Building with Resiliency – FORTIFIED

2020 Texas Community Development Conference

Julie Shiyou-Woodard and Warren Hopper

SMART HOME

SMART HOME
AMERICA

Before Hurricane Katrina

USGS

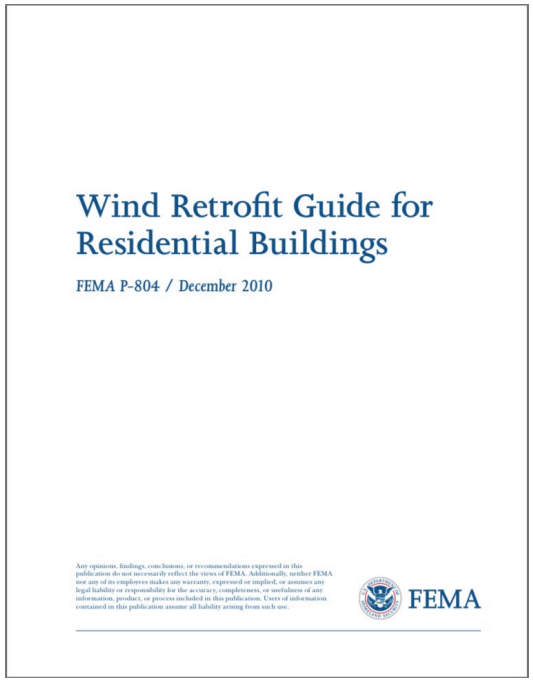
After Hurricane Katrina

FEMA

USDA

SBA

U.S. Small Business Administration

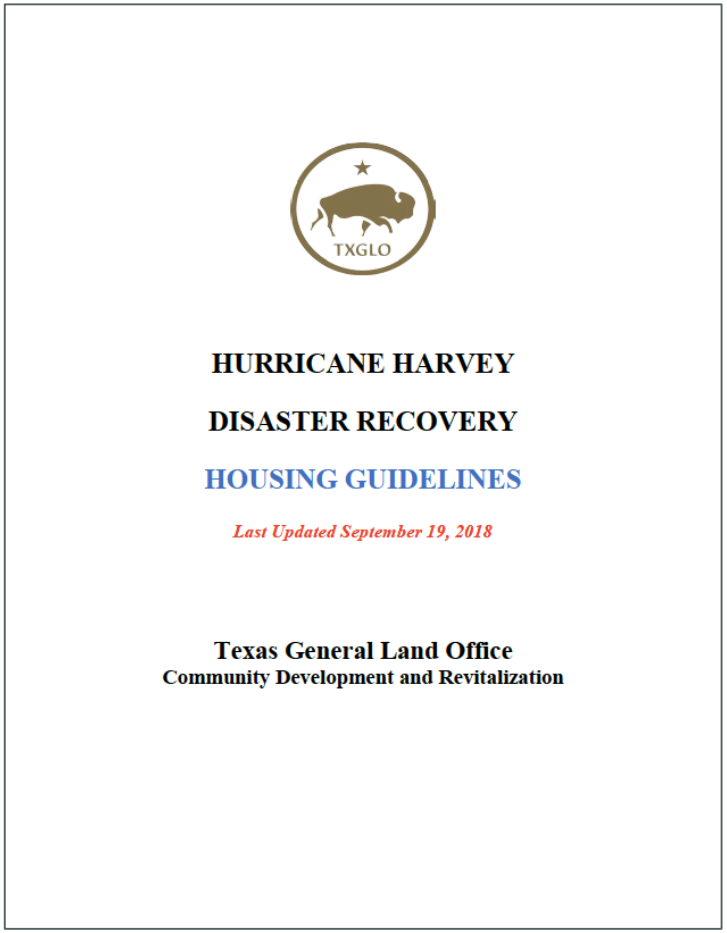


FEMA P-804 = FORTIFIED technical recommendations

P-804 ***does not*** include inspection requirements or a designation process.

**There are slight differences between the standards. Contact IBHS for info.*

SMART HOME AMERICA



3. PROGRAM DESIGN, F. Site and Development Restrictions, (4) Standards for: (b) Green Building Standards

A certificate of compliance issued as part of the chosen standard's compliance process will be required to be submitted as proof of compliance. Homes and multifamily homes in high wind and hurricane areas must also be built in compliance with FORTIFIED Home© standards or any other equivalent comprehensive resilient or disaster resistant building program. These standards also apply to rehabilitation projects that fall within the HUD definition of substantial rehabilitation.

3. PROGRAM DESIGN, F. Site and Development Restrictions, (6) Resilient Home Construction Standards

https://recovery.texas.gov/files/housing-guidelines-requirements-reports/harvey-housing-guidelines.pdf

SMART HOME AMERICA

	FORTIFIED Home™ Hurricane	FORTIFIED Home™ High Wind
FORTIFIED Roof	Roof and Attic Ventilation System	Roof System
Silver	Openings, Gables, and Attached Structures	Gables, Porches, Carports and Chimneys
Gold	Structure (CLP) and Chimneys	Garage Doors and Structure (CLP)

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

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Why Build to FORTIFIED?

