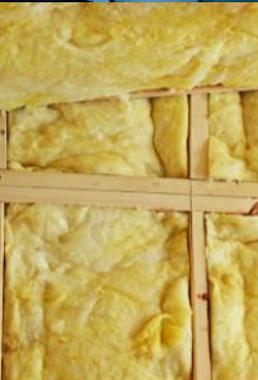


DOE Zero Energy Ready Home

Tech Training Webinar Series

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Going Green and Building
Strong: Building a FORTIFIED
Home – Part I



The Home of the Future....Today



Website

- www.buildings.energy.gov/zero/
- Events:
 - Upcoming in-person ZERH Trainings
 - Technical Training webinars
 - Conference Presentations
- Partner Locator
- Program Specifications
- Webinar Recordings



Building America Solution Center

- <http://basc.pnnl.gov/>

Thank You



For More Information:

www.buildings.energy.gov/zero

Email:

zero@newportpartnersllc.com



Going Green and Building Strong: Building a FORTIFIED Home™ Part 1

Fred Malik, Director of FORTIFIED
Programs

June 5, 2014



DOE Challenge Home Value

- > Energy Prices
- > Energy Efficiency
- > Builder Risk
- < Health Concerns
- < Renewable Cost
- > Water Crisis
- < Water Flow
- > Extreme Weather
- > Disaster Risk
- > Innovation
- > Informed Buyers
- > Hsg. Stock Age

Lives Better
Engineered Comfort
Healthier Living
Solar Ready
Long-Term Warranty

Works Better
Ultra-Low Utility Bills
Advanced Technology
Water Efficient
Black-Out Power

Lasts Better
Quality Construction
More Durability
Disaster Resistant
Lower Cost Insur./Mort.

Building a FORTIFIED Home™ :

Part 1 - Why build FORTIFIED

- Who is IBHS?
- Definitions
- Why FORTIFIED?
- Building and Wind Interactions



Building a FORTIFIED Home™ :

Part 2 – How to build FORTIFIED

- **Technical Requirements Overview**

- Most Vulnerable Systems
- Different Standards for Different Risks
 - Hurricane - Coastal
 - High Wind – Inland
 - High Wind & Hail – Inland
- FORTIFIED Home™ Upgrades
- Keys to Success

- **Recognition**





IBHS Mission:

“To conduct objective, scientific research to identify and promote effective actions that strengthen homes, businesses, and communities against natural disasters and other causes of loss.”



IBHS Research Center



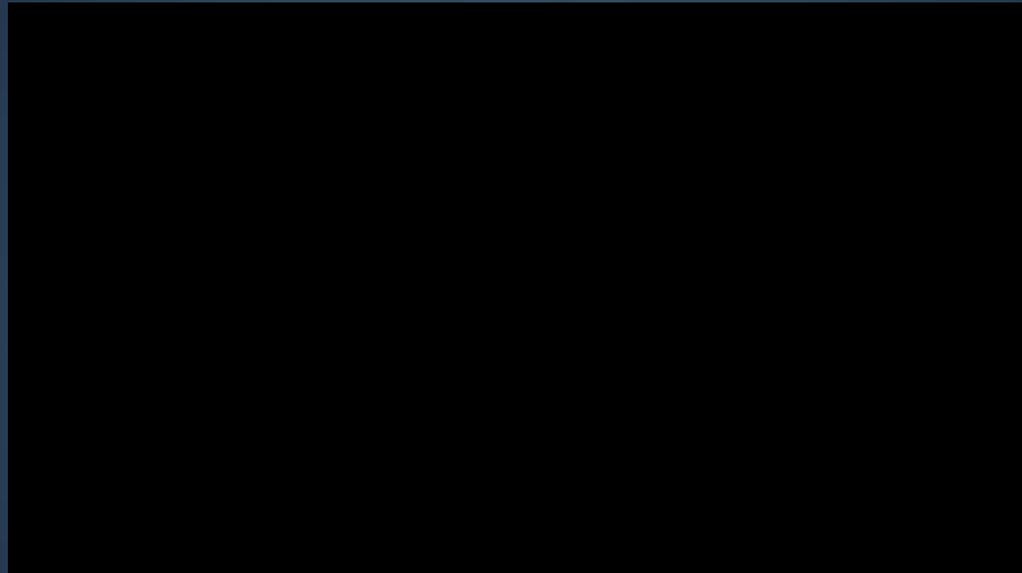
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© Insurance Institute for Business & Home Safety



IBHS Campus



IBHS – High Wind



What is Resilience?

The strengthening of residential dwellings and commercial properties to minimize the destruction of personal property and to minimize loss of use post catastrophe.

What Does “Built to Code” Mean?

- A home built in accordance with local ordinances (if any). The minimum legal standard.
- **The challenge:**
 - No value or meaning for consumers
 - Consumers think “built to code” same everywhere
 - Hard to differentiate between other new homes and less expensive existing homes.



