

Proposal for Conducting An Independent Study on Savings Associated with Public and Private Mitigation

Proposed by the Multihazard Mitigation Council of the
National Institute of Building Sciences

April 2016



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Regarding the original *Mitigation Saves* study:

- The original study demonstrated that for every public dollar spent on mitigation, society saves \$4.
- *Mitigation Saves* is the most often-quoted work on mitigation, and was originally mandated through the Senate Appropriations Committee and funded by FEMA.
- The study quantified the future savings (in terms of losses avoided) from hazard mitigation activities related to EQ, wind & flood funded through FEMA's Hazard Mitigation Grant Program, Project Impact program, and the Flood Mitigation Assistance Program.



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The National Institute of Building Sciences (NIBS) & The Multihazard Mitigation Council (MMC)

- NIBS is a non-profit, non-governmental organization focusing on resolving problems that may hamper the construction of safe, affordable structures in the United States
- NIBS established the MMC in 1997 to reduce losses associated with hazards as well as to promote mitigation efforts.
- MMC is a body of experts in a multitude of related fields that can address the challenges associated with the identification and implementation of effective mitigation practices.



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The Proposed New study:

An update and expansion of the original 2005 study

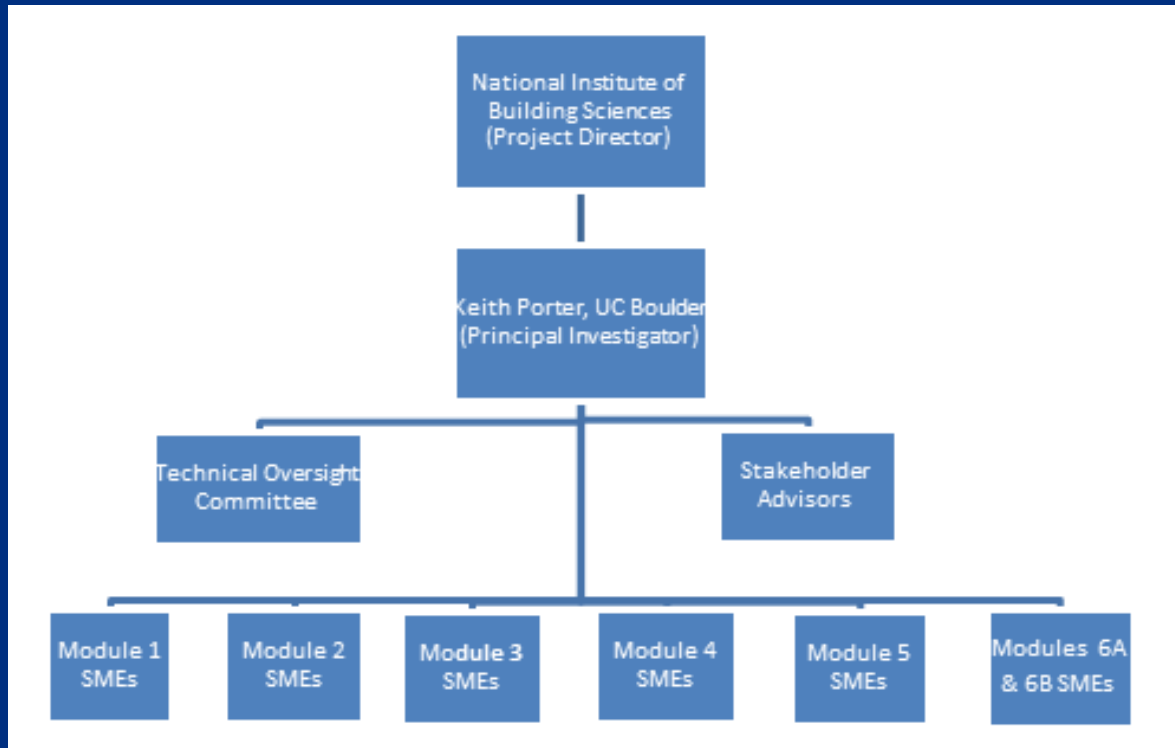
- Proposes to revisit both FEMA data and include additional new data from other federal programs and decisions made by the private sector.
- Public sector piece will build off prior study to include the benefit-cost ratio of investments made by other agencies including Department of Housing and Urban Development administered Community Development Block Grants, Small Business Administration Disaster Recovery Programs and Department of Transportation Grants



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Project Management

- The project will be managed by NIBS, and they will act as the prime contractor and issue sub-awards to individuals or entities to complete pieces of the study.



Flow of the Modules

- Module 1 sets standard procedures that apply across the other modules. It will integrate the results of the other modules to estimate the overall cost-benefit
- Module 1 is divided into two phases: initial development of the framework and aggregation of an initial set of mitigation measures from each module, followed by a review and possible course corrections, concluding with an aggregation of the remaining mitigation measures from Modules 2 through 6B.