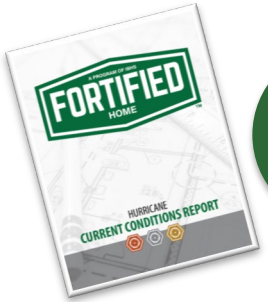
Reduce property damage and insurance claims

Protect business operations and livelihoods

Create win-win situation for business owners, their customers, insurance companies and society

Designation Process

1. Application
2. Evaluation
3. Review Current Condition Report
4. Take Action/Retrofits
5. Verify Retrofits/Designation



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Systems Evaluated - Commercial

Hurricane	High Wind
Roof	Roof
Building envelope, and electrical connections for backup power	Building envelope, and optional electrical connections for backup power
Key structural systems – load paths; provide on-site backup power for critical utilities	Key structural systems – load paths; provide on-site backup power for critical utilities

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

Designation Process

1. Review standards
2. Submit application
3. Work with IBHS third-party evaluator
   - Evaluator agreement
   - Compliance forms
   - Inspection
4. Compliance or designation packet issued

Letter of compliance- Summary Page

111 W. Washington St.
Suite1815
Chicago, IL 60602
Phone: (312) 223-1523

January 1, 2019

Joe Engineer
Joe's Engineering Company
123 ABC Road
Southeast Coast, Alabama
joe@engineeringco.com

Subject: Fortified Commercial (Hurricane or High Wind & Hail – Roof/Silver/ or Gold) - Compliance
Sample Project Name
Address
GRC File No.: 4041.XXXX

Dear Joe,

This letter summarizes the review of submitted documentation as well as on-site verification visits to ABC Project completed by GRC to confirm compliance with the Fortified Commercial Standards – (Peril and Level). Documentation provided to GRC for review included design and construction specifications, architectural & structural drawings, roof system design and installation requirements, as well as site photographs for the following location:

- ABC Project, 123 South Beach Street, Fairhope, AL 36532

Project Summary:

The submittals relate to a new two story condominium unit. A more detailed description of the submittals is included in the attached Supplement.

The purpose of this review is to establish whether the submitted documents and observed construction comply with the Fortified Commercial Standards.

We find the submitted documents and observed construction compliant with the **ROOF/SILVER/GOLD** level of the Fortified Commercial (Hurricane or High Wind & Hail) Standards.

This review and associated site surveys have been provided independent of IBHS and is not on their behalf. Any changes to the design or construction not in accordance with this review could jeopardize compliance with the standard. Please contact me if you have any questions.

Sincerely,

cc: IBHS Engineering

PROJECT DESCRIPTION:

Construction:

The 15,000 sq. ft. building is a two story ICF (insulated concrete form) structure with a roof slope of 4:12 although limited areas of the roof are sloped at 6:12.

Roof:

Wind Design:
Design is based on ASCE 7-05, ASD Design method with a minimum 2.0 safety factor. Design is based on a basic windspeed of 130 mph, a Risk Category of II, an exposure of C, and an Importance Factor of 1.0.

The determined pressures are:

Zone	qh (psf)	GCp+	GCp-	GCpi+	GCpi-	p1+ (psf)	p2+ (psf)	p1- (psf)	p2- (psf)
1	36.62	0.30	-0.80	0.18	-0.18	10.00	17.58	-35.88	-22.30
2	36.62	0.36	-1.35	0.18	-0.18	10.00	19.78	-56.04	-42.86
3	36.62	0.46	-2.69	0.18	-0.18	10.43	23.61	-97.92	-84.74
4	36.62	0.55	-1.05	0.18	-0.18	28.37	41.56	-45.22	-32.04
5	36.62	0.55	-1.31	0.18	-0.18	28.37	41.56	-54.55	-41.37

The roof deck is 23/32" PS-2 plywood secured to the framing using 10d ring shank nails installed into the structure at 4" on center. Framing is 24" on center. Submitted photographs indicate this spacing was adopted. Photographs also indicated that plywood boards were clipped to adjacent boards. The boards were overlaid with a self-adhered membrane, MFM Wind and Water Seal, which has passed ASTM D1970. This was followed by RhinoRoof underlayment.

The roof shingles are GAF Timberline HD shingles nailed with no less than 6 nails per shingle. These shingles have both Class F and H ratings per ASTM D7158, per publically available information. They have a UL Class A fire rating. Per photographs, a self-adhered starter strip was used at edges.

Drip edges are shown in photographs as being installed over the underlayment and as being nailed at 4" on center. Gutters and downspouts were noted to be designed to ANSI/SPRI GD-1. However, it is understood that extremely limited areas of gutter is installed.

Photographs show no vents in the gable overhangs.

No skylights, PV units or mechanical units are shown on the roofs.

Windows/Doors/Walls:

Windows are Andersen Corporation 400 series with maximum design pressures of no less than +70/-70 psf. Windows are missile rated (Large and small per Miami Dade NOA 13-0411.01).

Personnel doors are Andersen Corp A-Series Hinged outswing doors with pressure ratings of +65/-80 psf and are missile rated, Level D.

Exterior walls are insulated concrete form and have a core of reinforced concrete.

Flood:

FEMA panel 01003C0643L 7/17/2007 applies and locates the building outside the flood prone area.

Additional Structure Information:

Continuous Load Path:

The trusses are connected with two H-10 connectors and, between the trusses, the blocking is nailed to the deck and clipped. 5/8" anchor bolts secure them to the top of the wall. The ICF wall is connected to a poured in place lower wall connected by rebar to the foundation.

Power:

The submittal and the onsite visit confirms standby back-up power is installed with an automatic transfer switch.

FEMA

Disaster Recovery Reform Act (DRRA)

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FEMA

Building Resilient Infrastructure and Communities (BRIC)