What is FORTIFIED?



Cost effective, **consistent, definable, verified**
severe storm protection system upgrades
that protect property and **deliver meaningful**
value.

Systems Based Approaches vs. À La Carte

- À la carte approaches encourage the selection of individual components to achieve a score/credit. **Score, first; Performance second.**
- Without adequate resilience, risk of loss can be significant even in low intensity events.
- System based approach used in FORTIFIED **seeks to mitigate all** of the components that make up vulnerable assemblies.



Dealing with Natural Disasters

Traditional Paradigm: Response



Walt Jennings/FEMA

Prediction, Modeling and Alerts



Hurricane Sandy
 Friday October 26, 2012
 11 AM EDT Advisory 17
 NWS National Hurricane Center

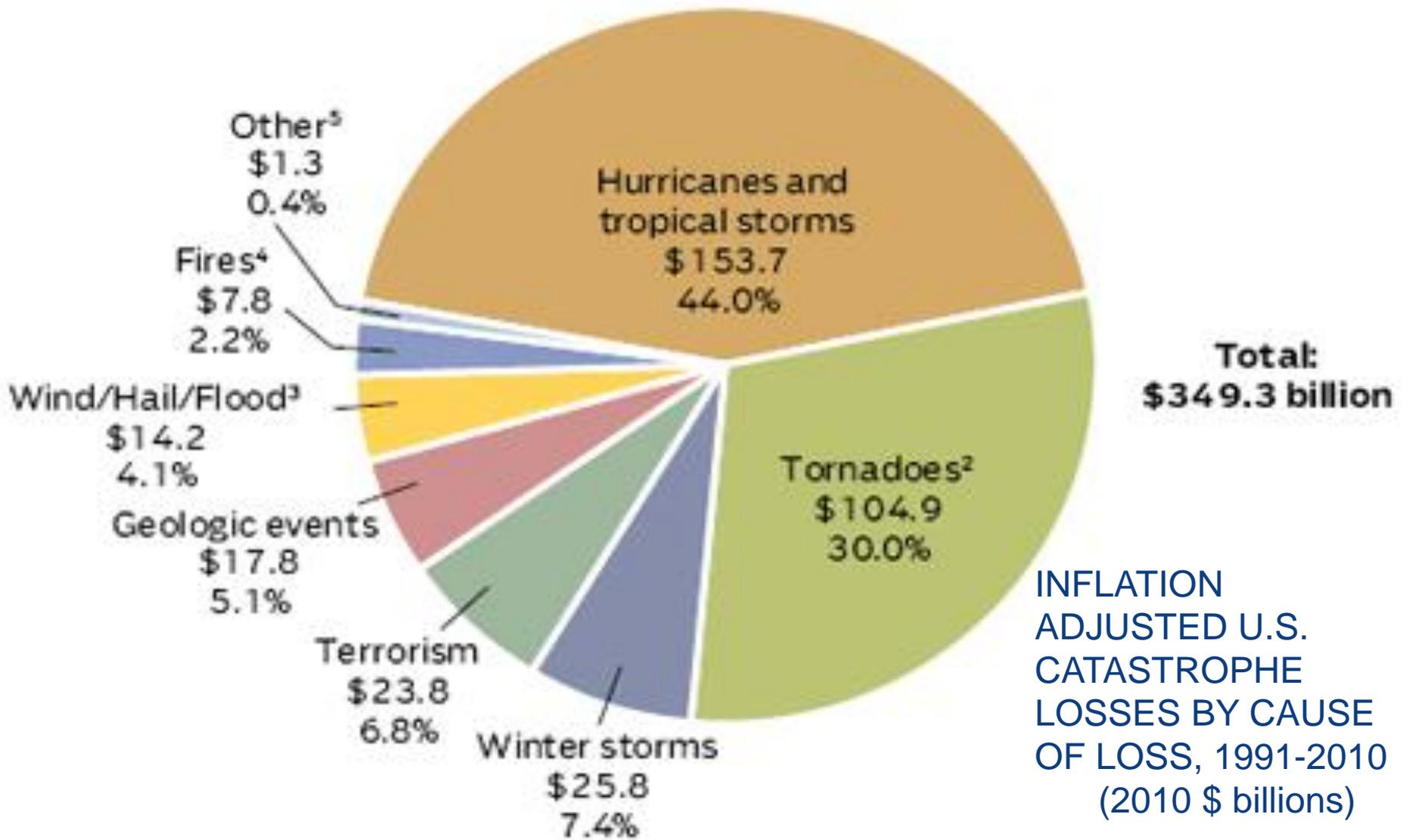
Current Information: ●
 Center Location 26.7 N 76.9 W
 Max Sustained Wind 80 mph
 Movement N at 6 mph

