3	Wind Speed #4	Wind Speed #5	Units
Wind speed	0	5	10	15	20	miles per hour

< Back

Next >

← Click **Next** to run FlamMap

This is the FlamMap input screen. You can run FlamMap for different fuel models, topography, canopy characteristics, wind direction, and wind speed. Click on the help icon above the input fields (upper right) for help with canopy and moisture inputs.

FlamMap Output – Tabular Format

FlamMap Surface Fire Behavior - Run 1

Views
 Table
 Graph ← **Switch to Graph view**

Wind speed: 0.0 miles per hour

	Fuel Model: FM1: Short grass	Fuel Model: FM3: Tall grass	Fuel Model: FM9: Hardwood litter	Fuel Model: FM12: Medium slash	Fuel Model: GS2 (122): Moderate Load, Dry Climate Grass-Shrub (Dynamic)	Units
Flame length	1.19	3.22	1.04	2.96	1.33	feet
Rate of spread	0.06	0.07	0.01	0.02	0.02	miles per hour
Fireline intensity	28.90	249.82	21.26	207.47	36.48	kilowatts per meter
Heat per unit area	1028.36	8446.16	4208.86	25039.69	5208.55	kilojoules per meter ²
Crown fire activity	Surface fire	Surface fire	Surface fire	Surface fire	Surface fire	
Mid-flame wind speed	0	0	0	0	0	miles per hour
Horizontal movement rate	0.06	0.07	0.01	0.02	0.02	miles per hour
Direction of maximum spread	147.00	147.00	147.00	147.00	147.00	degrees

Wind speed: 5.0 miles per hour

	Fuel Model: FM1: Short grass	Fuel Model: FM3: Tall grass	Fuel Model: FM9: Hardwood litter	Fuel Model: FM12: Medium slash	Fuel Model: GS2 (122): Moderate Load, Dry Climate Grass-Shrub (Dynamic)	Units
Flame length	2.03	8.52	1.41	5.66	2.90	feet
Rate of spread	0.20	0.55	0.02	0.08	0.09	miles per hour
Fireline intensity	91.06	2066.28	41.28	849.55	198.46	kilowatts per meter
Heat per unit area	1028.36	8446.16	4208.86	25039.69	5208.55	kilojoules per meter ²
Crown fire activity	Surface fire	Surface fire	Surface fire	Surface fire	Surface fire	
Mid-flame wind speed	1.81	2.20	1.38	2.16	1.97	miles per hour
Horizontal movement rate	0.20	0.55	0.02	0.08	0.09	miles per hour
Direction of maximum spread	112.55	110.75	112.53	110.89	111.08	degrees

This is the FlamMap output screen. Tabular outputs are arranged by model simulation (columns) and fire behavior parameter by wind speed bin (rows). Click on the **Graph** link to view the data on a graph.

You can export the input and output from FlamMap by clicking on the **Export to table** link at the bottom of the page.

FlamMap Output – Graphical Format

FlamMap Surface Fire Behavior - Run 1

Views	Select
Table	Flame length
Graph	Rate of spread
	Fireline intensity
	Heat per unit area
	Mid-flame wind speed
	Horizontal movement rate
	Direction of maximum spread

Select parameter to graph

Output

Flame length by Fuel Model

Wind speed (mph)	FM1: Short grass (feet)	FM3: Tall grass (feet)	FM9: Hardwood litter (feet)	FM12: Medium slash (feet)	GS2(122): Moderate Load, Dry Climate Grass-Shrub (Dynamic) (feet)
0.0	1.0	3.5	1.0	3.0	1.5
2.5	1.5	5.5	1.5	4.5	2.5
5.0	2.0	8.0	2.0	6.0	3.5
7.5	2.5	10.5	2.5	7.5	4.5
10.0	3.0	13.0	3.0	8.5	5.0
12.5	3.5	15.0	3.5	9.5	5.5
15.0	4.0	16.5	4.0	10.0	6.0
17.5	4.5	18.0	4.5	10.5	6.5
20.0	5.0	18.5	5.0	11.0	7.0

Save image ← Export your graph in MS Word-friendly format

< Back

This is the FlamMap graphical output screen. FlamMap outputs can be graphed by selecting the output parameter. The image can be exported for input to a burn plan document by clicking the **Save Image** link at the bottom of the page. The graph will be exported as an image (.png) and can easily be pasted or imported into a MS Word document. 11

Where Does FlamMap Input and Output Data Fit into a Prescribed Burn Plan?