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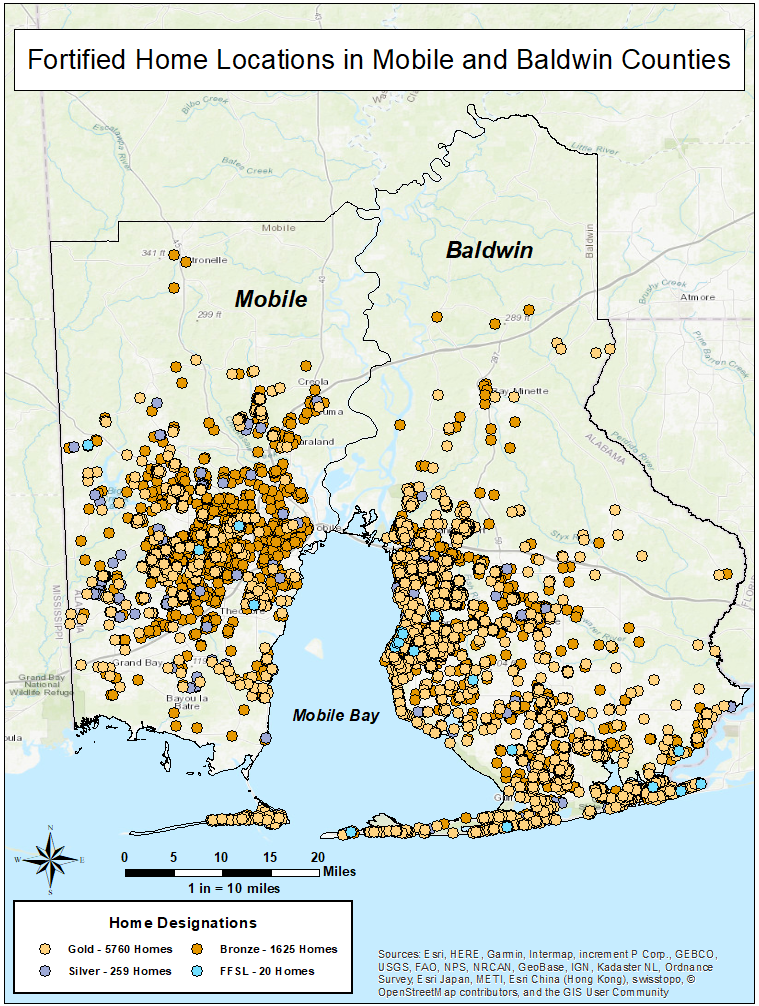
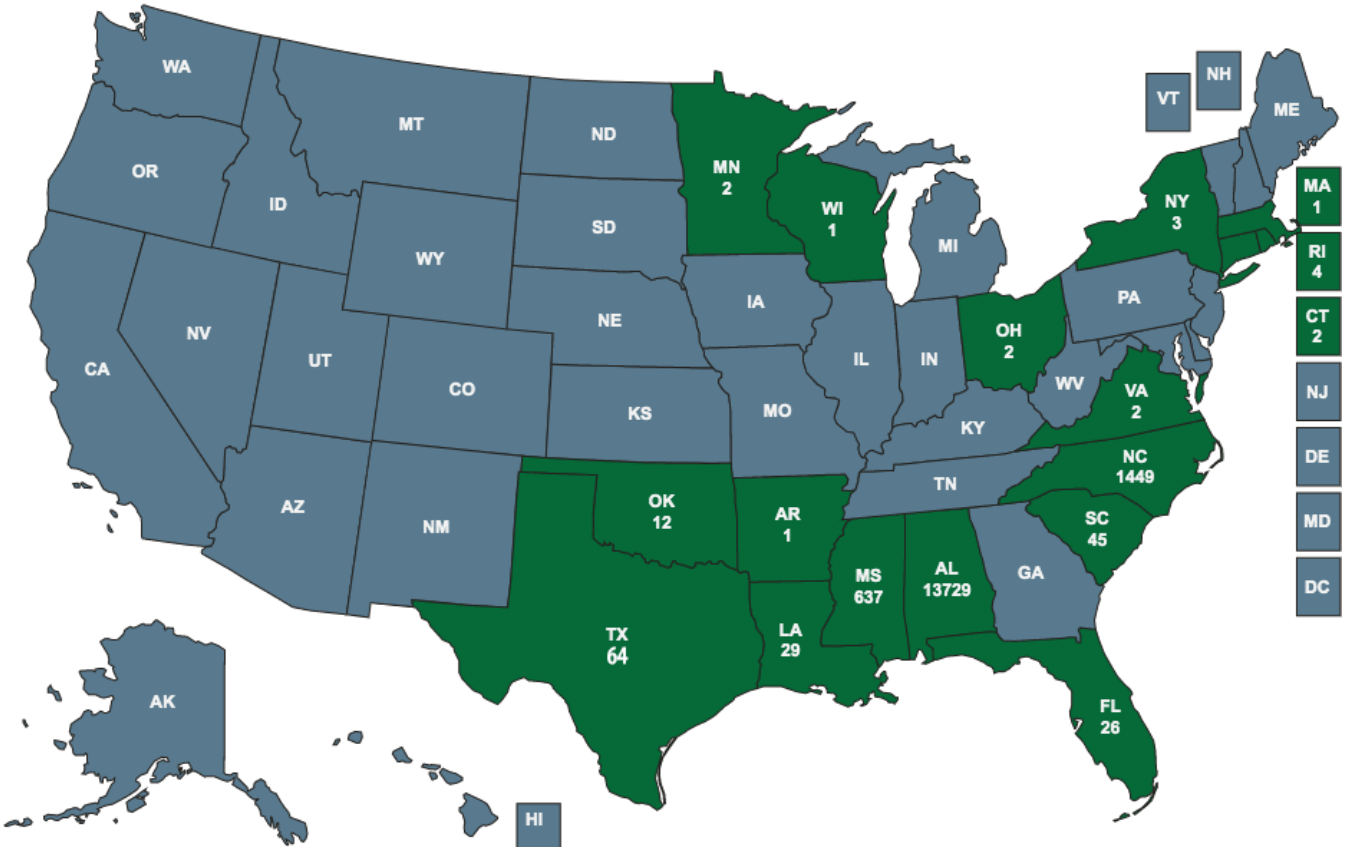
Before Hurricane Ike

After Hurricane Ike


Fortified Home Locations in Mobile and Baldwin Counties
Baldwin
Mobile
Mobile Bay
0 5 10 15 20
Miles
1 in = 10 miles
Home Designations
Gold - 5760 Homes
Bronze - 1625 Homes
Silver - 259 Homes
FFSL - 20 Homes
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

16,000+ FORTIFIED Homes Nationally



https://ibhs.org/fortified/fortified-monthly-update/

Insurance Institute for Business & Home Safety®

Alabama FORTIFIED Discount Sheet

Protect and Save by Choosing a FORTIFIED Home™

FORTIFIED Home™ offers homebuyers several opportunities to increase the strength of their investment.

