

National Wildfire Risk Model



Boulder, Colorado

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The National Hazard and Risk Model (No-HARM) is a versatile, mapping product customized for and designed to assess the real world exposure of critical infrastructure and property to wildfire impacts.

Drawing on a large variety of data sets, both inside and outside the public domain, No-HARM paints a picture of wildfire exposure for underwriting, pricing, portfolio analysis and loss estimation across the United States. The focus of No-HARM is to address the complexity of the Wildland-Urban Interface (WUI). Through fire science and the integration of

data that accurately identifies the boundaries of the WUI we can analyze threats from embers, smoke and direct flame exposure. This is critical as embers account for the majority of structure loss. Embers were found to be the primary cause of structure loss in the eastern Tennessee fires which claimed approximately 2,400 structures.

Ultimately, the goal of No-HARM is to differentiate risk throughout the country, to recognize risk, understand why it exists and drive profitable decision-making.

To underwrite wildland fire risks, you need the best answers to these key questions.

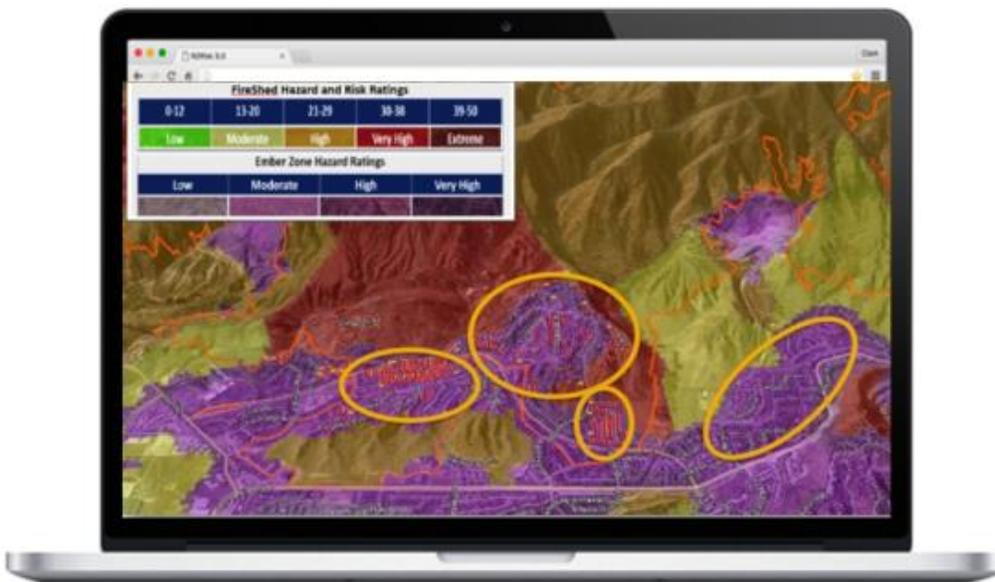
- Where are the high probability locations for fires?
- How severe will a wildfire be if it occurs?
- What might it harm?
- What elements contribute to the final risk rating?

No-HARM Provides:

- 50 state probability and severity ratings
- A consistent, address level wildfire risk evaluation

No-HARM's modeling framework integrates specific elements critical to evaluation of structure loss:

- Distance to Fire stations
- Distance to primary road
- Presence of crown fire
- Historic fires
- Percentage of non-burnable
- Existing veg cover
- Integration of golf courses
- Distance to water sources



Structure loss in the ember zone, on the Waldo Canyon Fire. June 2012 Colorado Springs, CO

Underwriting:

- Improve risk selection
- High resolution modeling of wildfire frequency and severity and their relationship to each other
- Annual updates that include recent wildfires
- Severity information with direct flame impingement, embers and smoke risk

