



XyloPlan

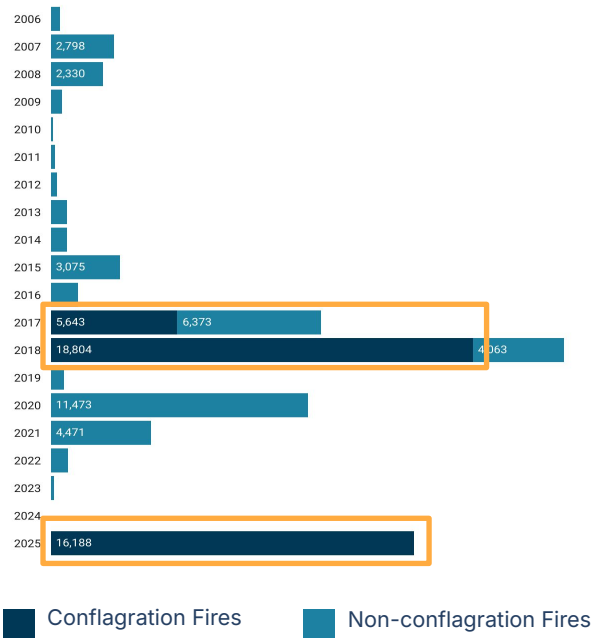
Rethinking Wildfire Risk

Bridging the gap between insurance and mitigation

October 29th, 2025



Structure Loss in California



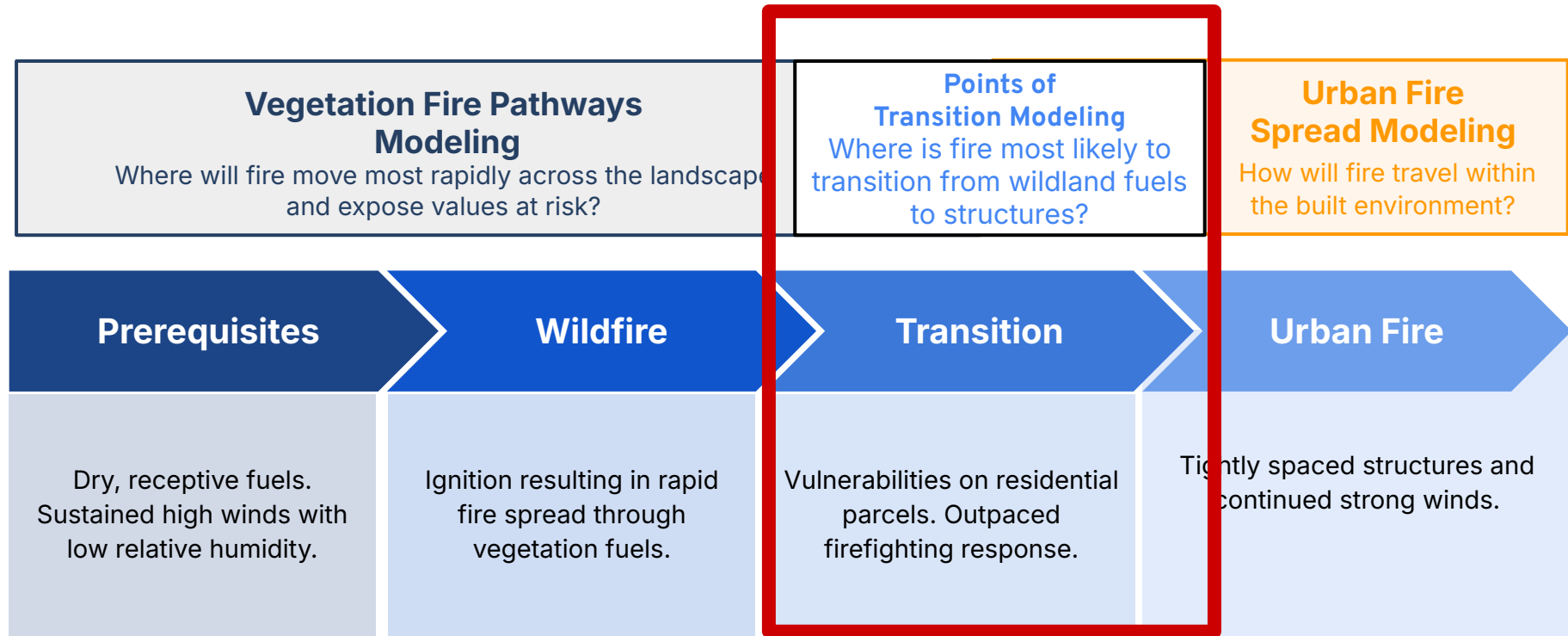
Only 4 Fires Account for 50% of California's Structure Loss

Legacy models focus on intensity and wildland exposure, not urban community loss.

