

Land Use Planning & Wildfire Forum

Presentations

Creating fire-adapted communities through better land use planning in the
wildland-urban interface

January 24-25, 2018 | St. Julien Hotel, Boulder, CO



Risk Modeling in a Community

Rocky Mtn Research Station

Chelan County, WA

Lewis & Clark County, MT

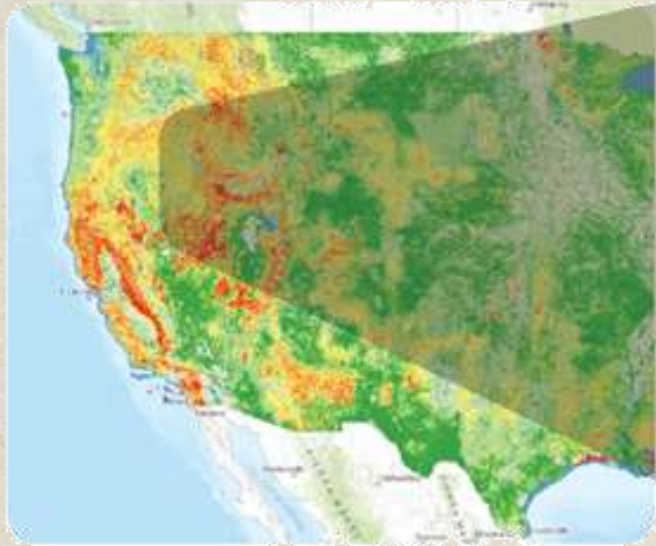
Wildfire Risk Assessments: Land Use Planning Decision Support

Kelly Johnston, RPF, FBAN

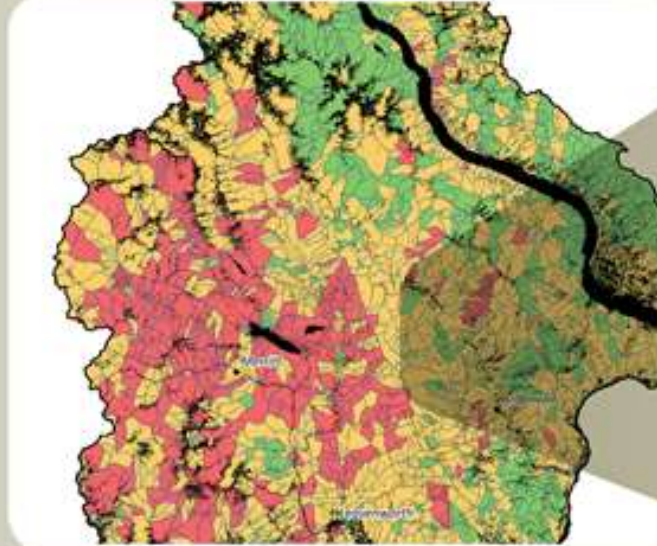


Wildfire Risk Scales

NATIONAL
LEVEL



COMMUNITY
LEVEL



INDIVIDUAL
PARCEL LEVEL



Wildfire Risk & Land Use Planning

Wildfire Risk Components :

- Likelihood
 - Fire use permitting & hazardous land use
- Intensity
 - Vegetation management & structure ignition resistance construction
- Susceptibility
 - Subdivision planning, structure ignition resistance construction, transportation planning, zoning.



Examples: CWPP, Land Use Zoning, Subdivision Regulations, WUI Building Code

Wildfire Risk Assessments

Greg Dillon

Spatial Fire Analyst

Rocky Mountain Research Station, USFS

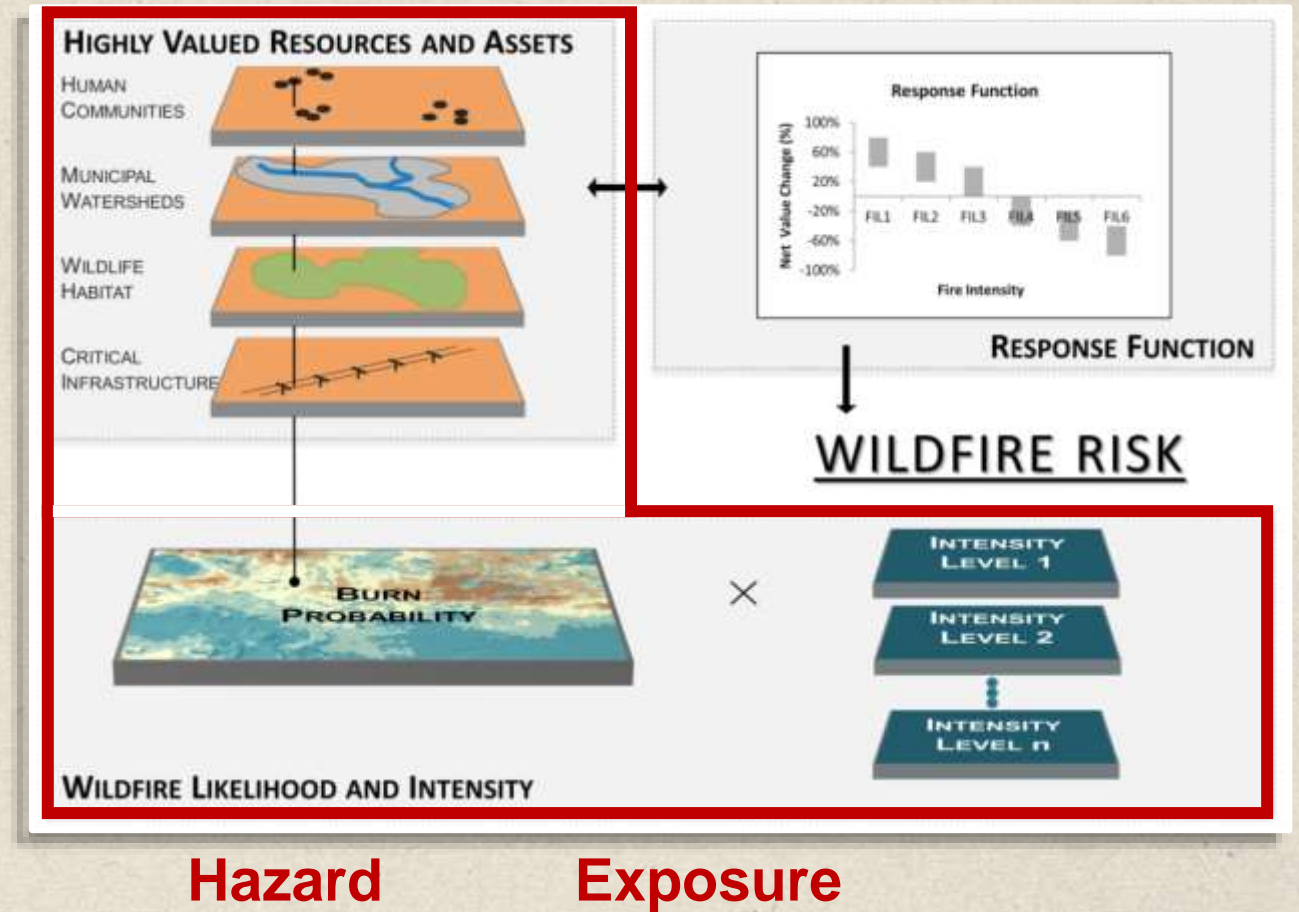


What is a Wildfire Risk Assessment?

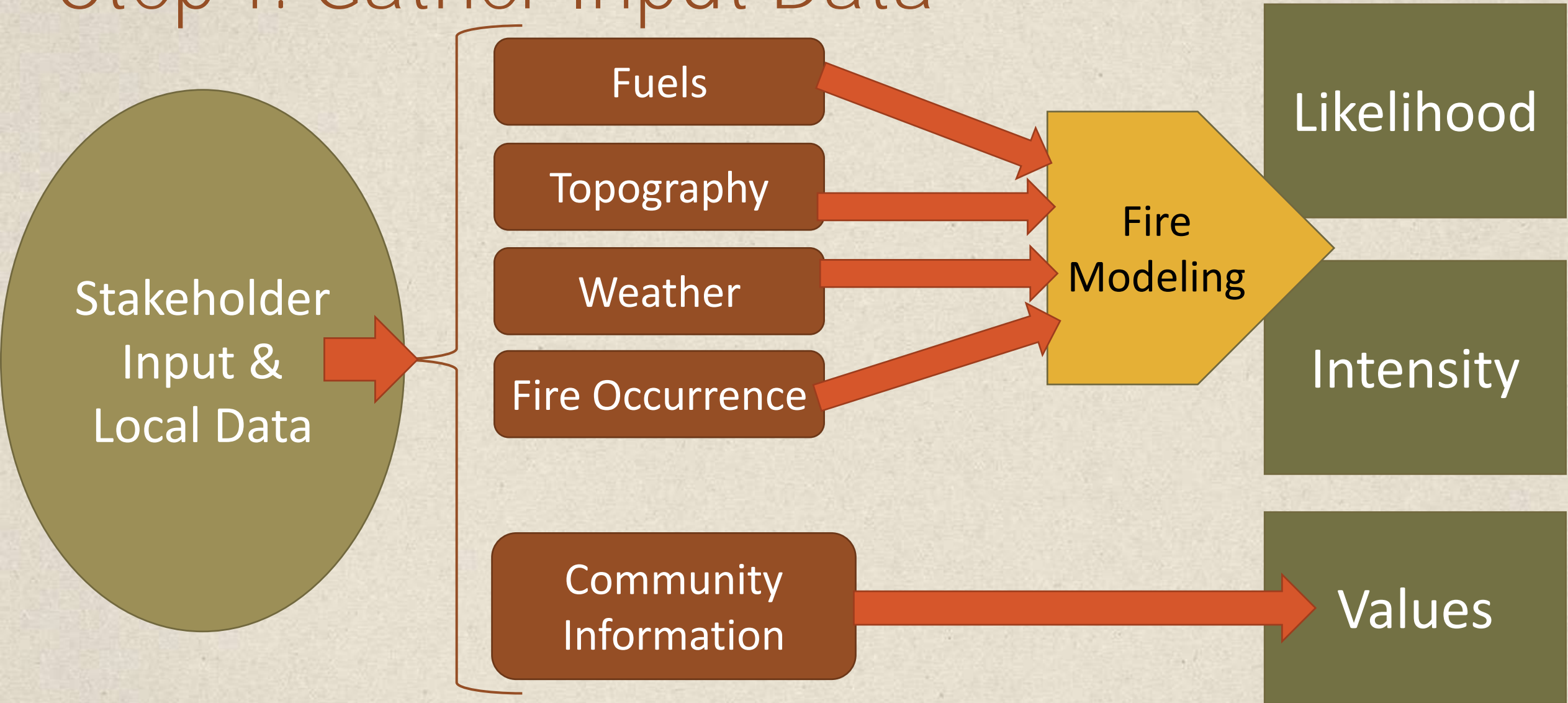
- Wildfire Risk: A measure of the probability and consequences of uncertain future wildfire events.



