

# Resilient Design

**American Institute of Architects**

Cooper Martin

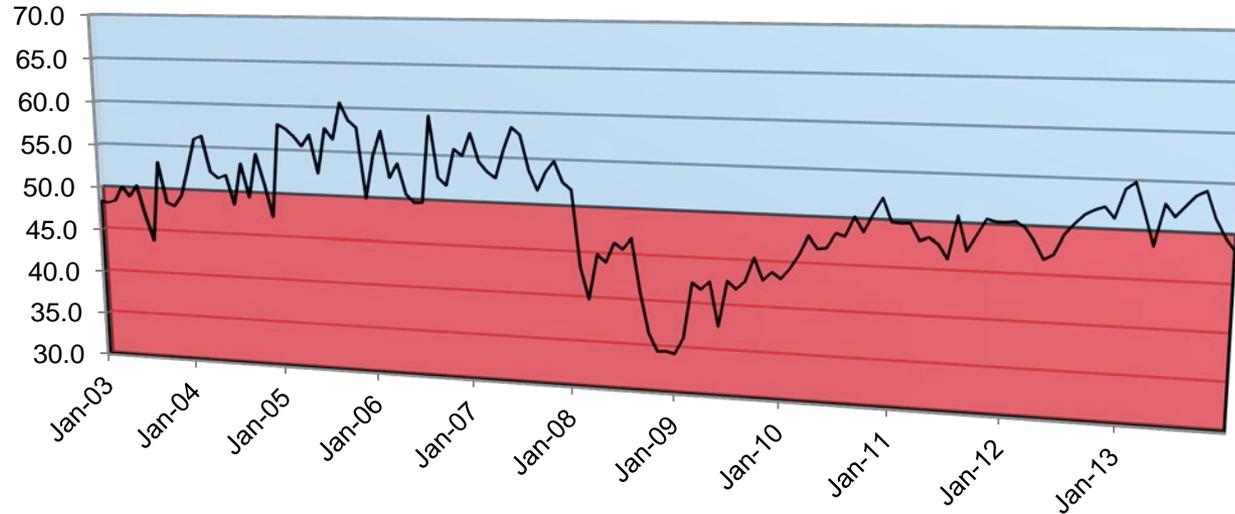
Director, Resilient Communities

# The AIA

- 80,000+ members
- Licensed Architects, aspiring architects and allied professions
- *“The AIA serves as the voice of the architecture profession and the resource for our members in service to society.”*

# Architects, Design, and Construction

- AIA issues the Architecture Billings Index
  - Leading economic indicator for commercial construction
  - Architectural activity typically precedes construction activity by approximately 9-12 months



# The AIA and Emergency Management

- Decades of response work
- Advocates for Safety and Security of the Built Environment



# Resilience

- *“The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events”*
- *“Resilience is the Immune System of our Nation.”*  
- Admiral Thad Allen