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Common Scope of Work for each Module

- **Project Kickoff**
- **Define the Mitigation Measures**
- **Identify Stakeholders**
- **Identify incentives**
- **Specify Methodology**
- **Gather Data**
- **Calculate benefits and Costs**
- **Document results**
- **Disseminate results**
- **Define future efforts**



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Module 1: Overall Framework and Integration requirements

- Objective: to provide a framework for integrating mitigation strategy modules into an overall statement of the benefits of mitigation efforts
- Module 1 includes the following tasks:
 - Initial Meeting
 - Identify & document common procedures that apply across multiple modules
 - Perform the cost-benefit analysis using input from other modules
 - Develop the Report and disseminate to project sponsors and archival journals



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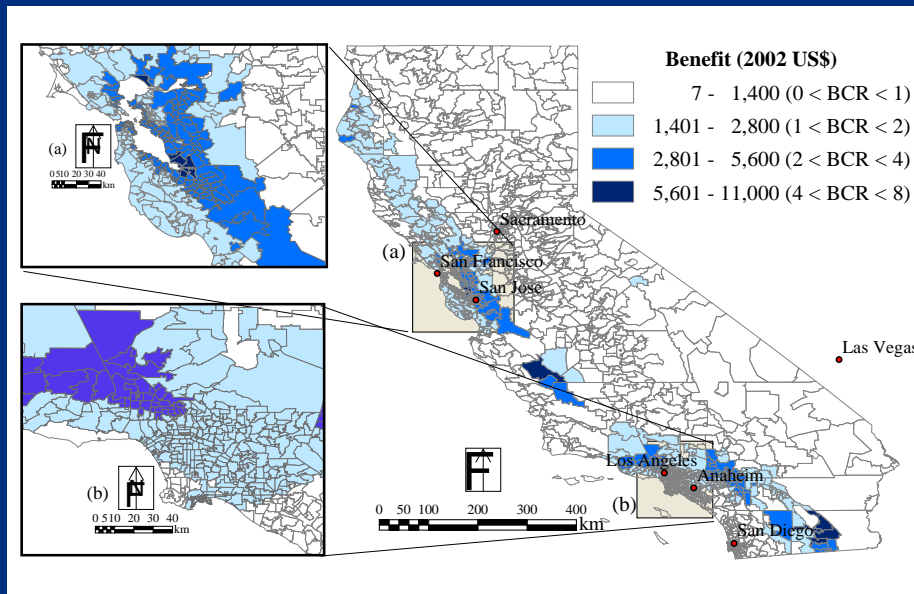
Module 2: Enhanced flood, wind, seismic and wildfire design requirements

- Objective: benefits & costs of above code design
- Stakeholders/funders: include lenders, insurers, Small business Administration, local, state and federal government
- Module 2 will quantify the benefits and costs of above-code design for wind and earthquake, greater elevation and foundation changes for flood resistance, and fire-resistant material for fire. NIBS will then estimate the potential aggregate benefits and costs from widespread adoption of above-code design requirements.



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Module 3: Retrofit of Existing Facilities to Ensure Post-Disaster Operability



- Objectives: benefits & costs of retrofit
- Stakeholders/funders: operators of large industrial or utility facilities, along with their insurers, suppliers, customers, regulators, investors, employees, and governments to which these businesses pay taxes.
- Image: A limited benefit-cost analysis for seismic retrofit of woodframe buildings could be updated to consider other locations and other benefits (Porter et al. 2006)



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Module 4: Emergency Management and Business Continuity Programs

Strategy	Example program elements
Prevention strategy	Conduct drop-cover-and-hold-on; pre-storm shut-down and evacuation
Mitigation strategy	Develop a backup work location in case the primary work location is inaccessible
Crisis communication and public information	Before an emergency event, develop notification scripts that can be customized and deployed as needed for an emergency
Warning, notifications, and communications	Subscribe to a third-party emergency notification system so that stakeholders can be contacted even if the organization's communication capacity is disrupted.

- Objective: benefits & costs of emergency management & business continuity
- Stakeholders/funders: private sector companies; schools, suppliers, emergency responders, etc.
 - Chart: Common strategies of emergency management & business continuity programs



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Module 5: Utility and Transportation Infrastructure Mitigation Programs



- Objective: benefits & costs of utility & transportation mitigation
- Stakeholders/Funders: operators of large utility systems, along with their insurers, suppliers, customers, regulators, investors, employees, etc. Could be funded through a relevant agency such as DHS, DOE, DOT and EPA.