Forecast Positions:
 ● Tropical Cyclone ○ Post-Tropical
 Sustained Winds: D < 39 mph
 S 39-73 mph H 74-110 mph M > 110mph

Potential Track Area:
 Day 1-3 Day 4-5

Watches:
 Hurricane Trop.Storm

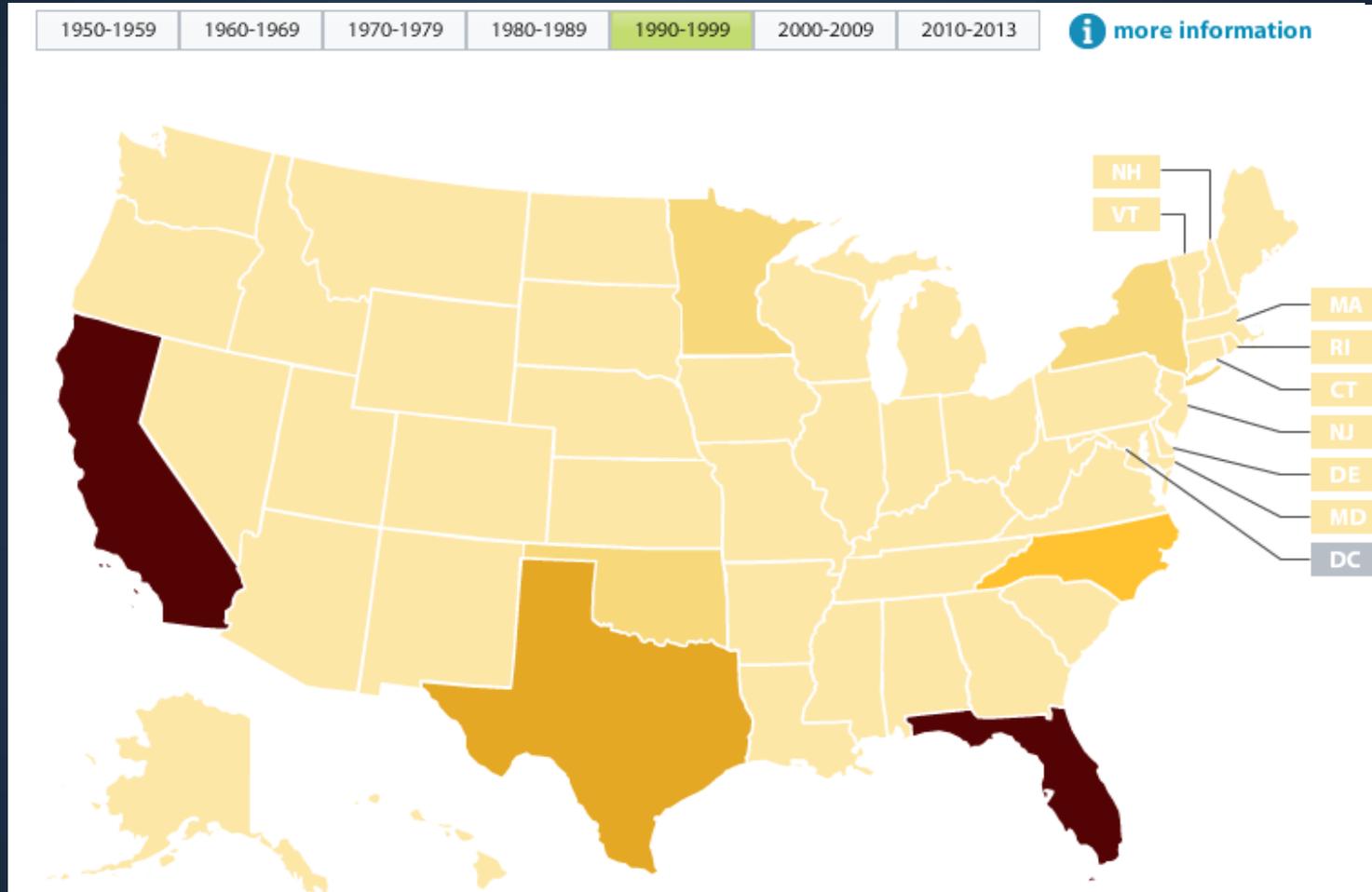
Warnings:
 Hurricane Trop.Storm



Source: The Property Claim Services (PCS) unit of ISO, a Verisk Analytics company.



The Financial Effects of Natural Disasters



Source: The Property Claim Services (PCS) unit of ISO, a Verisk Analytics company.



Wind Storm Demonstrations

October 2010



FORTIFIED in the Real World



© Insurance Institute for Business & Home Safety



Post-Hurricane Ike / Bolivar, TX FORTIFIED for Safer Living® Homes



Where Resilience and Sustainability Overlap

DOE Challenge Home Value

- > Energy Prices
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Lives Better
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Advanced Technology
Water Efficient
Black-Out Power

Lasts Better
Quality Construction
More Durability
Disaster Resistant
Lower Cost Insur./Mort.

