Resilience Policy Resource Guide and Retrofitting Program Playbook

for State Insurance Regulators

CENTER FOR INSURANCE POLICY AND RESEARCH

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FEDERAL ALLIANCE FOR SAFE HOMES

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1

EXECUTIVE SUMMARY

Resilience Solutions to **Strengthen Markets**

As property insurance markets confront disruption from costly natural disasters and climate risk, resilience strategies offer state insurance regulatory leaders proven solutions to foster stability.

This paper by the National Association of Insurance Commissioners – Center for Insurance Policy and Research (NAIC-CIPR) and nonprofit Federal Alliance for Safe Homes (FLASH)[1] details three key strategies many regulators leverage as climate risk and accelerating disasters impact state insurance markets. The strategies include **1 - Leadership to Advance Building Code Policy**, **2 - Creating and Sustaining Retrofitting Programs**, and **3 - Fostering a Culture of Resilience**.

Leadership to Advance Building Code Policy

Post-disaster forensic engineering and economic studies prove modern building codes protect life safety while limiting economic damage from disasters. States and communities with current building codes

recover more swiftly from disaster impacts, and their insurance consumers enjoy pre-disaster "blue sky" benefits, including annual premium discounts and enhanced insurance availability for newer, stronger homes.

Building code advocacy is traditionally localized, decentralized, and often strongest after a disaster strikes. However, as states' de facto risk managers, insurance regulators are highly credible and uniquely positioned to lend their voices to building codes as a proven tool to strengthen insurance markets and overall state economic health.

The growing building code leadership opportunity for regulators comes at a time when the available portfolio of advocacy resources is rapidly expanding. FEMA is implementing a new building code strategy

with toolkits, studies, and new regional subject matter experts deployed to support states' policy goals. In 2022, The White House created the National Initiative to Advance Building Codes (NIABC)[2] to support expanded code adoption. Federal agencies, including FEMA and HUD, have aligned grant and disaster relief dollars to recognize and incentivize code adoption.

> **In October 2023, FEMA announced a new building code grant program[3] that provides up to $2 million for states seeking to create or expand existing code administration programs.**

Also, a recent report by Moody's Analytics aligns modern building codes with climate and disaster resilience. The *Adapting to Hurricane Risk - Quantifying Benefits Now & in the Future for Insurers and Real Asset Investors - A Florida Case Study*[4] analysis compares South Florida homes built three decades apart with different building codes. Moody's projected the difference in "present day wind-derived average annual damage" for the 1990s home at $28,448 vs. $4,603 for a house constructed in 2022. These proof points drive public awareness and acceptance of codes as the foundation for resilience.

How can insurance regulators impact and support excellence in building code policy at the state and local levels? Some have done so through the following actions:

- Analyzing and tracking state and local building code adoption status and benchmarking against the current model codes

- Including building code legislative activity in their legislative portfolio and priorities

- Educating thought leaders (state officials, editorial boards, etc.) regarding the importance of codes and the link between code adoption and consumer safety and savings, e.g., automatic discounts for building codes, BCEGS ratings

- Engaging in public awareness campaigns, such as the annual *Building Safety Month* celebration presented each May by the International Code Council (ICC)[5]

- Incorporating digital code lookup tools into digital assets

Creating and Sustaining Retrofitting Programs

The paper's second and most extensive section is a "Playbook" created with findings from a one-year behavior-focused study conducted by FLASH with insurance regulators, insurance department staff, and resilience stakeholders. The study prioritized

input from regulators and staff who are leading or are considering home retrofitting grant programs.

The Playbook section begins with a discussion and listing of resilience stakeholders and potential allies. It provides best practices, lessons learned, model statutory language, financial resources, and a phased, step-by-step approach to program development and implementation. The phased approach offers detailed suggestions for contractor protocols, fraud prevention, software, training, etc. Detailed tables provide data and links to existing resources and contacts.

The study process included an ideation session where participants identified the need for a new system to support their retrofit program goals. The group concluded that an NAIC-CIPR resilience services "HUB" with a supporting member engagement team would be beneficial and provide the assets and knowledge necessary for states wishing to provide retrofitting grants. The HUB would connect to a Community of Practice (CoP) to ensure that the latest innovations in academic study, advocacy, engineering, and tools like catastrophe models are dynamically identified and shared through member workshops and outreach efforts.

One of the most insightful discussions in the Playbook recounts the Alabama case study where model codes and 6,600 Department of Insurance[6] *Strengthen Alabama Homes*[7] roof retrofit grants directly impacted and upgraded overall coastal homebuilding

quality. However, the codes and grants have had a profound indirect impact as well. As of November 2023, Alabama has certified more than 45,000 Insurance Institute for Business and Home Safety (IBHS)[8] FORTIFIED[9] homes that meet the insurance industry's highest standard. This means the state funding of 6,600 home upgrades acted as a force multiplier to motivate 38,400 households to build or re-roof their homes to higher standards without public financial support.

The Alabama experience shows that publicly funded grant programs can catalyze private-sector, market-based solutions by driving builder acceptance and consumer demand. This is good news as private-sector financial capacity far exceeds public-sector grant resources and can reach exponentially more households.

Fostering a Culture of Resilience

The third and final resilience strategy covered in the paper focuses on creating a culture of resilience to generate consumer awareness, understanding, and acceptance of stronger building practices to create resilience demand and social value. This section highlights risk communication assets, campaigns, and resources, including many offered by FLASH. One example includes the *Buyer's Guide to Resilient Homes*[10] homebuying publication and website. It also cites campaigns like ICC's *Building Safety Month*.

Annually, FLASH brings together many of our nation's most recognized and trusted voices across many professions, including broadcast meteorology and the greater "weather enterprise," to attend the National Disaster Resilience Conference (NDRC).[11] The NDRC is a thought leader forum that inspires leaders and trusted allies by highlighting new engineering insights, outreach programs, practical solutions, and science to advance building codes and home retrofitting. Following NDRC, attendees such as media representatives from *FOX Weather* and *The Weather Channel* take in and promote the latest information through their networks to help expand consumer knowledge and demand.

Stakeholder organizations operating together as a CoP are another vital element of a resilience culture. FLASH, IBHS, NAIC-CIPR, Robert Wood Johnson Foundation,[12] Smart Home America,[13] and other organizations sustain activities and efforts that drive resilience. Their efforts illustrate an existing CoP that can provide meaningful support for regulators' leadership efforts.

The paper concludes that the necessary funding, programs, and solutions are now in place for state insurance regulators to leverage as they lead efforts to protect lives and property while fostering market stability. The next step is to build the *Resilience Services HUB* as envisioned in the behavior-focused study while growing and leading a resilience CoP through collaborative work to foster strong, disaster-resistant homes nationwide. ■

2

History as a **Guide for the Future**

More than 30 years ago, on August 24, 1992, Hurricane Andrew struck Florida and Louisiana, providing a $27 billion case ($58.5 billion[14] in 2022 dollars) for better building codes for new construction and grant programs to harden older, existing homes and buildings.