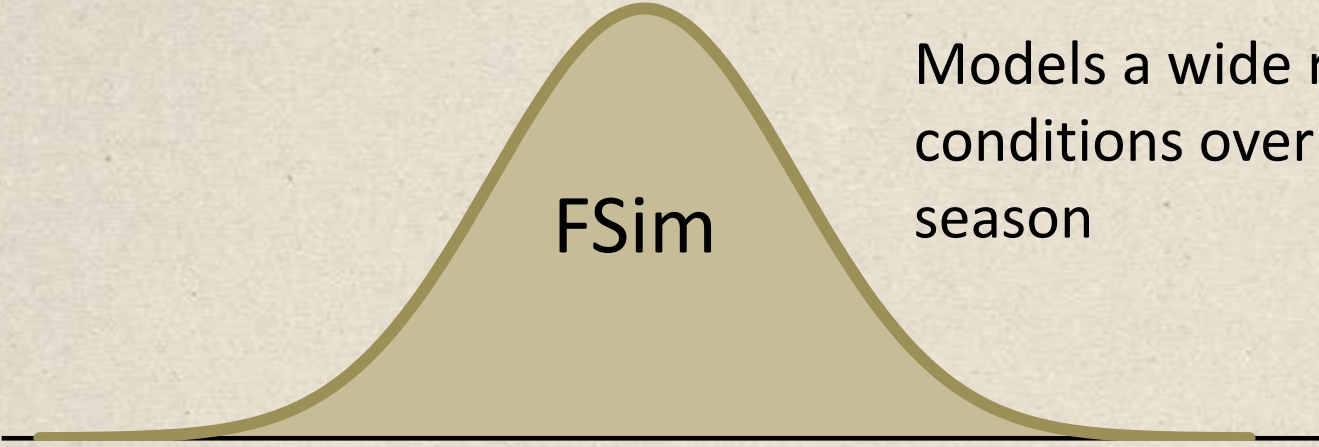
- Wildfire Hazard: A physical situation with potential for negative consequences from wildfire.
- Wildfire Exposure: The spatial intersection of wildfire hazard with something of value.



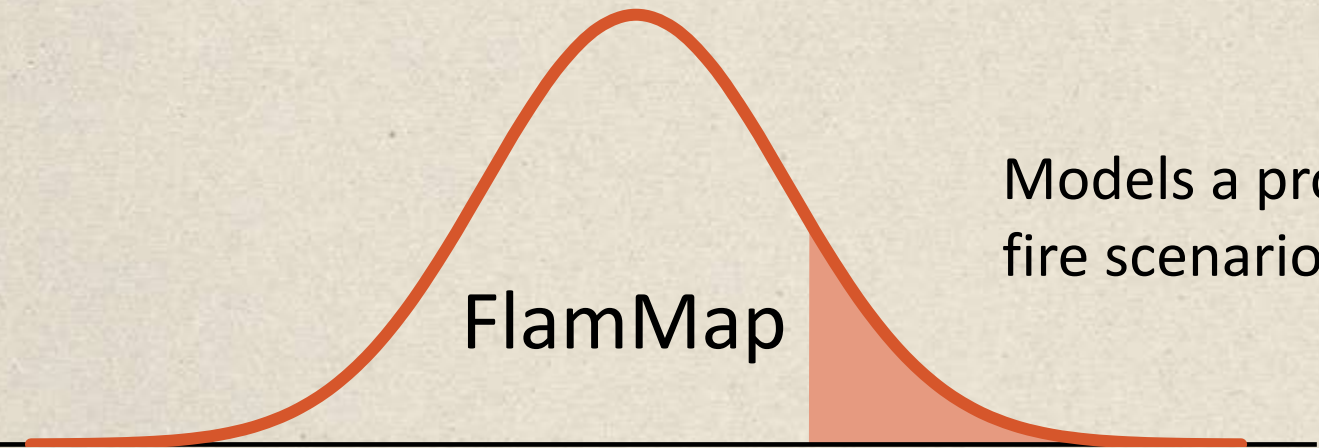
Step 1: Gather Input Data



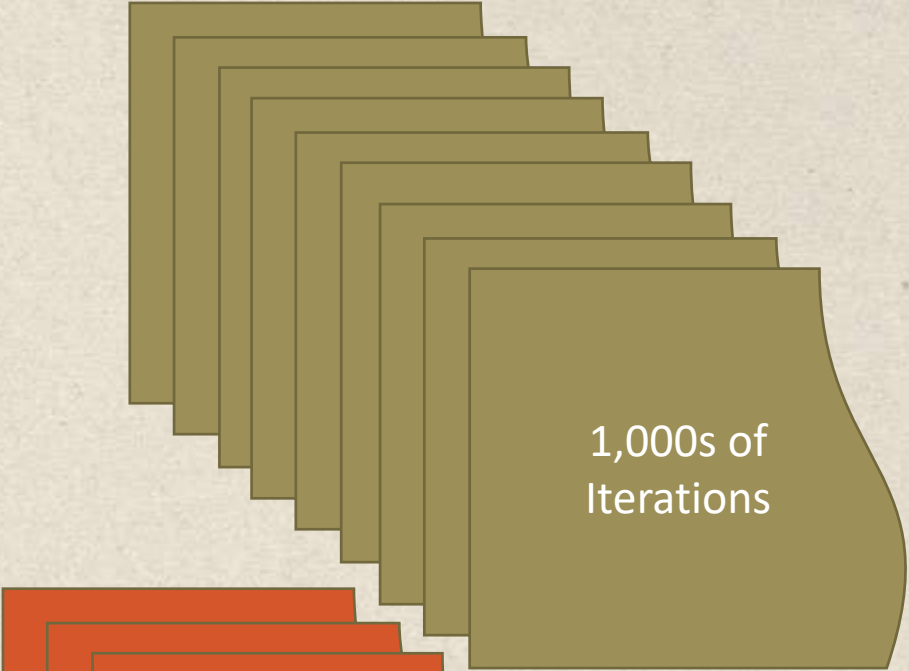
Step 2: Fire Modeling



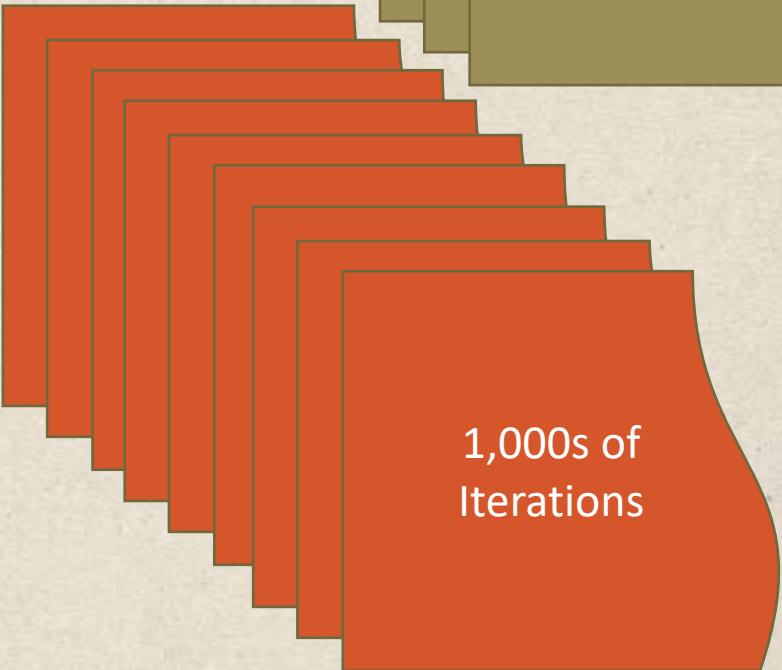
Models a wide range of conditions over an entire season



