

TESTIMONY BEFORE THE SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION

House Committee on Science and Technology  
U.S. House of Representatives

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*Commentary Regarding the State of Windstorm Reduction Impact Program Efforts*

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## Introduction

Thank you Mr. Chairman and committee members.

My name is Leslie Chapman-Henderson and I am here today representing the Federal Alliance for Safe Homes. We are a partnership of more than 100 public, private and nonprofit organizations and leaders who have dedicated the past ten years to making America a more disaster-resistant nation. Our mission is to “strengthen homes and safeguard families” from disasters of all kinds, including earthquakes, floods, hail, hurricanes, lightning, tornadoes and wildfires.

The Federal Alliance for Safe Homes helps reduce impacts from catastrophic losses like windstorms by providing the public with accurate and timely information on how to make homes more disaster-resistant — either at the time of construction or with post-construction hardening or retrofitting techniques. We want consumers to understand that they can protect their property, and “luck” is not their best tool when they confront natural disaster threats.

We view our work as part of a larger social movement to establish disaster safety as a public value in this country. This is a movement that supports a built environment strong enough to reasonably resist and survive natural disaster threats. We specifically focus on mitigation and the collective work undertaken beforehand to prevent or lessen impacts of hurricanes and other threats.

Our goal is to create widespread homeowner demand for safer, better-built homes. We modeled this approach after the highway safety movement, which succeeded in creating American demand for safe, well-built vehicles with seat belts and air bags. Just as the highway safety movement has saved lives on our roads, the disaster safety movement will reduce losses from catastrophic events. We recognize the following elements as essential to the establishment of the disaster safety movement:

- Building codes that are enacted and enforced
  - Applied to new construction, rehabilitated construction and restored construction
- Financial incentives
  - Including banking, insurance, real estate, tax
- Mitigation public policy
  - Inspection and matching grant programs
- Public awareness
- Professional education
  - Architecture, construction, engineering
- Research and innovation

Our typical activities include public awareness campaigns featuring free resource and referral services through a toll-free telephone hotline and the [www.flash.org](http://www.flash.org) website, integrated multi-media campaigns, professional education programs and extensive public outreach. Below is a sampling of our initiatives:

- Blueprint for Safety<sup>®</sup> — An award-winning curriculum for contractors, design professionals and home inspectors featuring training on disaster-resistant construction techniques. Blueprint recommendations are referenced as the basis for mitigation policies and programs enacted in several states, including Florida, Louisiana, Mississippi and South Carolina.

- The Tale of Two Houses — A motivational video story of two neighboring families and homes affected by 2004's Hurricane Charley that demonstrates dramatically different building performance and outcomes based on the different building practices used. The Tale of Two Houses program inspired a season of nationally syndicated television shows and joint work with home improvement guru Bob Vila.
- Turn Around --- Don't Drown — A jointly owned public awareness life safety campaign with the National Weather Service that helps raise awareness of the risks associated with walking or driving into moving water. The slogan is in widespread use by broadcast meteorologists, forecasters and others. Outdoor advertising campaigns are focused at the state level and are in place in Florida, Nevada, Texas and other states.
- StormStruck: A Tale of Two Homes™ ... presented by the Federal Alliance for Safe Homes – StormStruck is an interactive “edu-tainment” experience that will open in late summer of 2008 at Epcot at the Walt Disney World Resort in Florida. The high tech simulated storm experience will combine fun with game-based learning to provide more than four million annual guests to Epcot with information on how to protect their homes and families from severe weather.

While our organizational focus is solely on residential structures, my comments today will be relevant for some aspects of commercial structures as well.