Post-storm engineering analysis in Florida found that weak and poorly enforced building codes, flawed construction methods such as improperly braced gable end walls, and design practices incompatible with local conditions contributed to insurance losses that far exceeded insurance industry and regulatory capacity and expectations.[15]

Hurricane Andrew's impacts were felt well beyond Florida and Louisiana. The storm stressed the reinsurance, commercial, and residential insurance systems into crisis. Recalculated future loss projections using modeling vs. historic pricing methods indicated that the available

reinsurance capital was insufficient to cover the risk. The reinsurance capacity shortage caused property insurance markets in Florida, other hurricane-exposed states, and nationwide to harden. Insurance prices rose as availability constricted. Some companies went insolvent, while others retreated from markets altogether. Governors, insurance commissioners, and other state and federal officials swiftly addressed the crisis.

Florida leaders addressed market challenges using a comprehensive resilience strategy even as additional costly, catastrophic hurricanes occurred during the decade following Hurricane Andrew. The strategy components included implementing a new, statewide Florida Building Code (still one of the nation's strongest) and creating the Florida Hurricane Catastrophe Fund. This state-based trust fund accrues tax-exempt capital and provides affordable reinsurance for residential property insurers. They created a Florida Public Hurricane Loss Model and formed the Florida Commission on Hurricane Loss Projection Methodology.

Additionally, the state created the Citizens Property Insurance Corporation (Citizens) in 2002 to provide property insurance for those without options in the private market. As an insurer of last resort, the ebb and flow of policy counts in Citizens is a powerful reflection of market health.

A series of storms in 2004 and 2005, notably Hurricane Charley, reflected the strategy's success through better building performance,

mitigated losses, and increased overall market stability. Academic studies showcased the dramatic improvements due to the new Florida building code, inspiring the Florida Legislature to create My Safe Florida Home[16], a matching grant retrofit program to bring older, pre-code homes up to current standards.

Hurricane Irma struck in 2017, marking a multi-year return of major landfalling hurricanes striking Florida, and the disruption cycle started anew. Hurricane Michael in 2018, Ian in 2022, and Idalia in 2023 have sustained a pattern of devastation.

In response, Florida leaders have mounted a series of solutions to stabilize the market, including but not limited to additional reinsurance, lawsuit reforms, targeted tax breaks on impact-resistant windows, and a renewal of the My Safe Florida Home wind retrofitting program with three investments of $150 million, $100 million, and $176 million respectively.[17]

The My Safe Florida Home program is essential as it addresses older homes that are harder to insure due to outdated building practices used before improved, modern codes. Since the program reopened last year, more than 40,000 homeowners have applied for matching grants, and more than 21,000 have completed home hardening retrofits. The average grant amount of approximately $9,000 corresponds with homeowners' investment of approximately $9,800, and these figures do not account for retrofitting and upgrades that homeowners make on their own without grant support.

The Florida Building Commission has continued to review and adopt wind-resistant practices to meet the ongoing challenges. They adopted more stringent roof deck securing and sealing requirements during recent code update cycles, and preliminary post-storm findings indicate that the enhanced roof deck attachment methods helped mitigate roof damage during Hurricane Ian[18]. Moreover, while the sealed roof deck code requirements have not been in place for long, they provide homeowners with enhanced insurance availability due to the research-validated underwriters' expectations that the sealed deck will decrease costly wind-driven rain damage during future storms.

From 2013 to 2022, more than 170 billion-dollar U.S. events occurred from perils beyond hurricane winds, including flooding, straight-line winds, hail, tornadoes, wildfires, and winter storms.[19]

Hurricane Andrew was a relatively rare catastrophic loss event in 1992. Still, significant loss events have become more frequent since then, presenting ongoing market challenges nationwide. From 2013 to 2022, more than 170 billion-dollar U.S. events occurred from perils beyond hurricane winds, including flooding, straight-line winds, hail, tornadoes, wildfires, and winter storms. As a result, Hurricane Andrew now ranks as the 8th largest disaster loss on record adjusted for inflation, with 17 other events since 1992 surpassing its original $27 billion loss threshold.

Most consider Hurricane Andrew the seminal disaster safety and resilience movement event as it kicked off the seesaw market cycle that continues to disrupt disaster-prone states.

Nationwide, continuous billion-dollar disasters periodically upend markets and affect state economies, notably in Alabama, California, Florida, Louisiana, Mississippi, South Carolina, and Texas. The disruption makes an irrefutable

case for lasting pre-disaster solutions focused on strong, well-built communities as the foundation for resilience.

The Andrew and post-Andrew eras demonstrated that communities with sturdy and durable homes and buildings enjoy more stable, healthy insurance markets that offer affordable and available property insurance. Such communities recover more swiftly post-disaster because they suffer fewer losses and avoid long-term recovery challenges like demand surge that stresses the supply of goods and services. They avoid extreme fluctuations in local real estate values and gentrification trends that constrict the supply of affordable housing for critical workforce such as police, firefighters, and nurses. They leave no opportunities for bad actors who prey on disaster victims, and they ensure that individuals and families experience less overall trauma, anxiety, depression, and post-traumatic stress disorder (PTSD) caused by catastrophic events.[20]

Strong homes and stable insurance markets are inextricably linked. While they cannot prevent disasters, they offer communities their most reliable opportunity to survive, bounce back, and reclaim the pre-disaster quality of life. ◾

3

INTRODUCTION

Disaster
Resilient
Homes

Three strategies create reliably resilient residential housing that can resist dangerous and costly natural disaster damage.

1. CONSTRUCTING NEW HOMES

The first and most effective strategy is constructing new homes using model building codes and standards. Model building codes include the latest science, engineering, and product innovations to create earthquake, flood, hail, wildfire, and wind-resistant structures. Through countless disasters, using codes has proven to be the most successful way to protect families, homes, and communities.

2. RETROFITTING AND STRENGTHENING

The second strategy includes retrofitting and strengthening older, pre-code homes or those built in communities that do not adopt or enforce codes. Retrofitting older homes may be less efficient than building them right the first time, but it is still effective. Moreover, like new homes constructed with modern codes, retrofitted homes often qualify for annual insurance discounts and credits, adding an economic benefit for the insured homeowner. Whether built well the first time or retrofitted later, strong building practices delivered through codes are the key to resilience.

3. GENERATING PUBLIC DEMAND
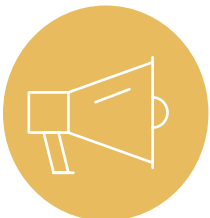
A third, indirect yet enduring strategy to drive resilience is to generate public demand by raising awareness of the many benefits of strong, well-built homes. Leadership messaging regarding safety, savings, and more rapid disaster recovery contributes to consumer outreach and education initiatives that have established and sustained a growing social marketplace for resilience.

