

DISASTER RESILIENCE AT NIST

BY THE NUMBERS

\$136 billion



Federal spending on disaster relief 2011 to 2013
(Center for American Progress)

84

Disaster declarations in 2014
(FEMA)

100 million

People affected by disasters worldwide in 2013



320,000



People displaced by natural disasters in the United States in 2013

40

Code changes made to the International Building Codes and International Fire Codes as a result of NIST's World Trade Center Investigation.



The Challenge

The United States government spent \$136 billion on disaster relief between 2011 and 2013. Preventing hazards such as earthquakes, hurricanes, and community-scale fires from becoming debilitating disasters depends upon the resilience of our buildings and infrastructure.

What NIST Does

- Studies disaster and failure events with the goal of improving the performance of buildings and infrastructure, the safety of building occupants, and the associated evacuation and emergency response procedures.
- Assesses the adequacy of codes and standards, current practices, and the state of knowledge in the areas of disaster resilience and buildings and infrastructure.

Recent Program Highlights

- Launched the creation of a Disaster Resilience Framework and Disaster Resilience Standards Panel to identify performance goals; existing standards, codes, and practices to enhance resilience; and gaps that must be addressed to enhance community resilience.
- Announced funding and collected proposals for a Center of Excellence in Disaster Resilience focused on developing integrated, systems-based computational models to assess and guide community infrastructure resilience efforts.
- Developed experimentally validated 3D models of steel and reinforced concrete frame buildings for assessment of vulnerability to collapse.
- Convened a national series of workshops to better understand the role that buildings and infrastructure lifelines play in ensuring community resilience.

New for FY 2016

NIST requested an additional \$10 million to develop and accelerate the adoption and use of the underlying measurement science to improve building standards, codes, and practices for cost-effective improvement of disaster resilience, including life-safety and reduction of property loss due to natural and man-made hazards.

With the requested funds, NIST will focus on:

- Improving building standards, codes, and practices.
- Improving design, construction, and retrofit of buildings, structures, and lifelines under extreme wind and coastal flooding loads.
- Facilitating construction of earthquake-resilient lifelines and enhanced earthquake performance in existing buildings.
- Developing a national Wildland Urban Interface fire rating system.

Program Goals

- **Accelerate resilience planning** by improving access to quality data, validated models, metrics, and mitigation strategies.
- Establish and promote the **adoption of best practices** to enhance resilience of buildings.
- Identify and address the gaps between research and building codes, standards, and practice through measurement science research, and **coordinate the development of standards and guidelines**.

Budget

