Solutions to Home Development in the Wildland Urban Interface (WUI)

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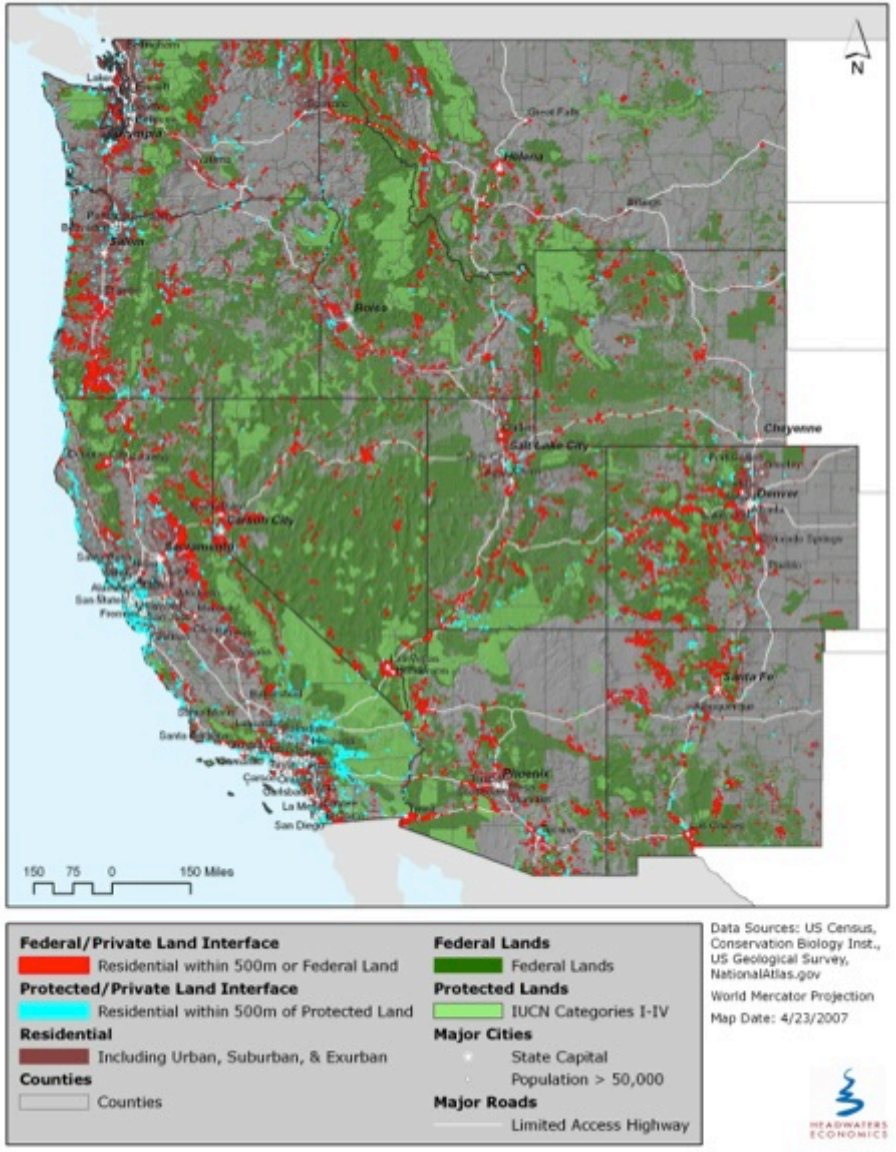
Photo courtesy of Chris Boyer

Outline:

Definition:

Wildland Urban Interface (WUI)

Private land within 500 meters of forested federal public land*



WUI is defined here: http://headwaterseconomics.org/pubs/wildfire/PGude_2008_Forestry.pdf

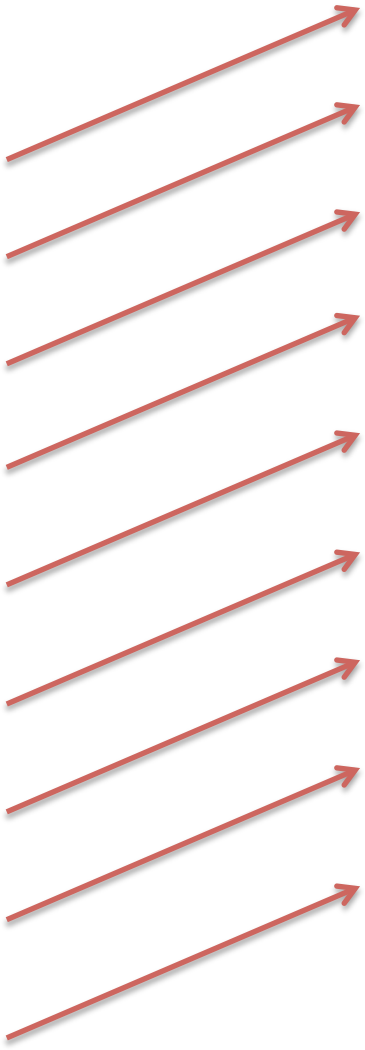
* "Nearly 65 million acres of WUI are adjacent to or near national forests or grasslands." http://www.fs.fed.us/aboutus/budget/2015/FS15-FS-Budget-Justification.pdf (pg. 9-5)

The problem

Wildfires are bigger, burn longer, cause more damage and kill more people than before

Homes built on fire-prone lands increase risk and costs

Wildfire Trends Are Worrisome:



- Fires are bigger
- Burn longer
- The season is longer
- Climate is getting hotter
- Homes are built on fire-prone lands
- More homes are burned
- Danger is increasing
- Costs are soaring
- Firefighting as % of agency budget is growing