Where Resilience and Sustainability Overlap



- DOE ZERH/
Sustainability
 - Immediate return
in energy savings
and comfort.



Where Resilience and Sustainability Overlap



- Strong Building/
Resiliency
 - Long term return
by lengthening the
life of the
structure.



Where Resiliency and Sustainability Overlap



- There is nothing sustainable about a home that ends up here.



FORTIFIED Home



The National Standard for
Resilient Construction



FORTIFIED Home™



Severe Storm Protection Systems

Hurricane



FORTIFY Roof and Attic Ventilation System



FORTIFY Openings, Gables and Porches



FORTIFY Structure (CLP) and Chimney

High Wind and Hail



FORTIFY Roof

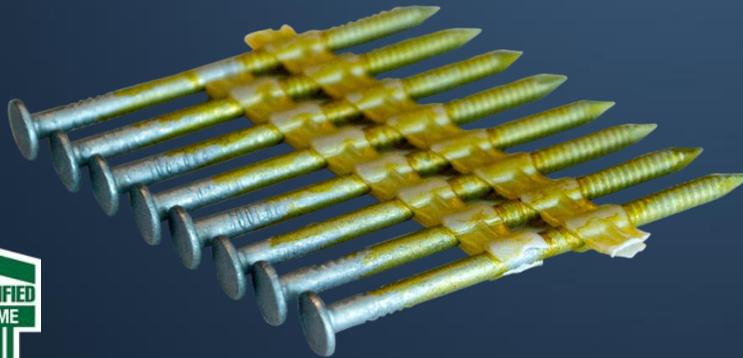
FORTIFY Gables, Porches, Carports and Chimneys

FORTIFY Garage Doors and Structure (CLP)

Location and Design Wind Speed are key determining factors in deciding which standard(s) apply.



...Because Little Things Matter



FORTIFIED Home™ Project Cost



©Insurance Institute for Business & Home Safety



Water Intrusion Highlights



Sealed Roof Deck Demonstration



© Insurance Institute for Business & Home Safety

**Sealed roof deck
damage estimate**

\$5,408^{.59}

**Unsealed roof deck
damage estimate**

\$16,935^{.23}



Program Basics

- Independent Verification is Required
 - Certified FORTIFIED Home Evaluator
- Cost
 - Inspection – varies by evaluator
 - Upgrades – if applicable, varies by what is needed
- Designations valid for 5-years
- Automatic reminders sent to registered owner prior to designation expiration
- Re-designation focuses on the roof, requires evaluation by certified FORTIFIED Home Evaluator



Critical to Success

Documentation

- Pictures
- Product Information
 - Labels
 - Data sheets
 - Testing Reports
- Compliance Forms

Involvement of Professional Engineer

- For levels ABOVE bronze
- Compliance Letters from both an engineer and contractor
 - Gable Bracing
 - Porch Load Path
 - Chimney Construction
 - Primary Structure CLP



FORTIFIED Home



Business Case

The Challenge...

- Consumers make purchasing decisions with incomplete information.
- Consumers value what they can see more than what they cannot.
- Consumers need an objective way to compare alternatives.



The Challenge continued

Nearly 1 in 3 consumers indicated they

do not trust

home building and real estate companies.

Source: The business of Trust – The Most Trusted Builders in America,
Lifestory Research, January 2013



FORTIFIED Home: Benefits to Builder

Build trust with customers

Independent Verification that key features of the home are built to severe storm protection



Protection for What is Priceless

- What makes your house a home?



FORTIFIED Home: Benefits to Builder

Differentiation and Recognition

Sell value not price

Be an expert

Stronger value proposition than competition (including foreclosures and short sales)



FORTIFIED Home: Benefits to Builder

Use the FORTIFIED Home™ mark



SELECT ONE:

- BRONZE
- SILVER
- GOLD

This home has been verified to meet FORTIFIED Home™ strict requirements for resilience.

FORTIFIED ID: _____

DESIGNATION DATE: _____ EXPIRATION DATE: _____

EVALUATOR: _____

WWW.DISASTERSAFETY.ORG/FORTIFIEDHOME



Gold

This designates that the residence located at

1234 Sample Street
Tampa, Florida 33617

has been awarded a
FORTIFIED Home: Hurricane
designation on
8/08/2013

Fred C. Malik
Fred Malik, FORTIFIED Program Manager

NEW ROOF

FORTIFIED ID: FEH201303361701000
DESIGNATION EXPIRES ON 4/1/2018

A program of the Insurance Institute for Business & Home Safety



FORTIFIED Home: Benefits to Builder

Point of Sale Collateral

Captivating imagery

Use Demonstration Videos to
Create a Sales Opportunity



FORTIFIED Home: Benefits to Builder

Control the process

Know the homes you build meet rigorous resilience standards

Homeowners are having new homes evaluated after closing



FORTIFIED Home: Benefits to Builder

Growing Demand

Expanding media coverage

1000s of evaluation requests

FORTIFIED homes in 16 states

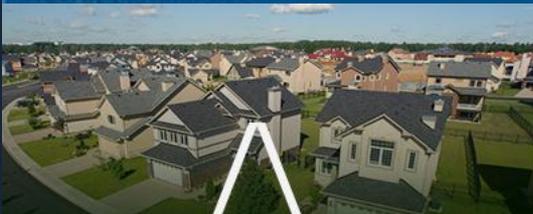


Who is using FORTIFIED?



