A photograph of a forest with tall, thin trees. A fire is visible in the background, with orange and yellow flames and smoke rising. The scene is dimly lit, with the fire providing the primary light source. The text is overlaid on a green rectangular background.

# Defining Fuel Treatment Success: Workflows, Metrics, and Evaluation

# Welcome!

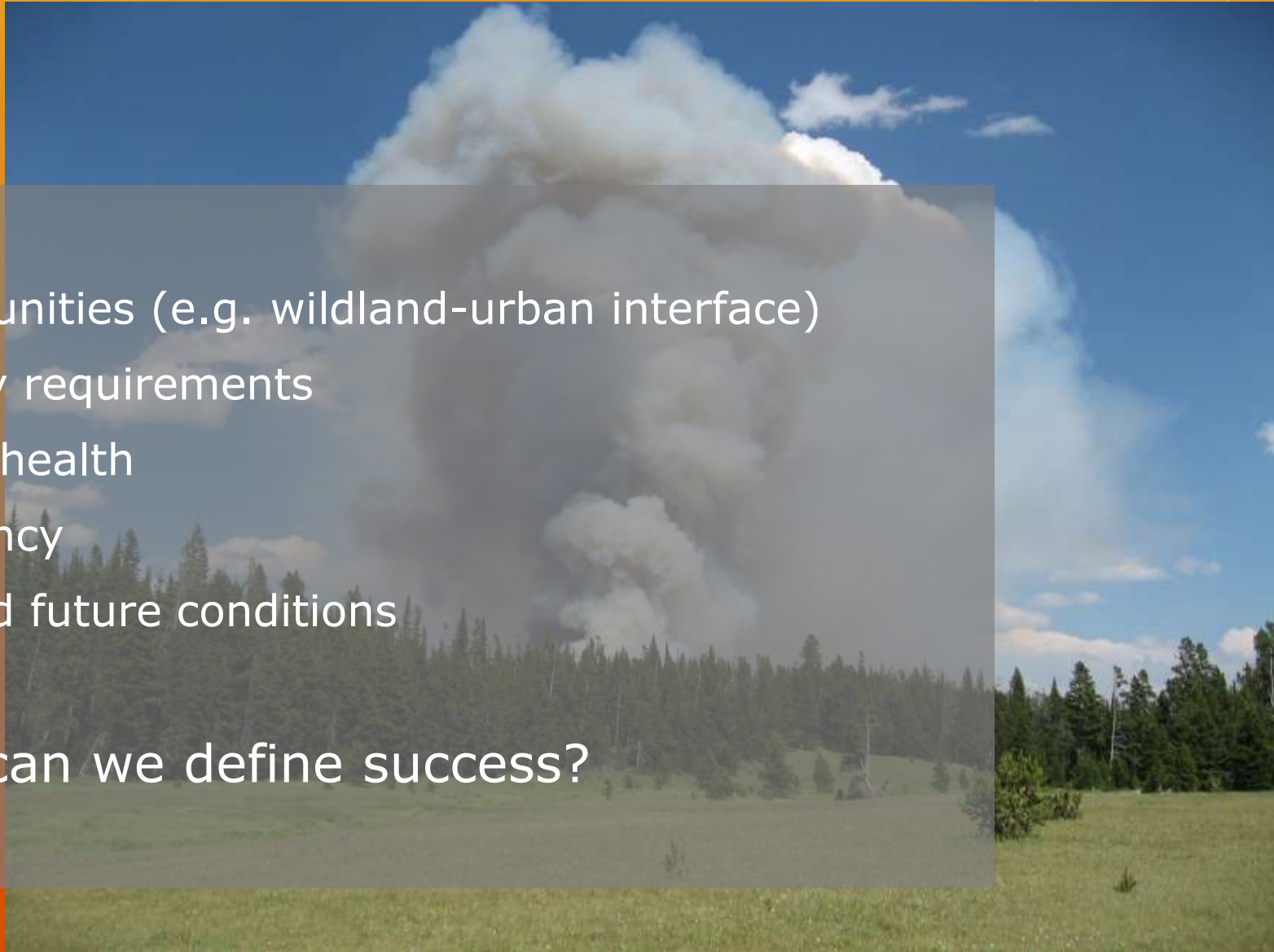
Please:

- 1) fill out name tag and
- 2) fill out self-rating sheet



# Demand for Fuel Treatments

- Communities (e.g. wildland-urban interface)
- Agency requirements
- Forest health
- Resiliency
- Desired future conditions
- How can we define success?