- FlamMap inputs including the physical description of the stand and vegetation and fuels information fit into **Element 4** of the burn plan template
- FlamMap outputs including weather conditions on-site and test fire results fit into **Element 14** of the burn plan template
- FlamMap outputs for fire behavior modeling fit into **Appendix E** of the burn plan template

FOFEM Fire Effects

- If you are interested in simulating fuel consumption, emissions, or tree mortality, you can run the First Order Fire Effects Model (FOFEM) for your stand
- In this example, we will create a second Run within the same project that was created previously

IFTDSS beta Getting Started Feedback Sign Out
Home Collaborate Projects Data About Logged in as Funk, Tami

Rx Burn Planning - Mariposa **Prescribed Burn** Run 1

Configure Inputs Outputs

FlamMap Surface Fire Behavior - Run 1

Views Wind speed: 0.0 miles per hour

	Fuel Model: FM1: Short grass	Fuel Model: FM3: Tall grass	Fuel Model: FM9: Hardwood litter	Fuel Model: FM12: Medium slash	Fuel Model: GS2 (122): Moderate Load, Dry Climate Grass-Shrub (Dynamic)	Units
Flame length	1.19	3.22	1.04	2.96	1.33	feet
Rate of spread	5.03	5.29	0.90	1.48	1.25	chains per hour
Fireline intensity	8.35	72.17	6.14	59.94	10.54	BTU/feet/second
Heat per unit area	90.55	743.73	370.61	2204.87	458.64	BTU/ft ²
Crown fire activity	Surface fire	Surface fire	Surface fire	Surface fire	Surface fire	
Mid-flame wind speed	0	0	0	0	0	miles per hour
Horizontal movement rate	5.02	5.28	0.90	1.48	1.25	chains per hour
Direction of maximum spread	147.00	147.00	147.00	147.00	147.00	degrees

To run FOFEM use the navigation feature at the top of the FlamMap output page to go to the Project Summary page.

FOFEM Fire Effects

The screenshot shows the IFTDSS beta web application. The top navigation bar includes links for Home, Collaborate, Projects, Data, and About. The user is logged in as Funk, Tami. The main content area is titled 'Rx Burn Planning - Mariposa' and features a sidebar with options like Project Summary, Prescribed Burn, Hazard Analysis, Treatment Assignment, Treatments over Time, Risk Assessment, and Data Management. The main content area displays 'Prescribed Burn Planning' with a sub-section for 'Burn unit 1'. Within this section, there are links for 'Run 1', 'FlamMap Surface Fire Behavior', and 'Delete'. A red circle highlights the 'Create New Run' link, and a red arrow points from this link to a text box on the right.

This is the Project Summary page. This page provides an overview of your Project and allows you to navigate within it.

You can create new analyses with different objectives and/or you can create new runs within an existing analysis.

To run FOFEM, as a new Run within an existing project, click on the **Create New Run** link.

Setting Up a Project Run

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Getting Started Feedback Sign Out

Home Collaborate Projects Data About

Logged in as Funk, Tami

Rx Burn Planning - Mariposa > Burn unit 1 > Create New Run

Create Run

Run Name

Model

- FlamMap Surface Fire Behavior
- FOFEM Consumption and Emissions
- FOFEM Tree Mortality

The run will be associated with Burn unit 1.

The Create Run screen allows you to select the type of analysis you would like to perform and the model(s) that you would like to run.

In this example, we are going to choose the **FOFEM Tree Mortality** model.

Click **Next** to continue.