### Commentary/Response to Committee Questions

#### **Question #1 — How vulnerable is the U.S. built environment — and its occupants — to windstorm hazards? Has this vulnerability increased or decreased in recent years?**

Answer #1 — We believe that the U.S. built environment is highly vulnerable to windstorm hazards, and the vulnerability is increasing. There are various ways to characterize the level and demonstrate the increase, including:

**A) Coastal Population Growth.** According to the U.S. Census Bureau, as of July 1, 2007, 35.3 million people lived in areas of the United States most threatened by hurricanes<sup>1</sup>. These areas are defined as the coastal portions of Texas through North Carolina and represent approximately 12% of the U.S. population. This figure represents an increase from the 1950 level of 10.2 million, which represented 7% of the U.S. population. Florida alone represents 6% of the current coastal population.

Three of the 20 most populous metro areas from 2006 to 2007 were within Atlantic or Gulf coastal areas from North Carolina to Texas<sup>2</sup>. These areas are:

- Houston-Baytown-Sugar Land, Texas (sixth)
- Miami-Fort Lauderdale-Miami Beach, Fla. (seventh)
- Tampa-St. Petersburg-Clearwater, Fla. (19th)

Note: Coastal counties include those with at least 15 percent of their total land area within the nation's coastal watershed.<sup>3</sup>

**B) Historic Losses<sup>4</sup> (United States).** Disaster losses tell a compelling picture of our economic and societal vulnerability to windstorms. From 1987 to 2006 the inflation-adjusted, insured losses break down as follows:

\$297.3 billion — total disaster losses

- \$137.7 billion, or 46.3% — tropical cyclone losses
- \$77.3 billion, or 26% — tornado losses
- \$19.1 billion, or 6.4% — earthquake losses

Seven of the 10 most expensive hurricanes in U.S. history occurred between August 2004 and October 2005.

**C) Today's Insured Values (Sample: Florida).**

- 4.5 million single family homes
- \$1.8 trillion in residential property
- \$1.0 trillion in commercial property

**D) Coastal Construction (Sample: Galveston, Texas).**

- More than \$2.3 billion in residential, commercial and public construction was under way in 2007
- More than 6,500 residential units under construction
- Mostly condos, including towers up to 27 stories high
- One Centex Homes development — 2,300 condos and houses on 1,000 acres
- Galveston is the site of the deadliest natural disaster in U.S. history
- At least 8,000 people were killed in a 1900 hurricane
- 3,600 homes were destroyed

The current seawall in Galveston is only 15.6 ft. high; Katrina's storm surge was nearly 30 feet. Insured losses today from a repeat of the 1900 storm would exceed \$21 billion, and it would become the 3rd most expensive hurricane in U.S. history (after Katrina and Andrew).

**E) Attributes of the Built Environment.** Vulnerability will continue to increase due to a variety of economic and other factors, including the aging of our built environment, the percentage of the built environment constructed without use of model building codes, and the increased cost of new construction.

**Question #2a — What are the challenges in implementing improvements to new or existing buildings?**

The greatest challenge in implementing improvements to new or existing buildings is a continuous breakdown in communication and knowledge transfer between homeowners, homebuilders and policymakers. During years of post-storm interviews and damage investigations, we meet homeowners who are frustrated to learn that a mere handful of additional nails may have made a difference in keeping their roofs on during a hurricane, especially since loss of roof covering and roof sheathing failure during windstorms is typically where a total loss of structure and contents begins.

In-place and intact enactment of model building codes with requisite code enforcement infrastructure before hurricanes strike is the best means of overcoming this lost opportunity to rebuild damaged communities in a stronger way. While new codes can only impact approximately 2% of the built environment in any non-disaster year, that percentage can increase dramatically in a post-storm rebuilding period.

Unfortunately, many of the rebuilding efforts during the post-2004 and 2005 hurricanes failed to include new, uniform roofing standards requiring enhanced nailing and installation of secondary

water barriers. This represents a tremendous lost opportunity and perpetuates the cycle of “build-destroy-rebuild” that our organization and movement is working to break.