# Evaluating fuel treatments: more complicated than you think

**Action taken in present to modify fire behavior ... in the future**

- What changes?
- Under what conditions is it effective?
- For how long?

Fuels

Pre-Treatment



Post-Treatment



Fire





# Challenges in evaluating fuel treatments

- Many moving parts
- Fuels and Weather are both:
  - Highly variable
  - Always in flux

Solving the problem is hard ...

- **Big toolbox**
- **Blueprint ... not so clear**



The perfect tool?

# Workshop Objectives

Collectively engage in a process that builds a workflow to evaluate fuel treatment success

- Step back and think broadly about problem solving
- Learn from the experience and knowledge of this group
- Identify common problems and solutions

# To achieve this we will:

- Work in small groups
- Design a flow chart, adding detail a bit at a time
- Identify ways to measure success
- **“Think outside the tools”**
- Learn from the diversity of opinions





# Rules of Engagement

- Be respectful and polite
- Be positive, have fun
- Keep an open mind
- Everyone's views are important
- Don't get bogged down – if you want, put your own picture together



# Icebreaker – Meet your group – 5 minutes

- Our team has sorted you into groups with a good mix
- Please take a few minutes to introduce yourselves
- Please share one interesting thing about yourself



# Scenarios

## A. Historic structure protection

- Reduce likelihood of destruction from wildfire



## B. Maintain whitebark pine seed source

- Reduce likelihood of whitebark pine mortality from wildfire



## C. Maintain old growth forest

- Reduce likelihood of mortality of trees designated as old growth

# Exercise 1: Work flows

○ **Objective** – Each group will construct a workflow that will allow them to meet the goal of their scenario

**Task** ~15 minutes

- Choose a scenario ( 5 minutes)
- Lay out cards to create a flow chart
  - Don't worry (now) about details
  - Use arrows to indicate flow
  - Blank cards are available
  - Markers and post it notes can add detail if desired

