



## At the Wildland Urban Interface, Federal Grants for Mitigation of Fire Provide \$3 Benefit for Each \$1 Invested

### Introduction

Natural hazards present significant risks to many communities across the United States. Fortunately, there are measures governments, building owners, developers, tenants and others can take to reduce the impacts of such events. These measures—commonly called mitigation—can result in significant savings in terms of safety, prevent property loss and disruption of day-to-day life.

The National Institute of Building Sciences Multihazard Mitigation Council (MMC) undertook a study in 2017 to update and expand upon the findings of its *2005 Mitigation Saves* study on the value of mitigation. In the *2017 Interim Report* (now incorporated into the *2018 Interim Report*), the project team analyzed two areas of mitigation programs:

- **Federal grants:** The impacts of 23 years of federal grants made by the Federal Emergency Management Agency (FEMA), Economic Development Administration (EDA) and the Department of Housing and Urban Development (HUD), resulting in a national benefit of \$6 for every \$1 invested.
- **Beyond code requirements:** Designing new structures to exceed select provisions of the *2015 International Building Code* (IBC) and *International Residential Code* (IRC) and the adoption of the *2015 International Wildland-Urban Interface Code* (IWUIC). This resulted in a national benefit of \$4 for every \$1 invested.

### Results of Federal Grants for Earthquake Mitigation

With a total project cost of approximately \$56 million (inflated to 2016 USD), federally supported mitigation of fire at the wildland-urban interface (WUI) will save society an estimated \$173 million in avoided future losses. For the 25 grants with sufficient data, the analysis produced an average benefit-cost ratio (BCR) of approximately 3:1.

For WUI fire resistance the mitigation measures examined include replacing roofs, managing vegetation to reduce fuels, and replacing wooden water tanks. Table 1 provides BCRs for each natural hazard the project team examined. Figure 1 shows the benefits specifically attributable to federal wildland fire mitigation grants. The national-level BCRs aggregate study findings across natural hazards and across state and local BCRs.

National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		Federally Funded	Beyond Code Requirements
<b>Overall Hazard Benefit-Cost Ratio</b>		<b>6:1</b>	<b>4:1</b>
 <b>Riverine Flood</b>		<b>7:1</b>	<b>5:1</b>
 <b>Hurricane Surge</b>		Too few grants	<b>7:1</b>
 <b>Wind</b>		<b>5:1</b>	<b>5:1</b>
 <b>Earthquake</b>		<b>3:1</b>	<b>4:1</b>
 <b>Wildland-Urban Interface Fire</b>		<b>3:1</b>	<b>4:1</b>

Table 1. Benefit-Cost Ratio by Hazard and Mitigation Measure.

**Benefit: \$173 million**

69% – Property: \$120

21% – Insurance: \$36

6% – Deaths, injuries, & PTSD: \$10

3% – Additional living expenses & sheltering: \$5

1% – Indirect business interruption: \$2

millions 2016 USD

**Cost: \$56 million**

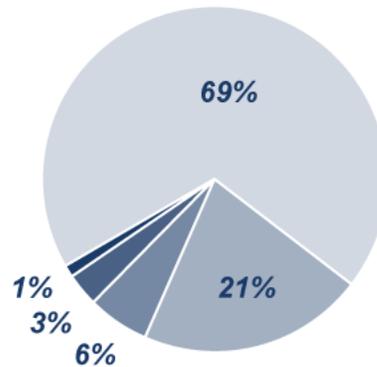


Figure 1. Contribution to benefit from federally funded WUI fire mitigation grants.