Building Resilience

DOE Energy Code Conference
May 30, 2019

Amy Schmidt
Construction Policy Manager,
DuPont Safety & Construction
Board of Directors, Alliance for National & Community Resilience
Why Resilience?

1980-2018 Year-to-Date United States Billion-Dollar Disaster Event Frequency (CPI-Adjusted)
Event statistics are added according to the date on which they ended.

1980-2018 Year-to-Date United States Billion-Dollar Disaster Event Cost (CPI-Adjusted)
Event statistics are added according to the date on which they ended.
## Benefit Cost Ratios by Hazard and Mitigation Measure

<table>
<thead>
<tr>
<th></th>
<th>Overall Hazard Benefit-Cost Ratio</th>
<th>Exceed common code requirements</th>
<th>Meet common code requirements</th>
<th>Utilities and transportation</th>
<th>Federally funded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Riverine Flood</strong></td>
<td>4:1</td>
<td>5:1</td>
<td>6:1</td>
<td>8:1</td>
<td>7:1</td>
</tr>
<tr>
<td><strong>Hurricane Surge</strong></td>
<td>11:1</td>
<td>7:1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Too few grants</td>
</tr>
<tr>
<td><strong>Wind</strong></td>
<td>4:1</td>
<td>5:1</td>
<td>10:1</td>
<td>7:1</td>
<td>5:1</td>
</tr>
<tr>
<td><strong>Earthquake</strong></td>
<td>4:1</td>
<td>4:1</td>
<td>12:1</td>
<td>3:1</td>
<td>3:1</td>
</tr>
<tr>
<td><strong>Wildland-Urban Interface Fire</strong></td>
<td>4:1</td>
<td>4:1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>3:1</td>
</tr>
</tbody>
</table>
The Importance of Community-Level Resilience

Galveston Texas, Post-Ike

Manhattan, Post-Sandy

Mexico Beach, Post-Michael
A Holistic Approach to Resilience
A Holistic Approach to Resilience

www.resilientalliance.org
A Buildings Benchmark for Community Resilience

1. Adoption of Building Codes
2. Administration and Enforcement of Building Codes
3. Licensure & Continuing Education or Testing of Contractors
4. Mitigation of Highly Vulnerable Buildings
5. Mitigation and Design of Critical Facilities
6. Resilient Design
7. Disaster Response/Continuity of Operations Plans (COOPs)
8. Standards for Emergency Shelters
9. Financial Resources for Post-Disaster Recovery
The Energy/Resilience Nexus

- Energy Burdens
- Community Health
- Money in the Community
- Reduced Shelters
- Urban Heat Island
- Cascading Effects
- Passive Survivability
- Rot, Mold and Mildew
Energy Code Contributions to Resilience

**Durability**
Durability ensures home is livable for decades

**Moisture Management**
Rot, mold, mildew

**Fire Safety**

**Extreme Weather Protection**
Better envelopes Habitability – more lives saved

**Energy Efficiency**
Grid Stability Microgrids Energy Storage

Works in Tandem with Other Model Codes
A New Age for Resilience Policy

FEMA Mission: Helping people before, during, and after disasters.

I. BUILD A CULTURE OF PREPAREDNESS
   1.1 Incentivize investments that reduce risk, including pre-disaster mitigation, and reduce disaster costs at all levels
   1.2 Close the insurance gap
   1.3 Help people prepare for disasters
   1.4 Better learn from past disasters, improve continuously, and innovate

II. READY THE NATION FOR CATASTROPHIC DISASTERS
   2.1 Organize the "BEST" (Build, Empower, Sustain, and Train) scalable and capable incident workforce
   2.2 Enhance intergovernmental coordination through FEMA Integration Teams
   2.3 Posture FEMA and the whole community to provide life-saving and life-sustaining commodities, equipment, and personnel from all available sources
   2.4 Improve continuity and resilient communications capabilities

III. REDUCE THE COMPLEXITY OF FEMA
   3.1 Streamline the disaster survivor and grantee experience
   3.2 Mature the National Disaster Recovery Framework
   3.3 Develop innovative systems and business processes that enable FEMA’s employees to rapidly and effectively deliver the agency’s mission
   3.4 Strengthen grants management, increase transparency, and improve data analytics

FEMA Vision: A prepared and resilient Nation.
Incentivization Strategies (NIBS)

**Costs**
- Risk Analysis/Evaluation Cost
- Construction and Maintenance Cost
- Appraisal Cost
- Underwriting Cost
- and others

**Avoided Losses in Case of Disasters**
- Property damage & repair and content loss
- Causalities, Injuries, PTSD
- Additional living expenses
- Direct Business Interruption
- Indirect Business Interruption
- Environmental
- Public Service

**Beneficiaries**
- Private Sector/Consumers (home owners, business owners, utilities)
- Financial Institutions
- Insurance
- Public Sector (federal, state, county, community, etc.)
An Emerging Resilience Issue: Designing for Future Risk
Resilience Opportunities For Energy Entities

• Continued advances in energy storage, renewables
• Support for microgrids and islanding
• Facilitate distributed generation
• Preparing buildings & industrial facilities to be good grid-citizens
• Advance zero energy [buildings, communities, campuses, portfolios]
• Examine evolution to DC-power
• Conduct interdependencies analysis
• Talk about the energy/resilience nexus
• Participate in code development and adoptions
• Encourage policymakers to think holistically (infrastructure, DRRA, etc.)
Questions?

Amy Schmidt
Construction Policy Manager, DuPont Safety & Construction
Board of Directors, Alliance for National & Community Resilience
989-513-2169
Amy.j.schmidt@dupont.com
ANCR@resilientalliance.org
iccsafe.org • resilientalliance.org
@ANCResilience