80,745
Total Structures
Burned

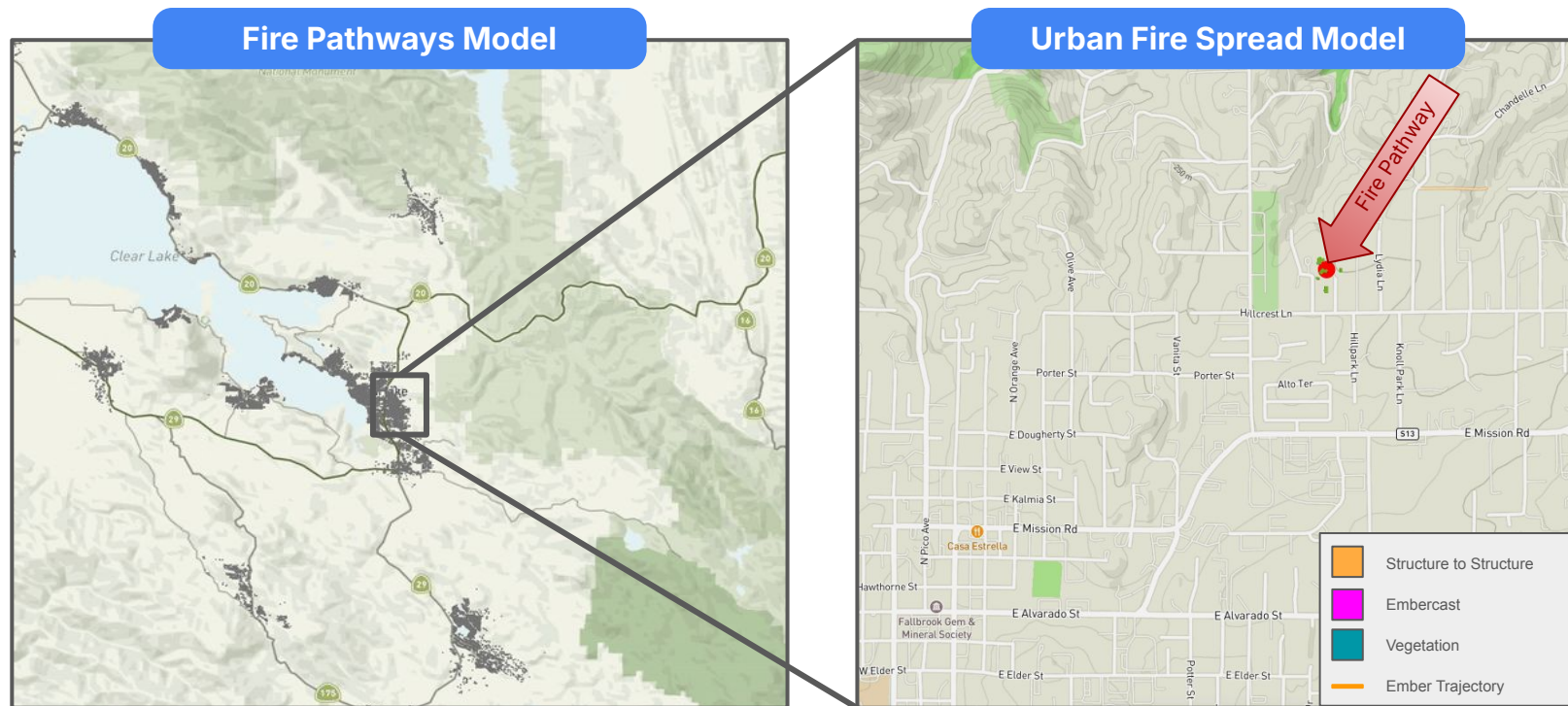
40,110
Conflagration
Structures Burned

50.3%
Conflagration
Rate



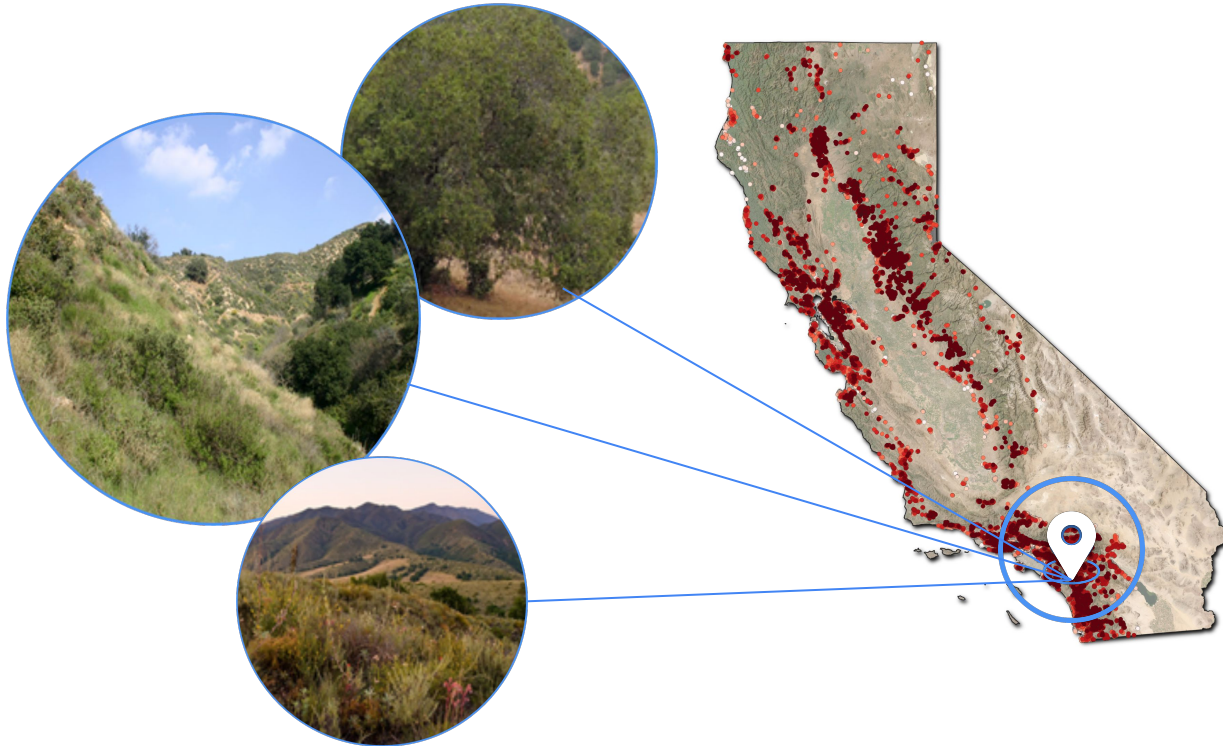
Large-loss fires require multiple factors to align. Lower winds, hardened communities, rapid fire response, and low-density communities often result in significantly lower structure loss than when risk factors all occur together.

Speed-based Fire Pathways for Wind-driven Wildfire



No other risk modeler assesses speed-based Fire Pathways and the probable urban fire spread at transition points to the built environment.

A town of 30,000 people located in Northern San Diego County.
Dominant vegetation types are mature chaparral, coastal scrub, and oak savanna.

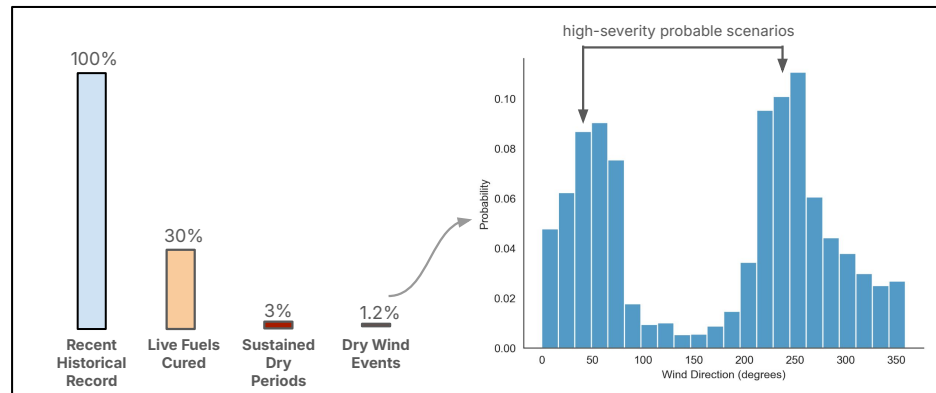
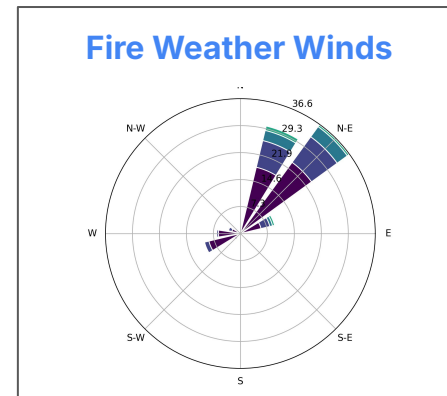
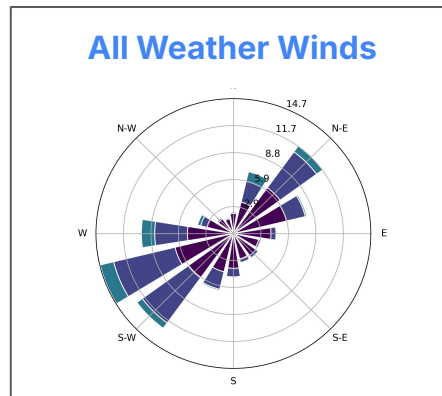


Extreme Fire Weather: Not just hot and dry.