Models a problem fire scenario



1,000s of Iterations

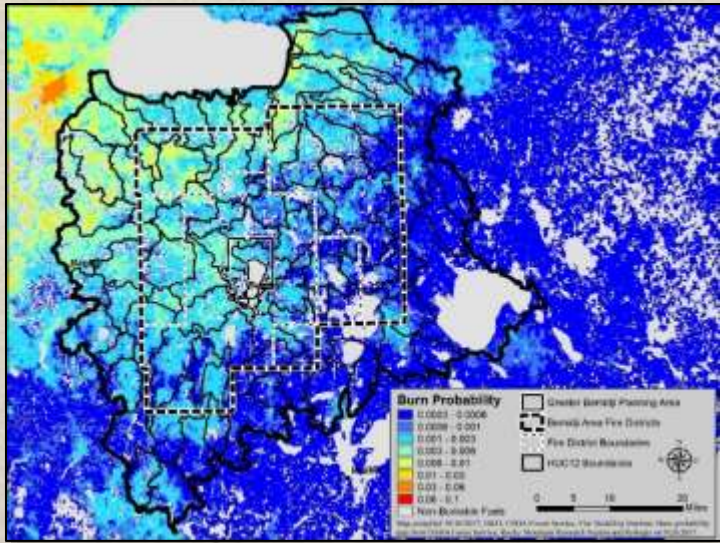


1,000s of Iterations

Step 3: Calculate And Summarize Outputs

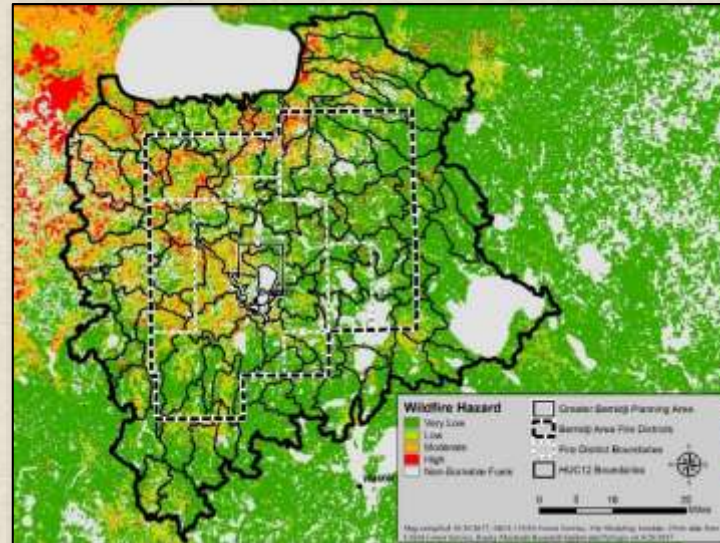
Pixel-Based Outputs

- Likelihood
- Intensity



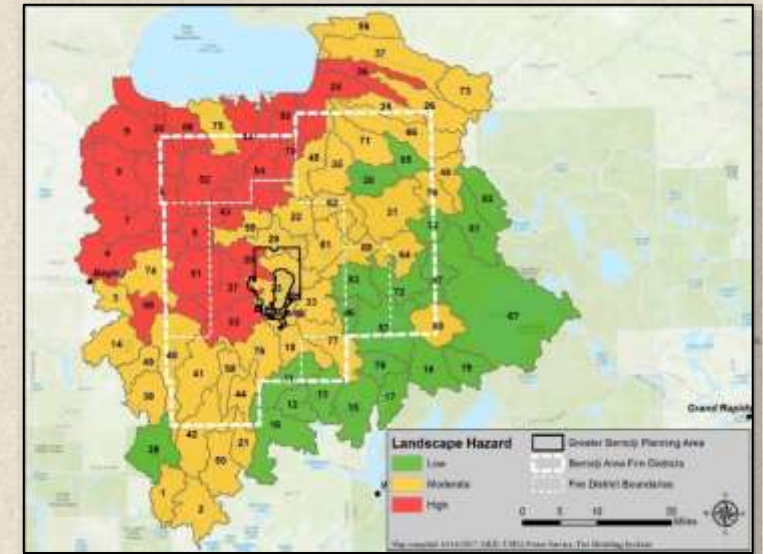
Derived Metrics

- Hazard
- Exposure
- Fireshed



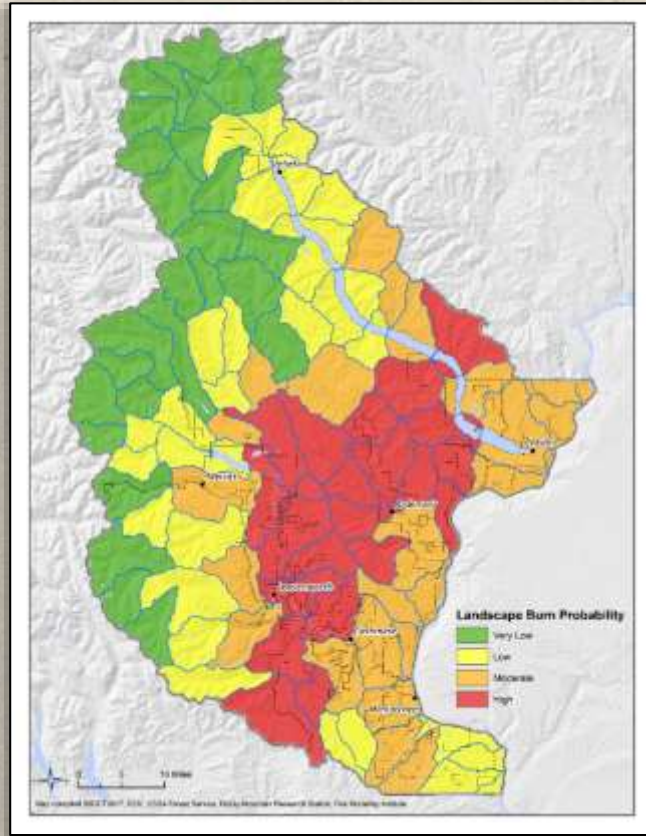
Summarize to polygons:

- Watershed
- Political units
- Neighborhoods



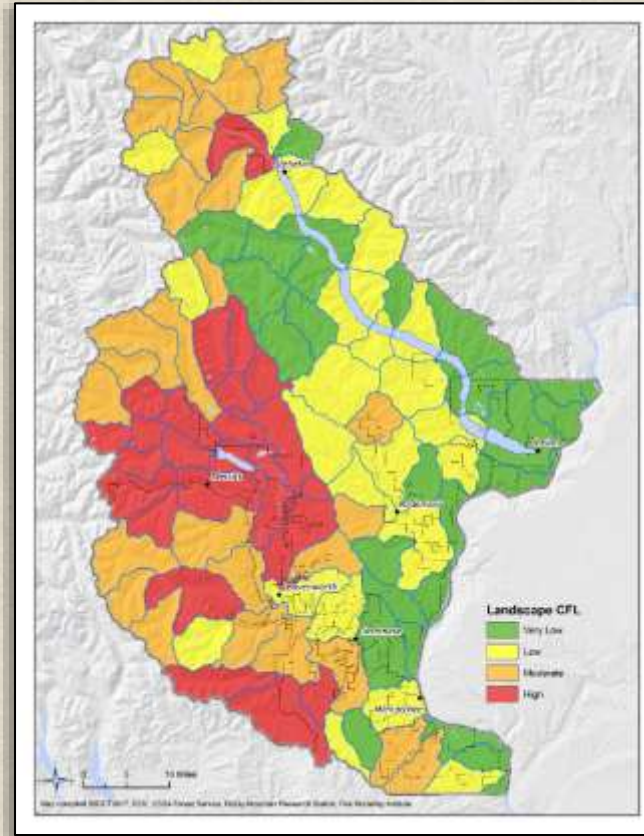
Landscape Assessment

Watershed scale (12-code HUC)