Furthermore, while outstanding progress is under way by the International Code Council and others in increasing model code adoption at the state levels, the model code can still be undermined, weakened or adversely amended upon adoption at the local level. We are concerned that many coastal, windstorm-exposed communities have adopted the 2006 International Residential Code, but also inserted provisions that remove requirements for protecting windows with code-approved shutters or other opening protection.

We believe it is well-established that protecting openings like windows is a key windstorm damage prevention practice.

**Question #2b - What has FLASH found to be effective mechanisms for convincing property owners and builders to adopt wind hazard mitigation measures?**

Like the highway safety movement, success relies on a combination of regulation, enforcement and education.

**Intact enactment of model building codes is a vital first step, and we should reward local communities that adopt model codes by linking enhanced federal, pre-disaster mitigation dollars to the strength and enforcement record of the state and local building codes.**

Communication and education are also essential. FLASH has found that the most effective ways to deliver relevant information to the public, policy makers and affected trades and professions are:

1. through news media outreach that focuses on specific storm experiences of real families,
2. by creating simple, clear and actionable “how to” information to empower consumers to ask for specific, prescriptive constructive practices at the time of building or rebuilding, and
3. by participating and serving on relevant public policy forums that create and recommend model programs.

Two such model programs at the state level are the My Safe Florida and South Carolina Safe Home initiatives for residential structures. These programs provide wind mitigation home inspections and matching grants for home hardening and retrofitting activities. These efforts help homeowners understand the relative strengths and weakness of their homes, and then provide matching funds to help offset the cost of retrofitting or hardening those homes.

Conservatively derived measurements of the value of mitigation are also essential tools for delivering compelling mitigation improvements to the public and policy leaders. Consider these findings from an independent study by the National Institute of Building Sciences:

Mitigation provided a return on investment of up to four-to-one .

A 10-year snapshot of FEMA mitigation grants and projects found:

- Reduced human losses (death, injuries and homelessness)
- Reduced direct property damage
- Reduced direct business interruption loss
- Reduced indirect business losses
- Reduced non-market damage
- Reduced cost of emergency response

(Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities, National Institute of Building Sciences, December 2005, accessed at <http://www.nibs.org/MMC/mmcactiv5.html>)

Modeling the strength of existing building stock based on the historic building code practices can also provide a compelling case for implementing windstorm mitigation. The tables below illustrate some relevant examples:

**Key Florida Risk Metrics  
(Single family homes only)**

Scenario	Avg Annual Loss	10 yr loss	100 yr loss	1,000 yr loss
Current Bldg Stock	5.5	13	63	150
What if: 1974	6.7	16	74	180
What if: 2008	1.5	3	22	74
What if: Fortified Home	1.0	2	14	53

\* Ground-up economic losses, in \$ billions

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**Key Texas Risk Metrics -  
Percent reduction in State Wide Loss  
(Single family homes only)**

Scenario	Avg Annual Loss	10 yr loss	100 yr loss	1,000 yr loss
Current Bldg Stock	-	-	-	-
What if: Pre-1974	17%	21%	14%	11%
What if: 2008	-40%	-48%	-35%	-31%
What if: BLUEPRINT for Safety Home	-78%	-81%	-76%	-73%

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**Key Texas Risk Metrics  
State-wide losses  
(Single family homes only)**

Scenario	Avg Annual Loss	10 yr loss	100 yr loss	1,000 yr loss
Current Bldg Stock	0.932	2.14	16.3	47.6
What if: Pre-1974	1.09	2.60	18.5	52.7
What if: 2008	0.562	1.12	10.7	32.8
What if: BLUEPRINT for Safety Home	0.206	0.398	3.85	12.7

\* Ground-up economic losses, in \$ billions

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**Question #3a — Where do improvements need to be made in building practices and our ability to mitigate wind damage to structures and communities?**

- Increase funding for research and innovation in building structure performance

When examining building performance post-storm, we need to understand how and why buildings survived or failed. Our academic partners still do not have all the answers to understanding wind and wind-driven rain effects on buildings, and the financial resources for this research seem inconsistently distributed and difficult to sustain on an ongoing basis. The resources dedicated to research on storm effects are greatly outpaced by research spending on earthquake hazards.