Location Specific Analysis:

- **Wind** Intensity, Duration, and Return Interval
- **Vegetation** Moisture Content
- Relative **Humidity**

While wildfires occur regularly, the XyloPlan framework focuses on identifying the key **enabling local conditions** that must align to lead to **significant loss**.



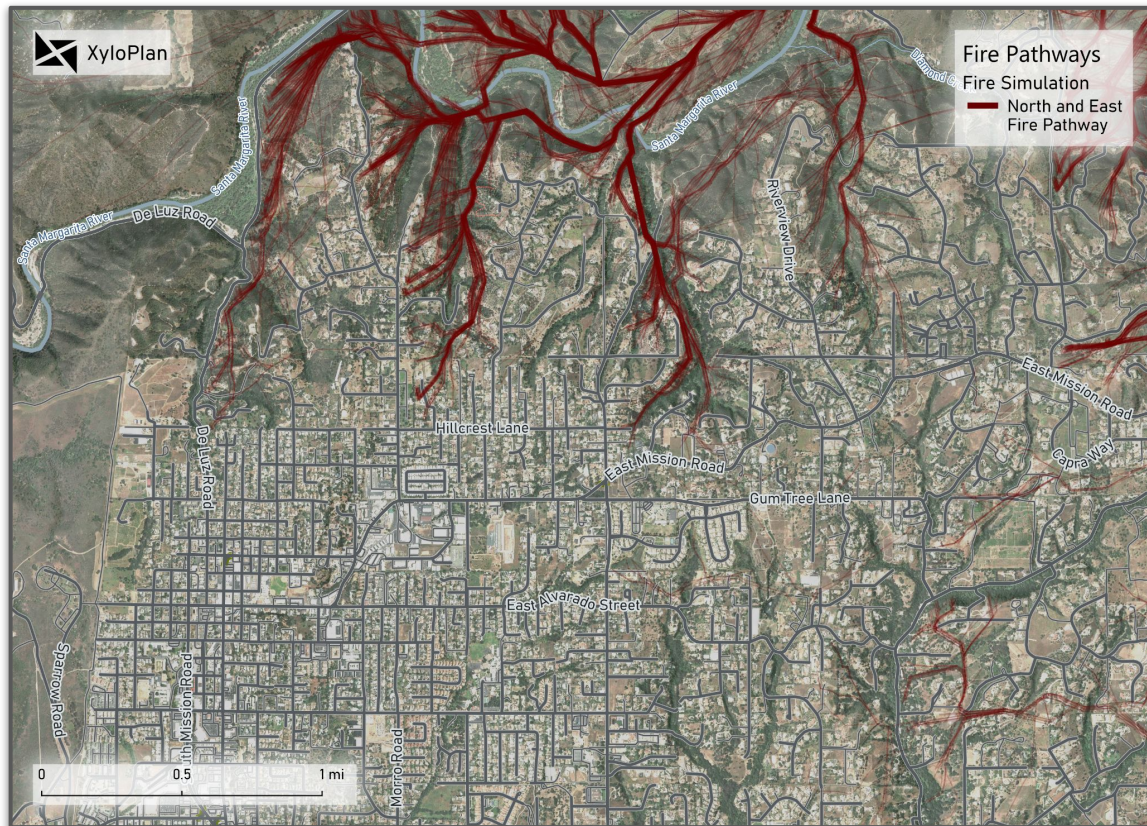
Fire Pathways: Vegetation. Weather. Topography.

Vegetation: Most receptive between October and December.

Fire Weather is driven by Santa Ana wind events that coincide with receptive vegetation.

Terrain: Canyons and slopes channel fire into developed areas of Fallbrook.

Exposure: Fire Weather and Receptive Vegetation carry fire from the north into the built environment.



The Past Is Prologue: Fire History Validation

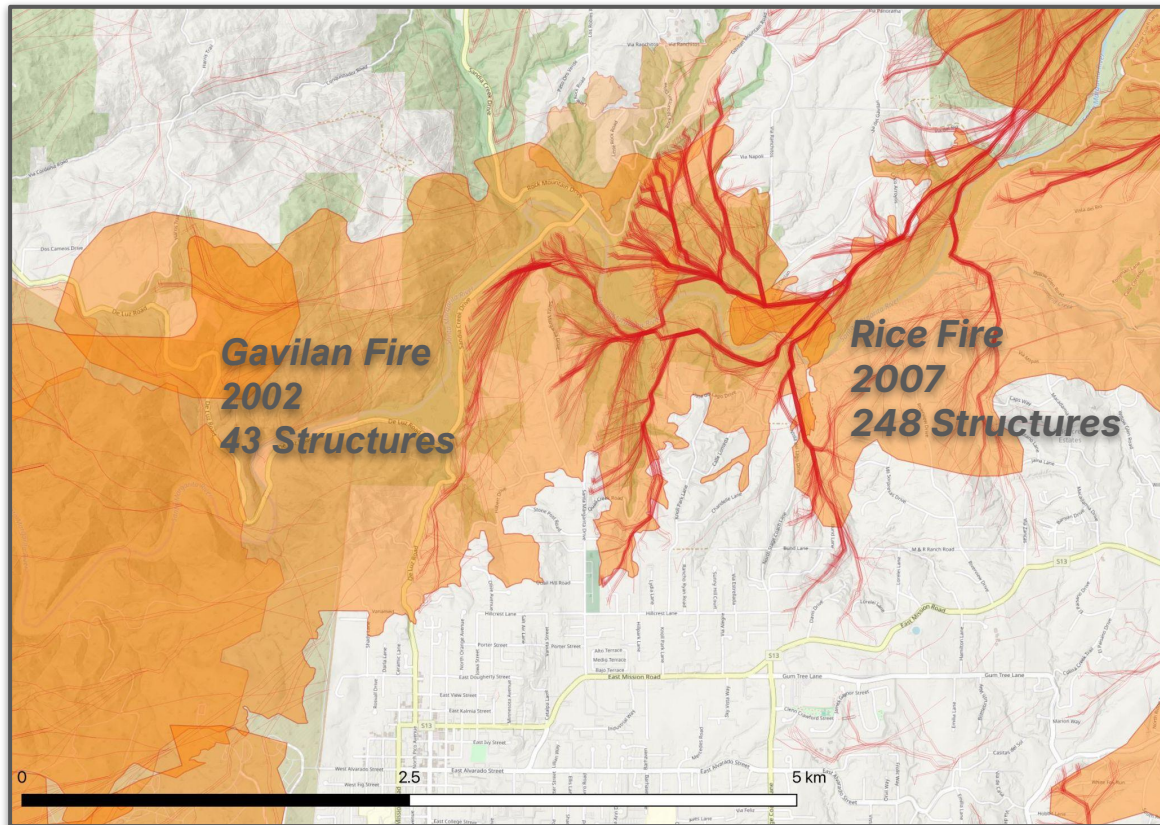
Historic activity is in **alignment** with the **Fire Pathways model**.