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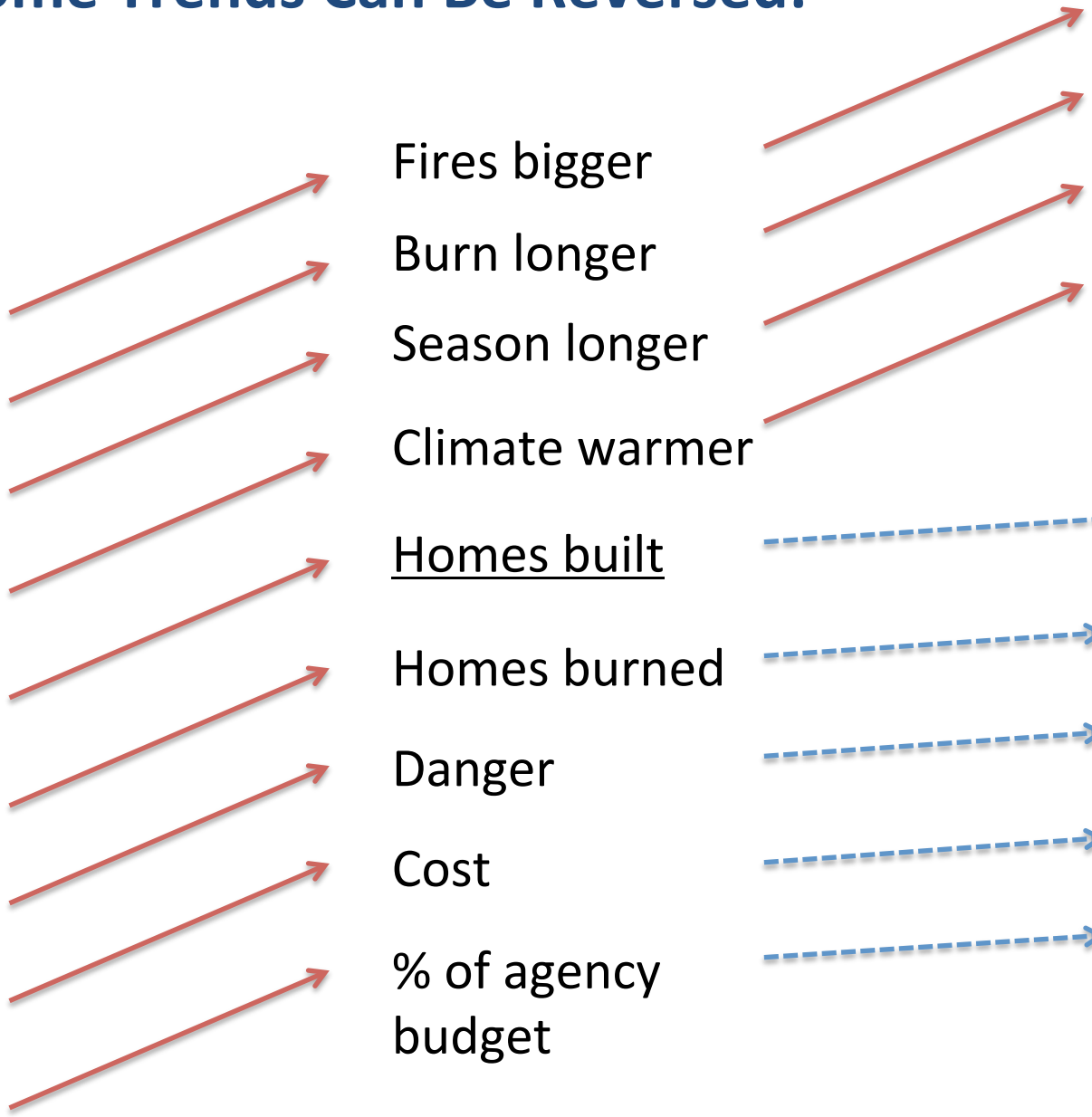
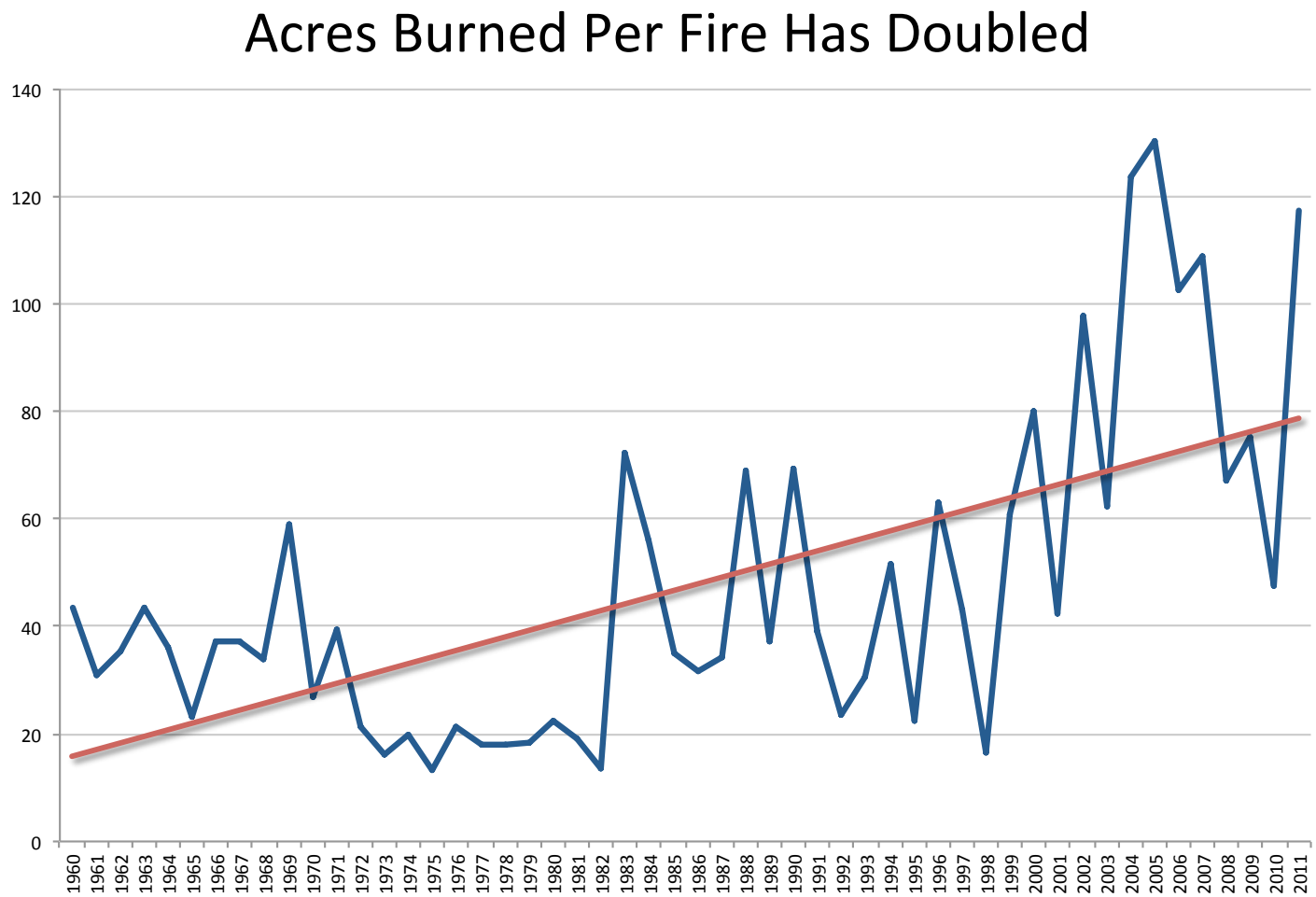
Some Trends Can Be Reversed:



