

Natural Hazard Mitigation Saves 2017 Interim Report

The Nation Saves Through Mitigation Programs:

\$4 for every \$1 spent exceeding select provisions of the 2015 model building codes.

Beyond code requirements: The costs and benefits of designing all new construction to exceed select provisions in the 2015 International Building Code (IBC) and the 2015 International Residential Code (IRC) and the implementation of the 2015 International Wildland-Urban Interface Code (IWUIC). This resulted in a national benefit of \$4 for every \$1 invested.

\$6 for every \$1 spent through mitigation grants funded via select federal agencies.

Federally-funded: The impacts of 23 years of federal mitigation grants provided by the Federal Emergency Management Agency (FEMA), Economic Development Administration (EDA) and Department of Housing and Urban Development (HUD), resulting in a national benefit of \$6 for every \$1 invested.

This Interim Study quantified a number of benefits from mitigation, including reductions in:

- Future deaths, nonfatal injuries, and PTSD
- Repair costs for damaged buildings and contents
- Sheltering costs for displaced households
- Loss of revenue and other business-interruption costs to businesses whose property is damaged
- Loss of economic activity in the broader community
- Loss of service to the community when fire stations, hospitals, and other public buildings are damaged
- Insurance costs other than insurance claims
- Costs for urban search and rescue

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

Riverine Flood

\$5:1 Beyond Code Requirements | **\$7:1** Federally-Funded

Disaster resilience for floods in this study can be achieved by building new buildings that are elevated higher than the minimum elevation required in the IBC/IRC.

Benefit-cost ratios for building above the minimum requirements of the IRC and IBC are variable by community. This image is intended to only be a guide. Contact a professional for solutions specific to your community.

Hurricane Surge

\$7:1 Beyond Code Requirements | **TOO FEW GRANTS TO PROVIDE STATISTICAL VALUE** Federally-Funded

Disaster resilience for floods in this study can be achieved by building new buildings that are elevated higher than the minimum elevation required in the IBC/IRC.

Benefit Cost Ratio

- 1
- 3-5
- 5-8
- 8-9
- >9

Wind

\$5:1 Beyond Code Requirements | **\$5:1** Federally-Funded

For wind, designing for disaster resilience in this study can be achieved by adding hurricane shutters, stronger roofing, and better connections.

Benefit Cost Ratio

- 1
- 1-4
- 4-8
- 8-16
- >16

Earthquake

\$4:1 Beyond Code Requirements | **\$3:1** Federally-Funded

For earthquakes, designing for disaster resilience in this study can be achieved by making new buildings stronger and stiffer than the code requires.

Benefit Cost Ratio

- 1.0
- 1.05-1.5
- 1.5-2.0
- 2.0-4.0
- 4.0-8.0

Wildland-Urban Interface Fire

\$4:1 Beyond Code Requirements | **\$3:1** Federally-Funded

The International WUI Code is intended as a supplement for fire and building codes. Its objective is establishing minimum regulations for safeguarding life and property caused by wildland fire exposures. The study includes using fire-resistant roofing, trimming brush around houses, and ensuring fire department access.

Benefit Cost Ratio

- 0-1
- 1-2
- 2-4
- 4-6
- >6