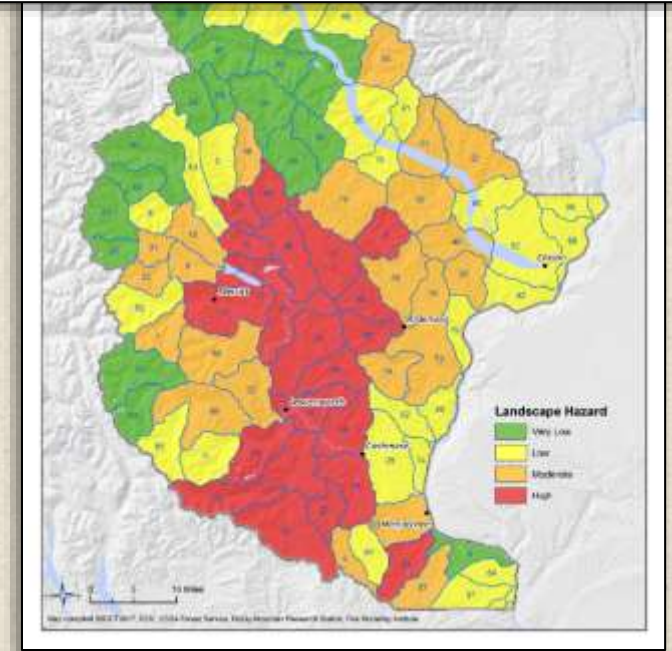
Likelihood

X

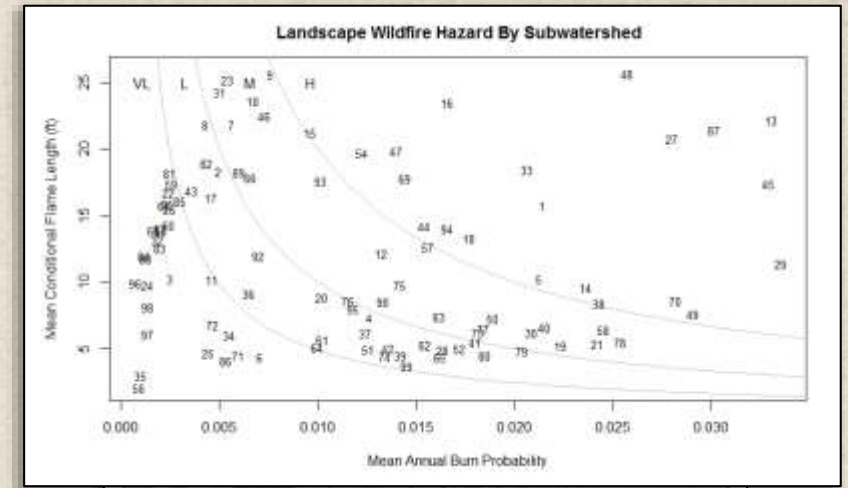


Intensity

=

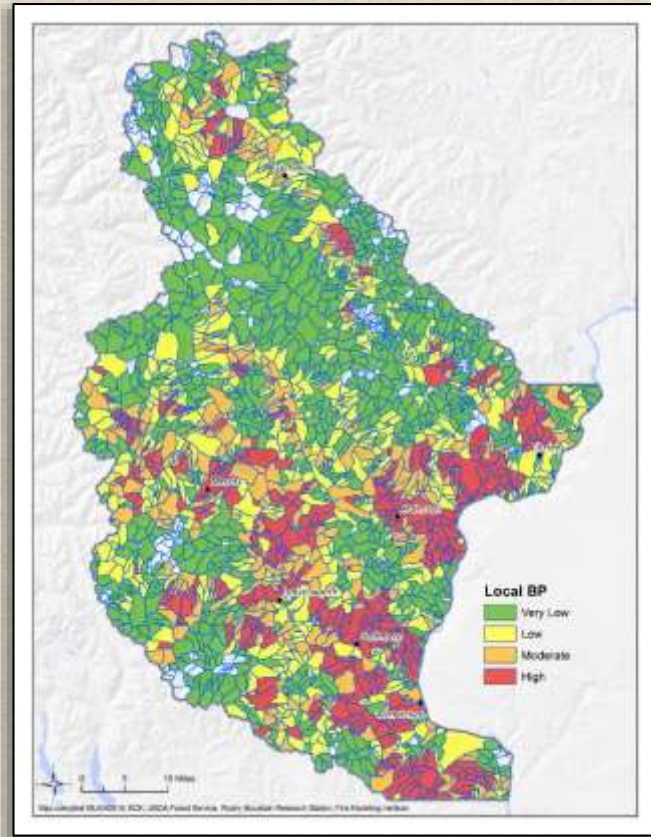


Hazard



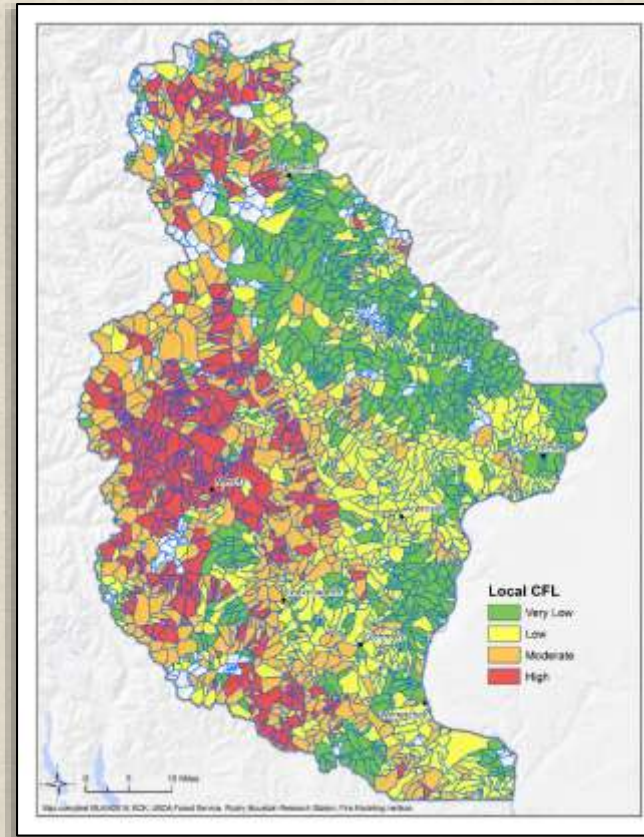
Local Assessment

Sub-watershed scale (catchments)



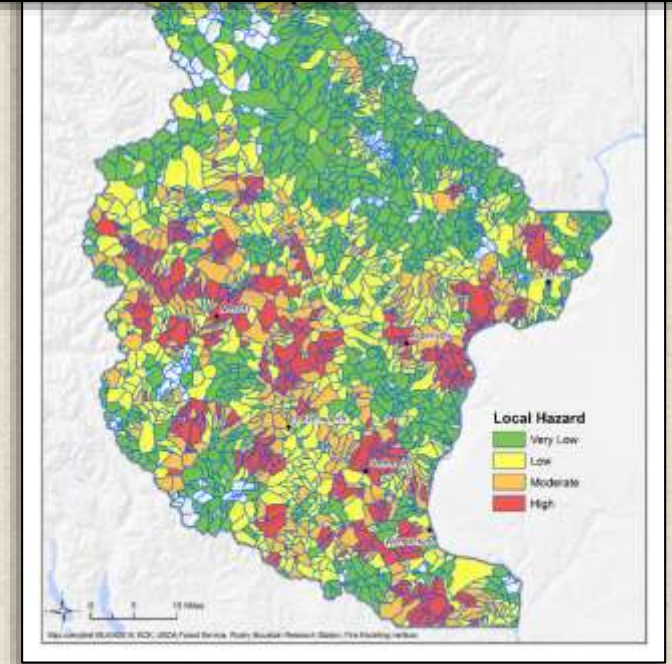
Likelihood

X

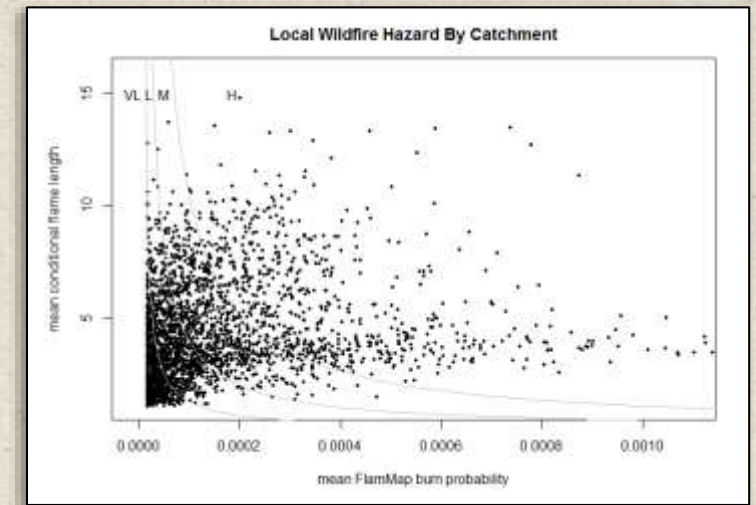


Intensity

=

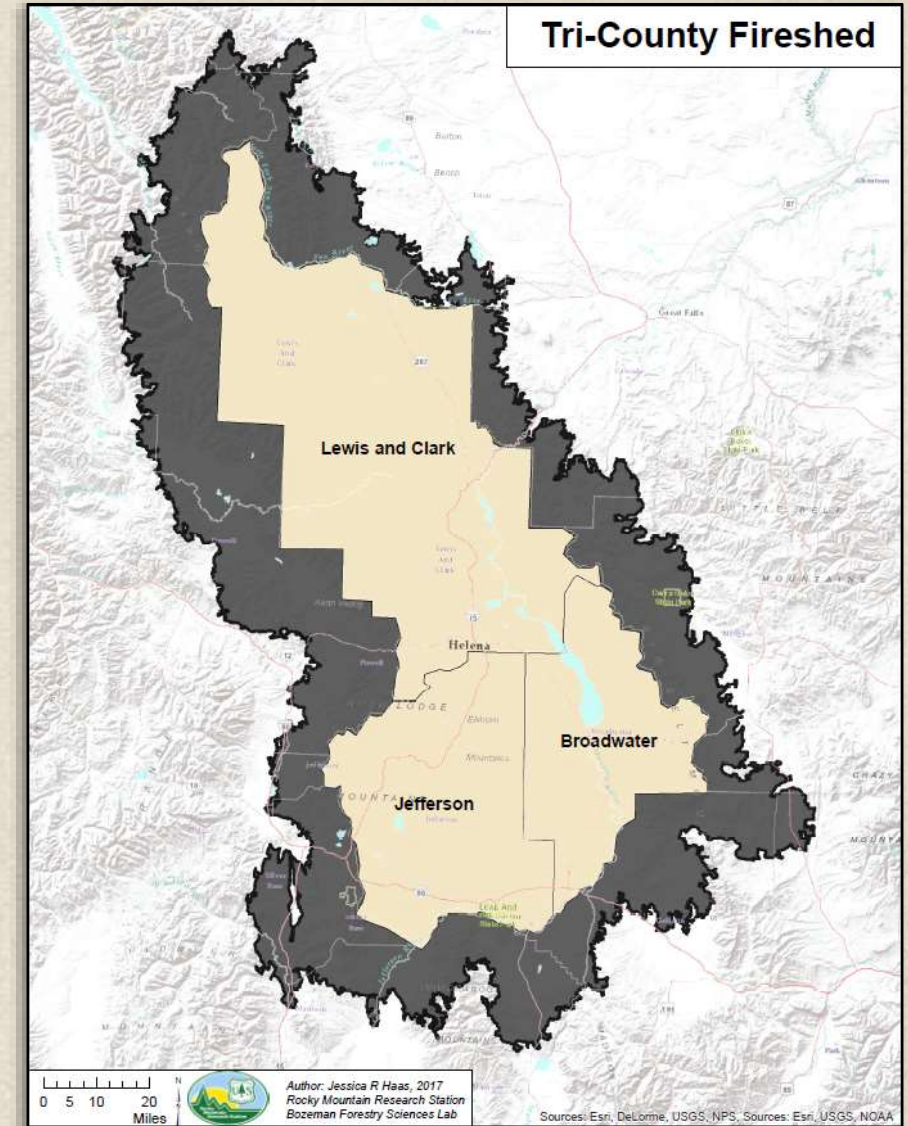
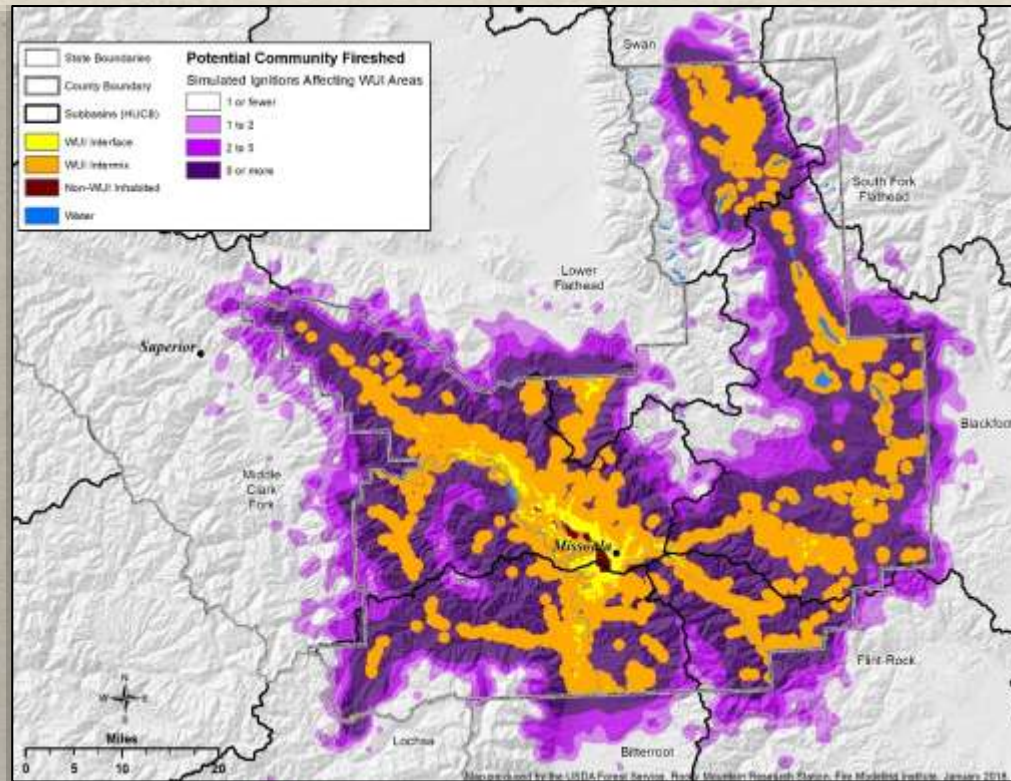


