**AGENDA**

THE AFTERMATH

RESILIENCE DEFINED

USRC

CASE STUDIES

INCENTIVES

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**THE AFTERMATH**

1. THE AFTERMATH

   - According to Verisk Insurance Solutions, 4.5 million U.S. homes are at high or extreme risk of wildfire, with more than 400,000 in California alone.

   - 2017 was a particularly bad year with over 150,000 homes destroyed and $19 billion in losses in the U.S. over the past five years.

   - 2017 was the costliest wild fire season in U.S. history.

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**THE AFTERMATH - COST OF WILDFIRES**

According to Verisk Insurance Solutions, 4.5 million U.S. homes are at high or extreme risk of wildfire, with more than 400,000 in California alone.

- Average losses from major fire seasons (since 2015) have been $19 billion in the U.S. over the past five years.

- 2017 was a particularly bad year with over 150,000 homes destroyed and $19 billion in losses in the U.S. over the past five years.

- 2017 was the costliest wild fire season in U.S. history.
WILDFIRE RISK

U.S. Wildfire Risk

BILLION-DOLLAR DISASTER EVENTS ON THE RISE

Billion-Dollar Disaster Events by Year (CPI-Adjusted)

COST OF BILLION-DOLLAR DISASTER EVENTS

Concentrated Wealth

For example, while California’s Los Angeles County accounts for only 2.5% and Florida’s Miami-Dade County accounts for only 1%. of their respective states land area, they contain 30% of their states property value.

These changes in concentration of population and property values are significant contributors to this phenomenon. California and Florida are two of the most concentrated wealthy states in the country, and both have experienced a significant increase in the number of billion-dollar disaster events.

NEED FOR MITIGATION

Disaster is a signal of the failure of a society to adapt to its new environment.
WHAT IS RESILIENCE?

There are several definitions of resilience. The Urban Land Institute (ULI) defines resilience as “the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.”

Basically, addressing changes in the environment, whether the changes are natural or man-made, requires actions to mitigate their negative effects and adapt to those changes.

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

NBS undertook a study in 2017 to quantify the value of designing buildings to exceed the 2015 IBC or IRC for hazards including riverine flooding, hurricane surge, wind, earthquakes, and wildfires with the objective of reducing losses.

Results revealed that for every dollar spent on building above code, the amount of money saved ranged from $4 to $7 depending on the hazard.

CASE STUDY: STORM SURGE
THE SUNDBERG RESIDENCE, PASS CHRISTIAN, MS

When Hurricane Katrina slammed into the coastal counties of Mississippi with sustained winds of 125 mph and a storm surge that reached 28 feet, the only house to survive along the beachfront of Pass Christian, Mississippi, was the Sundberg residence.

CASE STUDY: HURRICANE MICHAEL, MEXICO BEACH, FLORIDA, OCT 2018

“I'm a fan of concrete construction,” Dr. Lebron Lackey, owner

Resilience Expressed as Functionality

Bruneau, 2003 and McDaniels, 2008

March 10, 2020

Promoting Concrete's Resilience

US Resilience Council

Why Safer Structures
Protect and Promote Social and Economic Vitality

March 10, 2020
Sustainability has largely been defined in terms of carbon. Carbon footprint calculations are not always a reflection of the true impact on the environment.

Green design is not delivering on the sustainability promise. "Disaster Resilience is a National Imperative." - National Academies of Sciences, Engineering, Medicine.

Green buildings continue to be the focus of most "sustainable design." But disasters still typically cost more than $100 billion per year and claim tens of thousands of lives.

"Design Level and Max. Credible Events" only 2 buildings collapsed, 50% of buildings in downtown had to be demolished.

Resilience is different than "Green Design." LEED certified buildings in Superstorm Sandy were designed to have a low impact on the environment... but not for the environment to have a low impact on them.

Resilience is Different than "Green Design.

Consequences of Miscommunication.

Christchurch Earthquake, NZ – 2010 & 2011

"Design Level and Max. Credible Events"

50% of buildings in downtown had to be demolished

Only 2 buildings collapsed.

Were expectations met? Depends on who you ask!