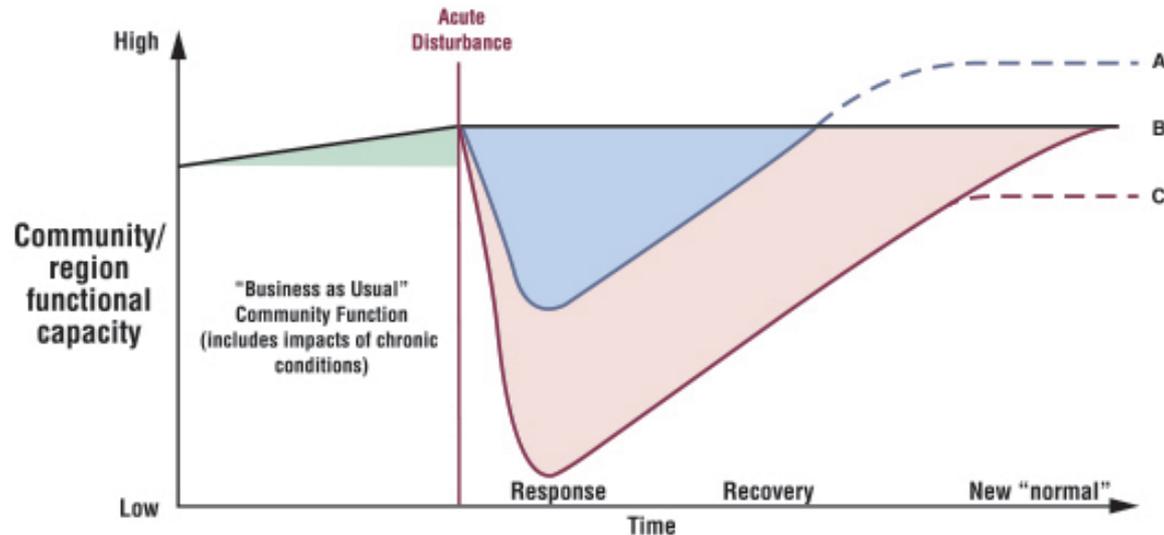
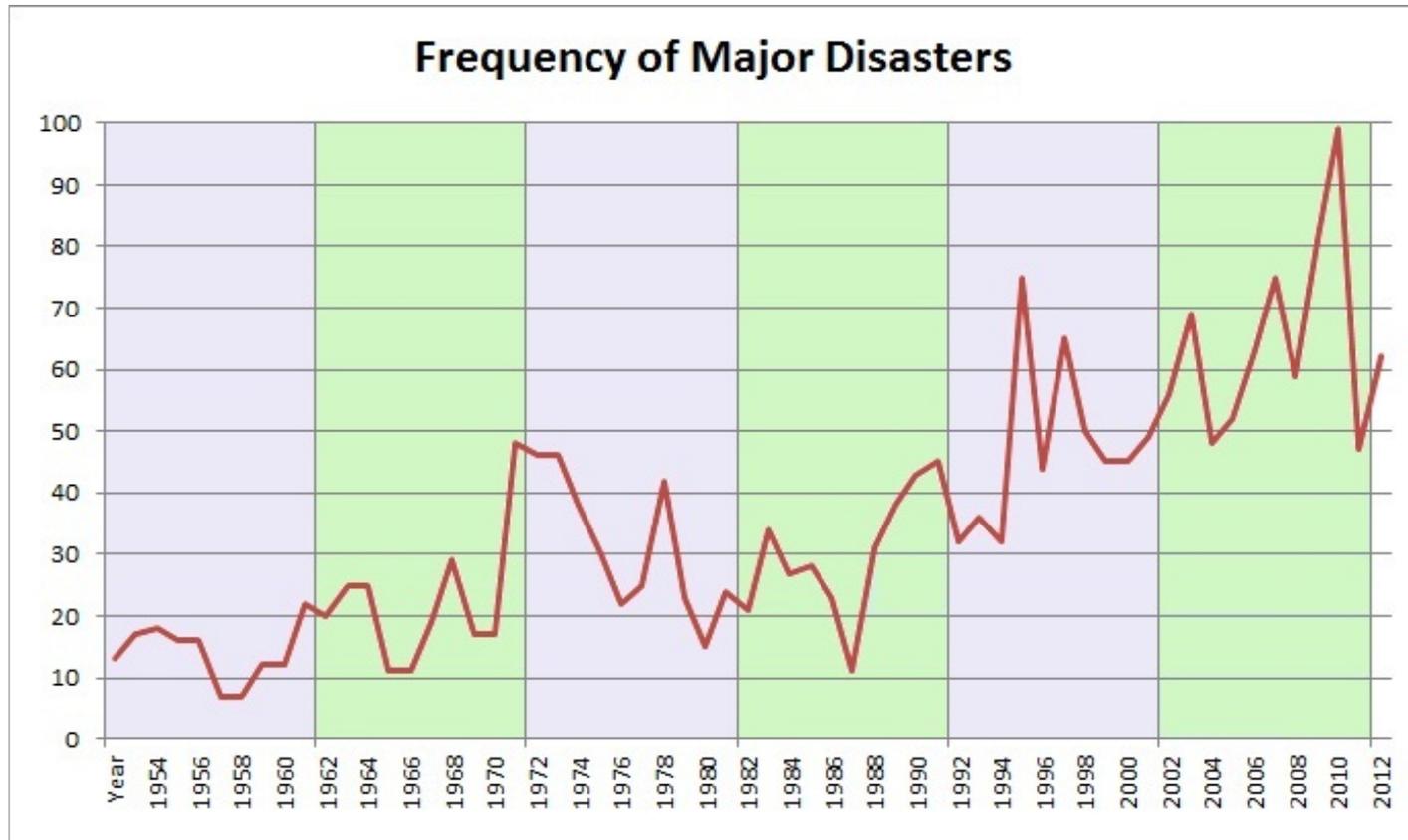