FORTIFIED HOME™

FORTIFIED Home™ is a third-party certification program specifying design and construction standards to increase a home's resilience and deliver superior performance during tropical storms and hurricanes. The FORTIFIED Home™ program has three levels of designation – Roof, Silver and Gold – that build upon each other.

INSURANCE DISCOUNTS: 25%–35%*

ROOF: STRENGTHEN THE ROOF SYSTEM

Minimizes the risk of water getting into the home and makes roof system stronger.

INSURANCE DISCOUNTS: 35%–45%*

SILVER: STRENGTHEN THE WINDOWS & DOORS

Minimizes the risk of wind entering the home and causing a roof failure. Also effective at reducing the risk of water getting into the home.

INSURANCE DISCOUNTS: 45%–55%*

GOLD: STRENGTHEN THE STRUCTURAL SYSTEM

Ties all of the elements of the home together and to the ground. The most effective way to minimize risks from high winds.

Strength isn't always obvious.

Alabama Wind Mitigation Benchmark Discounts (Applicable to Wind Premium)

These discounts are not subject to any "total maximum credits" rule. Benchmark discounts are effective January 1, 2018 and are subject to change. Rates vary by insurer. Additional discounts for wind/hail premiums are available, visit www.olshi.gov for more information. Applies to the following counties: Mobile, Baldwin, Washington, Escambia, Covington, Geneva, Houston.

TO LEARN MORE ABOUT FORTIFIED, VISIT
FORTIFIEDHOME.ORG

Alabama FORTIFIED Discount Sheet - High Wind

Protect and Save by Choosing a FORTIFIED Home™

FORTIFIED Home™ offers homebuyers several opportunities to increase the strength of their investment.

FORTIFIED HOME™

FORTIFIED Home™ is a third-party certification program specifying design and construction standards to increase a home's resilience. FORTIFIED delivers superior performance during severe thunderstorms, straight-line wind events, and high winds at the outer edges of tornadoes. The FORTIFIED Home™ program has three levels of designation – Roof, Silver and Gold – that build upon each other.

INSURANCE DISCOUNTS: up to 20%*

ROOF: STRENGTHEN THE ROOF SYSTEM

Minimizes the risk of water getting into the home and makes the roof system stronger.

INSURANCE DISCOUNTS: up to 25%*

SILVER: STRENGTHEN GABLES & ATTACHMENTS

Strengthens critical areas such as porches, carports, gables and chimneys against damage from high wind, minimizing the risk of wind and water entering the home.

INSURANCE DISCOUNTS: up to 30%*

GOLD: STRENGTHEN THE STRUCTURAL SYSTEM

Ties together all the elements of the home to the ground. Ensures a continuous load path and addresses garage doors, The most effective way to minimize risks from high winds.

Strength isn't always obvious.

Alabama Wind Mitigation Benchmark Discounts (Applicable to Wind Premium)

These discounts are not subject to any "total maximum credits" rule. Benchmark discounts are effective January 1, 2018 and are subject to change. Rates vary by insurer. Additional discounts for wind/hail premiums are available, visit www.olshi.gov for more information. Applies to Central and Northern and Central Zones as determined by the Alabama Department of Insurance,

TO LEARN MORE ABOUT FORTIFIED, VISIT
FORTIFIEDHOME.ORG

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COASTAL CONSTRUCTION CODE SUPPLEMENT

For Adoption by Communities Affected By Hurricanes

A supplemental code to the International Residential Codes (IRC) 2009, 2012 or 2015 and later editions that will be created.

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STRENGTHEN
ALABAMA HOMES

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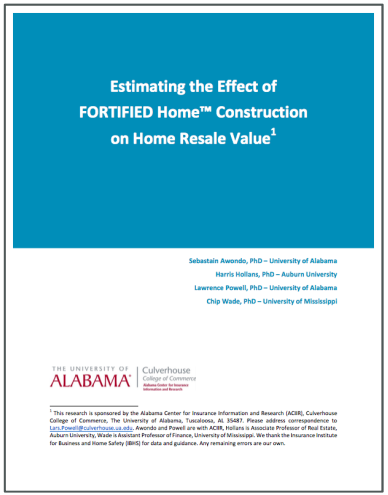