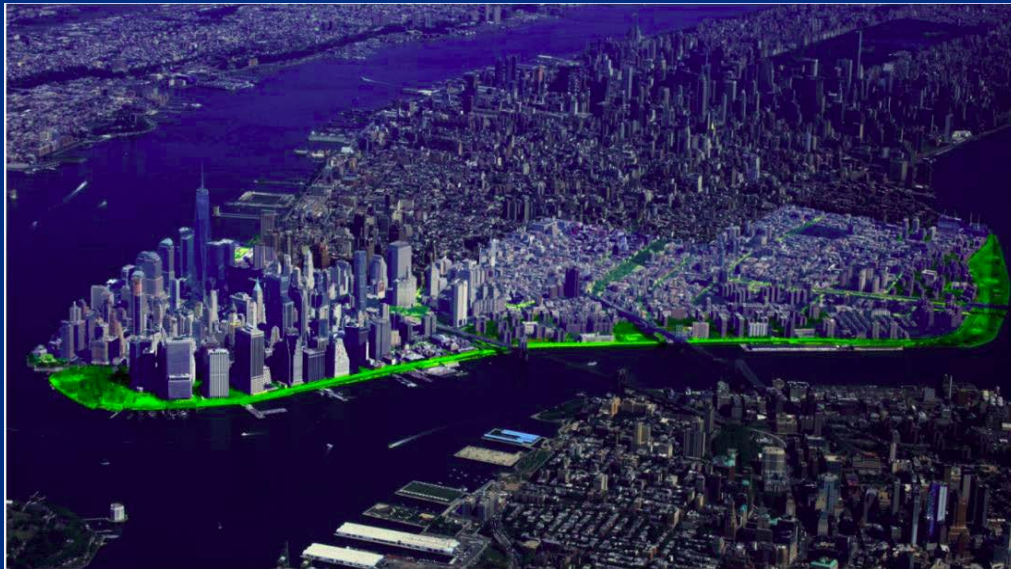
Image: FAA regulated airports with hurricanes (1851-2014)



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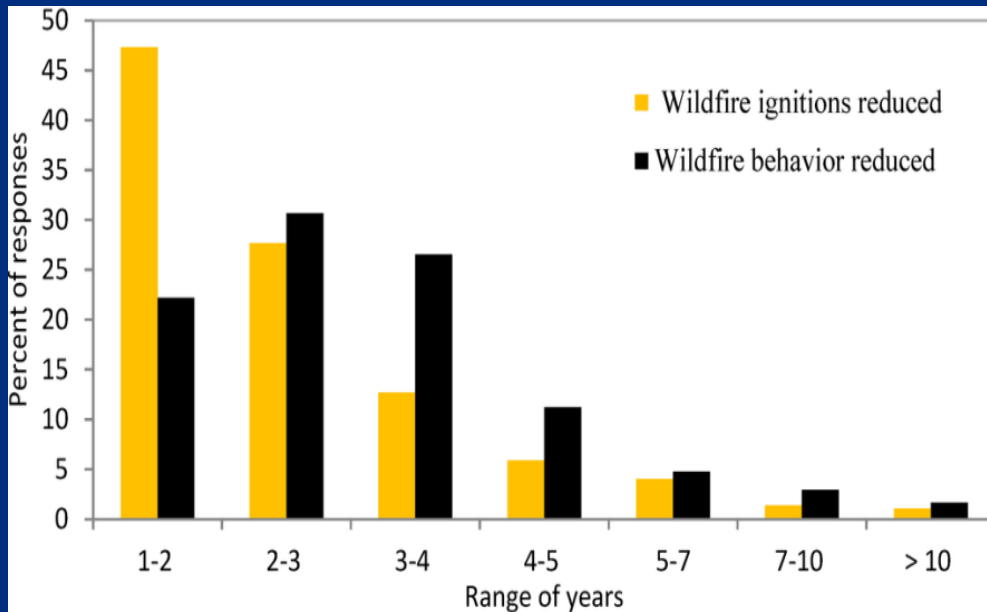
Module 6A: Cost-Benefit Analysis of Public-Sector Mitigation Grants and Loans

- Objective: benefits & costs of public sector mitigation grants & loans
- Stakeholders/Funders: Agencies with particular interest would include those whose programs are being addressed including DHS, FEMA, HUD, SBA, DOT, USACE, Commerce and Interior.
 - Image: Lower Manhattan Project and Connect Project (US Department of Housing and Urban Development 2016)



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Module 6B: Cost-Benefit Analysis of Non-grant Public-Sector Mitigation



- Objective: benefits & costs of public sector mitigation through direct activity
- Stakeholders/Funders: Agencies with particular interest would include those whose programs are being addressed including DHS, FEMA, HUD, SBA, DOT, USACE, Commerce and Interior.
 - Image: Estimates of the Effectiveness of prescribed fire (Kobziar et al. 2015)



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Project Schedule

- Depending on funding and available data sources, NIBS expects the study to take 12-18 months for the completion of all deliverables.
- Depending on which module(s) each stakeholder is supporting, the stakeholder may get initial results sooner than the 18 months.



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Project Budget

- There are 6 modules in the study, and with the exception of Module 1, the modules can be funded separately. Which modules are actually performed depends on funding.
- A budget is presented for each module, to facilitate modules being funded at different times or by different sponsors.
- If all modules are funded, the work will be performed on a fixed-fee basis for approx. \$3.4 million



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Value of the Study

- Identifying mitigation opportunities that provide the best value to those funding the measure
- Providing an important benchmark for gauging progress towards community resilience over the long term
- Establishing frameworks for collecting disaster performance data
- Creation of a common methodology for quantifying future losses in both the public and private sectors.



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Contact Information

For more information on the study and how to participate, please contact Ryan Colker at NIBS: rcolker@nibs.org

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