Topography, weather, and fuel align to bring wildfire into the built environment.

Topography is unchanging and known.

Fuel is changing on an annual basis and knowable.

Historical weather gives a range of worst case scenarios.



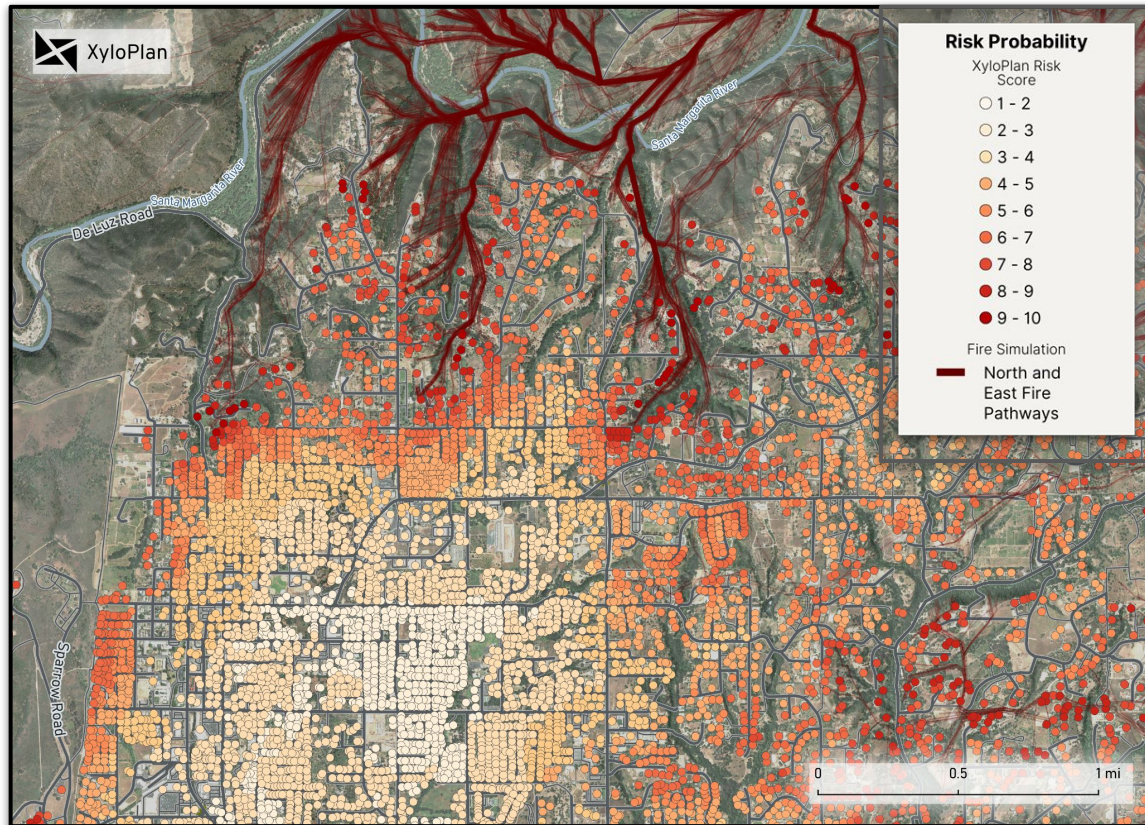
XyloPlan Risk Score:

Model reflects:

- **High Severity** Wind Events
- **Ember** Exposure
- **Direct** Flame Impingement
- **Structure Density**

Model used by **Fire Agencies** across the West to:

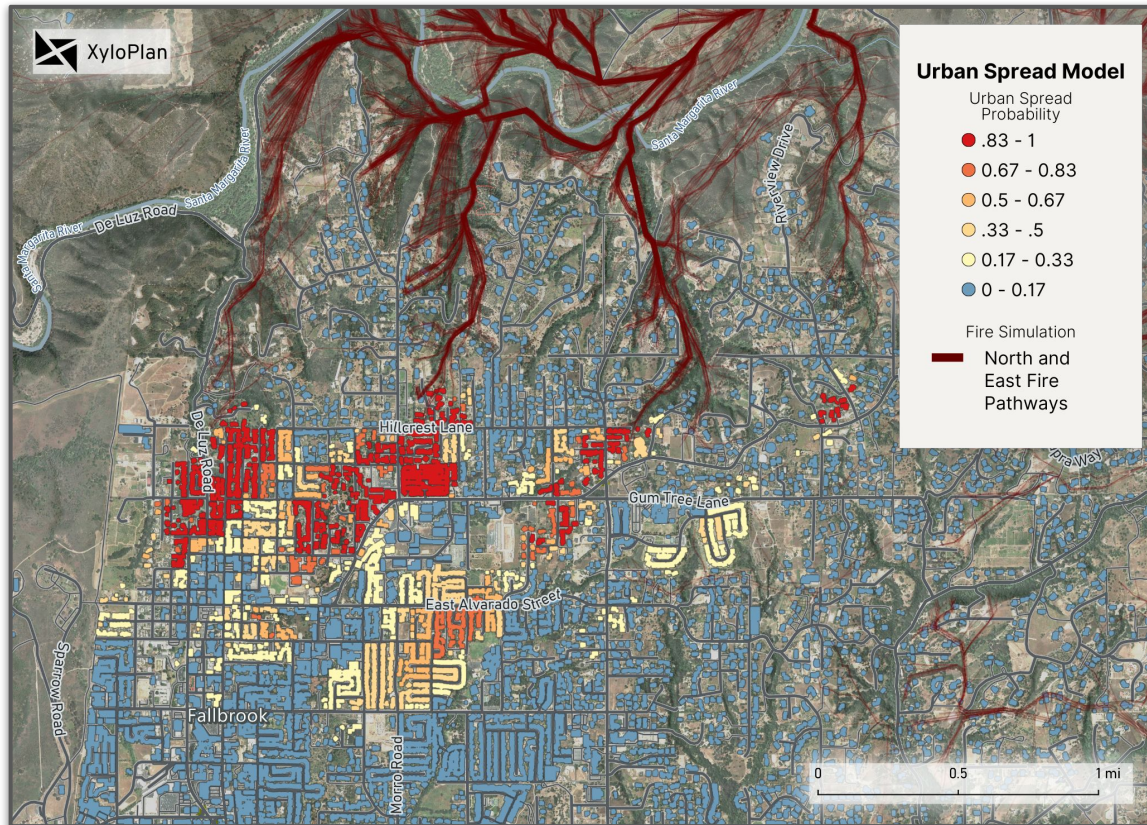
- Assess **vulnerability**
- **Prioritize** mitigations
- **Develop** inspection program
- **Allocate** incentives