Hazard



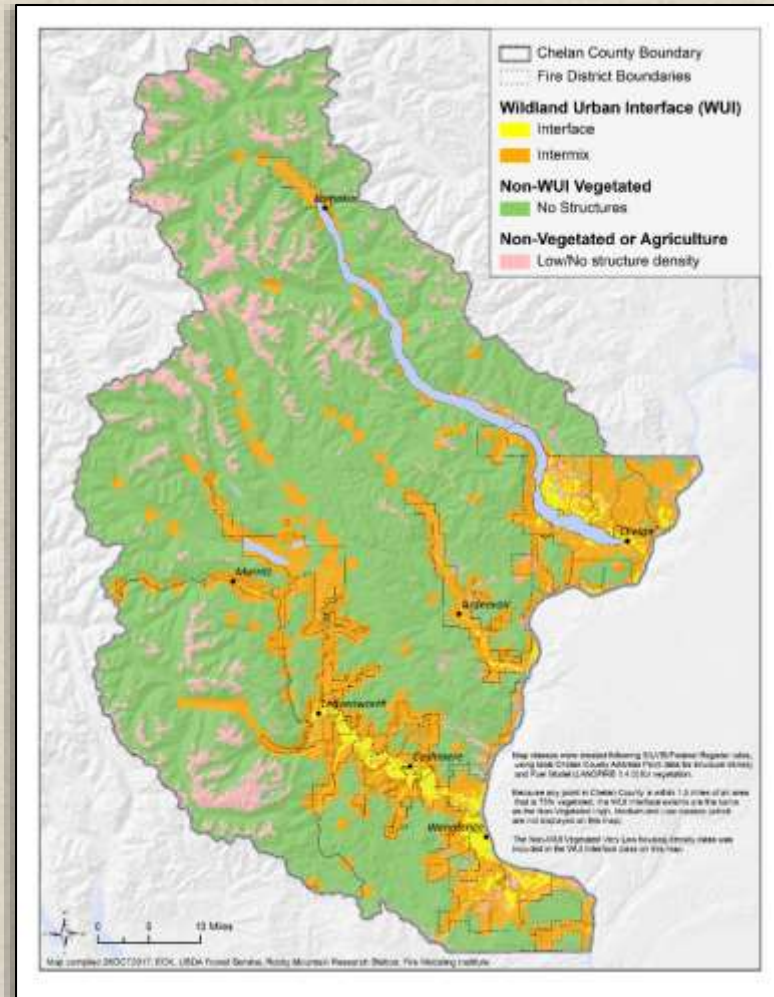
Community Fireshed

- The potential source area for wildfires that could impact the community
- Similar in concept to a watershed

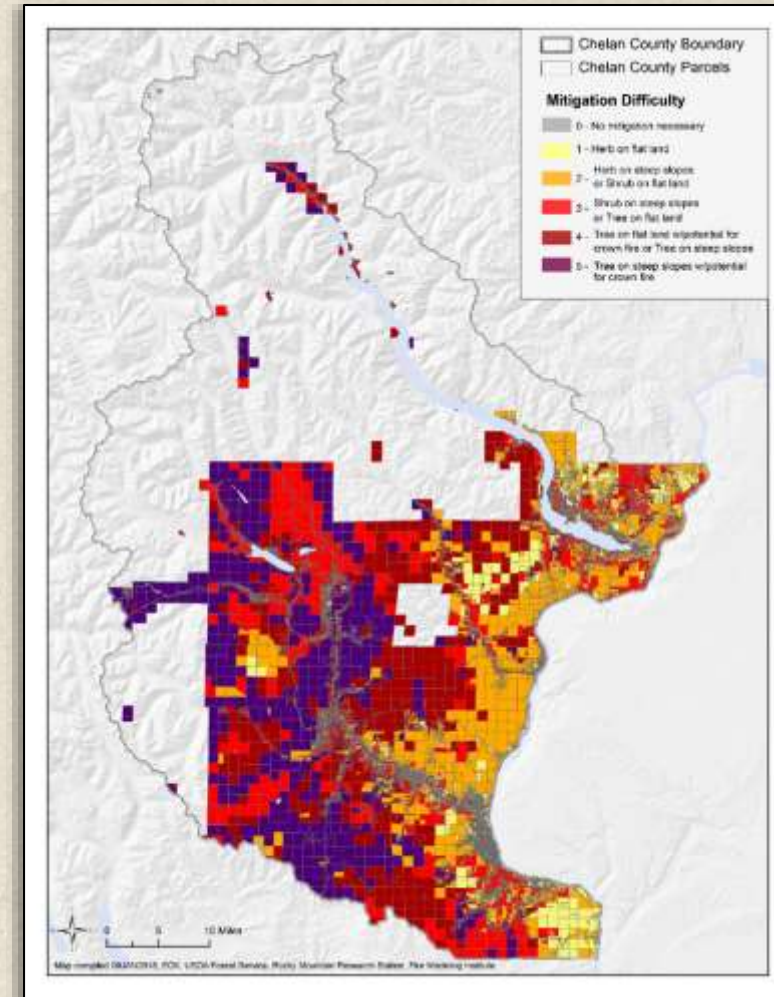


Other Related Products

Wildland Urban Interface map



Mitigation Difficulty map



Contact



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Spatial Fire Analyst

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Communities At A Glance

Chelan County, WA

Mike Burnett

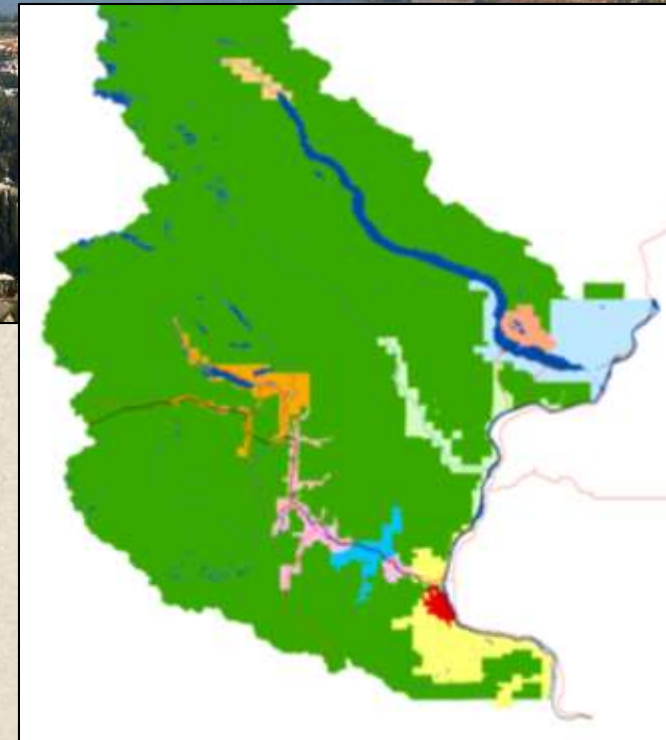
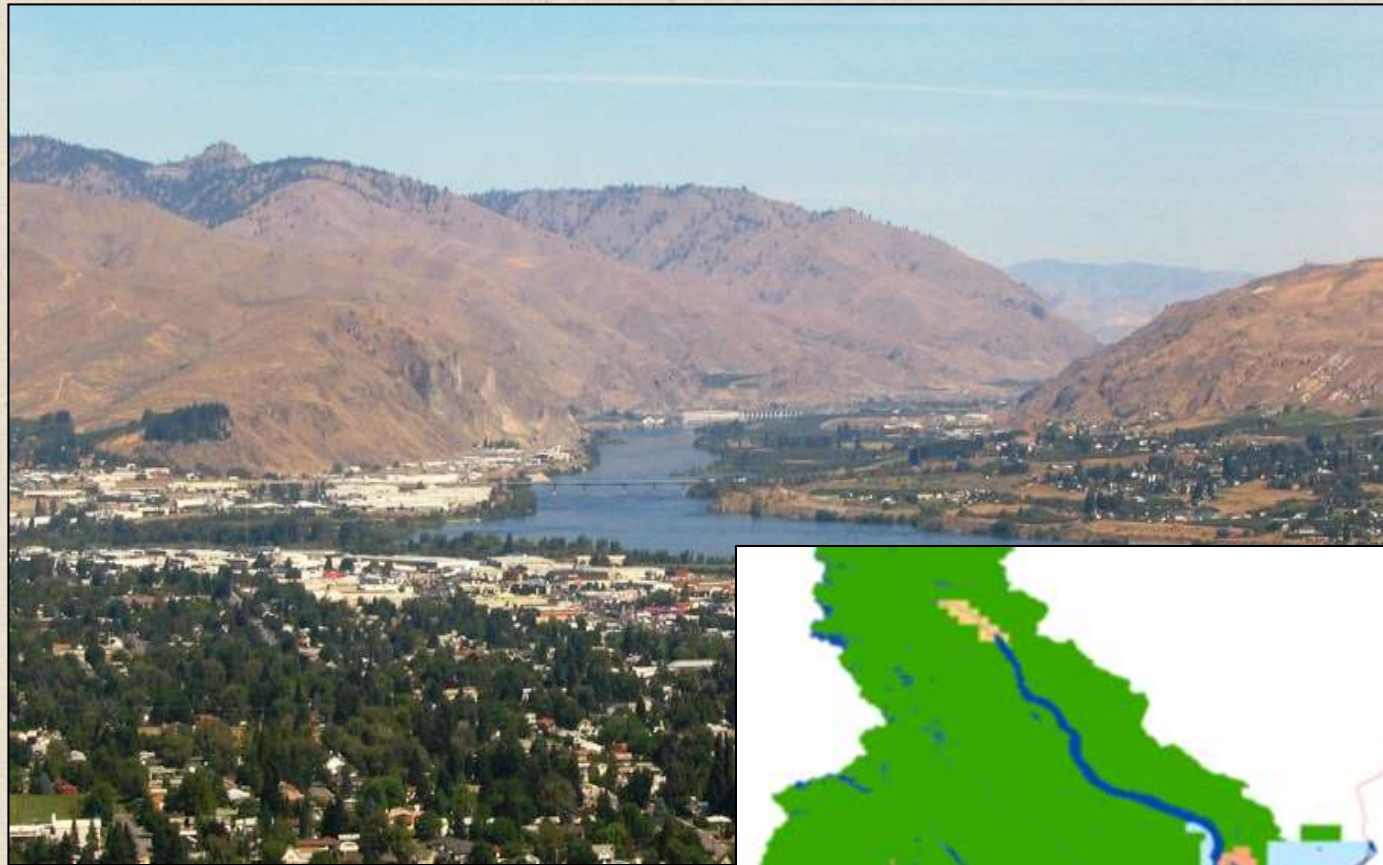
Fire Chief

