The Cost of Protecting Homes from Wildfires in the Sierra Nevada

Full research paper at http://headwaterseconomics.org/wildfire

Patty Gude
patty@headwaterseconomics.org
Since 1950, more than 900,000 homes were built in the Sierra Nevada study area.

2010
- Homes
- Public Land
- Private Land
- Data not available
Since 1950, 1,500 square miles of undeveloped private land has been converted to low density development in the Sierra Nevada area.
This map shows homes built since 1950 in the Placerville area (east of Sacramento.)

This level of sprawl increases the chances that homes will be threatened by wildfires.
Warming temperatures and drought are strongly related to increases in wildfires.

An increase in temperature of 1\(^o\) F is associated with a 35% increase in area burned by wildfires.
In the past 10 years, 13,000 homes on average were threatened annually by wildfires.

This is more than twice the number threatened during the 1980s and 90s due to the increase in area burned by wildfires and sprawl.
We analyzed how homes affected daily firefighting costs.

The best model of costs included 5 factors:
• Count of Homes
• Fire Size
• Fire Growth Potential
• Habitat (% Forest Cover)
• Time (% of Fire Complete)

This figure shows a clear relationship: firefighting costs go up when more homes are present around the fire.
What we found:
In low density areas, the per home cost can be incredibly high.

Additional Daily Firefighting Cost Associated with One New Home Within 6 Miles of the Wildfire

For a 35 day fire, one home can increase the firefighting cost by $2 million.
When there are hundreds of homes around, the cost of each additional home is less (fire managers are probably already doing all they can to stop the fire).

For a 35 day fire, one home can increase the firefighting cost by $2 million. One new home in an already developed area increases costs by much less.

Keeping development within the existing “footprint” would reduce future firefighting costs by millions.
Policy Implications:

As firefighting costs rise, future policies will need to focus on covering the additional costs related to new housing.

If the costs were borne, in part, by those who build at-risk homes, or by local governments who permit them, rather than by the federal and state taxpayer, development rates in high risk areas may slow.
View other wildfire studies & resources at http://headwaterseconomics.org/wildfire