Urban Fire Pathways: Quantifying Conflagration Risk

The **Urban Spread Model** quantifies **Fire Pathways** in built environments by modeling:

- **Radiant Heat** Transfer from vegetation to structure and structure to structure
- **Convective Heat** Exposure vegetation to structure and structure to structure
- **Surface Fire** Propagation through both vegetative and structural fuels
- **Embercast (firebrands)** and subsequent Spot Fire Ignitions



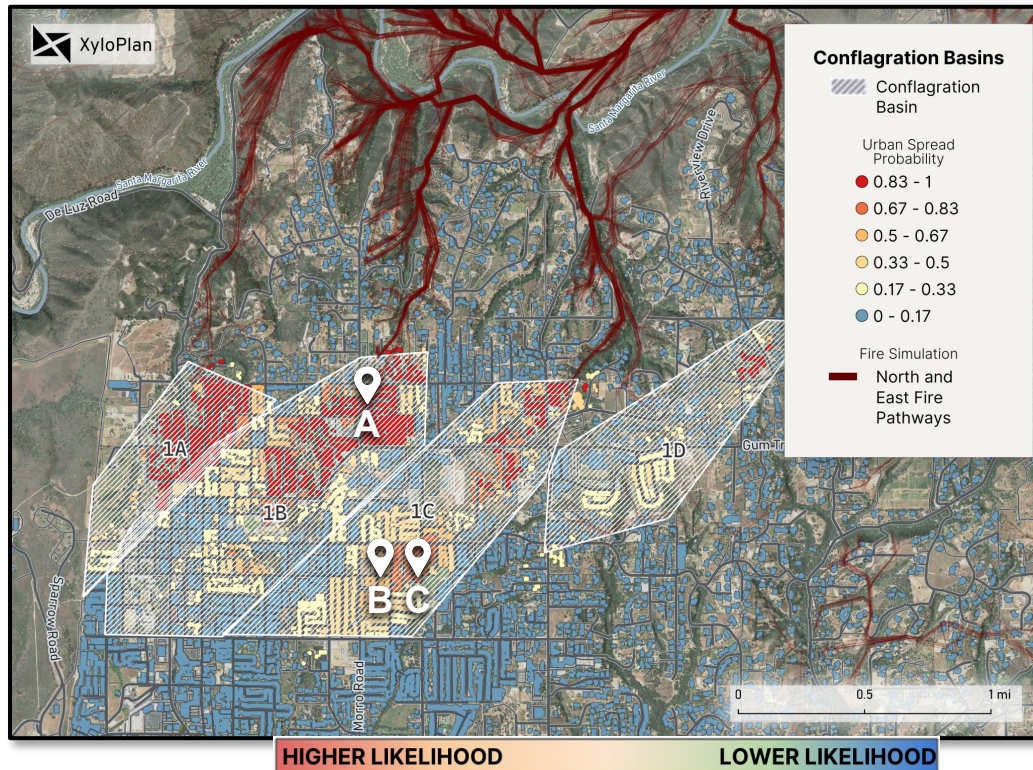
Urban Fire Spread: Quantifying Shared Urban Risk

Conflagration Basins identify the likely extent of **urban fire spread**.

XyloPlan delivers **market-specific** modeling to help insurers **manage portfolios** and address **correlated loss risk** within Conflagration Basins.

Example:

- Parcels A and B have a low probability of being exposed to the *same* Wildfire or Urban Fire risk
- Parcels B and C both have low Wildfire Risk exposure, but are have similar risk of loss to Urban Fire, and are highly correlated with one another.

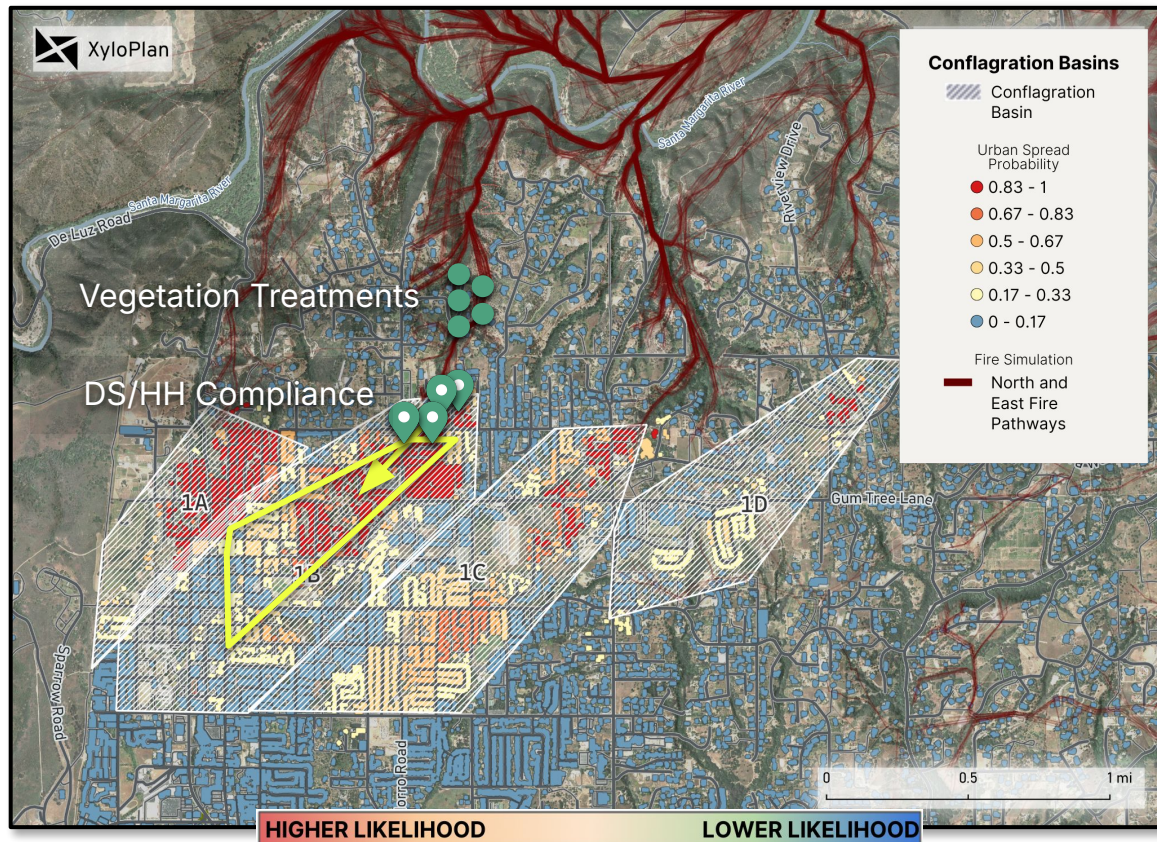


Reducing exposure: Mitigation Measured. Risk Reduced.