Image Credit:  
Community and Regional  
Resilience Institute



# Why Resilience?





# Why Resilience?

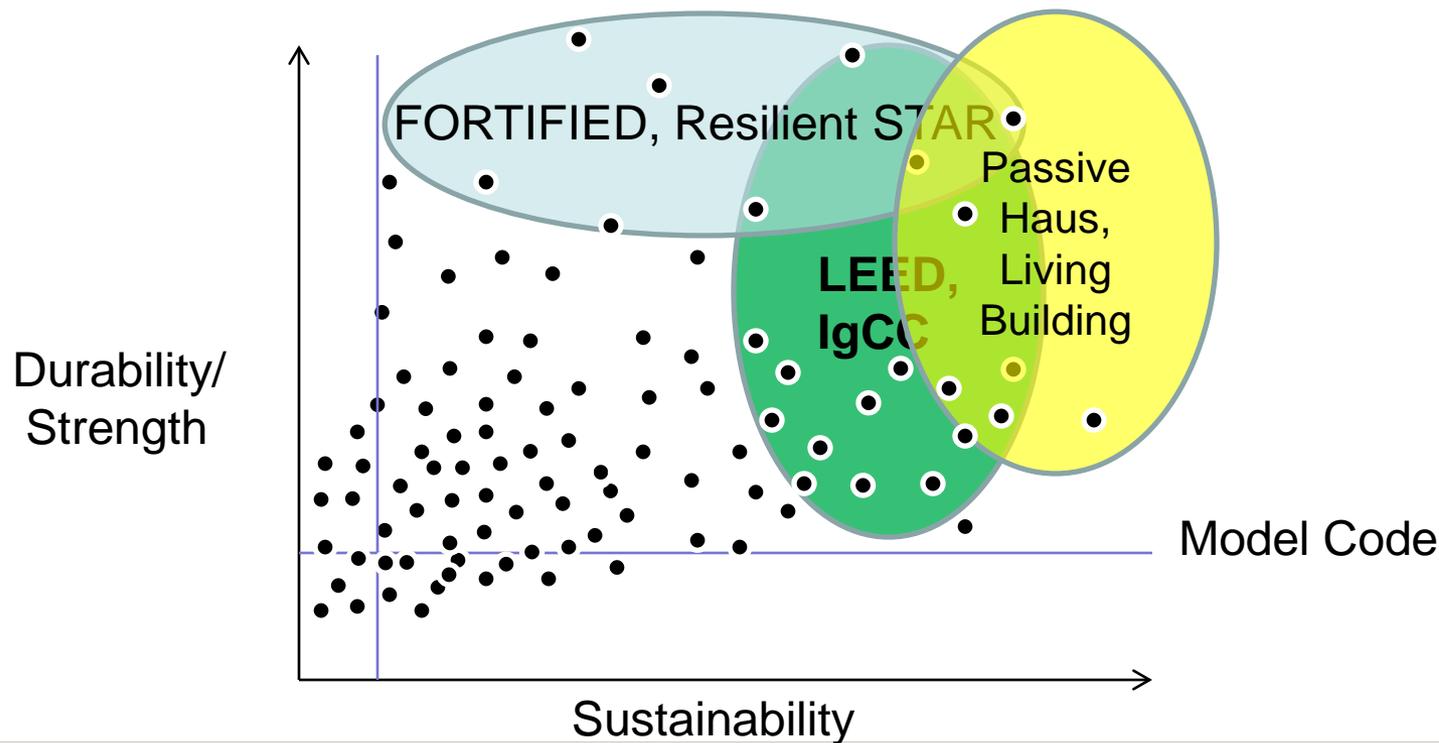
- “Disaster-related losses are increasing across all regions, threatening the economies of low- and middle-income countries as well as outpacing wealth gains across many of the world’s more affluent nations.”  
-UN Report on Disaster Risk Reduction

# Resilient to What?

- Risk = Hazard \* Vulnerability \* Exposure
- $R = H * (V / Resilience) * E$
- Risk can be quantified, but it's "fuzzy." It has uncertainty and the results are within a given range.