The trends

Fires are bigger



They also burn **2x** as long

Average 1990s
44 acres/fire

Average 2000s
88 acres/fire

http://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html

The fire season is longer

"The length of the fire season has increased by over **two months** since the 1970s."

- Tom Tidwell, U.S. Forest Service Chief,
  Senate Testimony, June 2013

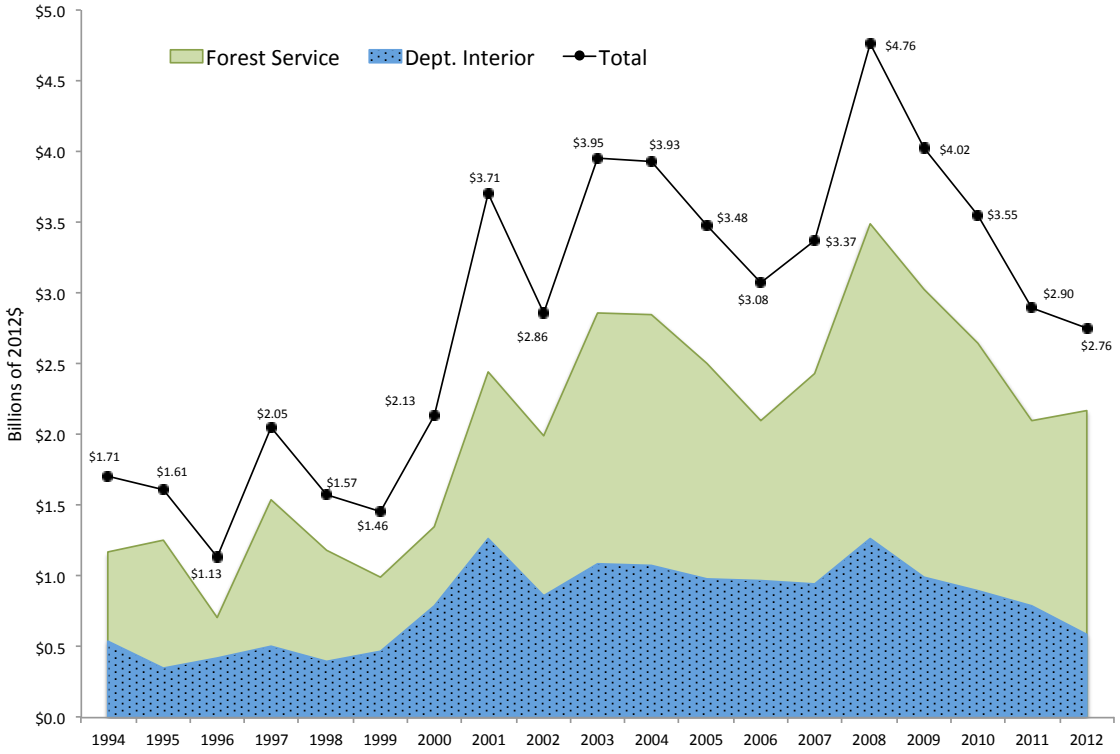
Tidwell quote from: http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=e59df65c-09c6-4ffd-9a83-f61f2822a075. See also: http://www.fs.fed.us/aboutus/budget/2015/FS15-FS-Budget-Justification.pdf (pg. 9-1) According to recent estimates of the Forest Service the fire season is 60 to 70 days longer than a decade ago: http://www.fs.fed.us/aboutus/budget/2015/FS15-FS-Budget-Justification.pdf (page 9-5)

Costs are soaring

Federal Wildfire Appropriations Have Tripled

1990s
$1 Billion/year

2000s
$3 Billion/year



A number of agencies incur wildfire costs. From FY1991 through FY1999, average Forest Service and Department of the Interior wildfire protection appropriations were $0.92 billion annually, while in the past decade (FY2002 through FY2012), wildfire protection funds for these agencies have averaged $3.13 billion annually. FEMA's fire management assistance grants averaged $71.2 million annually between 2002 and 2011, more than triple the FEMA wildfire assistance in the 1990s. States spent $1.43 billion on wildfire programs in 2010. http://headwaterseconomics.org/wphw/wp-content/uploads/fire-costs-background-report.pdf, page 5, from CRS Report RL33990, Federal Funding for Wildfire Control and Management. According to the Congressional Research Service, $3.9 billion was appropriated for wildfire management in FY14. http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43077.pdf March 5, 2014.