- Accelerate adoption of new construction technology findings into model building codes

The code development process is understandably deliberate, however, it often takes years to incorporate to new findings into model codes. As a result, homes and buildings continue to be built without the benefit of expensive and deadly lessons learned post-disaster.

**Question #3b - How well do agencies at all levels of government advocate and educate on the importance of wind hazard mitigation measures?**

We believe that federal agencies like FEMA and the National Weather Service do an excellent job of communicating the importance of mitigation as a thematic priority. However, by its nature the specific mitigation information and professional training is delivered at the state and local levels. It is our observation that Florida, Louisiana and South Carolina are the most active states in terms of mitigation outreach, education and training.

A novel concept that is in use in Florida as part of the My Safe Florida Home program is the *Hurricane Resistance Rating Scale* that ranks homes on a zero to 100 scale on the basis of its wind-resistant features, including roof shape, presence of opening protection, construction method, etc. This concept could be adapted to a national model scale and be incorporated into the home construction industry in all windstorm exposed states, including the so-called “Tornado Alley”. The scale could help revolutionize consumers’ understanding of the wind hazard, much like Energy Star revolutionized society’s perception and value for energy savings.

**Question #4 — Please comment on the implementation of NWIRP and the level of federal funding for wind hazard mitigation R&D. Looking toward the reauthorization of the program, what do you feel are the three most important priorities and what changes would you suggest for the legislation?**

We strongly support all aspects of the National Windstorm Impact Reduction Program and strongly encourage the reauthorization with additional investment of resources. We offer the following priorities based on our belief that the private sector can augment the program’s efforts with significant resources.

- Improved understanding of windstorms
  - Activities to enhance the understanding of windstorms shall include research to improve knowledge of and data collection on the impact of severe wind on buildings, structures, and infrastructure. Highest Priority
- Windstorm impact assessment
  - Research, development, and technology transfer to improve loss estimation and risk assessment systems; Low Priority
  - Research, development, and technology transfer to improve simulation and computational modeling of windstorm impacts. Medium Priority
- Windstorm impact reduction
  - Development of improved outreach and implementation mechanisms to translate existing information and research findings into cost-effective and affordable practices for design and construction professionals, and state and local officials; Highest Priority
  - Development of cost-effective and affordable windstorm-resistant systems, structures, and materials for use in new construction and retrofit of existing construction; High Priority
  - Outreach and information dissemination related to cost-effective and affordable construction techniques, loss estimation and risk assessment methodologies, and

other pertinent information regarding windstorm phenomena to federal, state, and local officials, the construction industry, and the general public. Highest Priority

Our one implementation recommendation is that the program establish a singular guiding principle for all program outcomes as follows: “Any and all program findings, materials and information shall be communicated, shared, widely promoted and accessible to the general public with a special emphasis on reaching and targeting home buyers, home owners, home builders and public policymakers.”

It is our firm belief that, like highway safety, the knowledgeable, empowered consumer has the most capacity to move disaster safety and windstorm mitigation forward. The essential tool they require to do is knowledge of the definition of a strong, wind-resistant home backed by a system of building codes that ensure optimal, future construction practices. We can and should continue to improve on all areas of focus identified in the National Windstorm Impact Reduction Program; however, the stronger we make our built environment, the more opportunities our citizens will have to safely shelter-in-place outside of flood-prone areas.