Insurance regulatory leaders (commissioners) recognize the profound connection between these strategies and their constituents' safety, well-being, and access to affordable insurance products. The nonprofit Federal Alliance for Safe Homes (FLASH) and the Center for Insurance Policy and Research (CIPR) at the National Association of Insurance Commissioners (NAIC) created this *Resilience Policy Resource Guide and Retrofitting Program Playbook for State Insurance Regulators* (Playbook) to highlight, communicate, and support their efforts to develop and sustain a more disaster-resilient nation through the proven strategies outlined above.

A | The Evolving Role of Insurance Commissioners

The core functions of insurance commissioners focus on insurance company stability, solvency, and fair practices. However, in light of accelerating disasters, these core functions are evolving to address the new challenges and insurance market disruption caused by billion-dollar disasters. Insurance underpins healthy state economies, and buildings must be viable to be insurable. That is why state insurance commissioners are natural champions to help advance climate and disaster resilience.

As a state's de facto risk overseers regulating the risk management and insurance industry, they protect states' economic health by sustaining a marketplace with available and affordable insurance. Commissioners recognize this linkage, and several have stepped forward during the past decade to help advance resilience public policies like modern, hazard-resistant building codes. They have supported the creation of and led mitigation grants and retrofitting programs. And they have increased the social value of resilience by raising public awareness and conducting outreach campaigns.

In 2017, with grant support from the Federal Emergency Management Agency (FEMA), the nonprofit Federal Alliance for Safe Homes (FLASH) launched the *DisasterSmart - Leadership for a Resilient Future* (DisasterSmart) initiative. DisasterSmart research and findings identified potential local, state, and federal

resilience leaders, including many state insurance commissioners. It offered workshops, tools, and information regarding resilience policy fundamentals, incentive-aligned relief programs, public-private partnerships, and innovative disaster finance.

DisasterSmart recognized the natural alignment of insurance regulatory leaders with the disaster safety and resilience movement and generated reciprocal awareness with the private sector. It helped galvanize support for the eventual passage of sweeping resilience policies like the Disaster Recovery and Reform Act of 2018. The NAIC made natural disaster resiliency a critical regulatory priority in 2020 but has been working to address weather-related risks for more than a century. State insurance commissioners, as risk management specialists, are aware of the challenges climate-related risk may pose to the insurance sector on both sides of their balance sheet.[21] Maintaining the financial solvency of insureds is a critical aspect of insurance

regulation, meaning insurers must make and retain enough capital to pay claims.

This goal of financial stability can be at odds with ensuring that consumers have access to affordable insurance products when loss events are frequent and severe, driving up losses for the industry. To balance the competing goals of financial stability and access to affordable insurance coverage, state insurance commissioners are taking a greater interest in reducing the risk of loss through risk mitigation.

For this reason, the NAIC Executive level Climate and Resiliency Task Force formed a Pre-Disaster Mitigation Workstream to participate in multi-agency stakeholder educational efforts on coverage gaps and pre-disaster mitigation related to climate risk. The NAIC–CIPR supported this regulatory priority by developing research, education, and training. It hosted various events, including FEMA and joint FLASH workshops, published research findings, and created the Catastrophe Modeling Center of Excellence (CAT COE). CIPR established the CAT COE

in 2022 to provide regulators with technical expertise, tools, and information to regulate their markets effectively.[22]

The following are some examples of the NAIC resources related to natural disaster risk and preparedness:

- The Catastrophe Resource Center provides state insurance regulators with resources to support disaster preparation and response efforts.[23]

- The Natural Catastrophe Risk Mitigation and Resiliency Resource Center provides state insurance commissioners with resources to support mitigation and resiliency efforts related to risk assessment and stakeholder engagement, support for risk-informed land use planning and building codes, hazard mitigation, resilience funding, consumer outreach, and insurance access.[24]

- The Resiliency Map provides a catalog of disaster resilience information developed

by state insurance departments and the NAIC to help consumers identify and manage the risk of natural hazards in their region.[25]

- The NAIC Catastrophe Modeling Center of Excellence provides insight and research utilizing outputs from catastrophe models to assess the risk of loss from natural hazards and identify risk reduction opportunities.[26]

- For several years, the NAIC's Insurance Summit has included sessions highlighting risk and resiliency initiatives within the NAIC, in state insurance departments, and among key stakeholders and partners with shared goals of creating safer, more resilient communities.[27]

B | Resilience Resource Guide and Playbook – Purpose

FLASH and NAIC-CIPR created the Playbook to advance the DisasterSmart goals and support state insurance commissioners planning and leading resilience efforts through building code advocacy, retrofitting programs, and public awareness initiatives. We based the information in this Playbook on research, lessons learned, best practices, and decades of experience in the disaster safety and resilience movement.

The authors acknowledge the invaluable roadmap in the FEMA Natural Hazard Retrofit Program Toolkit (Retrofit Toolkit) designed to guide communities in establishing retrofitting

programs. The Retrofit Toolkit provides a holistic approach for community-based programs led at any public or private sector level that address residential and commercial structures. However, our Playbook offers guidance for programs led at the state level by insurance commissioners to strengthen residential homes. The Playbook answers the following questions:

- What is the role of the insurance regulator in light of accelerating disaster losses and climate change?

- What are the building code leadership opportunities for state insurance regulators?

- Who are the disaster safety and resilience stakeholders, and how can they help address insurance market disruption?

- What should insurance departments consider when starting and managing a residential retrofit program?

- What funding resources are available to drive resilience? How can the private insurance industry participate?

- How can we create a social value or marketplace for disaster-resilient policies and practices through risk communication and outreach?

- How can we move forward to create sustained change and mitigate market-disrupting losses in the future? ◼

4

AN OPPORTUNITY

Building Code
Policy
Leadership

Building codes offer a set of regulations and standards that outline minimum requirements for building design, construction, and maintenance. They are the foundation of resilience and a key to property insurance stability because their use affects building durability and performance, especially in disasters. Jurisdictions across the U.S. that adopt a residential code most often adopt the International Residential Code, a model building code updated every three years through a consensus process led by the International Code Council (ICC). Still, it is up to state and local governments to adopt and enforce the codes.

A | Federal Policy Trends and Initiatives - FEMA-Led Efforts

In 2017 and 2018, FLASH conducted a national behavior-focused study to understand consumers' understanding of building codes. After qualitative research to identify top consumer perceptions, quantitative findings revealed that eight of ten surveyed believed they were fully "protected" through modern building codes. Unfortunately, the consumer confidence belied FEMA-sourced engineering analysis of building code data reflected in the Building Code Adoption Tracking Portal each quarter, indicating that, on average, only 1/3 of United States jurisdictions have adopted the necessary hazard-resistant building code provisions needed for resilience.

