January 11, 2018
Office of External Affairs
Intergovernmental Affairs Division
202-646-3444

Frequently Asked Questions

Natural Hazard Mitigation Saves: 2017 Interim Study

Q1. What is the background of the Interim Study?

A1. In 1999, Congress instructed the Federal Emergency Management Agency (FEMA) to conduct an independent review of the benefits and costs of FEMA-funded natural hazard mitigation efforts. The results were published in the **Mitigation Saves Study** (2005), which showed that on average, FEMA-funded natural hazard mitigation saved $4 for every $1 (4:1) spent. This 4:1 figure in the 2005 study has been widely cited thousands of times in scholarly journals, Congressional testimony, and elsewhere, as information to inform and support more investment into natural-hazard mitigation.

Peril	Mitigation measure
Flood	Elevation
	Buyout
	Wet flood proofing
	Dry flood proofing
	Land use planning
	Site perimeter flood proofing
Wind	Manufactured housing engineered tie-down system (ETS)
	IBHS FORTIFIED Home (existing home, hurricane)
	IBHS FORTIFIED Home (existing home, high wind)
	Strengthen vents, soffits, and overhangs at gable end walls
	Strengthen connections of attached structures
Quake	Restrain furnishings, fixtures, and equipment
	Add manufactured housing engineered tie-down system (ETS)
	Add foundation anchors & strengthen cripple walls to older wood buildings
	Add seismic gas shutoff valves
	Strengthen unreinforced masonry bearing-wall (UMB) buildings
	Strengthen roof-to-wall connections in older tiltup and reinforced masonry
	Add steel frames or wood shearwalls to soft-story multi-family dwellings
Wildland-Urban Interface	Retrofit to approach 2015 IWUI Code
	Home firefighting system

Q2. What Hazards and mitigation measures are covered in the 2017 Interim Study?

A2. The 2017 Interim Study focuses on the following hazards and specific mitigation measures designed to address these hazards: Riverine floods, hurricane flood surge, wind, earthquakes, and wildfires at the wildland-urban interface. Examples of the types of mitigation measure is provided below.

Q3. Why were these hazards and mitigation measures selected?

A3. In recent years, these types of hazards have caused extensive damage to properties, and in some cases, injuries and deaths to citizens. These hazards threaten the viability of entire communities and severely impact the local economy. The mitigation measures in the study were selected because the cost of implementation tends to be lower, while the benefits received tend to be at a higher rate of return.

Q4. How is the 2017 Interim Study different from the 2005 Study?

A4. The most significant difference is the increased scope of the new study. The updated 2017 Mitigation Study takes a broader look at mitigation investments. FEMA-funded mitigation represents only a fraction of all natural-hazard mitigation in the United States. The private sector makes investments in designing new facilities to be stronger or stiffer than current codes require and communities reduce the number of citizens who live in high-risk areas by adopting and enforcing stronger codes and land use ordinances. The 2015 International Codes (I-codes) from the International Code Council (ICC) have substantially improved safety and property protection compared to codes in place in 2005.

Q5. How are these hazards studied?

A5. The 2017 Interim Study updates and expands the 2005 study which only analyzed FEMA-provided grants. The Study explores the benefits and costs of the following two areas: designing new buildings to exceed select building code requirements and the cost-effectiveness of grant programs by federal agencies including FEMA, Housing and Urban Development and Economic Development Administration.

In addition, the 2017 study uses a more-realistic economic life span for buildings (75 versus 50 years) and takes advantage of a more-advanced Hazus-MH flood model and improvements in FEMA's Benefit-Cost Analysis Tool, which, among other things, allows quantification of the benefit associated with enhanced service to the community provided by fire stations, hospitals, and other public-sector facilities.

Q7. Who funded and conducted this study?

A7. This is an Independent Study: The study is directed by the National Institute of Building Sciences (Institute) with funding support from the Federal Emergency Management Agency (FEMA) and other governmental and non-governmental sponsors. The authors of this Study do not speak for or on behalf of FEMA. Findings presented in this Interim Study should not be taken as reflecting the opinions or policies of FEMA or its staff.

Q8. What are the select mitigation measures in the Interim Report?

A8. The results released to date represent a limited number of mitigation measures and should not be presented as the aggregate value of all resilience-related investments. Studies are ongoing to identify the Benefit Cost Ratio (BCR) for additional mitigation measures. Once all of the components of the study are completed, the Institute will issue aggregate results. Results representing federal agency grants are final.

Q9. What is the relationship between the 2017 Interim Report and the National Mitigation Investment Strategy?
A9. The 2017 Interim Report and the National Mitigation Investment Strategy are complementary. The Study demonstrates that investments in resiliency saves, and the work complements the Investment Strategy.

Q10. Does The Study differentiate between different federal grant dollars?
A10. While The Study looks at different types of mitigation activities and looks at FEMA grants from 2005 to present, it presents federal grants and investments as an aggregate, so there are not specific benefit-cost ratios for each agency's investments.

Q11. What will impact The Study have on current supplemental appropriations language?
A11: While The Study doesn't directly address proposed supplemental appropriations language, nor does it make recommendations about what types of mitigation and resilience solutions to invest in, its' message is consistent with the earlier 2005 study: Hazard Mitigation Saves. In fact, these new results indicate that for certain types of solutions, the savings may be higher than originally thought. The study's good news message would support any potential supplemental language addressing the need to be resilient.