Chelan County Fire District #1, City of Wenatchee



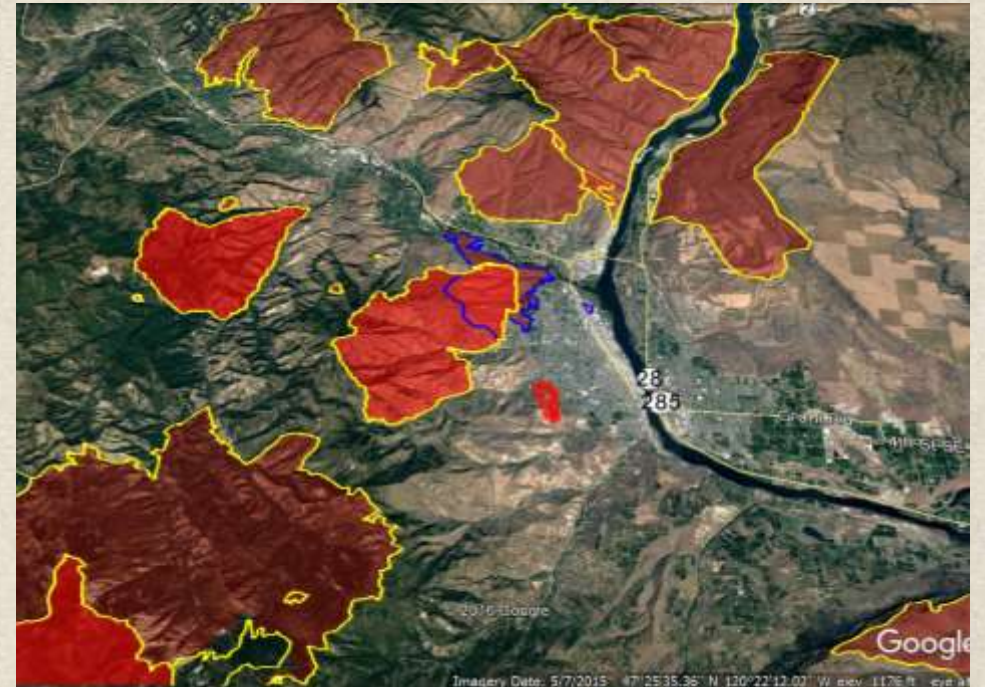
Overview

- 3,000 square miles
- Agriculture, recreation and tourism
- Over 80% Public Lands
- County population:
 - Chelan County – 75,000
 - Fire District 1 – 45,000
 - Wenatchee – 33,000



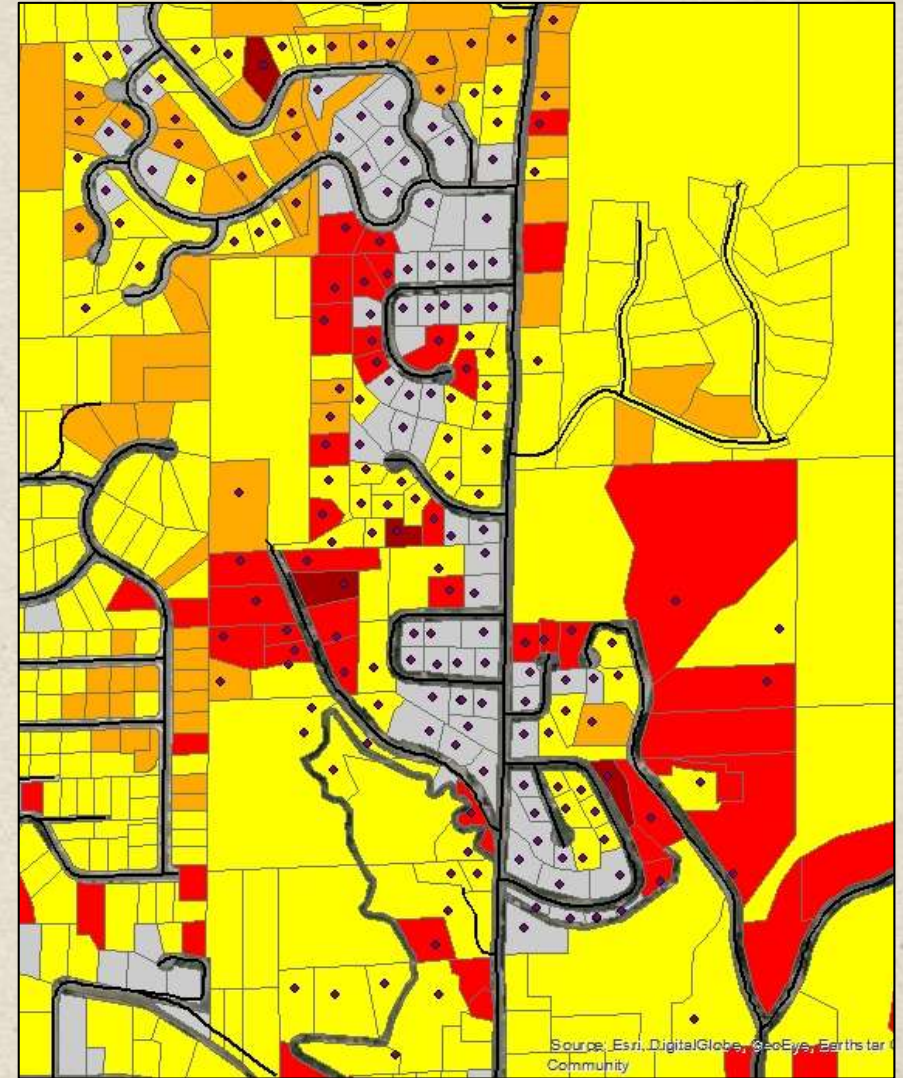
Wildfire History

- 25 fires in the last 20 years, burning more than 728,000 acres
- **2014:** ~600 homes lost & over 1.5 million acres burned
- **2015:** 77 homes, 5 warehouses lost, & 4 fatalities



Why Risk Mapping in Chelan County?

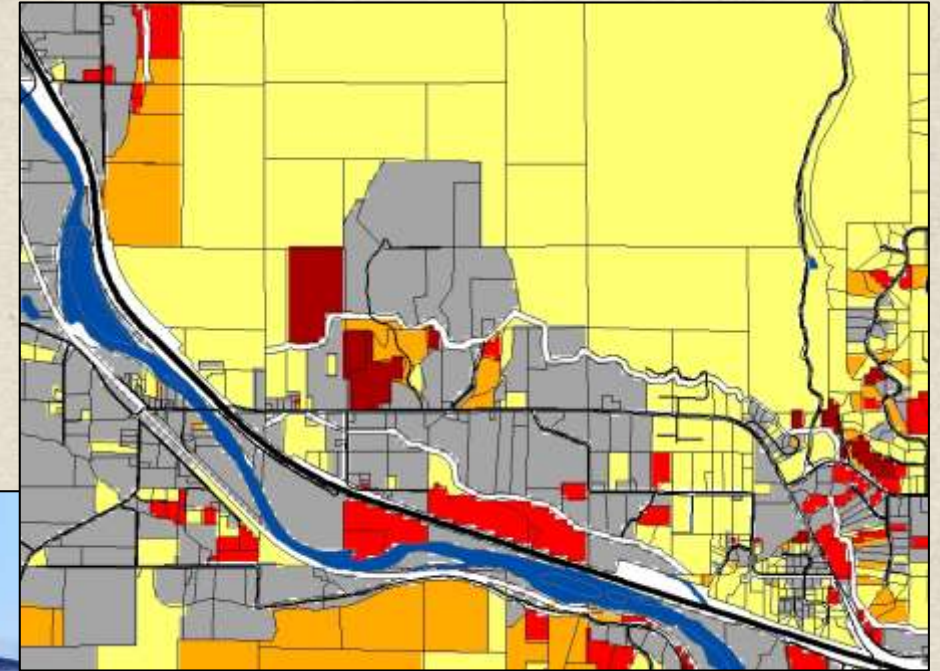
- Pre-development
 - Urban growth planning
 - Permitting process
- Existing Environment
 - Prioritizing mitigation efforts
 - Incident response tool
 - Catalyst for discussion and education with communities, neighborhoods and property owners



The Process of Risk Mapping

Version 1

- Under valued the Mitigation Difficulty on a parcel level
- % of slope (30%) or size of averaged area