Why More Expensive?

1. Fire severity

   Fuel

   Climate – hotter, drier conditions

2. Home building
   on fire-prone lands

Photo courtesy of Chris Boyer

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More homes are built on fire-prone land

Since 1990, 60% of new homes in the U.S. have been built in the WUI

40% of single-family homes in the U.S. (46 million homes) are in the WUI

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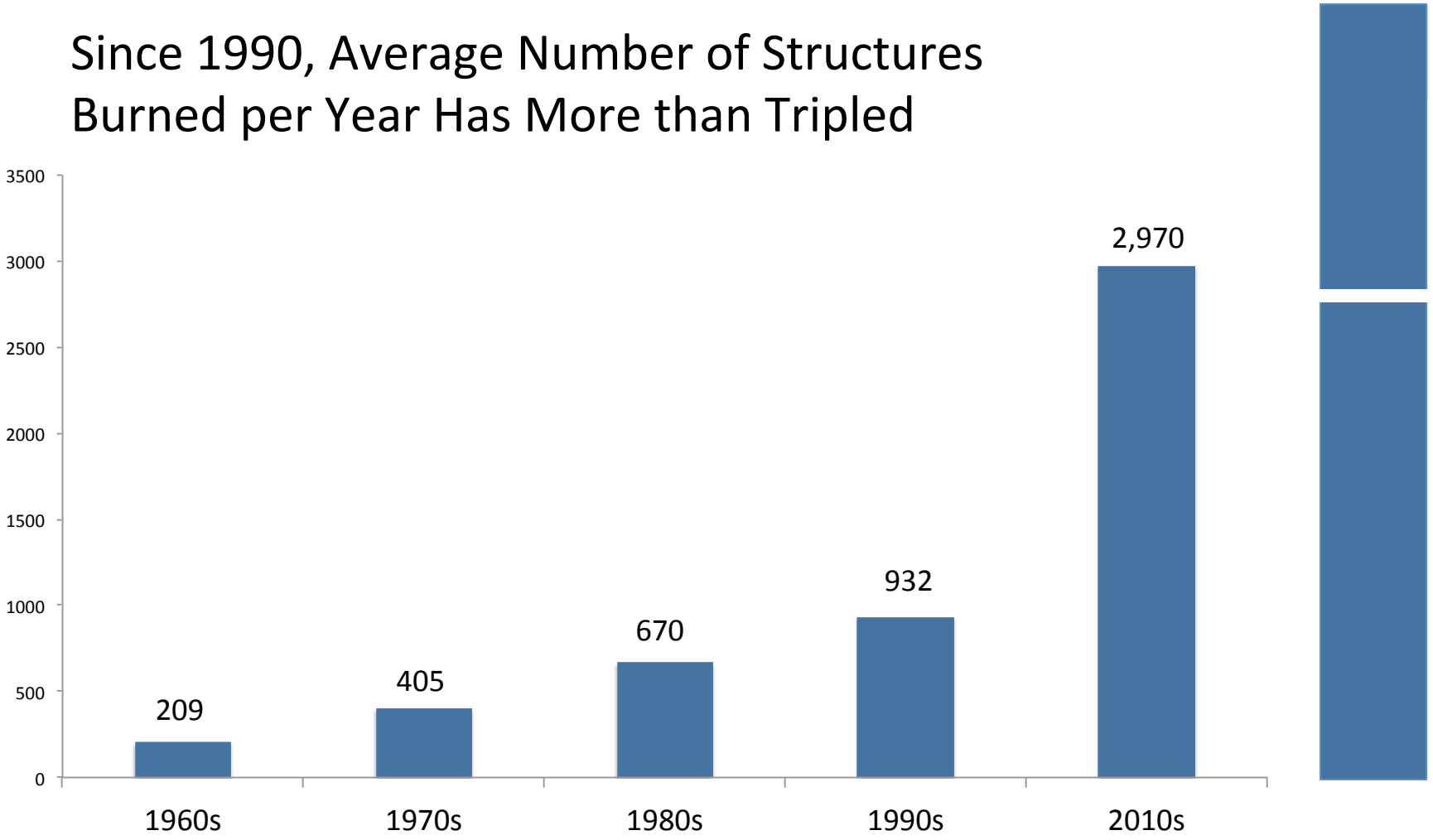
International Code Council. The Blue Ribbon Panel Report on Wildland Urban Interface. April 4, 2008. https://inawf.memberclicks.net/assets/blueribbonreport-low.pdf .
Note, above statistics do not include estimates of WUI development since 2008. In 2008, 115 million single family homes existed in the U.S., of which 46 million are in the WUI. From 1990 to 2008, 17 million homes were constructed, of which 10 million were in the WUI.