After 2018, FEMA continued its legacy of building code support by embarking on a broad-based leadership effort to increase building code adoption and enforcement to boost disaster resilience. The three-part planned strategy process focused first on aligning FEMA components around building code priorities. The second focused on joint work with other federal agencies, especially grant-making entities like HUD. The third is underway and focuses on creating public-private partnerships to increase understanding and support for building code adoption and enforcement, especially for smaller communities without adequate resources for code administration and vulnerable populations with disparate impacts when disasters occur.

1. FEMA Building Code Strategy

FEMA formed a Building Code Secretariat and Building Codes Working Group to forge and implement the FEMA Building Code Strategy to advance building codes more robustly. The strategy provides policy alignment, technical assistance, training, outreach, and resource support for communities that desire to administer modern codes. In dedicating the strategy, FEMA Administrator Deanne Criswell stated, "This document is just the first step in a comprehensive building codes implementation at local jurisdictions and to help the federal government align building codes across the nation. These efforts will better prepare our nation for disasters, mitigate the impact of those disasters when they inevitably occur, and ultimately help save lives and minimize property loss."

2. National Initiative to Advance Building Codes (NIABC)

Following the FEMA Building Code Strategy development, the White House formed the National Initiative to Advance Building Codes (NIABC) to drive federal agency alignment and "help state, local, Tribal, and territorial governments adopt the latest, current building codes and standards, enabling communities to be more resilient

to hurricanes, flooding, wildfires, and other extreme weather events that are intensifying due to climate change."[28] The NIABC emphasizes the everyday benefits of building codes through increased energy efficiency, consumer savings, disaster resilience, and insurance market stabilization benefits.

B | Building Codes - Linkage to Insurance

Building codes have a direct link to insurance as a significant predictor and driver of loss prevention. Since 1995, the Insurance Services Office (ISO), part of Verisk Analytics, Inc., has administered the Building Code Effectiveness Grading Schedule (BCEGS) ratings for the property and casualty insurance industry across the country.[29] ISO created BCEGS as a tool to evaluate and compare U.S. local jurisdictions' building code strength and enforcement practices. BCEGS analysts consider more than 16,700 building and zoning departments serving more than 25,000 U.S. communities. They provide an overall rating for a jurisdiction representing a combination of elements related to the strength of code, level of code enforcement, quality of code administration, and the interaction of these features.

Given that there is no national U.S. building code against which to benchmark communities on the same relative basis across the U.S., BCEGS ratings are compared to model codes such as the International Code Council's International Residential Code (IRC)

for residential dwellings, International Building Code (IBC) for multi-family and commercial structures, and the International Existing Building Code (IEBC) for existing and historic buildings. BCEGS classifies each jurisdiction or community on a scale of 1 to 10. The lower the rating, the better. A 1 rating reflects more exemplary code enforcement, and a 10 rating indicates that the jurisdiction earned few points across many evaluation criteria.

ISO establishes BCEGS ratings for each community. Additionally, ISO develops advisory rating credits (e.g., insurance premium discounts) using the overall 1 to 10 scale that correlates to BCEGS classifications ranges of 1-3, 4-7, and 8-9. These advisory ratings give communities an additional financial incentive beyond avoiding disaster losses to improve building code administration.[30]

Over time, post-disaster forensic engineering investigations have validated that jurisdictions with more favorable BCEGS ratings have better disaster loss experience where all other factors are equal.[31]

Beyond private insurance, BCEGS ratings are critical to several signature disaster resilience programs. This includes the National Flood Insurance Program Community Rating System scoring activity, the FEMA Building Resilient Infrastructure and Communities (BRIC) grant program scorecard, and resilience and mitigation efforts such as loss avoidance studies and data for the FLASH building code adoption status website.

C | State Leadership - Best Practices

Few state insurance departments have direct regulatory authority over building codes.[32] Several state insurance departments, however, do have a role in model code adoption, frequently in conjunction with other state agencies. So, how can insurance regulators impact and support excellence in building code policy at the state and local levels? Some have done so through the following actions:

- Analyzing and tracking state and local building code adoption status and benchmarking against the current model codes

- Including building code legislative activity in their legislative portfolio and priorities

    - Supporting statewide code adoption of current model codes

with no weakening amendments vs. local adoption only

    - Opposing efforts to skip three-year code adoption cycles

    - Opposing efforts to weaken state building code commission powers

- Educating thought leaders (state officials, editorial boards, etc.) regarding the importance of codes and the link between code adoption and consumer safety and savings, e.g., automatic discounts for building codes, BCEGS ratings

- Engaging in public awareness campaigns, such as the National Building Safety Month celebration each May

- Incorporating digital code lookup tools into digital assets

D | Leadership Resources

Many resources produced by leading government, academic, and nonprofit organizations provide leaders with the support necessary to advocate for building codes. Below are some of the signature tools.

1. Research and Studies

Post-disaster forensic engineering investigations and academic studies reveal that modern model building codes are the most reliable predictive factor for damage levels in disaster events. These studies provide persuasive evidence in support of codes. For example, the *FEMA Building Codes Save: A Nationwide Study* states, "Cumulative losses avoided across the U.S. from codes that have already been adopted are projected to grow to over $132b by the year 2040."[33]

Some of the most compelling studies include:

- A 2006 study concluded that economic losses in Hurricane Katrina could have been reduced by an estimated 65 percent, from $4.8 Billion to $1.7 Billion, if Mississippi had adopted and enforced a residential building code.[34]

- FEMA Building Codes Save: A Nationwide Study of loss prevention shows the significant reduction in property losses from natural disasters due to modern building codes through earthquakes, flooding, and hurricane winds. The analysis finds that over 20 years, cities and counties with modern

Natural Hazard Mitigation Saves: 2019 Report
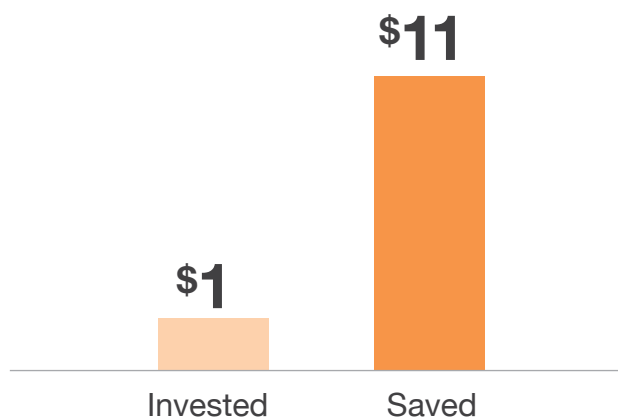
building codes would avoid at least $32 billion in natural disaster losses, unlike jurisdictions without modern building codes.[35]

- NIBS: Natural Hazard Mitigation Saves 2019 Report found that adopting the latest building code is affordable and saves $11 per $1 invested, with the most significant benefits for communities using the most recent code editions.[36]

- Economic Effectiveness of Implementing a Statewide Building Code: The Case of Florida in 2017 details the benefits of the FBC, finding that the "FBC passes the BCA by a margin of 5 dollars in reduced loss to 1 dollar of added cost, with a payback period of approximately ten years."[37]

- Estimating the effects of wind loss mitigation on home value in 2023 "…

empirically estimates the effects of windstorm loss mitigation features on the value of coastal homes using fixed-effects and spatial regression hedonic models."[38] The findings "suggest that policies promoting Fortified homes (or stronger building codes) can create value for coastal homeowners. In addition, policies encouraging home appraisers and financial institutions to reflect the marginal value of Fortified construction in home appraisals could amplify this effect."