# Construction Practices Today

- “Modern building codes are not what we would call inadequate, but they are kind of a bare minimum.”
  - Rakesh Gupta; Oregon State Wood Engineering & Mechanics

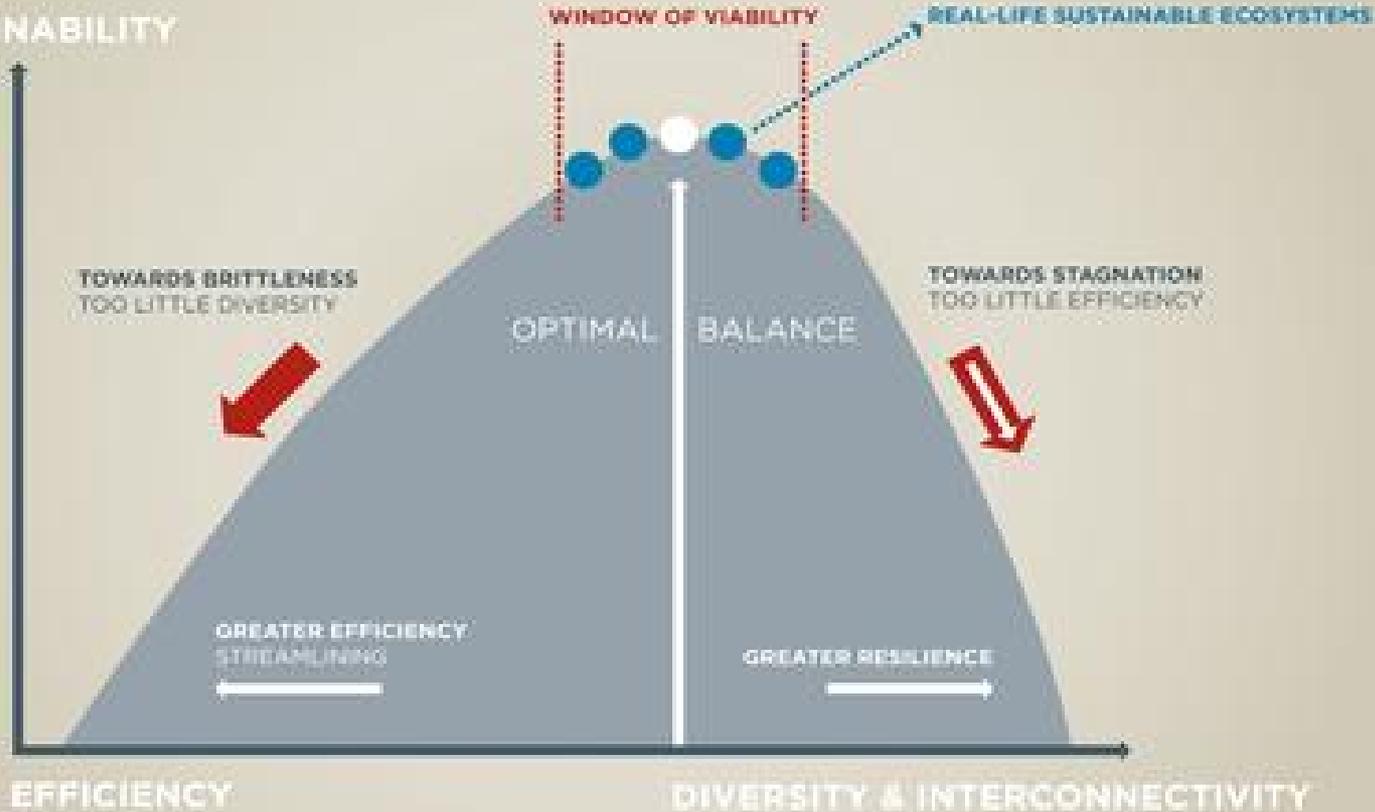


# The Fundamental Challenge

- Resilient Systems are diverse and redundant
- Efficient Systems are focused and eliminate redundancy