FORTIFIED Increases Home Value Nearly 7%

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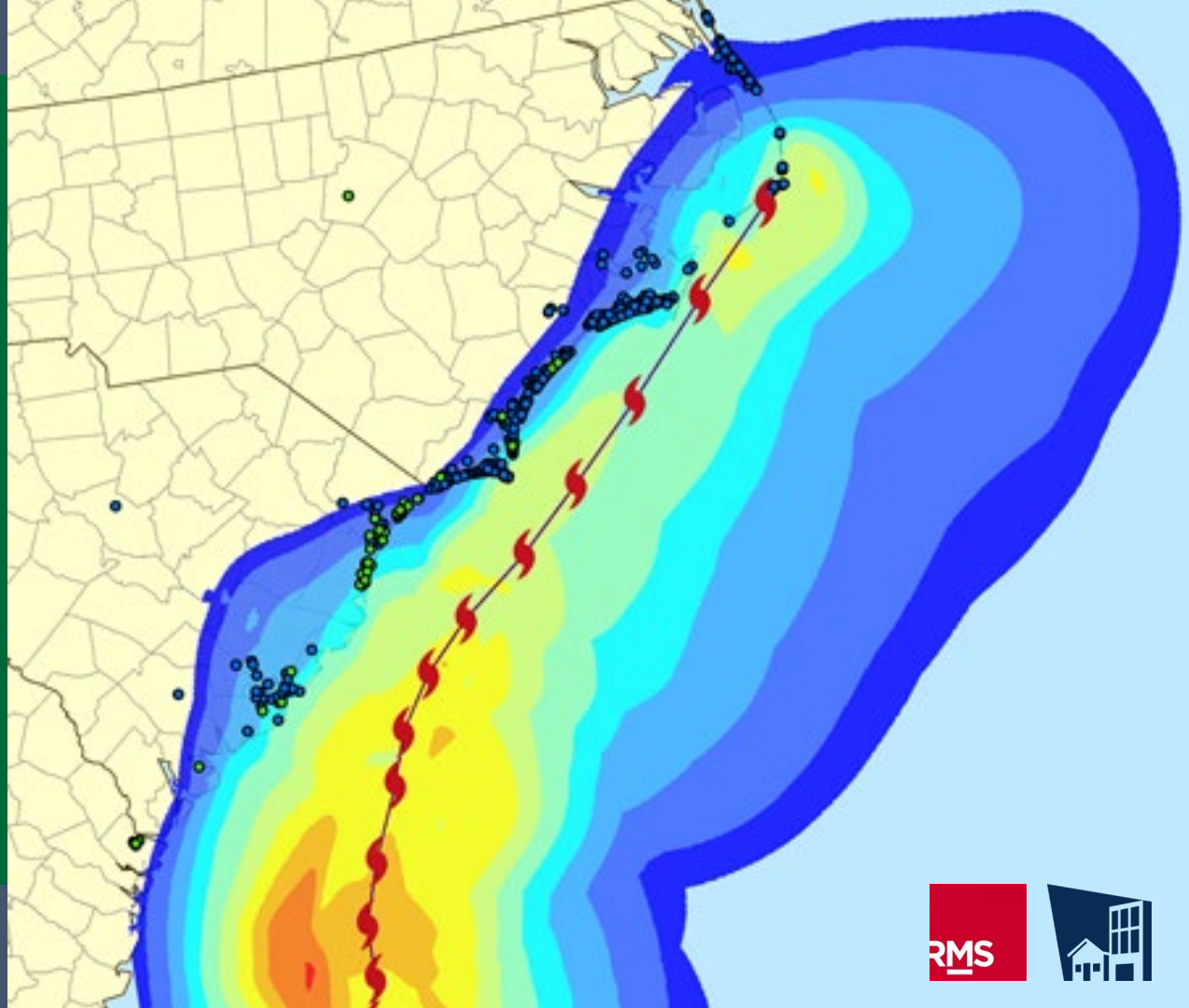
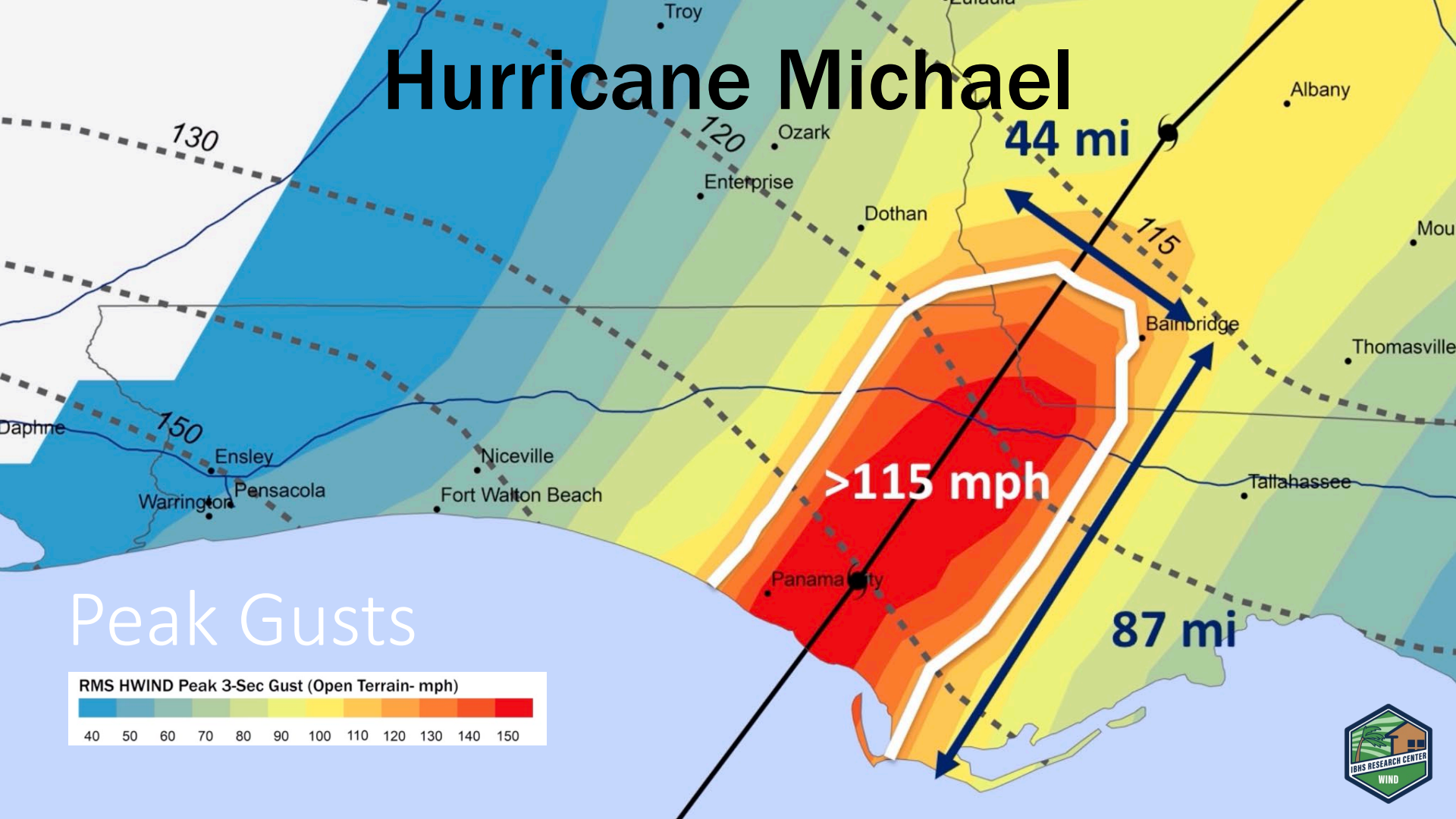
WATER INTRUSION