XyloPlan **quantifies** mitigation impacts.

Help insurers design **custom**, science-based discount tiers that reflect **real wildfire risk reduction** at both the parcel and community level.

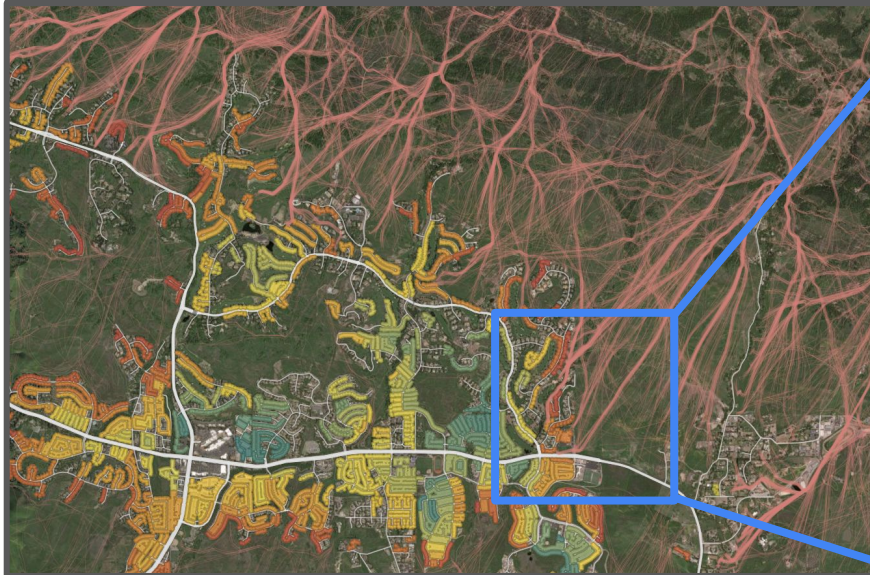
Decrease in Community Risk and Conflagration exposure



Wildfire Risk as a Driver of Inspection Priorities



XyloPlan Conflagration Initiation Rating



- Conflagration Initiation Rating assessed for fast-moving, wind-driven fire, not fire intensity
- Score assesses the **risk of conflagration initiation**

Prioritization of Inspections



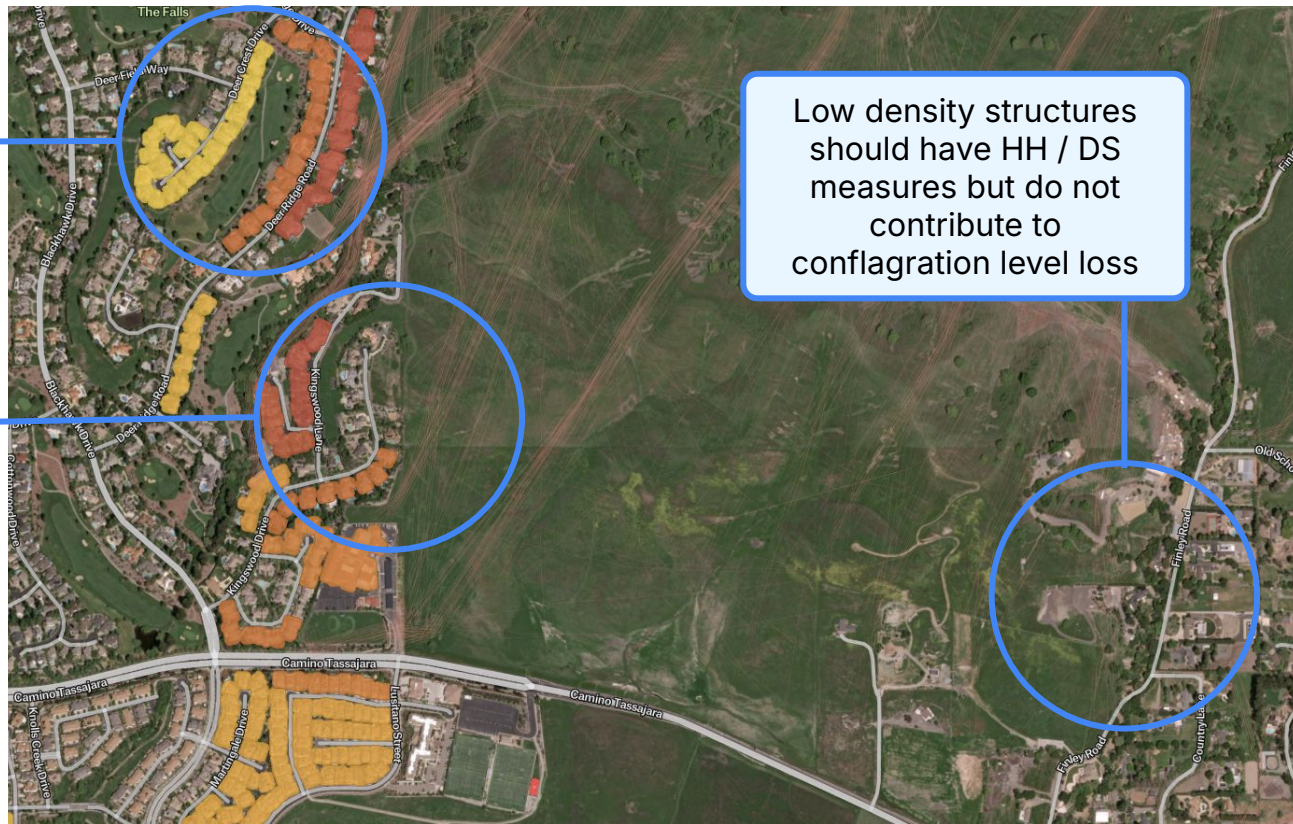
- Some structures have an outweighed importance in **preventing conflagration level loss**
- Utilize rating percentile to prioritize resources