The Process of Risk Mapping

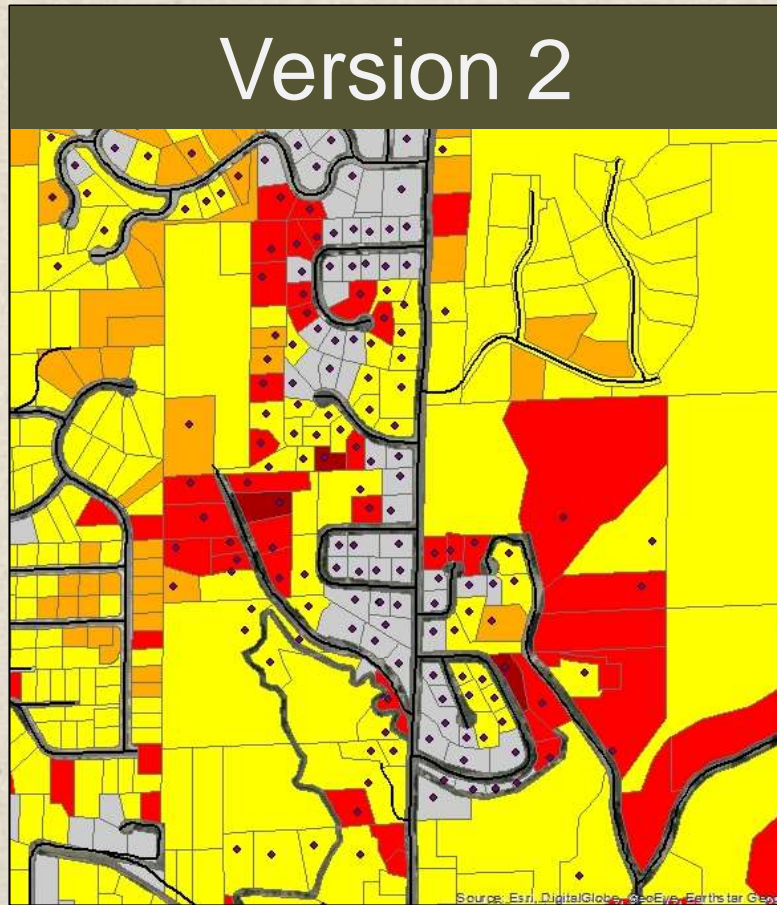
Version 2

- More accurate when compared to local knowledge of the area
- Still requires ground truthing at the parcel level

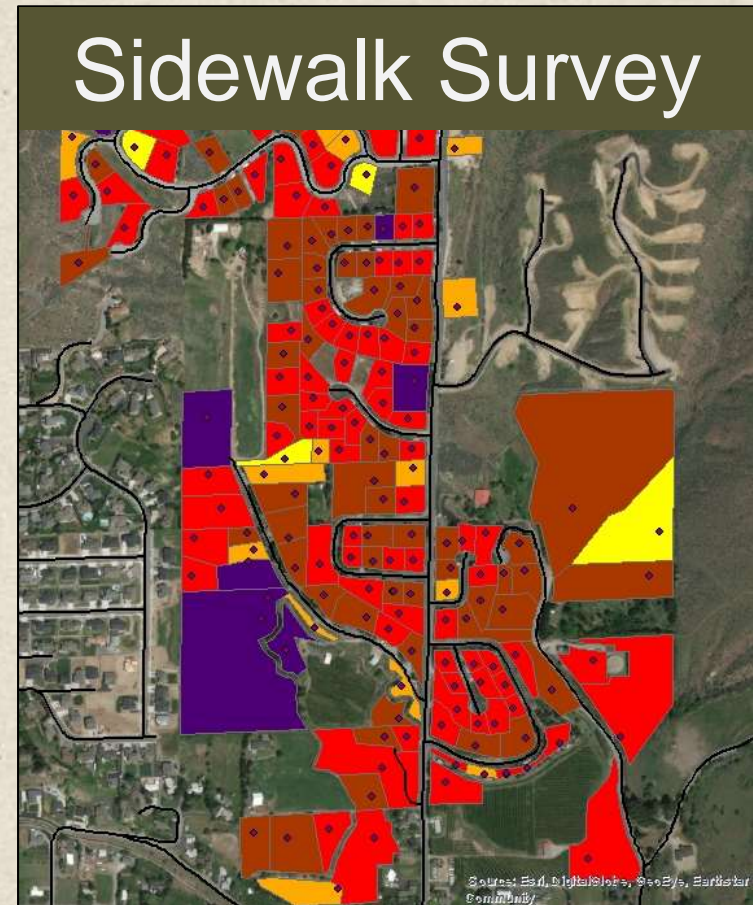


Key Opportunities/Challenges

Mitigation Difficulty still undervalued

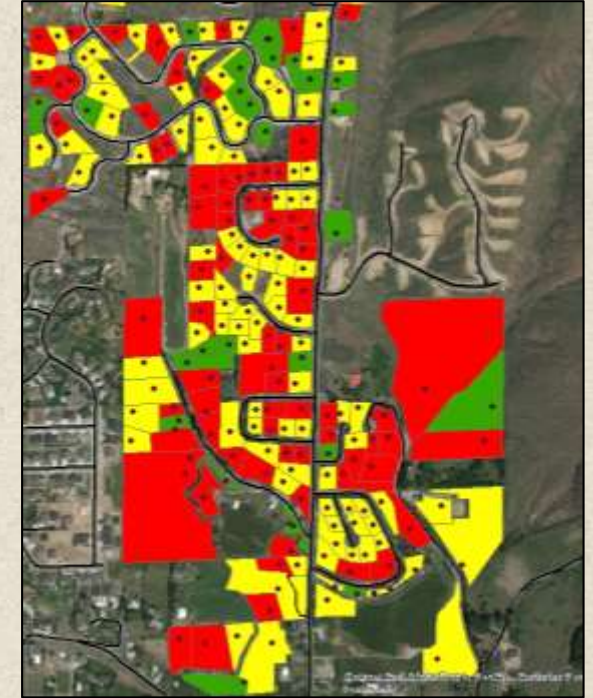
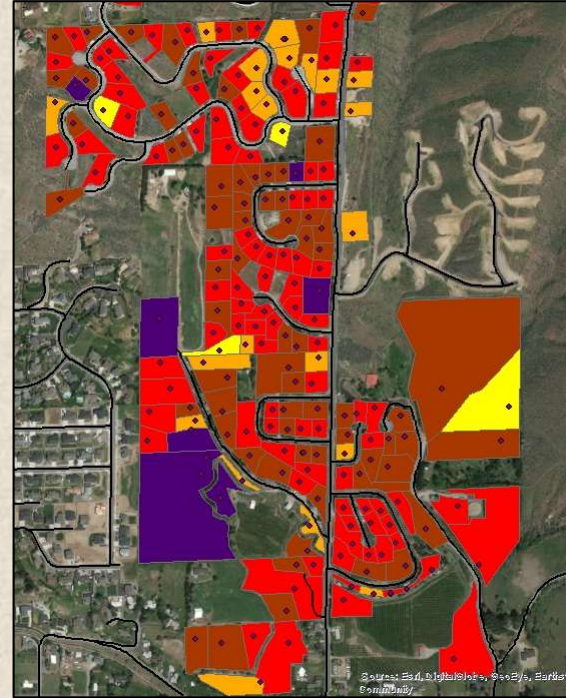


Vs.



Key Opportunities/Challenges

- # of classification breaks
- # of attributes
- Weight given to each attribute
- Multiple structure on a parcel
- Displaying Sidewalk Survey compared to a comprehensive home assessment



Difficulty associated with presenting the information

Contact



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Fire Chief, Chelan County, Fire District #1