More homes are burned

5,000/yr. in
2011, 2012
2,135 in 2013

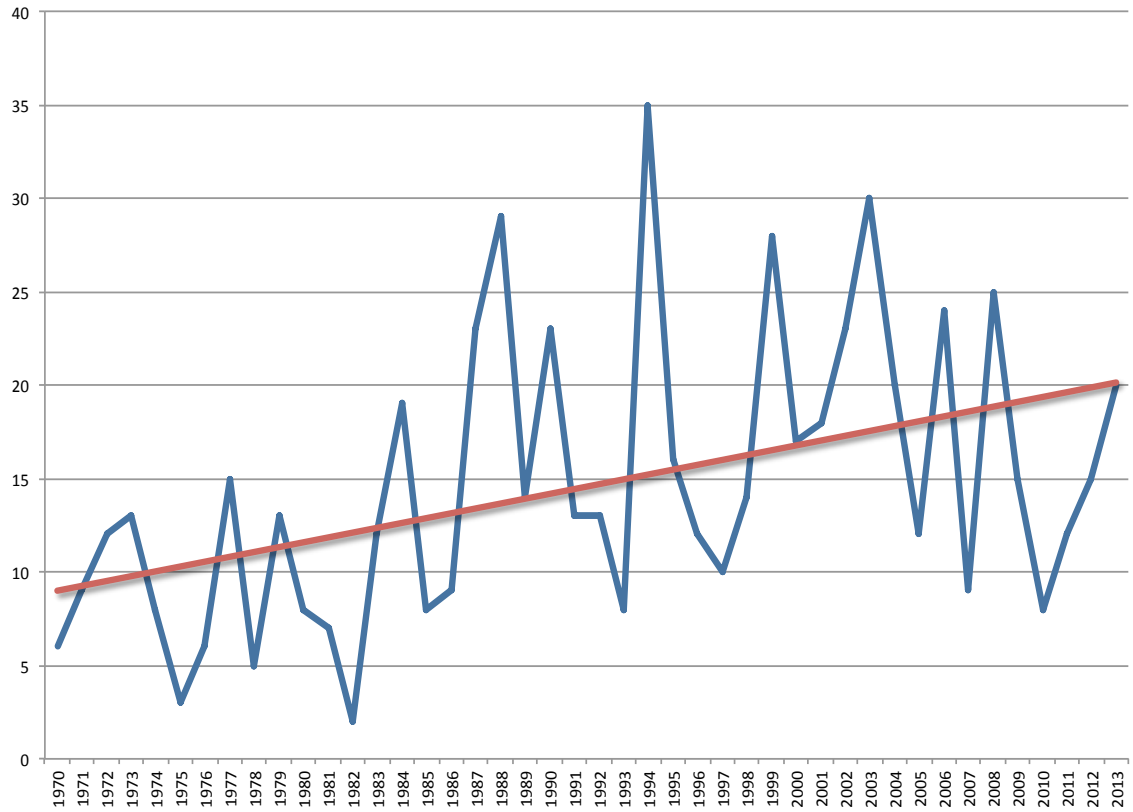
Since 1990, Average Number of Structures Burned per Year Has More than Tripled



Dan Bailey, http://firechief.com/wui/backstory-part-i-its-still-about-wui-facts, using figures from National Interagency Fire Center, InciWeb, & International Organization for Standardization. 2013 figures from CRS report R43077 Wildfire Management: Federal Funding and Related Statistics. March 5, 2014. http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43077.pdf Figures include all structures; most are homes.

Danger is increasing

Number of Firefighter Deaths/Year Continues to Increase



34 deaths in FY13

2013 is partial count – includes 19 at Yarnell Fire

Average 1970s	Average 1980s	Average 1990s	Average 2000s
9	13.1	17.2	19.3

Trend line figures from: National Interagency Fire Center http://www.nifc.gov/safety/safety_HistFatality_report.html 34 deaths in FY 2013 figure from CRS report R43077 Wildfire Management: Federal Funding and Related Statistics. March 5, 2014. http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R43077.

The future

Worse because of:

Climate change

More home building

Climate change will accelerate trends

"Scientists estimate that by the year 2050, wildfire activity is expected to **double** in the Southwest, Pacific Northwest, Rocky Mountains Forest, and the Eastern Rockies/Great Plains regions."

- GlobalChange.gov and EPA

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Future projections are from: http://www.globalchange.gov/news/climate-change-and-wildfires-what%E2%80%99s-connection and https://blog.epa.gov/science/2013/08/climate-change-and-wildfires-whats-the-connection/ and in this journal: http://www.sciencedirect.com/science/article/pii/S1352231013004573