Wind Retrofit Guide for Residential Buildings

FEMA P-804 / December 2009



Resilience STAR

Standards for a **stronger, safer** tomorrow.

DisasterSafety.org/FORTIFIED/Resilience-STAR/



HURRICANE SANDY
REBUILDING
STRATEGY

Stronger Communities, A Resilient Region



August 2013



Regulatory Incentive Programs

© Insurance Institute for Business & Home Safety



FORTIFIED Home



Building and Wind Interactions



The key difference in the performance of these homes is knowing what to focus on, and when.

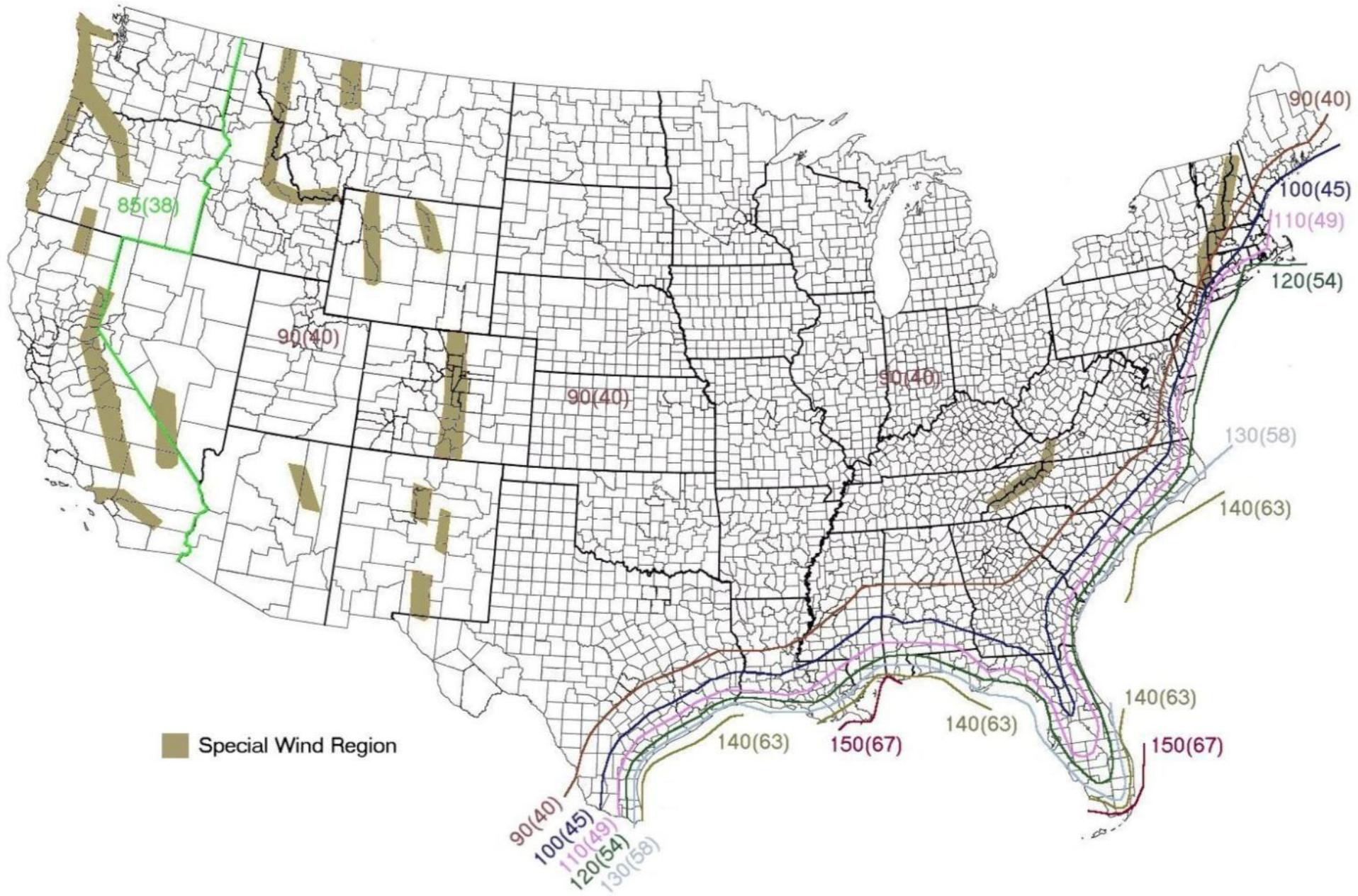


Wind Load Design

1. Basic Wind Speed—Where is the House Located?
 - a) Windspeed Maps
2. Exposure Category—Area Surrounding Site
3. Building Height and Roof Slope
4. Location relative to Terrain Features



Gust Wind Speed ASCE 7-05



Building and Wind Interactions

- Critical to understand that a home resists the forces associated with high winds as a system
- All elements of the severe storm protection systems must be adequately designed and built.