Case Study - Fire Pathways and Conflagration Initiation Rating

Structures downwind of non-burnable features have lower risk ratings

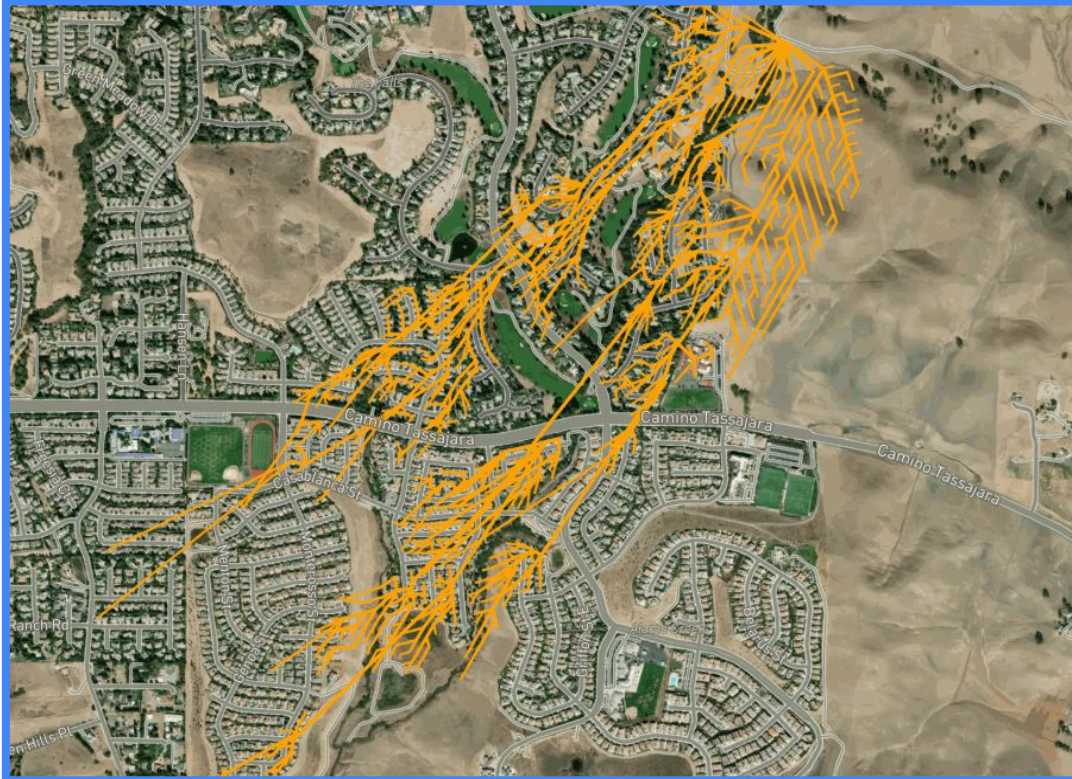
Only groups of structures with <50ft structure separation distance that are most likely to initiate conflagration are prioritized for inspections

Low density structures should have HH / DS measures but do not contribute to conflagration level loss

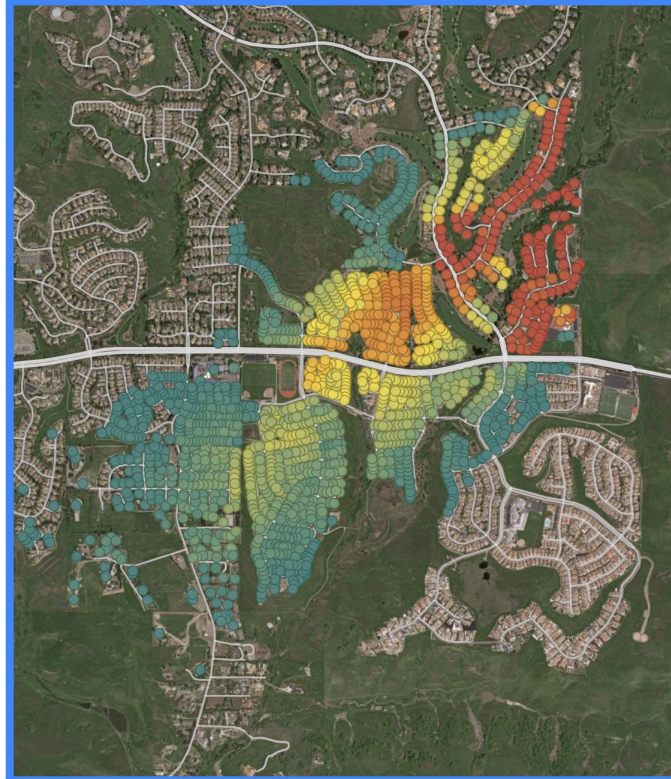


Case Study - Urban Fire Spread with No Hardening

Urban Conflagration Sequence - 4hr

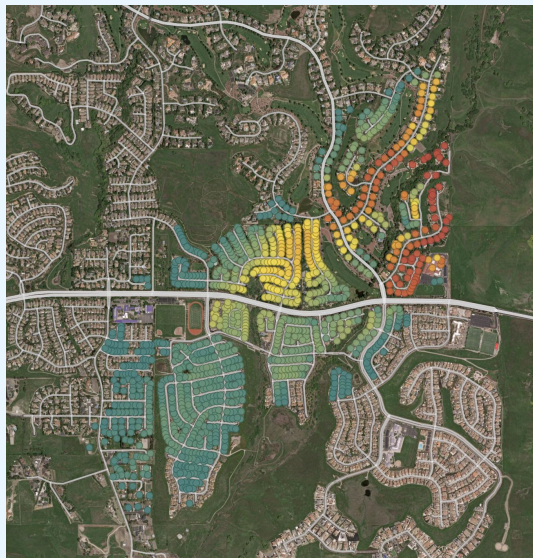


Ignition Probability



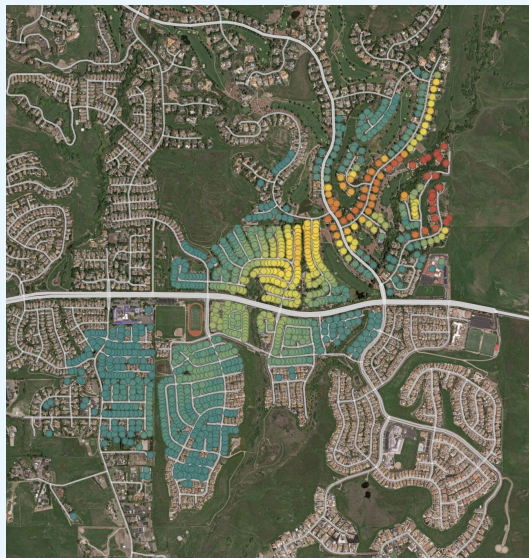
Case Study - Prioritized Hardening of Structures