Dorian v. FORTIFIED



Hurricane Michael



Peak Gusts

IBHS RESEARCH CENTER WIND

Hurricane Michael: Research

Post Michael – Habitat Strong

TEAM RUBICON

Habitat for Humanity®

SBP

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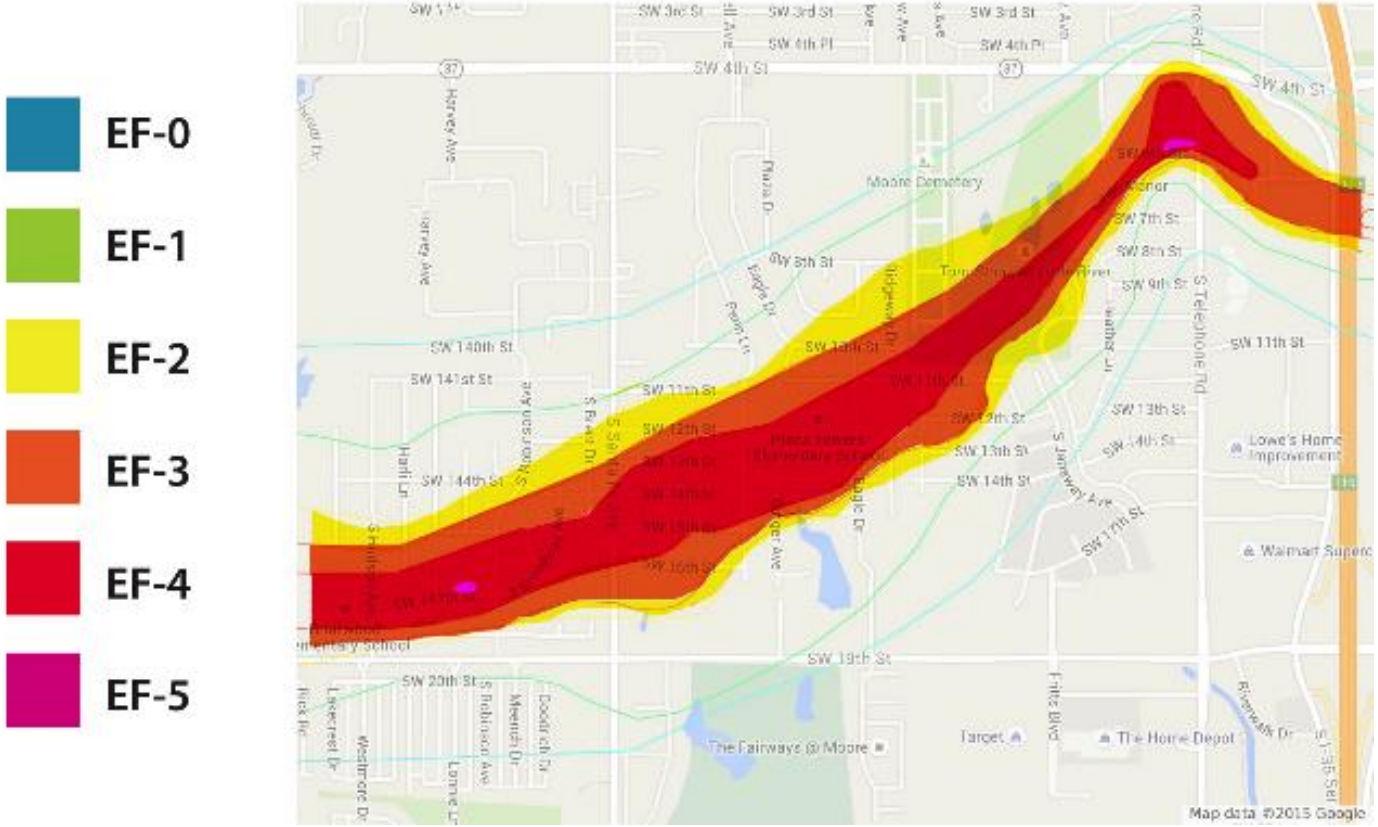
May 20, 2013 Newcastle-South OKC-Moore EF-5 Tornado



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A PROGRAM OF IBHS


WE CAN’T PREVENBUT WE CAN
ALL DAMAGE. PREVENT THIS.
IBHS RESEARCH CENTER
WIND

2/3

of homes
are
underinsured

Marshall & Swift/Boeckh

SMART HOME AMERICA

Marshall & Swift/Boeckh

SMART HOME AMERICA

Multi-Hazard Resilience




Wind + Water + Insurance + Contingency

SMART HOME AMERICA


StateFarm
TM


TRAVELERS INSTITUTE
TRAVELERS


FARMERS
INSURANCE


Sea Grant
Mississippi-Alabama


Allstate
Foundation


Insurance
Institute for
Business &
Home
Safety®


Culverhouse
College of Commerce
Alabama Center for Insurance
Information and Research


USAA®


BASF
We create chemistry
Disaster Durable Solutions™


Habitat
for Humanity®


Malarkey
Roofing Products®


ZIPsystem™


GULF
OF MEXICO
ALLIANCE


Trusted
Choice
Alabama Independent
Insurance Agents, Inc.