Overview of Wind Action and Effects

- Wind exerts **pressures** on all exposed surfaces of the building and can affect the internal pressure in the building.
- **Wind speed** and **Exposure Category** used to determine **Wind loads** (both positive and negative) that need to be considered.

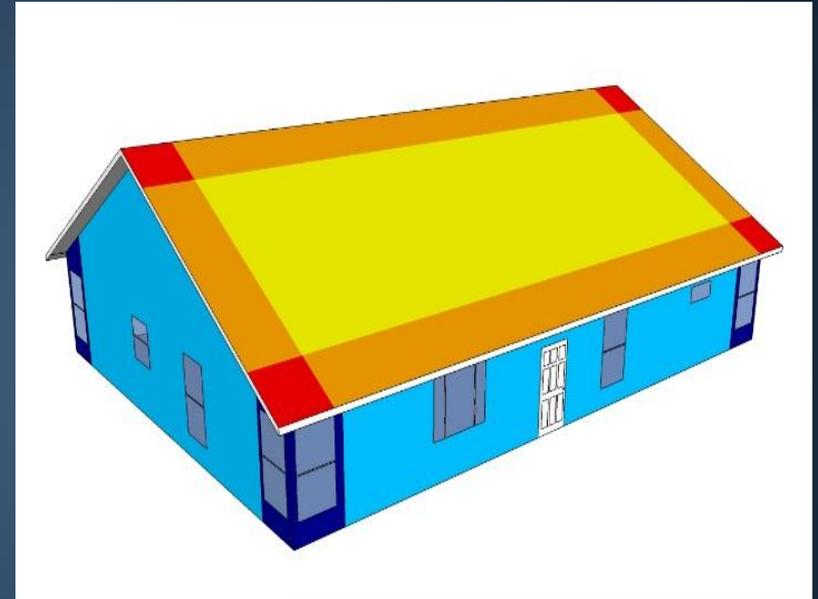


Wind tries to push, pull, spin and lift up the home as it moves around the building



Pressure Zones on a typical building

- Generally, the darker the color to the right, the higher the pressure.
- Red = Highest on the house (Zone 3)
- Dark Blue = Highest on the wall (Zone 5)



Positive and Negative C & C Pressures for Each Zone on the Example House

Wind Zone	Location	Negative Pressure	Positive Pressure
1	Roof Interior	-27.8	17.5
2	Roof Edge	-48.4	17.5
3	Roof Corner	-71.6	17.5
4	Wall Interior	-33.0	30.4
5	Wall Corner	-40.7	30.4