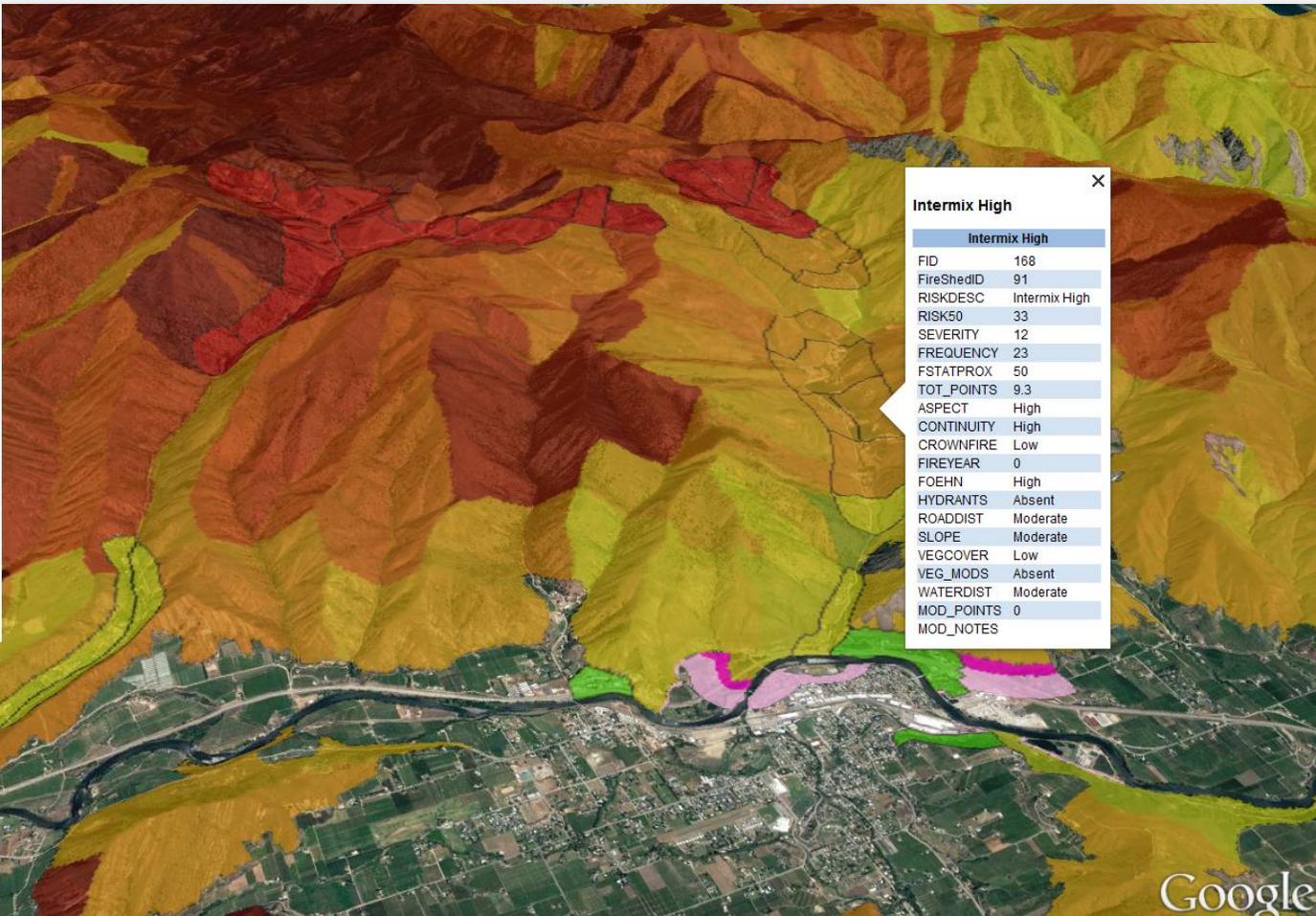
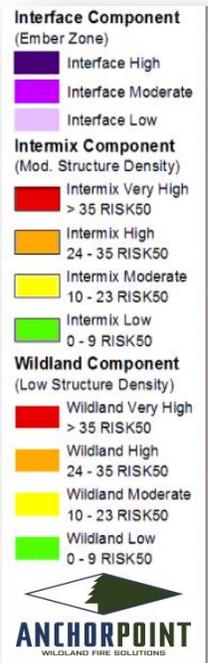
Portfolio Exposure:

- A better understating of portfolio-level exposure throughout every region and every state
- A consistent, relative ranking of nationwide wildfire risk
- Comprehensive representation of the actual risk based on the combination of deterministic and probabilistic modeling
- Calibrated with real world experience, having managed major fires throughout the US and observed fire behavior for almost 30 years

Reduced Cost of Claims:

- Improve service and increase customer retention.
- No-HARM provides the how and why of every risk score so you can educate your policy holders on their existing condition and how to properly mitigate their unique wildfire exposure
- Modeling helps define mitigation at the individual and community level

BELOW: No-HARM provides wildland, community and urban edge risk ratings, including the ember zone, shown in purple.



Intermix High	
FID	168
FireShedID	91
RISKDESC	Intermix High
RISK50	33
SEVERITY	12
FREQUENCY	23
FSTATPROX	50
TOT_POINTS	9.3
ASPECT	High
CONTINUITY	High
CROWNFIRE	Low
FIREYEAR	0
FOEHN	High
HYDRANTS	Absent
ROADDIST	Moderate
SLOPE	Moderate
VEGCOVER	Low
VEG_MODS	Absent
WATERDIST	Moderate
MOD_POINTS	0
MOD_NOTES	