- [Adapting to Hurricane Risk - Quantifying Benefits Now & in the Future for Insurers and Real Asset Investors - A Florida Case Study](#) 10/19/2023. This Moody's report analyzes South Florida homes' hurricane exposure and concludes that, "building codes clearly influence predicted hurricane damages and how these damages are expected to change over time in a warming climate." The report compares two standard, two-story, single-family homes, one built with modern codes and one without modern codes. It cites Florida building codes, "greater emphasis on the use of impact-resistant windows, reinforced doors, enhanced roof coverings, and stronger connections between structural elements, such as hurricane straps or clips." According to Moody's, the code requirements lowered expected hurricane damage costs associated with severe wind.[39]

Present Day Wind Derived Average Annual Damage

Building Code Era	
1990s	2022
$28,448	$4,603

2. Building Code Literature, Technical Support, and Resources

The FEMA Building Codes Secretariat, Building Code Working Group, and many stakeholders have produced valuable, open-source building code resources, including:

- **Reports, Playbooks, and Toolkits**

  a. [FEMA Protecting Communities and Saving Money – The Case for Adopting Building Codes](#) - Explains how communities benefit from codes and standards, the hidden costs of failing to act, and provides guidance and case studies intended to help officials and decision makers start conversations about codes to make communities more resilient.

  b. [FEMA Building Codes Toolkit for Homeowners and Occupants](#) - Equips homeowners and occupants with basic building code knowledge, tools such as checklists to ask your general contractor and acquiring a permit and FAQs for homeowners and renters.

c. [FEMA Building Codes Adoption Playbook for Authorities Having Jurisdiction](#) - Provides general knowledge on the importance of building codes, general steps to adopt and enforce them, information on FEMA grants, and references to additional resources.

• **Technical Support**

a. FEMA Building Science provides subject-matter experts at the headquarters level to help leaders understand building code status and quality. They have also recently hired and deployed engineers and other building code experts at the regional levels.

b. The FEMA Building Science Helpline is available to provide additional information on building science guidance and publications:

   • Phone: (866) 927-2104

   • Email: FEMA-Buildingsciencehelp@FEMA.dhs.gov

• **Digital Building Code Information**

a. FEMA Building Science Resource Library - https://www.fema.gov/emergency-managers/risk-management/building-science/publications

b. FEMA Building Code Documents - https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes

• **Digital Building Code Analysis Tools**

a. FLASH hosts and provides a consumer-facing custom, building code lookup experience and tool with information on disaster history, top risks, and retrofit recommendations at www.InspectToProtect.org. FLASH developed the tool following the previously mentioned qualitative and quantitative study designed to understand consumer awareness and understanding of building codes and users' informational needs. The lookup tool is part of the "No Code. No Confidence." public awareness campaign that features celebrity Public Service Announcements (PSAs), animations, and social media kits. The campaign is open source, and the assets are available to download [here](#).

b. FEMA monitors the current building code adoption status for state, local, tribal, and territorial governments for approximately 22,000 nationwide jurisdictions through the Building Code Adoption Tracking (BCAT) system. BCAT evaluates aspects of a community's natural hazard risks and building code adoption, including:[40]

1. State or territory requirements for mandatory building code adoption;

2. Building code adoption status for jurisdictions, including construction requirements for residential and commercial; and,

3. Identification of known weakening of flood, wind, and seismic provisions of adopted building codes.

4. The BCAT tool offers detailed state-level fact sheets with invaluable information for insurance regulators who wish to analyze their code status.

c. ISO, a subsidiary of Verisk Analytics, provides insurers with a private, subscription-based local building code evaluation tool and ranking via the Building Code Effectiveness Grading Schedule (BCEGS) rankings. ISO bases the rankings on local building code adoption, enforcement, administration, and extensive field analysis. Participating companies automate the rankings into property insurance rating formulas, including premium discount calculations.

d. Verisk Analytics publishes a national report every three years using its proprietary analysis matrix.

e. The ICC develops model codes, the I-Codes, on a three-year cycle. The I-Codes include the International Residential Code for one- and two-family dwellings and townhouses up to three stories. The ICC hosts a map of I-Code adoptions by state.[41]

f. Every three years, following the update cycle of the International Code Council, the Insurance Institute for Business & Home Safety (IBHS) publishes "Rating the States." The report scores the 18 Atlantic and Gulf Coast states vulnerable to hurricanes based on a set of questions related to statewide building code adoption, administration and enforcement, and contractor licensing requirements in the adopted building code. It also provides a roadmap each state can follow to improve residential building regulations and reduce the cycle of repeated losses resulting from hurricanes and other severe weather events.

3. Advocacy Partners

In addition to FEMA, FLASH, IBHS, ICC, ISO, and state building officials associations, many local, State, and national building code advocacy coalitions, trade associations, and potential allies can support insurance regulators who wish to advance building code policy. These entities can provide analysis, subject-matter expertise, and technical experts to provide legislative or regulatory testimony and guidance. ■

5

THE STUDY

How to Create and Sustain Retrofitting Programs

Promoting and enforcing building codes for new construction is one of the most critical components of risk reduction strategies. However, nearly one-half of U.S. homes were built before 1980. Moreover, approximately 38% were built before 1970.[42]

Due to the amount of residential housing built before the advent of modern codes or built without codes, retrofitting and hardening older, pre-code, or no-code housing stock is essential to reduce disaster risk, and post-disaster engineering studies consistently demonstrate that newer, strong building practices and mitigation retrofit measures can dramatically reduce losses and insurance claim costs. That is why retrofitting to "harden" homes is vital to addressing natural disaster risk. These proactive measures impact insurance affordability, availability, and overall market stability.