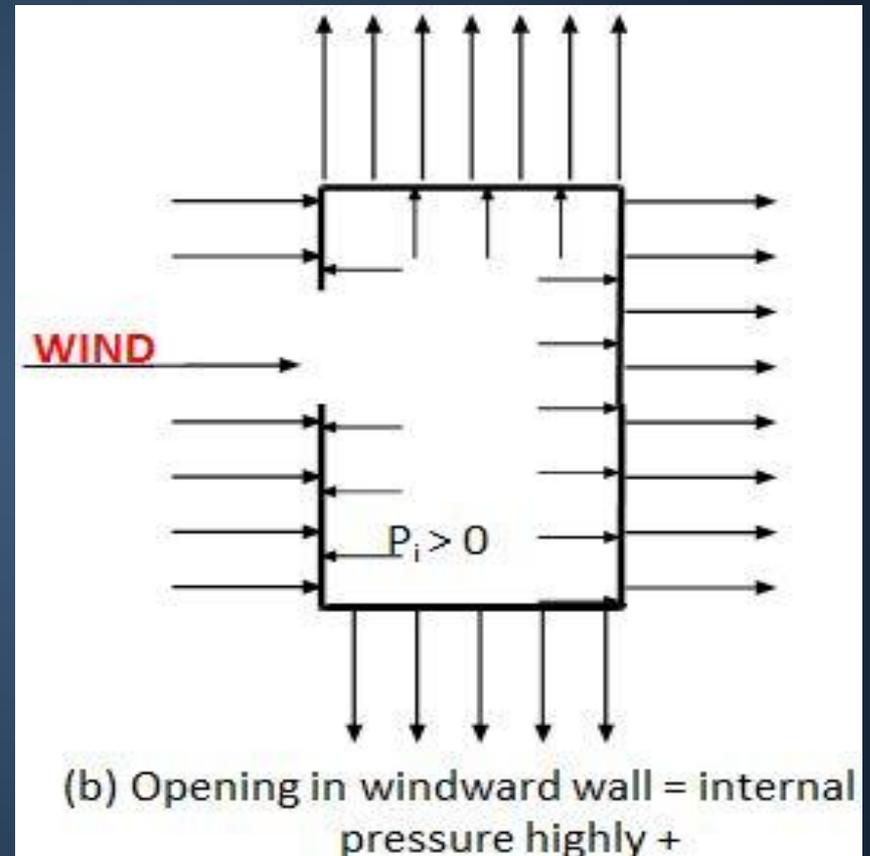
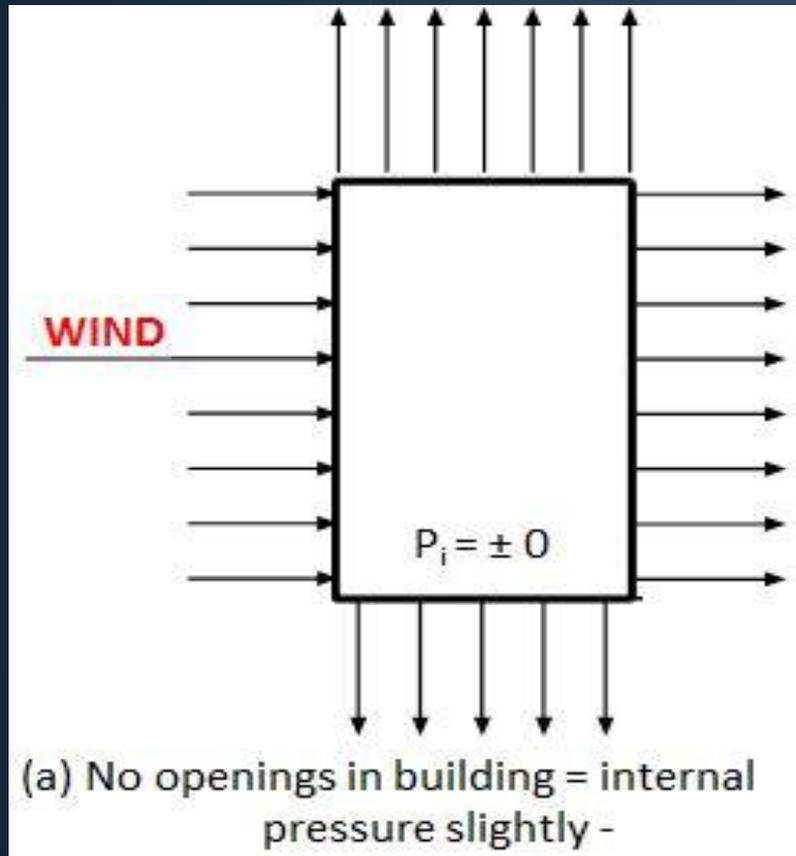