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[Welcome](#) | [Home](#) | [Collaborate](#) | [Projects](#) | [Data](#) | [About](#)
Version 0.4.15192.1375

FOFEM Tree Mortality

IFTDSS *beta*

[Home](#) [Collaborate](#) [Projects](#) [Data](#) [About](#)

[Getting Started](#) [Feedback](#) [Sign Out](#)

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[Rx Burn Planning - Mariposa](#) » [Prescribed Burn](#) » [Run 2](#)



Click here for
Information about
the FOFEM model



First Order Fire Effects Model

FOFEM Tree Mortality - Run 2

FOFEM (a First Order Fire Effects Model) is a computer program for predicting tree mortality, fuel consumption, smoke production, and soil heating caused by prescribed fire or wildfire.

Number of stands or simulations

[Next >](#)

Enter the number of stands or model simulations you would like to perform.



[Welcome](#) | [Home](#) | [Collaborate](#) | [Projects](#) | [Data](#) | [About](#)
Version 0.4.15303.1399


FOFEM Tree Mortality Input Screen

IFTDSS beta Getting Started Feedback Sign Out

Home Collaborate Projects Data About Logged in as Funk, Tami

Rx Burn Planning - Mariposa > Prescribed Burn > Run 2

Configure Inputs Outputs




FOFEM Tree Mortality - Run 2

FOFEM Inputs

	Simulation #1	Simulation #2	Simulation #3	Simulation #4	Units
Tree Species	Yellow buckeye	Firs	Ohio buckeye	Mountain maple	
Trees per Acre	20	20	20	20	
Diameter Breast Height	40	40	40	40	inches
Tree Height	50	50	50	50	feet
Crown Ratio	1	1	1	1	
Flame Length	10	10	10	10	feet
Scorch Height	10	10	10	10	feet
Use flame length or scorch height?	Flame Length	Flame Length	Flame Length	Flame Length	
Fire Severity	Moderate	Moderate	Moderate	Moderate	

< Back Next >



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[Welcome](#) | [Home](#) | [Collaborate](#) | [Projects](#) | [Data](#) | [About](#)
Version 0.4.15303.1399

This is the FOFEM input screen. You can run FOFEM for different tree types, tree characteristics, and fire severities. Click the **Next** button when you are ready to run FOFEM.

FOFEM Tree Mortality Output Screen

IFTDSS beta

Getting Started Feedback Sign Out

Home Collaborate Projects Data About

Logged in as Funk, Tami

Rx Burn Planning - Mariposa » Prescribed Burn » Run 2

Configure Inputs Outputs



First Order Fire Effects Model

FOFEM Tree Mortality - Run 2

Export To CSV

	Simulation #1	Simulation #2	Simulation #3	Simulation #4	Units
Average Mortality	86	85	92	90	percent
Trees Killed	17	17	18	18	
Average DBH of Killed Trees	40	40	40	40	inches
Average Mortality, DBH > 4 inches	86	85	92	90	percent
Total Trees per Fire	20	20	20	20	
Basal Area: pre-Fire	174.53	174.53	174.53	174.53	square feet
Basal Area: post-Fire	24.13	25.53	13.59	16.64	square feet
Basal Area: killed	150.40	149	160.94	157.89	square feet
Crown Cover: pre-Fire	30	22	30	42	percent
Crown Cover: post-Fire	5	4	4	5	percent

< Back



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[Welcome](#) | [Home](#) | [Collaborate](#) | [Projects](#) | [Data](#) | [About](#)
Version 0.4.15303.1399

This is the FOFEM output screen. You can download the output data to your local computer by clicking on the **Export to CSV** link. “CSV” is a file format that is compatible with MS Excel.

Follow the same run set up procedure if you would like to run the FOFEM consumption and emissions simulators.

Next Steps...

- If you have spatial data in landscape file format you can perform a **Current Condition Hazard Analysis** to identify locations across a landscape that may be potentially hazardous if a fire were to occur.
- For general information about logging in and navigating IFTDSS, please refer to the **Getting Started: System Overview**