The retrofitting guidance and content in this Playbook includes findings from a one-year feasibility study completed in 2023 by FLASH and CIPR (FLASH Study)[43] with a grant from the Robert Wood Johnson Foundation. The study aimed to identify and overcome practical and policy barriers that can deter insurance regulators from undertaking retrofitting initiatives while identifying and socializing solutions mounted by their peers leading successful retrofitting initiatives. The study explored many programs to identify what would help state insurance departments consider, build, launch, and optimize statewide retrofit programs and, in turn, create more resilient housing stock across the country. It explored types of incentives to motivate homeowner participation. The study investigated the concept of centralized retrofitting administration. Could a dedicated entity support state-level programs? Could it create efficiencies, drive expansion, and upgrade those programs?

The study concluded that various retrofit incentive programs are in place today in at least ten states,[44] all requiring multiple trade-offs from both a regulator's and a homeowner's perspective.

These programs include:
- Cash grants and loans (with and without matches and means tests)

- Insurance discounts (including some that are mandated or coordinated)

- Tax exemptions, credits, and deductions

- Subsidized or free wind inspections

- Incentives provided through community block grants or other funding

- State-sponsored contractor training and certification

Putting a retrofitting program in place means making several choices, including determining the type of incentive, staffing, funding, and contractor training and payment.

After program development, a state must promote it and the incentives, target specific populations, and implement a plan to evaluate the direct and indirect impacts. Knowing what decisions to make and how to implement them can be daunting for states, mainly when capacity and funding are low.

This Playbook will provide insights and resources for insurance departments that are considering, creating, or already implementing a retrofit program.

We present the following retrofitting program development overview steps as a linear process for ease of reading. However, many of these actions may overlap and occur simultaneously.

Table 2. Retrofit Program Development Phases

Phase	Action
A. Plan Your Program	1. Develop a Team – Establish a cross-functional team to help design your program, identify key stakeholders to create buy-in, and garner support.
	2. Assess Community Needs, Gather Data, and Analyze – Gather all necessary information to understand community needs, including hazard and vulnerability data, inventory analysis, existing mitigation programs, building code status, property insurance market data, and insurer solvency insights to validate the case for your program.
	3. Review and Select Homeowner and Community Adoption Incentives – Ten different retrofit incentive programs across ten states revealed incentives from both regulatory and homeowner perspectives, including grants, insurance premium discounts, free wind inspections, and more.
	4. Evaluate Potential Program Goals and Scope – Identify and select eligible recipients, geographic areas, allowable retrofit activities, and construction standards that homes must meet to receive grant dollars, e.g., building codes or standards such as IBHS FORTIFIED.
	5. Identify Potential Funding Sources – Identify funding sources to administer the program and underwrite the first grants and potential recurring resources to sustain the program over time.

| Phase	Action
B. Structure Program and Build Support	1. Design Your Program – Assemble the best practices and policies that best suit your state and your program size.
	2. Establish Program Oversight – Select either internal or external consulting or a hybrid approach of both to provide program oversight and management.
	3. Implement Enabling Strategy Via Legislative or Regulatory Process – Identify and draft legislative or regulatory action, guidance, and policy structure needed to establish the program.
	4. Design and Structure Program Management and Support Services – Secure technology solutions for administration, contractor, and grantee support services, including fraud detection. Develop outreach material for critical audiences to promote the program and generate participation.

Phase	Action
C. Implement, Maintain, and Grow Your Program	1. Develop a Pilot Program – Test drive your program model on a small scale, select a number of grant recipients, and seek their input about your program, processes, and constructs through feedback, interviews, and evaluations.
	2. Measure, Evaluate, and Report – Establish metrics and feedback mechanisms to gauge outcomes and ensure success. Work with building suppliers to ensure supply adequacy and technical support services to manage service-level constraints. Track key performance indicators such as the number of properties designated, the number of premium discounts applied for, the increased value of completed homes, and reduced disaster risk. Deliver performance reporting to funding organizations or bodies.
	3. Grow and Sustain Your Program – Participate in a Community of Practice through participation in the proposed *Resilience Services HUB*. Leverage best practices, model legislation, proven tactics, and more to establish a culture of resilience in your state. Forge public-private partnerships with your state's admitted homeowners insurance companies and align your program with resilience advocates.

FEMA National Mitigation Framework

FEMA's National Mitigation Framework emphasizes that multiple state partners must work together to identify and implement mitigation solutions and investments to ensure the success of a program. State insurance departments are not typically named partners in the FEMA Hazard Mitigation Guide (State Mitigation Planning Policy Guide), but as risk managers, they should be. A critical component of the planning includes hazard identification and risk assessment whereby state agencies collaborate to identify and describe the known hazards for the state and analyze the vulnerability to local jurisdictions.

The insurance industry has the tools and capability to assess vulnerabilities, often using catastrophe models. State insurance departments could play a role in hazard mitigation planning by providing critical information on vulnerabilities, including where hazards are most common and insurance coverage gaps exist. If a disaster occurs, more significant coverage gaps in some areas may result in more reliance on federal, state, and local aid. People with access to insurance recover more quickly and fully following a loss event. They avoid coverage gaps that create additional strain on state and local businesses, economies, and consumers. Access to information on coverage gaps and a granular assessment of the risks and vulnerabilities of a region is critical for planning purposes. Insurance regulators are well-positioned to provide this analysis through cooperative data gathering with the insurers in each state.
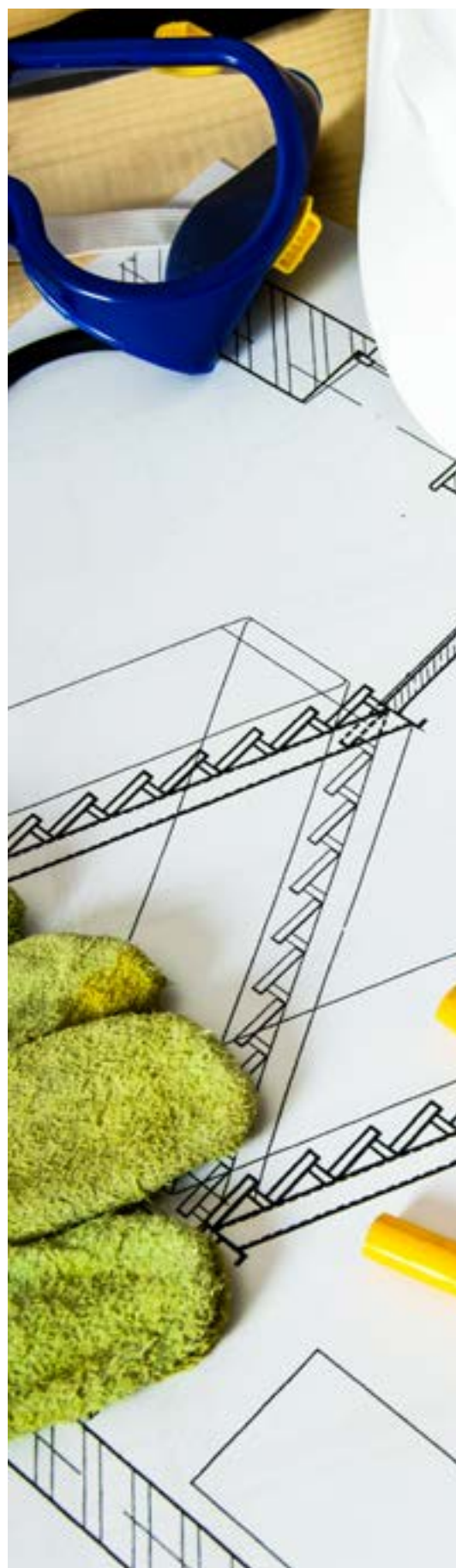
A | Plan Your Program