FLASH
FEDERAL ALLIANCE FOR SAFE HOMES


MISSISSIPPI
INSURANCE DEPARTMENT

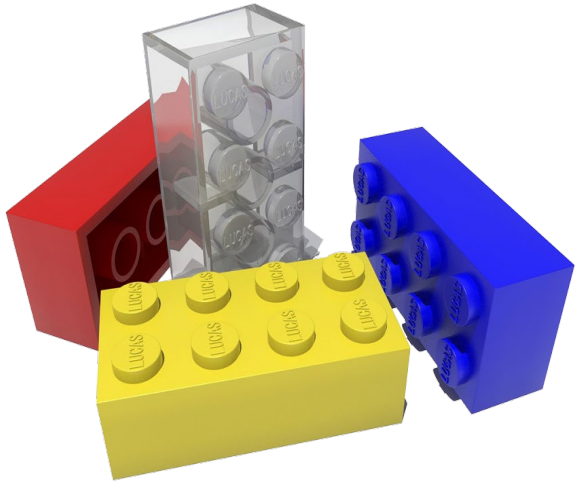

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI
1910


THE UNIVERSITY of
MISSISSIPPI


ALABAMA DEPARTMENT
OF INSURANCE


CODE OFFICIALS
OF
LOWER ALABAMA


NAHB
National
Association
of Home
Builders



Current Building Codes

FORTIFIED Home™ Construction

Insurance = economic resilience

State and Local policies to enhance resilience

Mitigation funding options

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Consumers
Building Officials
Real Estate
Insurers
Elected Officials
NGO’s

Contractors
Appraisers
Manufacturers
Suppliers
Architects & Engineers
Academics

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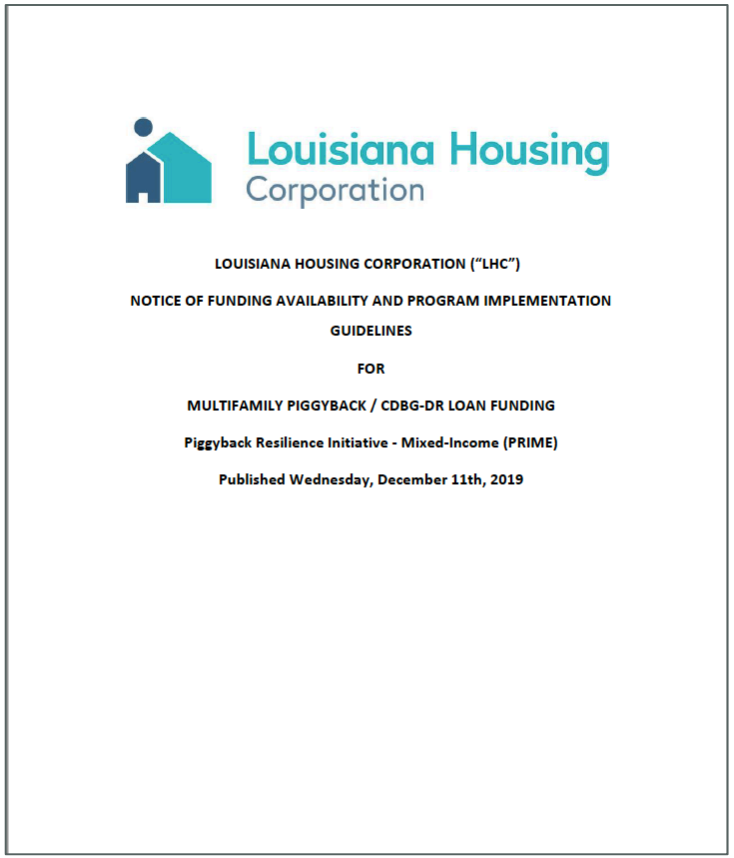
Education

Collaboration



Louisiana Housing Corporation

LOUISIANA HOUSING CORPORATION ("LHC")

NOTICE OF FUNDING AVAILABILITY AND PROGRAM IMPLEMENTATION GUIDELINES

FOR

MULTIFAMILY PIGGYBACK / CDBG-DR LOAN FUNDING

Piggyback Resilience Initiative - Mixed-Income (PRIME)

Published Wednesday, December 11th, 2019

Section 5 - Mandatory Disaster Resilience Criteria

disaster resilience. Note that a central element of disaster-resilience under this NOFA is project siting. See §4, Eligible Sites.

As a consequence of these criteria, all properties funded under this NOFA will—at a minimum and in addition to specific siting and elevation requirements—have to meet the FORTIFIED Commercial Roof standard, will conduct a multi-hazard risk and vulnerability assessment, manage surface stormwater, provide access to potable water during emergencies, flood-proof

https://www.lhc.la.gov/hubfs/Document%20Libraries/Housing%20Development/Funding%20Opportunities/CDBG/CDBG%202020%20PRIME%20NOFA%20FINAL%202019_1211.pdf?hsLang=en-us