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Communities At A Glance

Lewis & Clark County, MT

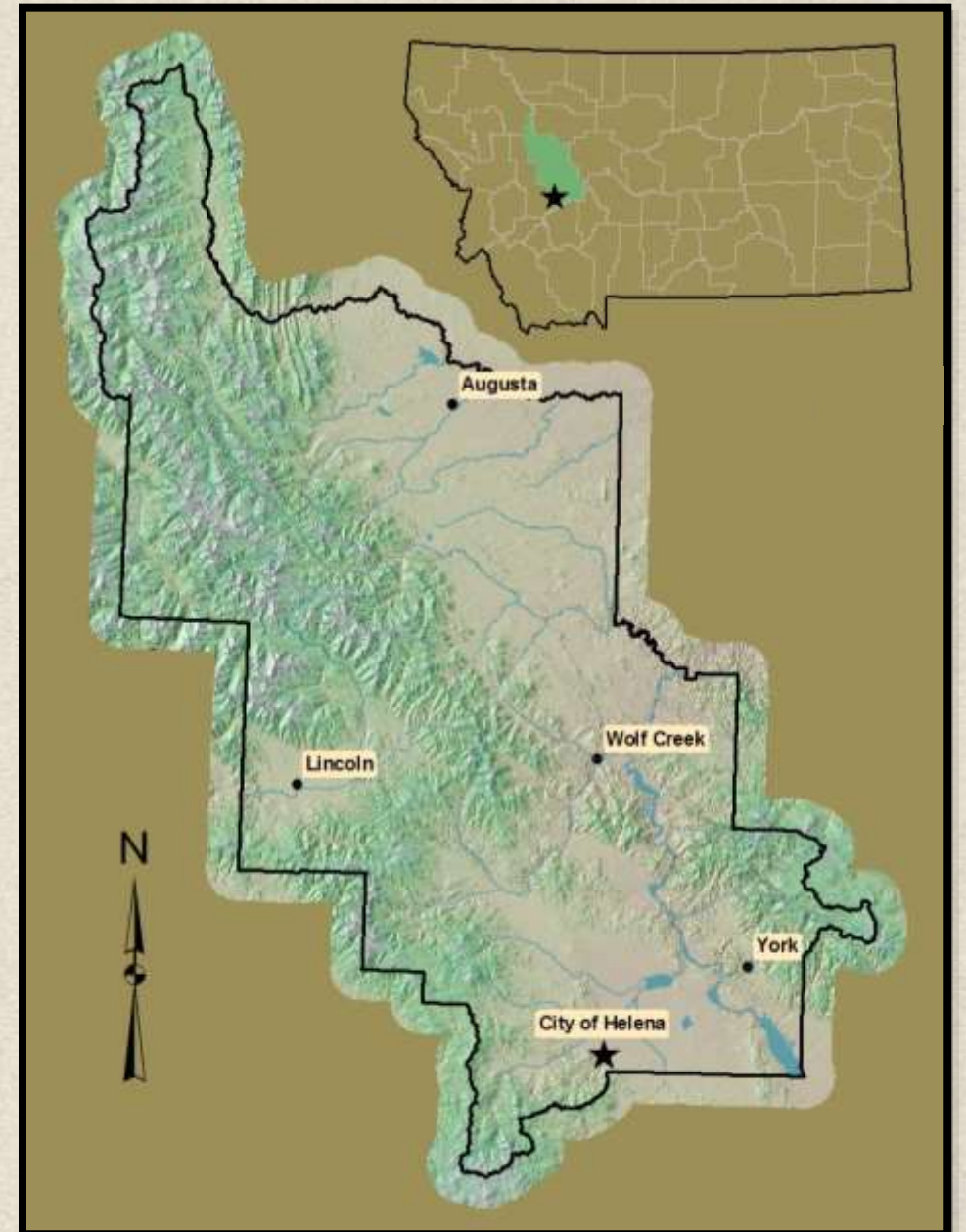
Greg McNally

Land Use Planner II
Lewis & Clark County



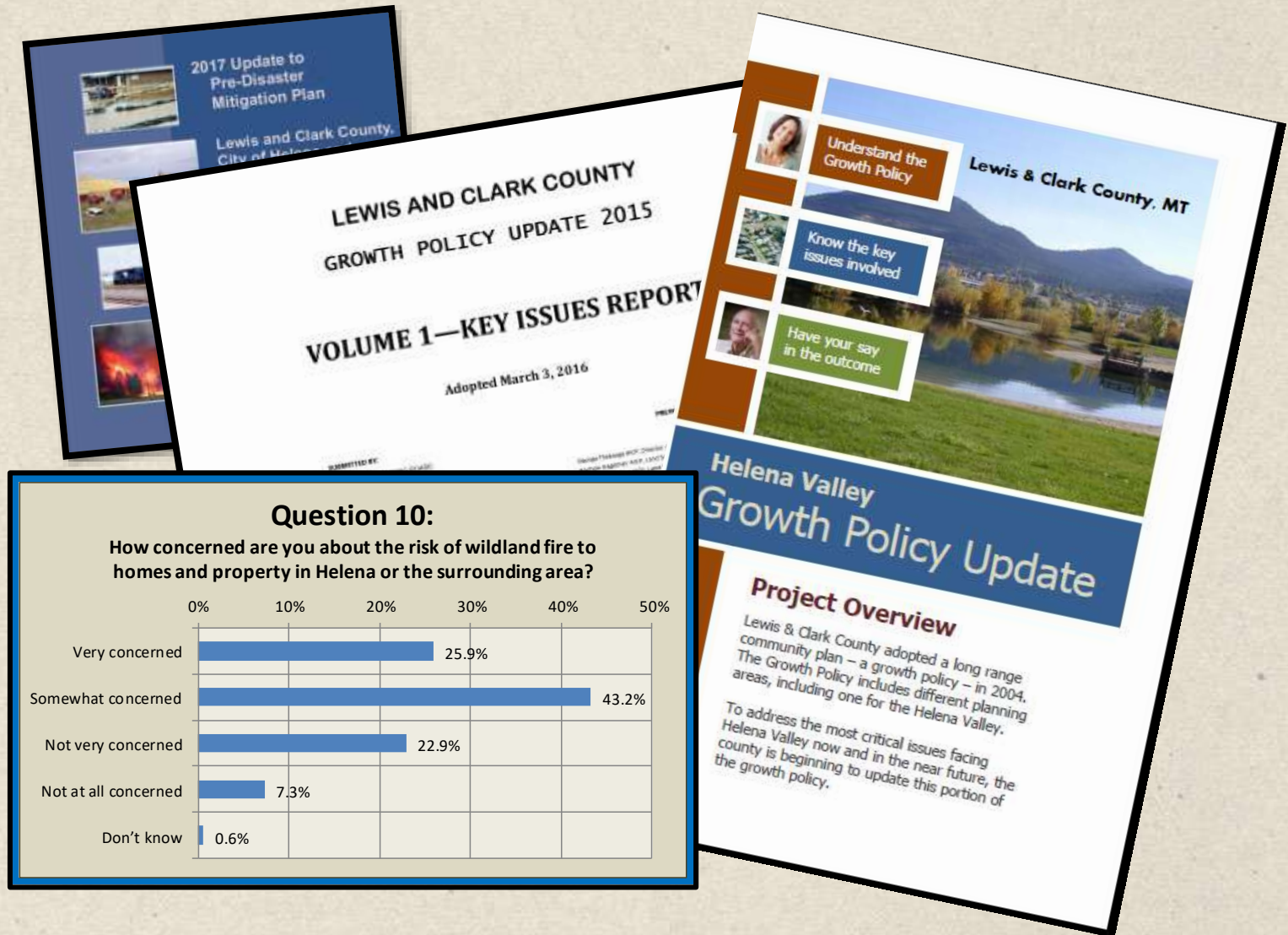
Overview

- County population: 65,357
 - 95% live the Helena Valley
- 3,500 sq. miles
- 4,000 units of housing needed over the next 20 years
- Past 32 years: 80 Large Wildfires (450,000 acres burned)
- In 2017: 34 Wildfires (45,000 acres burned)



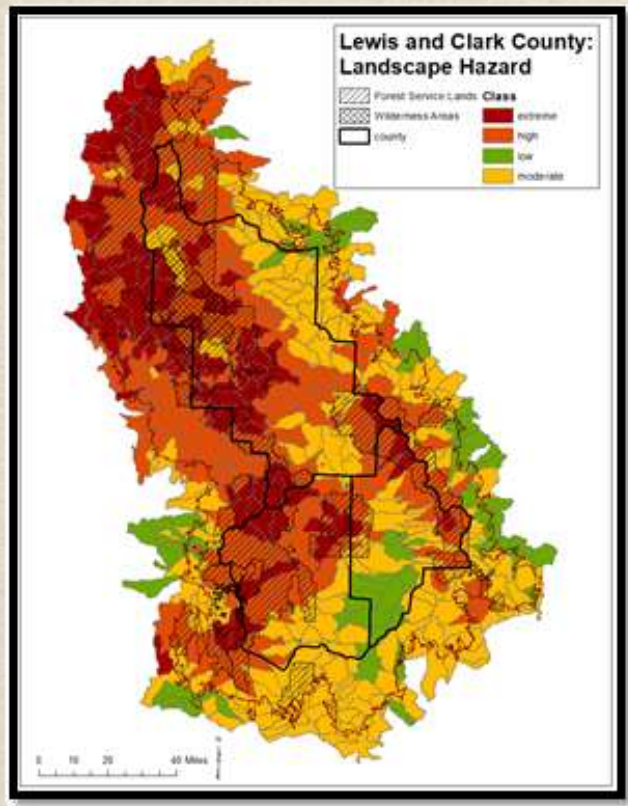
Why Risk Mapping in Lewis & Clark?

- Long-range planning efforts established a need and a path
- Outdated fuel hazard maps are not easily applied to land-use decision making
- Land-use decision support tool

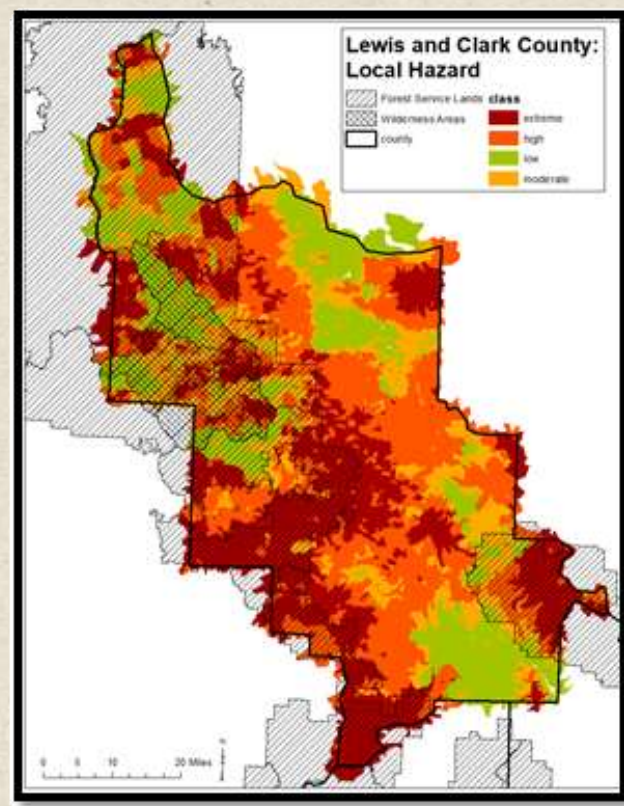


The Process of Risk Mapping

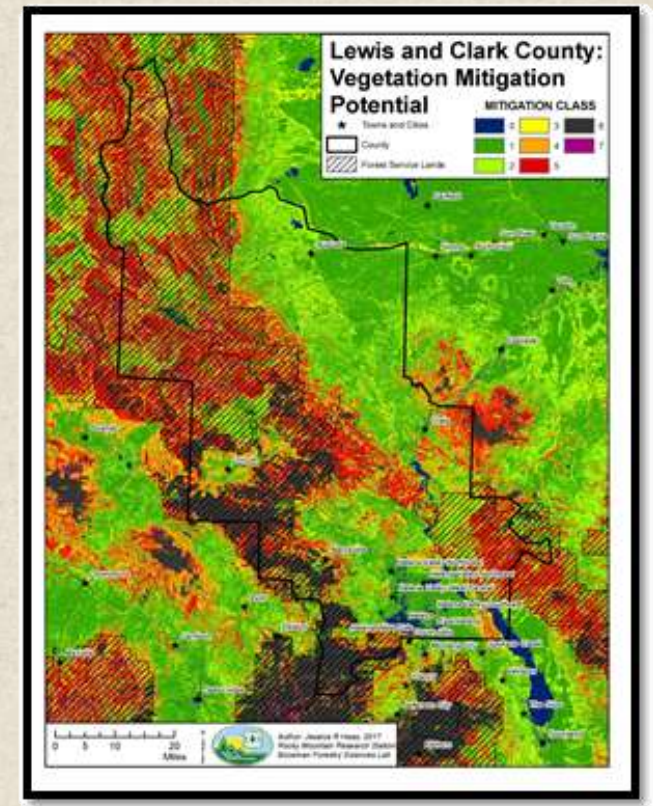
LANDSCAPE HAZARD



LOCAL HAZARD



MITIGATION POTENTIAL



Key Opportunities

- Support land-use decisions
- Engage and educate citizens
- Seek funding for mitigation efforts
- Build on a history of strong collaborative partnerships in the community
- State-wide application



Corral fire, a few miles northwest of the state Capitol building in Helena, Montana. Photo by Chris Denning

Key Challenges

- Ownership stake
- Need for “Boots on the Ground” to complete individual parcel level assessments
- Navigating a complex statutory framework



Future Steps

- Integrate risk maps into planning documents
- Educate citizens and stakeholders
- Establish a plan to regularly update the mapping database



Contact



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