# RESILIENCE V EFFICIENCY

SUSTAINABILITY



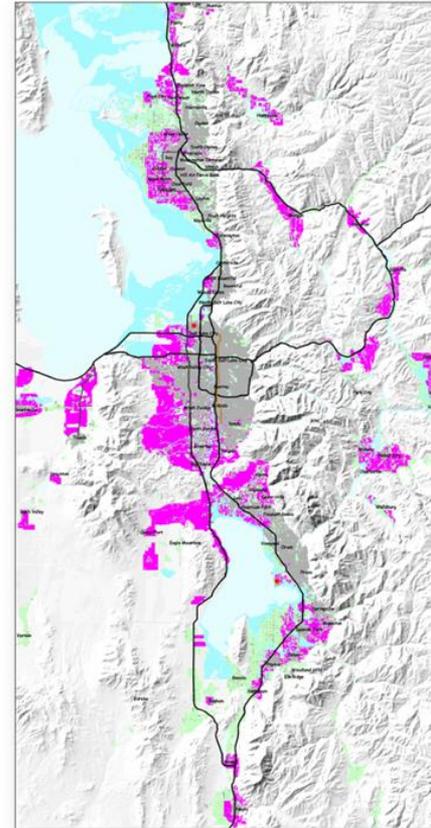
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# Recommendations

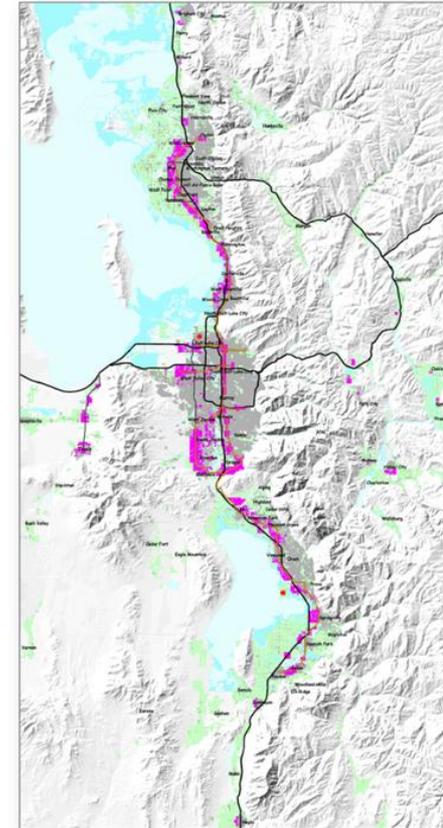
- The role of government is to ensure that a given system does not skew too far toward efficiency in the short term, increasing the risk of collapse in the medium to long term.

# Recommendations

- Reform Infrastructure Planning & Finance
  - Encourage Comprehensive, Scenario Planning. (Sec 134 and 135 of MAP-21)
  - Infrastructure Bank



Scenario A  
Auto-Oriented



Scenario D  
Transit-Oriented

# Recommendations

- Safe Building Codes Incentive Act (HR 1878; S 924)
  - Stafford Act provision would provide an incentive for states to adopt and enforce model building codes
  - Only 15 states currently meet the requirements

# Recommendations

- Home Stewardship > Home Ownership
  - PACE, Green Mortgages, other programs that utilize on-bill payback to encourage holistic design

# Recommendations

- FEMA Pre-Disaster Mitigation Grant Program, Hazard Mitigation Program



# POST-SANDY

# INITIATIVE

**Building Better,  
Building Smarter:  
Opportunities  
for Design  
and Development**  
*May 2013*

16'7" Projected Year 2080 Flood Height with Sea Level Rise

14'5" Projected Year 2050 Flood Height with Sea Level Rise

14' Post-Sandy Advisory Base Flood Elevation with Residential Freeboard

13' 2012 Sandy Surge Level

12' Post-Sandy Advisory Base Flood Elevation

8'10.8" Pre-Sandy Base Flood Elevation

8' Nominal Ground Level

0' Sea level datum NAVD 88

Learn from the last disaster

[www.postsandyinitiative.org](http://www.postsandyinitiative.org)

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