Top 90th Percentile Hardened



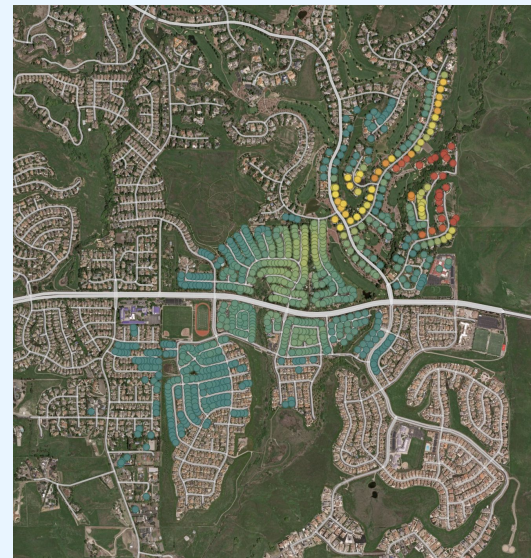
Hardened*: 29
Avoided:** 219
ROI: 7.5

Top 70th Percentile Hardened



Hardened: 59
Avoided: 306
ROI: 5.2

Top 50th Percentile Hardened

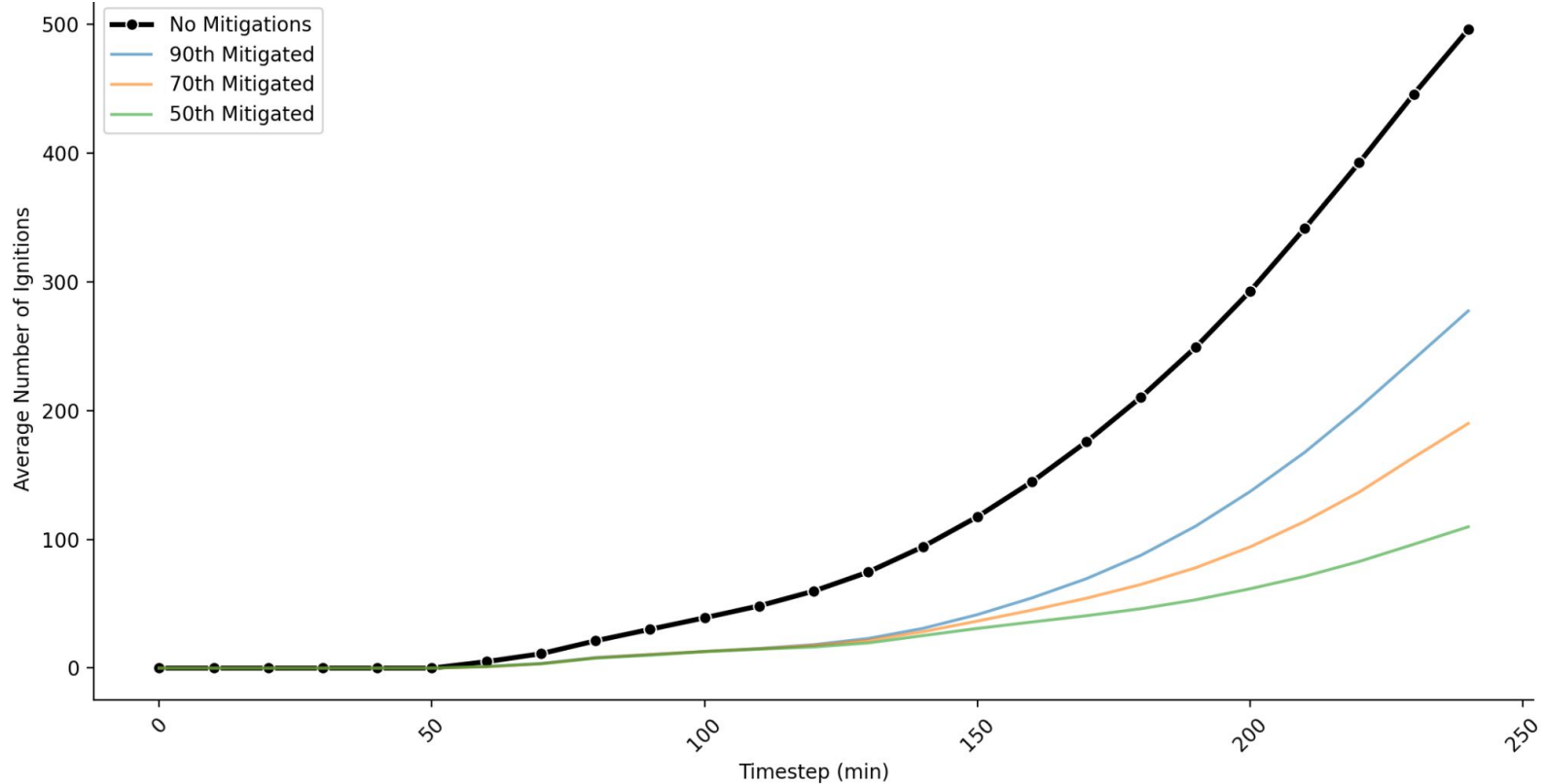


Hardened: 75
Avoided: 400
ROI: 5.3

*Hardened to IBHS Wildfire Prepared Home Plus Standards

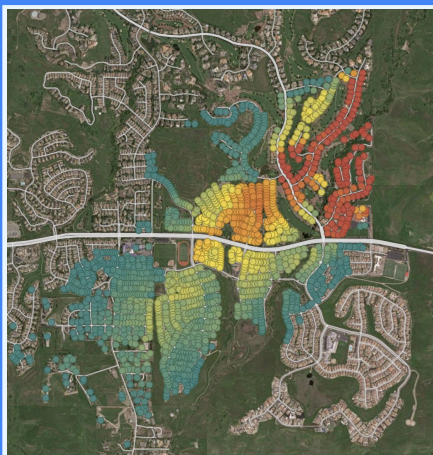
** Ignitions avoided within 4hr simulation duration

Probable Ignitions Over Time with Prioritized Structure Hardening Scenarios

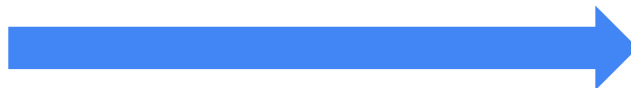


Hardened Developments Form Risk-Reducing Buffer

Utilize the XyloPlan Conflagration Initiation Rating to **prioritize** inspections, incentives, and enforcement of **home hardening and defensible space** for structures at the **transition** from the wildlands to the built environment



No Home Hardening/
Defensible Space



AHJs must optimize the use of their
limited resources to most effectively
reduce community wildfire risk



90th Percentile
Hardened

Questions