1. Develop a Team

Identifying the key stakeholders is the first challenge when analyzing resilience leadership. Who is engaged in resilience initiatives in your state? What are your state and other states doing to achieve disaster resilience? How have other states succeeded, and what agencies are involved? The first section of this Playbook aims to help users identify state resilience players and identify the leaders and initiatives already in place in their state.

Identify key legislative, regulatory, or ordinance development stakeholders and recruit their involvement. This may include government officials, policymakers, legislators, representatives from relevant government agencies, experts in disaster resilience, insurance industry representatives, builders, architects, and community organizations.

The following sections describe individual roles and entities that lead disaster-resilience initiatives across the United States that you should consider adding to your team. An excellent place to start is by reviewing the State Hazard Mitigation Plan. Such plans are typically updated on a five-year cycle and include input from various state and local agencies with a role in resilience.

- **The State Hazard Mitigation Officer** – A State Hazard Mitigation Officer (SHMO) is a role within a state government agency that focuses on coordinating and implementing hazard mitigation efforts at the state level. The specific title and responsibilities may vary between states. Still, the role typically involves creating and maintaining the State Hazard Mitigation Plan, a critical tool to understand your state-specific natural hazard risks and to examine your State's existing long-term risk reduction strategies. States must update their hazard mitigation plan every five years to receive Stafford Act non-emergency assistance. FEMA lists State Hazard Mitigation Officers' contact information.

- **The Chief Resilience Officer** – The Chief Resilience Officer (CRO) position first began as part of the Rockefeller Foundation's 100 Resilient Cities program, with San Francisco's Patrick Otellini as the world's first Chief Resilience Officer. 100 Resilient Cities described the CRO as "an innovative position in government that ideally reports directly to the city's chief executive and acts as the city's point person for resilience building."[45] Many, but not all, states have a chief resilience office or officer appointed to lead resilience efforts for the state.[46] The position within the state administration, reporting structure, and responsibilities of resilience officers vary considerably.

- **Building Code Administration** – Building code adoption and enforcement status varies across

states, territories, commonwealths, and tribes. The administration of building codes varies from state to state. Still, designated positions or agencies are typically responsible for overseeing and enforcing building codes. Typical individuals, functions, or entities that administer building codes at the state level:

- State Building Official

- State Department of Building Standards, Safety, or Inspections

- State Fire Marshal

- State Construction Licensing Board

- State Department of Community Affairs or Development

- **Professionals, Associations, Organizations, and Federal Agencies that Foster Disaster- and Climate-Ready Communities** – Certain professionals, practitioners, and trade associations are crucial to disaster resilience in the built environment. They include architects, engineers, builders, and associations like the American Institute of Architects (AIA), the American Society of Civil Engineers (ASCE), and the National Association of Home Builders (NAHB). Building code development organizations like the International Code Council (ICC), the National Fire Protection Association (NFPA), the National Electrical Manufacturers Association (NEMA), and state and local building code officials and associations have a direct role in developing and administering

the minimum standards for safe construction.

- **Nonprofit Disaster Safety Organizations** – BuildStrong Coalition, FLASH, IBHS, Smart Home America, and others are essential advocates for disaster safety at the federal, State, and local levels of government through the support of building codes, financial incentives, resilience retrofitting programs, and common-sense public policy. These organizations serve as subject-matter experts (SMEs) and educate stakeholders.

Form a working group, formally or informally, to help define the program's objectives, address identified risks, and provide recommendations for retrofitting requirements, funding mechanisms, incentives, fraud prevention, and enforcement provisions. Identify a champion to establish credibility and trust and to increase visibility and awareness among policymakers, legislators, and key decision-makers.

2. Assess Community Needs, Gather and Analyze Data

Program administrators must understand the specific challenges of natural hazards and assess the vulnerabilities of residential structures and communities. A systematic approach incorporating data analysis and stakeholder engagement can develop targeted strategies and prioritize resources where they are most needed. In your process, consider the assessments below. The FEMA Natural

Hazard Retrofit Program Toolkit provides additional details.

- Evaluate Hazards: Identify the specific natural hazards prevalent in the region or community and evaluate historical data and patterns to understand the frequency and severity of these hazards. Determine the impacts of these hazards on residential buildings and communities, including property damage, health effects, displacement, and economic losses. Use various resources to collect relevant data, such as government agencies, existing reports and studies (e.g., State Hazard Mitigation Plan), historical records, census data, and GIS technology. Engage with local communities, experts, and stakeholders to gather insights on local experiences, perceptions, and challenges related to natural hazards and retrofitting. FEMA National Risk Index (NRI) provides data about expected annual losses to natural hazards, social vulnerability, and community resilience.

- Assess Vulnerabilities: Identify the vulnerabilities and risks in the target area, considering factors such as building age, construction materials, location, and socioeconomic characteristics. Analyze data on past incidents, damage assessments, and insurance claims to identify areas of high vulnerability and frequent losses. As reflected in the FEMA National Risk Index, social vulnerability considers a community's

social, economic, demographic, and housing characteristics that influence its ability to prepare for, respond to, cope with, recover from, and adapt to environmental hazards. Socioeconomic variables include below 150% poverty, unemployment, housing cost burden, and lack of health insurance.

- Analyze Inventory: Analyzing the current building inventory captures information and community characteristics. Details like building type, location, and age are critical to capture the complete picture of a community's risk from the hazards they face. Inventory analysis findings can influence the design of a retrofit program in various ways. For example, the *My Safe Florida Home* program prioritized eligibility based on the age of the home. The FEMA Natural Hazard Retrofit Program Toolkit has developed worksheets to assist communities in inventory analysis.

- Evaluate and Catalogue Existing Mitigation Efforts: Review any existing retrofitting initiatives, building codes or regulations related to natural hazards and assess their effectiveness and coverage. Identify gaps or limitations in current efforts and determine areas for improvement or expansion. Many states have programs through CDBG, BRIC, HMGP, etc., that they could leverage to prevent duplication of efforts and increase program capacity.