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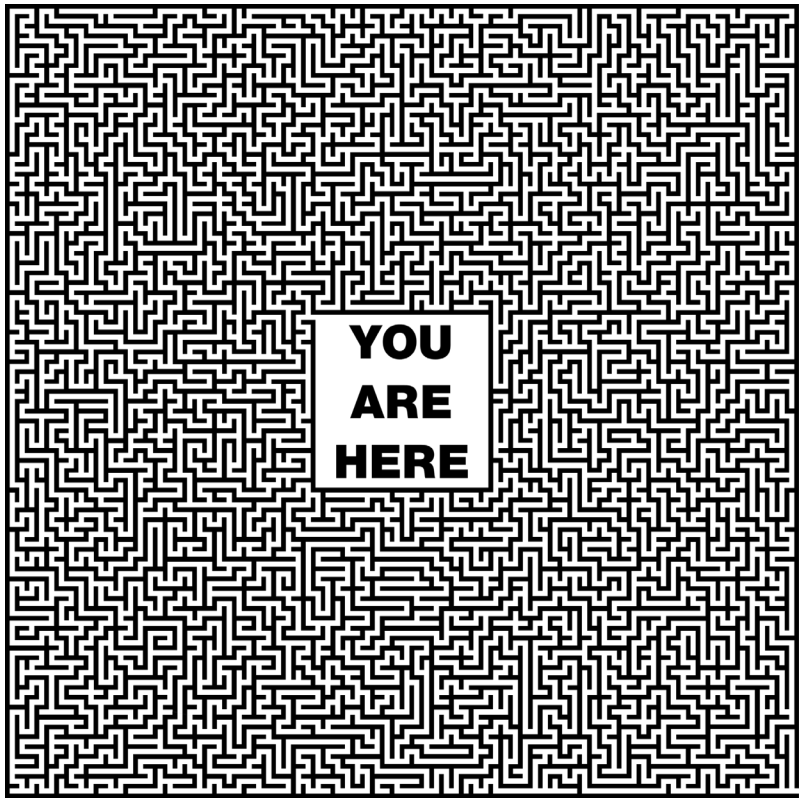
Recovery

Rebuilding

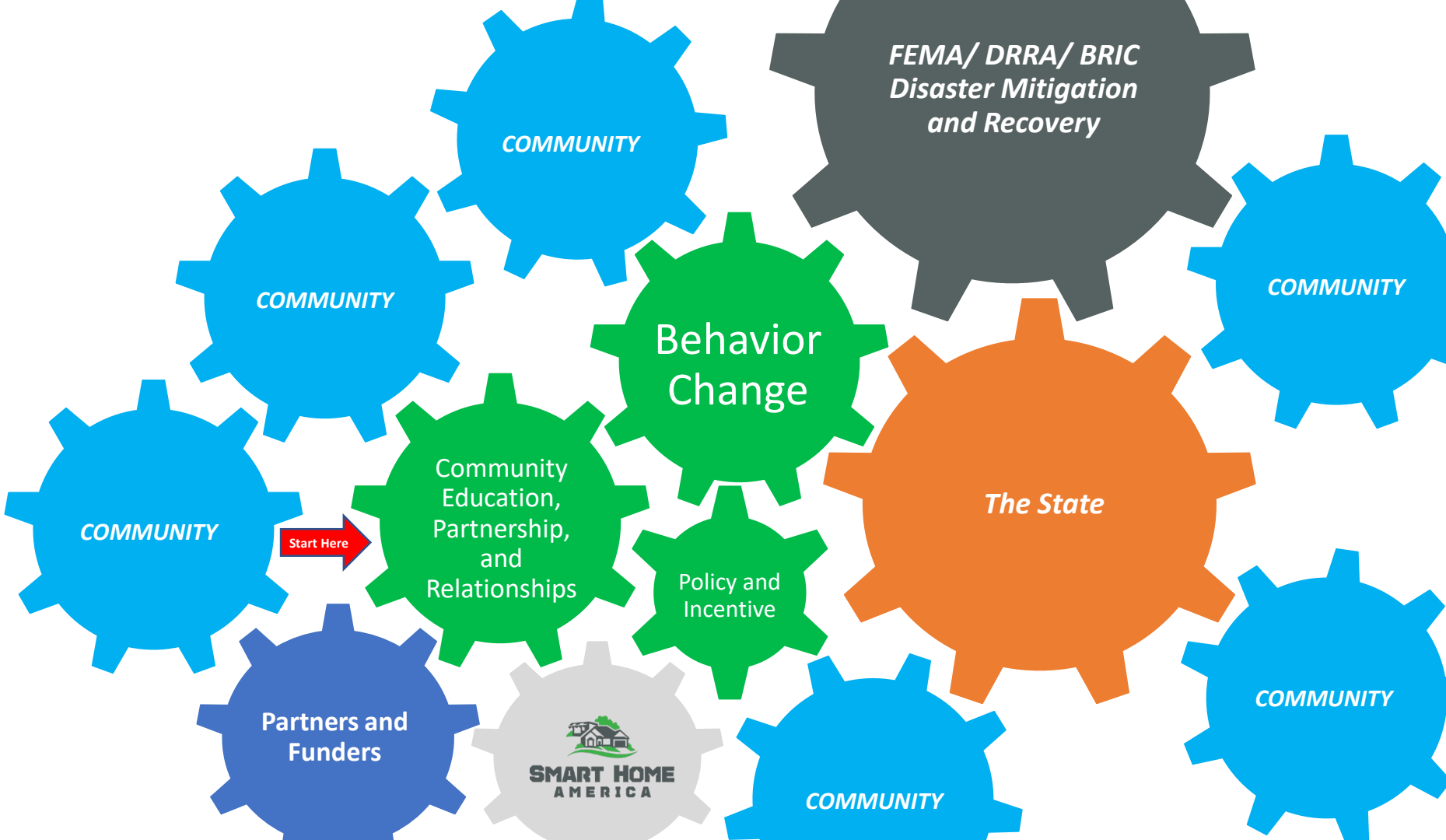
Resilience

Post Disaster

Ideal Mitigation



SMART HOME
AMERICA


COMMUNITY
FEMA/ DRRA/ BRIC Disaster Mitigation and Recovery
COMMUNITY
COMMUNITY
Behavior Change
COMMUNITY
COMMUNITY
Start Here
Community Education, Partnership, and Relationships
Policy and Incentive
The State
Partners and Funders
SMART HOME AMERICA
COMMUNITY
COMMUNITY

SmartHomeAmerica.org

DontGoof.org

FORTIFIEDHome.org

SMART HOME
AMERICA

Thank You!