Internal Pressure

Figure 3-21

22

Figure 3-



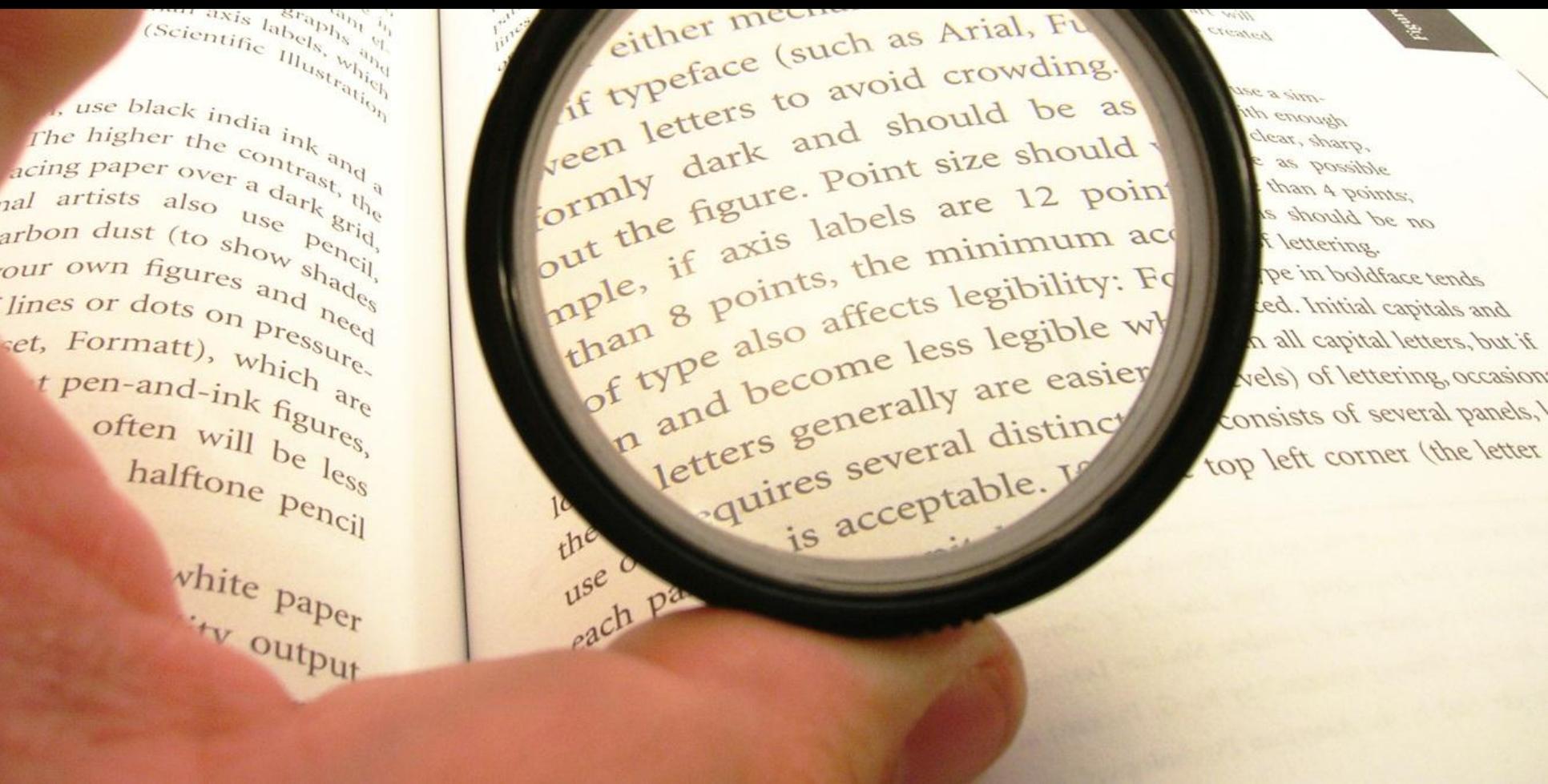
IBHS High Wind Demonstration



How Can You Become Involved?



Help Bring Clarity and Focus to the Resilience Movement



What can you do, now?

Commit to building FORTIFIED

Download standards, guides and fact sheets for FREE at

www.disastersafety.org/fortified/home



Get Trained

Evaluator Training

Contractor/Builder Training

Coming this Fall ...

Become a
FORTIFIED-Wise
Contractor

Insurance Institute for Business & Home Safety
Where building safety research leads to real-world solutions.

Risks FORTIFIED Commercial Public Policy Research Media Center Blog Videos Members-only

FORTIFIED » FORTIFIED Home™ Evaluator Training

FORTIFIED Home™ Evaluator Training

[CLICK HERE FOR TRAINING REGISTRATION DETAILS](#)

FORTIFIED Home™: Hurricane is a high wind and hurricane mitigation program developed by the Insurance Institute for Business & Home Safety (IBHS). This innovative program is recognized as the premier standard for retrofitting existing and building new homes to reduce or repair damage caused by hurricanes.

IBHS has made a substantial investment in new technology that streamlines the program's evaluation and designation processes, among other things. Starting this fall, evaluations can be completed on your mobile device and no special tools are required.

[Program Handbook](#)

Next Training Dates:

2014

Evaluator Certification

- June 18 - IBHS Research Center, Richburg, SC
- August (Date to be announced) - Gulf Coast (Location to be determined)
- October 9 - IBHS Research Center, Richburg, SC

Train the Trainer

- June (Dates to be announced) - IBHS Research Center, Richburg, SC

SEATS ARE LIMITED

BECOME A FORTIFIED HOME EVALUATOR

Search DisasterSafety.org...

SHARE THIS

f t

Enter your ZIP Code below to discover the risks you face.

Search



Links & URLs

- Homeowner Application
 - <https://secure.fortifiedhome-ibhs.com/HomeOwner/Forms/HomeOwner/EvaluationRequest.aspx>

or

- <https://secure.fortifiedhome-ibhs.com/HomeOwner/>



Links & URLs (continued)

- FORTIFIED Home™ Fact Sheets
 - <http://www.disastersafety.org/fortified/home/fortified-home-fact-sheets/>
- FORTIFIED Home™ Standards, Summaries and Guides
 - <http://www.disastersafety.org/fortified/fortified-home-standards/>
- FAQs
 - <http://www.disastersafety.org/fortified/home/home-property-insurance-professionals/fortified-home-frequently-asked-questions-2/>



Thank You



disastersafety.org/fortified

facebook.com/buildfortified