Trends Toward Resilience

Community insurance ratings

Resilience San Francisco

Resilient New Orleans

Resilient San Francisco

Buildings As Part of A Resilient Community

USRC

Building stock performance

Natural hazards

Residential recovery

Healthcare

FEMA recovery planning

Emergency services functionality

Financial infrastructure

Residential recovery

Community insurance ratings

Emergency planning

Transportation

Emergency planning
Every Day Rating/Ranking Systems

VISION
- A world in which people have the information they need about how buildings will perform in natural disasters

MISSION
- Educate, advocate, and organize to promote better tools for assessing and communicating building performance
- Implement rating systems that describe the performance of buildings during natural disasters

ROLES AND RESPONSIBILITIES
- Educate the public to increase market demand for better performing buildings.
- Develop consensus among diverse stakeholders and technical experts.
- Promote integrity, stability, consistency and transparency of rating systems.

US Resilience Council

Members
- Engineering companies
- Architects
- Professional organizations
- Industry suppliers
- Builders
- Software firms

SAFETY
- Blocking exit paths unlikely
- Serious injuries unlikely
- Loss of life unlikely

DAMAGE
- Isolated loss of life

RECOVERY
- Minimal Damage (<5%)
- Moderate Damage (<10%)
- Significant Damage (<20%)
- Substantial Damage (<40%)
- Severe Damage (40%+)

Immediate to Days
- Within days to weeks
- Within weeks to months
- Within months to a year
- More than a year

CASE STUDY: 4-Story Mixed-Use Civic Building

INCREASING COMMUNITY RESILIENCE

© USRC, 2020
Case Study: 9-Story Affordable Housing

**ADDITIONAL RESILIENCE COST:** 0.24%

**Safety:**
- Conditions unlikely to cause injuries

**Damage:**
- The mean repair cost is less than 10% of building replacement cost.
  - The median recovery time to regain basic function is less than one month.

**Recovery:**
- The median recovery time to regain basic function is less than one month.

Case Study: CA State Office Building

**USRC RATING WAS AN ENHANCEMENT IN RFP THAT IMPROVED BIDDERS’ SCORE**

**Safety:**
- Conditions unlikely to cause injuries or to keep people from exiting the building.

**Damage:**
- The mean repair cost is less than 5% of building replacement cost.

**Recovery:**
- The median recovery time to regain basic function is less than one week.

Case Study: 5-Story Office Building

**STIFFER BUILDING REDUCED REQUIRED GAP BETWEEN ADJACENT BUILDINGS, INCREASING RENTABLE SPACE THAT PAID FOR THE COST OF ADDITIONAL STEEL**

**Safety:**
- Conditions unlikely to cause injuries

**Damage:**
- The mean repair cost is less than 10% of building replacement cost.

**Recovery:**
- The median recovery time to regain basic function is less than one month.

Case Study: Seismic Retrofit – Portland, OR

**RETROFITTING BRICK BUILDINGS REMOVES PUBLIC STIGMA**

**Safety:**
- Conditions unlikely to cause death.

**Damage:**
- The mean repair cost is less than 20% of building replacement cost.

**Recovery:**
- The median recovery time to regain basic function is less than six months.

Case Study: Seismic Retrofit

**Community Design Guidelines**

- Housing
- Fixed
- Architectural
- Schools

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3/9/2020
**Resilience Incentives - Reduced insurance rates**
More resilient buildings = Less insurance risk, lower loan default rates

**Resilience Incentives - Expedited permitting**
More resilient buildings = More resilient cities

**Resilience Incentives - Property tax waivers**
More resilient buildings = Property tax security, less disaster aid

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**FIRING WITH BOTH BARRELS – A STRATEGY FOR RESILIENCE**

- Understand the place that buildings have in community, corporate and family resilience
- Quantify the social and economic returns of resilient design to all stakeholder groups
- Expand LCA to consider the reduction in Nat Cat impacts from resilient design
- Calculate expected building costs to achieve higher performance levels

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**HOW DO YOU GET INVOLVED?**

- Explain to your clients the difference between green and resilient design – social and economic benefits
- Talk about how USRC ratings can quantify DAMAGE and RECOVERY TIME – protect your investment and your business
- Discuss incentives that are being developed for USRC rated buildings – see immediate ROI
- Offer USRC ratings for project you build – concrete contractors gain marketing PR
Thank You!

For more information on The USRC, Ratings and Membership

www.usrc.org
www.usrc.org/membership

Questions?

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