### **Biographical Sketch of Leslie Chapman-Henderson**

Leslie Chapman-Henderson is President/CEO of the Federal Alliance for Safe Homes, Inc. - FLASH<sup>®</sup>, a national, non-profit corporation founded in 1998 by a collaborative of non-profit, private and public organizations dedicated to strengthening homes and safeguarding families from disaster. Today, FLASH is the fastest growing disaster safety education organization in the United States with more than 90 partners, including FEMA, Georgia Pacific, Institute for Business & Home Safety, International Code Council, Mercedes Homes, NeighborWorks, NOAA, South Carolina Insurance Department, State Farm Insurance Companies, Texas Department of Insurance, Texas Tech Wind Science & Engineering, The Home Depot and Home Depot Foundation, University of Florida, and USAA.

Ms. Chapman-Henderson and FLASH have championed the cause of code-plus construction methods through the creation of Blueprint for Safety<sup>®</sup> (Blueprint), an educational program for homebuilders, homeowners and design professionals on disaster-resistant construction techniques.

Among Ms. Chapman-Henderson’s civic, community and professional awards are the 2008 National Hurricane Conference Outstanding Achievement in Mitigation Award, 2008 Governor’s Hurricane Conference Corporate Award, 2006 Texas Silver Spur Award for Public Education Excellence, 2006 Governor’s Hurricane Conference Public Information/Education Award, 2005 National Hurricane Conference Outstanding Achievement in Public Awareness Award, 2005 National Weather Association Walter J. Bennett Public Service Award, 2005 NOAA Environmental Hero Award, 2002 National Hurricane Conference Outstanding Achievement in Mitigation Award, 2002 FEMA Special Recognition Award, 2002 Florida Fire Chiefs Association Excellence in Community and Public Education Award, 2002 Florida Emergency Preparedness Association Corporate Award, and 2001 Governors Hurricane Conference Public Education Award.

Additional award-winning FLASH outreach projects include two seasons of episodes with the nationally-syndicated programs *Bob Vila* and *Home Again with Bob Vila*; a one-hour, nationally televised multi-hazard PBS Special entitled, *Blueprint for Safety ... Disaster-resistant Homes*; and “A Tale of Two Houses,” a multi-media awareness campaign, showcasing code and code-plus construction success stories.



Ms. Chapman-Henderson currently serves as co-chair of the legislatively-created My Safe Florida Home Advisory Council. Her past service includes consumer representative and chair for the Florida Hurricane Catastrophe Fund Advisory Council under Governor Charlie Crist and former Governor Jeb Bush, guest lecturer at the University of Florida - School of Construction and one of the Florida representatives to the Federal Communications Commission WARN Committee. She was recently elected as a board trustee of the Florida International University - International Hurricane Research Center.

Other past service includes trustee for the Florida Fire and Emergency Services Foundation; consumer representative to the Louisiana Uniform Building Code Task Force; consumer representative and vice chair on the 2005 Florida Legislative Task Force on Long Term Solutions for Florida's Hurricane Insurance Market; and insurance consumer representative to the 2006 Property and Casualty Insurance Reform Committee chaired by former Lt. Governor Toni Jennings.

She has a bachelor's degree from the University of Florida, resides in Tallahassee and is married to Robert Henderson.

### Citations

<sup>1</sup> Source: Population Estimates <http://www.census.gov/popest/estimates.php>

<sup>2</sup>. Source: <http://www.census.gov/Press-release/www/releases/archives/population/011671.html>

<sup>3</sup> Source<[http://www.census.gov/geo/landview/lv6help/coastal\\_cty.pdf](http://www.census.gov/geo/landview/lv6help/coastal_cty.pdf)>

<sup>4</sup> Source: Insurance Information Institute – Presentation to the National Hurricane Conference - [http://server.iii.org/yy\\_obj\\_data/binary/784319\\_1\\_0/nhc2008.pdf](http://server.iii.org/yy_obj_data/binary/784319_1_0/nhc2008.pdf)

<sup>5</sup> Source: Insurance Information Institute from “A Texas-Sized Hunger for Gulf Coast Homes,” *New York Times*, March 18, 2007

and [www.1900storm.com](http://www.1900storm.com) and [www.twia.org](http://www.twia.org) accessed July 9, 2007.