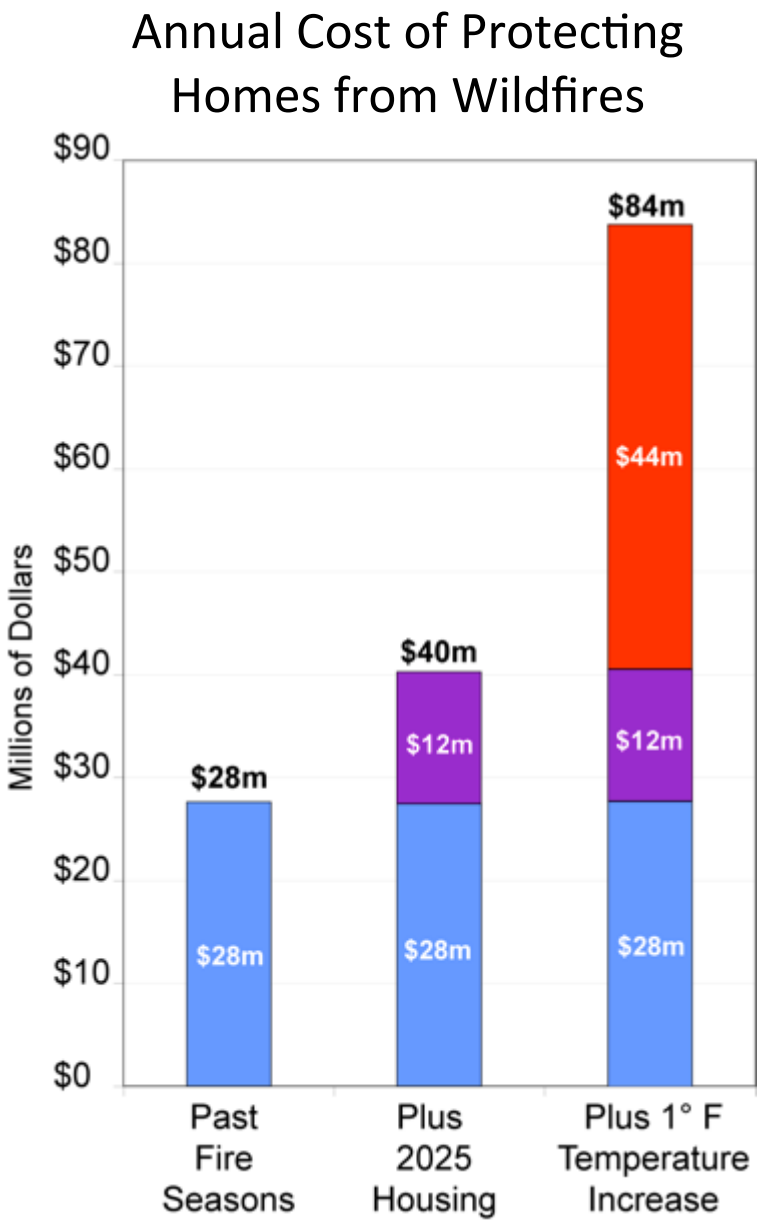
Climate – Montana example:

A 1º F increase in summer temperature is associated with:

Doubling the cost of defending homes from wildfire

125% increase in acres burned

Lack of land use planning and continued home building to year 2025 (purple bar) seem less serious when compared to the effect of climate change (red bar)



http://headwaterseconomics.org/wildfire/montana-wildfire-costs based on a sample of 18 fires and daily weather records

Climate – N. California example:

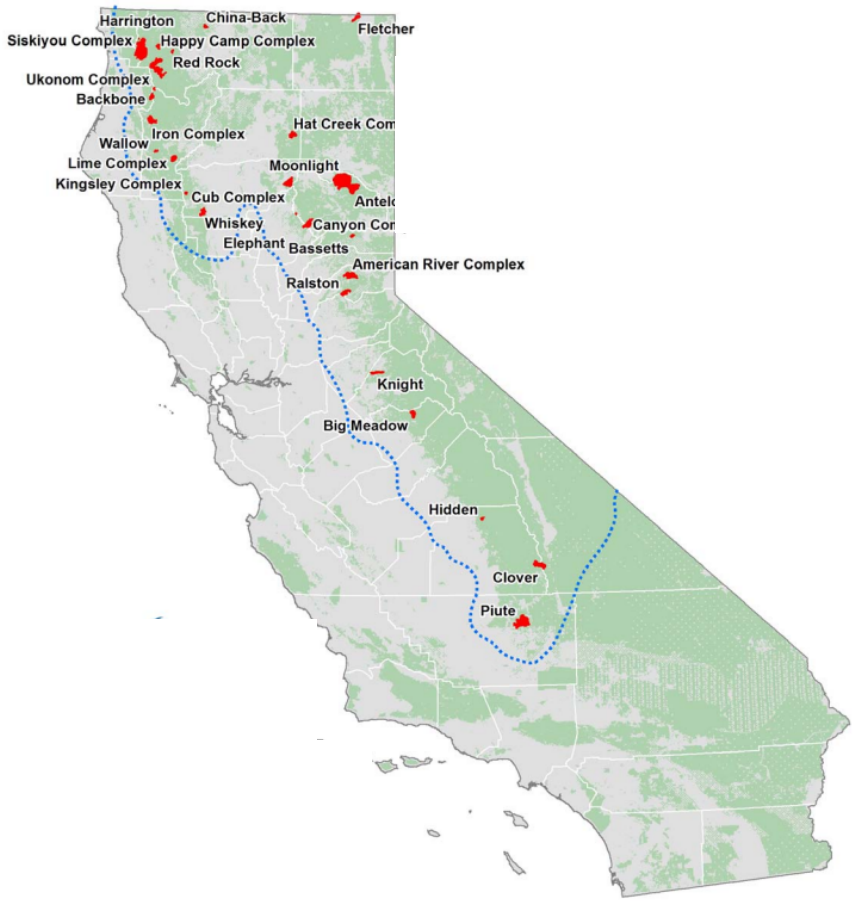
A 1º F increase in summer temperature is associated with:

35% increase in acres burned

Cost of defending homes from wildfire:

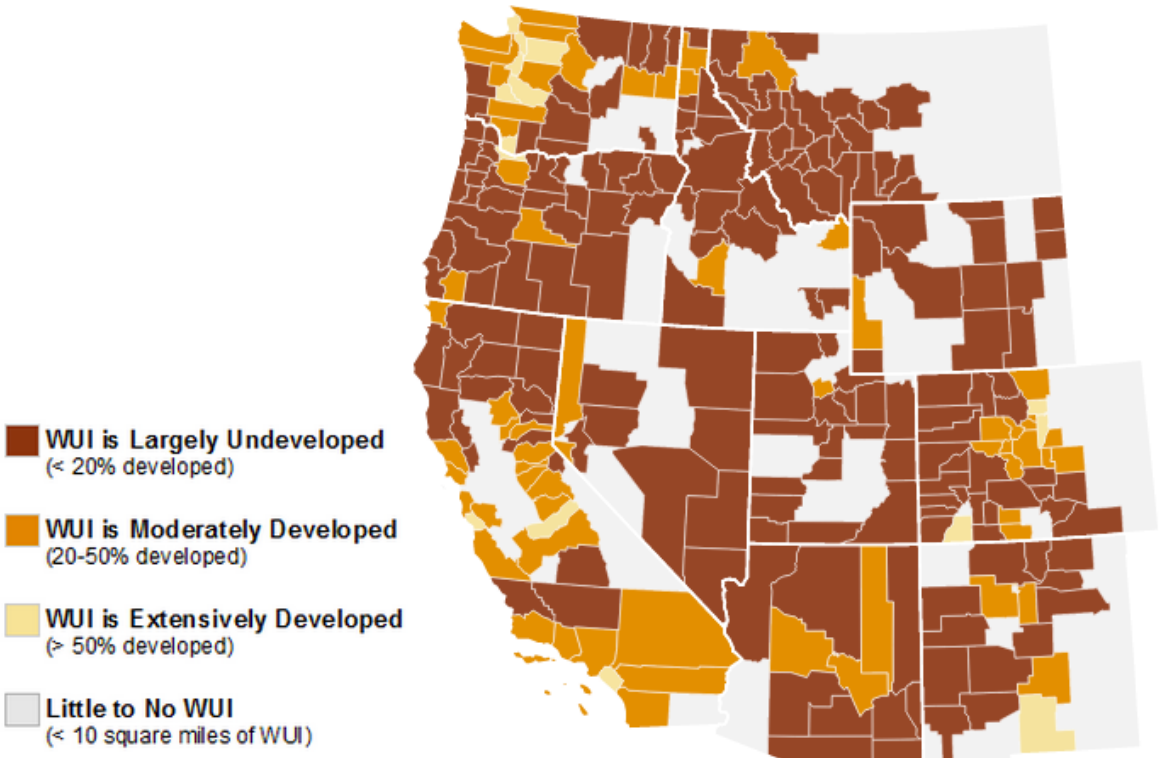
Average $82,000/home

Some as high as $400,000 to $600,000/home

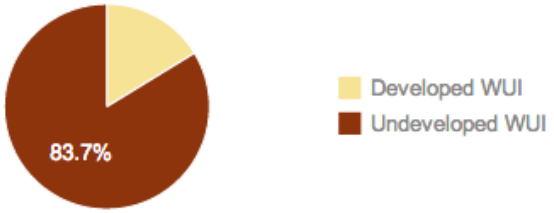


http://headwaterseconomics.org/wildfire/northern-california-homes-and-cost-of-wildfires
These estimates are based on mean May-October temperatures and take into consideration variation in precipitation.

More home building



West Wide



Only 16% of the WUI is developed with homes

84% of the WUI is not yet developed

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http://headwaterseconomics.org/interactive/wui-development-and-wildfire-costs

More home building

In the West:

Almost 2 million homes in the WUI

16% of WUI is developed

84% of WUI is yet to be developed

	% of WUI Developed	Total Homes in WUI	% Second Homes
Arizona	16%	52,701	41%
California	17%	490,255	18%
Colorado	20%	117,472	40%
Idaho	13%	43,454	34%
Montana	9%	43,136	31%
Nevada	9%	20,970	23%
New Mexico	16%	27,387	40%
Oregon	11%	179,451	15%
Utah	7%	15,733	35%
Washington	29%	951,468	6%
Wyoming	5%	5,900	43%
West Wide	16%	1,947,927	15%

Table from: http://headwaterseconomics.org/interactive/wui-development-and-wildfire-costs More than 1/3 of housing units in the continental U.S. are located within the WUI, according to U.S. Forest Service Chief Tom Tidwell, Senate testimony, June 2013: http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=e59df65c-09c6-4ffd-9a83-f61f2822a075 citing 2013 Forest Service General Technical Report RMRS-GTR-299.

With More Home Building, Will the Forest Service Become the "Fire Service"?

1991 firefighting = 13% of Forest Service budget

2013 firefighting = 50% of Forest Service budget*

16% of WUI is currently developed with homes

If **50%** of WUI were developed, the cost of defending the homes **would be equal to 100% of Forest Service budget**

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* Based on calculations by Headwaters Economics; available from ray@headwaterseconomics.org In FY14 the Forest Service estimates fire suppression was 40% of their budget, up from 13% a decade ago. http://www.fs.fed.us/aboutus/budget/2015/FS15-FS-Budget-Justification.pdf (page 9-1)

Solutions

Response to Date

Forest Thinning

About 230 million acres in need of treatment, according to Forest Service & Dept. of Interior (75 million at "high" risk, plus 156 million at "moderate" risk)

Only 3 million acres/year treated

http://headwaterseconomics.org/wphw/wp-content/uploads/fire-costs-background-report.pdf More detail can be found in: CRS Report RL33990, Federal Funding for Wildfire Control and Management. Almost 400 acres at moderate to high risk according to U.S. Forest Service Chief Tom Tidwell, Senate testimony, June 2013: http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=e59df65c-09c6-4ffd-9a83-f61f2822a075

Response to Date

Voluntary Landowner Education

Used by permission, Monte Dolack Gallery, Missoula, MT

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70,000 Communities Are at Risk of Wildland Fire

Less than **2%** are **Firewise Communities**. Also, no relationship between FireWise and suppression costs.

Less than **3%** of 46 million at-risk homes are **inspected by insurance companies** for wildfire survivability (only 2% of policies were cancelled due to lack of homeowner follow-up).

About **11%** have **CWPPs** (community wildfire protection plans)

Less than **10%** have a **WUI development code**.