Compare

Define  
Treatment

Define  
Target  
Value

Calculate  
Metrics

Evaluate  
Success

Define  
Metrics

Current  
Conditions

Future  
Conditions

Data

Analysis

**START:**  
Goal

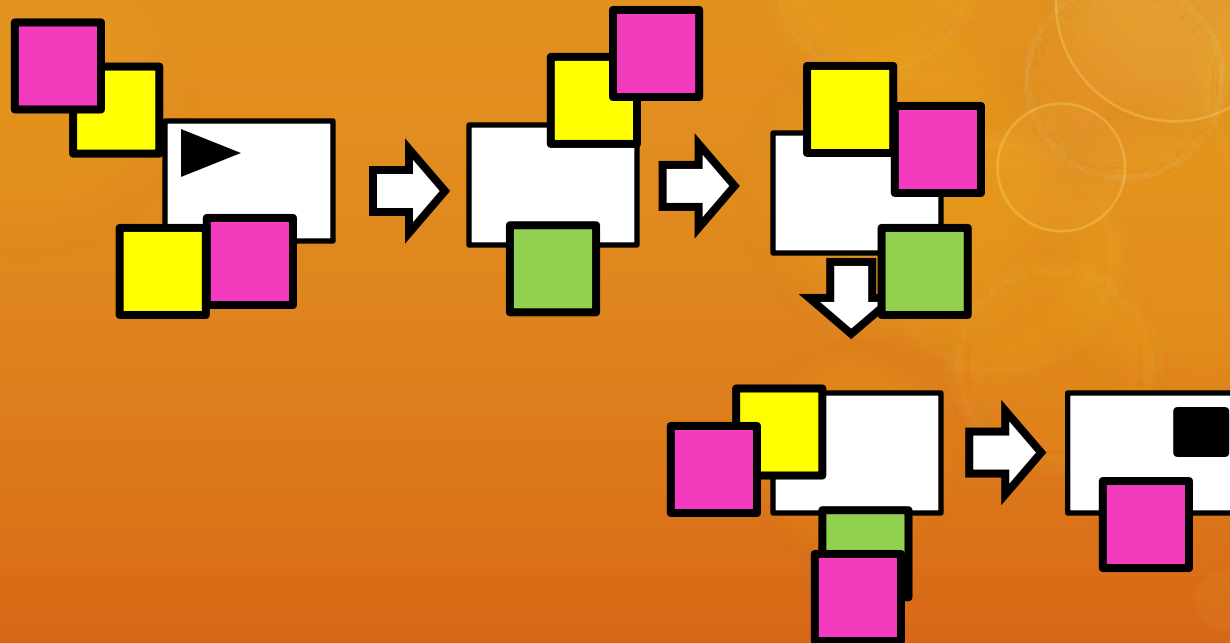
**END:**  
Implement



# Quick Overview of the Exercises

## Exercise 1

Lay out  
workflow



## Exercise 2

Add detail:  
metrics

## Exercise 3

Add detail:  
evaluation

## Outcome:

- A problem-solving **PROCESS**
- A well thought out **workflow** evaluating fuel treatment success

# The Cards →

- Add more if you want
- Use less or more as you want

## Definitions

- **Scenario** – a specified resource to protect and general description of fuels
- **Issue** – perceived resource risk(s)
- **Goal** – action to address issue
- **Metric** – quantity that can evaluate success
- **Target value** – specific value of a metric where objective is met

Compare

Define  
Treatment

Define  
Target  
Value

Calculate  
Metrics

Evaluate  
Success

Define  
Metrics

Current  
Conditions

Future  
Conditions

Data

Analysis

**START:**  
Goal

**END:**  
Implement



# Exercise 1: Work flows (continued)

- **Group presentations** 7 minutes per group
  - Each group's workflow is presented to the entire workshop by the person with the *lowest odd number*
  - Present any alternate workflows

# Workflows -- Discussion





# Exercise 2: Metrics and Targets

- **Exercise objective**: Each group will add metrics of fuel treatment success and target values to their work flows
- **Task**: ~15 minutes
  - Choose a small set of key metrics
  - Add these metrics to the work flow. (use pink Post-its)
  - If possible, add target values for each metric (ballpark is OK)

Example:

Goal: reduce likelihood of crown fire

Metric:  
increase crown spacing

increase crowning index

# Exercise 2: Metrics and Target Values

**Group presentations**      7 minutes per group

Person with the *lowest even number* presents the metrics and target values for their group

Follow up discussion (5 minutes)



# Metrics and Target Values -- Discussion



# Exercise 3: Evaluation: Addressing Uncertainty

- **Objective**: Identify factors that could alter the effectiveness of the metrics, target values, or chosen treatments
- **Task** ~10 minutes
  - Identify sources of uncertainty that could affect your workflow
  - Identify potential ways to account for unknown or uncertain factors
  - Add these items to your workflow

# Exercise 3: Evaluation:

## Addressing Uncertainty (Continued)

**Group presentations** 7 minutes per group

Person with the *highest odd number* presents the metrics and target values for their group





# **Evaluation: Uncertainty and Constraints**

## **-- Discussion**





# Wrapping it up ...



Landscape view of Tripod Complex,  
Okanogan-Wenatchee National Forest, 2006

# Workshop Evaluation

Please take a moment to fill out our workshop evaluation

Help us improve this process for future work



International Crown Fire Modeling Experiment



# Thanks!

- We welcome additional comments!
- Send your thoughts, complaints, etc.