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WUI FACT SHEET, August 1, 2013: http://www.iawfonline.org/ Number of communities at risk from U.S. Forest Service Chief Tom Tidwell, Senate testimony, June 2013: http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=e59df65c-09c6-4ffd-9a83-f61f2822a075 Tidwell estimates 21% of at-risk communities have CWPPs. Some fire officials feel the 70,000 count is likely an underestimate. FireWise and suppression costs: http://headwaterseconomics.org/wildfire/firewise

Not Yet Tried

Control the Pace, Scale & Pattern of Future Development

84% of WUI
not yet developed

Context:

Who Pays Most of the Fire Suppression Bill?

FEMA

Not

local government

Not

at the level where the development decision is made

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Context:

"**If state and local agencies became more financially responsible for WUI protection**, it would likely encourage these agencies to more actively implement land use regulations that minimize the risk to people and structures from wildfire."

"**Mandatory zoning and building regulations** may be needed to compel landowners to take the actions necessary to protect their homes and property from wildfire."

U.S. Department of Agriculture
Office of Inspector General, 2006

http://www.usda.gov/oig/webdocs/08601-44-SF.pdf

Context:

It will be difficult to control the rising costs, damages, and dangers related to home development in the WUI unless:

- There are negative financial consequences for private land management decisions that increase risk and

- Direct positive financial rewards for decisions that reduce risk

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LOCAL SOLUTIONS

1. Improved Comprehensive Land Use Plans and Community Wildfire Protection Plans (CWPPs)

Needed to make this happen:

- Shift more of the WUI fire protection cost to the state and county levels to create strong financial incentives for improved land use planning.
- Provide financial and technical assistance for land use planning.
- Share model ordinances, comprehensive plans, and CWPPs. Work with demonstration communities to learn & share lessons.
- Link levels of community federal financial assistance to planning performance.
- Map fire risk.

LOCAL SOLUTIONS

2. Full Disclosure of Fire Risk for Potential Home Buyers

Needed to make this happen:

- Make mapping of fire risk mandatory.
- Require disclosure through the lending institutions.
- Partner with the insurance industry to rank and disclose risk.
- Federal or state agencies produce coarse scale improved by local governments, neighborhood associations, and private fire risk mapping companies.

ADMINISTRATIVE SOLUTIONS

3. Bill County Governments for Their Share of Firefighting Costs

Needed to make this happen:

- Analysis of where this has been tried in the past and its effectiveness.
- Analysis of the legal ramifications.
- Significant upfront warnings to local governments & include explicit estimate of fire suppression costs related to proposed developments.

4. Shift Fire Suppression Responsibility More to the Local Level

Needed to make this happen:

- Strong coordination between jurisdictions and clear acknowledgement of responsibilities.

- Incentives for signing Master Agreements. For example, higher levels of financial and technical assistance, or county payments (e.g., PILT and SRS payments) to communities that sign Master Agreements.

- Disincentives for not signing Master Agreements. For example, withhold aid or reduce level of PILT and SRS payments.

5. Redirect Federal Financial and Technical Aid to Improved Land Use Planning

Needed to make this happen:

- Financial and technical assistance programs are expanded in scope to offer assistance in land use planning.
- Make fire risk assessments for undeveloped private lands available to the public.
- Assessment of the risk, dangers, and costs associated with future development.
- Alter the mission of federal coordination and assistance efforts to include considerations of the undeveloped portion of the WUI.
- Learn from other federal funding programs (e.g., HUD, EPA Sustainable Cities Initiative, National Floodplain Insurance Program).

6. Buy Land and Development Rights

Needed to make this happen:

- Identify and prioritize lands where the cost of purchase will be less than the cost of defending homes from wildfire.

- Modify criteria for purchasing land or development rights; e.g., allow LWCF money to be used to buy land that would reduce fire risk and save money.

7. Refuse to Risk Firefighter Safety by Early Involvement in Land Use Planning

Needed to make this happen:

- Reinforce to the public the safety first ethical code among firefighters.
- Public statements that not all fires can be fought and not all structures can be protected.
- Educate the public on potential fire risks early on in the development process, especially during the times when county governments are evaluating whether to permit new home developments in the WUI.
- Make public education and participation in county land use planning part of local federal land manager job responsibilities.

8. Map Fire Risk

Needed to make this happen:

- Clarity about which tools exist and how to apply them.

- Analysis of whether identification of fire risk would make a difference in county government's permitting of development or on homeowners land purchase decision, or affect insurance rates enough to dissuade development.

LEGISLATIVE SOLUTIONS Could have these elements:

- Identify the fire risk (mapping).
- No lives should be risked to defend structures.
- Promote federal involvement in land use planning.
- Financial and other assistance offered, based on local performance.
- Involve banking (no loans in WUI, or conditional on performance)
- Discourage rebuilding in the same high-risk place.
- Full-disclosure of risk for potential home buyers.
- Eliminate mortgage tax deductions for new homes built on land identified as being at high risk for wildfire.
- Programs that distribute federal funding for conservation (e.g. LWCF) can be used to reduce fire risk.

Wildfire Resources

Solutions for controlling the pace, scale, and pattern of future development in the WUI: http://headwaterseconomics.org/wildfire/reducing-wildfire-risk

The rising cost of wildfire protection: http://headwaterseconomics.org/wildfire/fire-cost-background The latest figures on how WUI, climate change and fuel build-up have contributed to a tripling of wildfire costs

An on-line interactive tool showing development in the WUI, by state and county: http://headwaterseconomics.org/interactive/wui-development-and-wildfire-costs

Summary of our wildfire research: http://headwaterseconomics.org/wildfire/fire-research-summary Wildfire costs, WUI, and impact of climate change studies on MT, OR, CA

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