Leverage Catastrophe (CAT) Models

Use CAT modeling of complex scenarios and events by incorporating data, technology, scientific research, engineering methods, and statistical analysis.* Models were introduced in the 1980s, but Hurricane Andrew in 1992 influenced their widespread use by the insurance industry. The severity of losses seen with Hurricane Andrew drove insurers to adopt better tools to estimate potential catastrophe loss rather than simply looking at historical loss trends to rate policies and reserve capital.

Catastrophe models produce outputs that are used in various ways. The insurance industry uses models for risk selection, rate making, pricing mitigation factors, reserving capital, and placing reinsurance. Similarly, state and federal policymakers can use models to estimate loss potential for known hazards, measure the impact of mitigation on the risk profile of communities, and determine insurance coverage needed for public property.**

*NAIC Center for Insurance Policy and Research. Catastrophe Models (Property).

**American Academy of Actuaries Extreme Events and Property Lines Committee. (2018). Uses of Catastrophe Model Output.

- Identify Building Code Status: Ascertain whether your community has adopted and enforced a modern, hazard-resistant building code. The U.S. building code system overlays a patchwork of communities where codes are either adopted, partially adopted, or not adopted. Building codes and standards are often adopted legislatively but administered at the state or local level.

  Some states adopt modern building codes and require the code statewide enforcement with local amendments at least as stringent as the statewide building codes. *(Note: This step relates to the previous discussion regarding opportunities and resources in this Playbook's Building Code Leadership section.)* Other states do not mandate statewide enforcement of building codes and instead give local jurisdictions the power to regulate.

Several new tools and resources now exist to help states and jurisdictions learn more about what building codes are in place and whether hazard-resistant provisions like flood elevation are intact in their codes. The resources include:

- FEMA Building Code Adoption Tracking (BCAT) Map – tracks inclusion or deletion of hazard-resistant provisions relevant to local risk;

- FLASH www.InspectToProtect. org - provides a consumer-friendly, jurisdiction-level building code status lookup tool with information on retrofit options for relevant hazards;

- International Code Council https:// codeadoptions.iccsafe.org/ - provides state-level building code adoption statuses for professionals.

- Verisk Analytics/ISO - Participating BCEGS communities receive a score that reflects the level of building code adoption and enforcement in that community.

State, territorial, tribal, and local governments all benefit from strong building codes due to their impact on insurance rates, potential for discounts, and availability of coverage. A strong building code is a factor considered in a jurisdiction's BCEGS score, in addition to other elements of building code adoption and enforcement. BCEGS provides participating insurers with BCEGS classifications, advisory credits, and related underwriting information.[47] The National Flood Insurance Program's (NFIP) Community Rating System (CRS) also factors in a community's BCEGS score, indicating eligibility for flood insurance discounts.[48]

As previously outlined, FEMA grants programs such as BRIC factor in a jurisdiction's building code and BCEGS score when determining eligibility for federal grant funds, as well as other Hazard Mitigation Assistance and Public Assistance programs.[49]

- Engage Stakeholders: Collaborate

with local communities, government agencies, insurance departments, and other relevant stakeholders to gather input and insights.

Based on the collected data and stakeholder input, prioritize the natural hazards and vulnerable areas that require immediate attention. Start to set clear goals and objectives for the residential retrofit program, focusing on enhancing resilience, reducing damages, and minimizing health impacts.

3. Review and Select Homeowner and Community Adoption Incentives

Existing retrofit incentive programs highlight the importance of customizing and tailoring incentives to meet specific objectives and aligning them with homeowners' and communities' needs. Our research found diverse retrofit incentive programs across ten states, each with its own set of trade-offs from both regulatory and homeowner perspectives. Careful consideration is required when developing an incentive-based program, as multiple options exist, including grants, premium insurance discounts, free

wind inspections, and more. Among these options, grants and premium discounts emerge as the most prevalent incentives for retrofit programs.[50]

You will likely have to make trade-offs when structuring grant eligibility for your residential retrofit program. For example, programs that only offer incentives to homeowners under a certain income threshold can concentrate their impact on lower-income communities. However, experienced program leaders advise that setting such thresholds can carry a significant administrative burden and may have less effect on the overall housing stock. They report that programs with more open-ended incentives are more straightforward to promote and administer.

The table below outlines what some states have implemented, along with some of the pros and cons of each approach. Several local jurisdictions administer retrofit programs as well. The FLASH Study[51] independent research informed Table 2. Retrofitting Program-Based Incentives and Table 3. General Market-Based Incentives.

Table 3. Program-Based Incentives: Regulators' Perspective

Incentive	Programs With Incentives	Pros	Cons
Cash grant (no match, no means tests) Homeowners or their contractors are reimbursed for the total cost of mitigation up to a dollar cap. Must meet specific construction standards.	**Existing** [State ($ cap)] Alabama ($10,000)[52] California ($3,000)[53] North Carolina ($8,000)[54] Texas[55] **Past** Hawaii ($6,500) Mississippi ($2,500) **Starting Up** Louisiana ($10,000)[56]	• Popular with homeowners. • Easy to expend budget: Demand typically exceeds funding supply. • Reduces barriers for homeowners who cannot afford any or part of the costs of a retrofit.	• Compared with cost-share models, fewer homeowners can be helped per dollar expended. • No means test means wealthy homeowners get the same assistance as everyone else. • Demand typically far exceeds supply. It may make a small dent in the overall need. • The homeowner must pay costs over the cap.
Cash grant (match required) The program matches a specified level of spending by the homeowner up to a cap. Must meet certain construction standards.	**Existing** Florida ($10,000)[57] South Carolina[58] **Past** Hawaii ($5,200)	• Homeowner match increases the buying power of the grant. • The homeowner is financially invested and may strike a better bargain with the contractor. • Incentivizes, but also norms, having homeowners invest in their home's resilience.	• Matching the grant may be a barrier for low-income homeowners. • Homeowners may not participate because they cannot afford the difference not covered by the program to retrofit. • Need to track and verify homeowner investments along with everything else.

Table 3. Program-Based Incentives: Regulators' Perspective (cont.)

Incentive	Programs With Incentives	Pros	Cons
Means-tested cash grants or loans - More generous grants or loans are limited to lower-income homeowners.	**Existing** California – Brace + Bolt ($1,125 - $7,000)[59] South Carolina[60] **Proposed** Connecticut[61]	• Method to supplement cost or provide better terms for lower-income applicants. • Eliminates grants to wealthier homeowners who can more easily pay for the work.	• Adds the need to verify income or other means-testing criteria. • Does not provide incentives for homeowners who do not qualify. • Some homeowners may not apply because they don't think they qualify.
Free, subsidized, or cost-controlled home wind inspections	Florida[62] Mississippi[63] North Carolina South Carolina[64] Texas[65]	• Informs homeowners of deficiencies. • Incentivizes homeowners to consider needed retrofits. • Establishes an inventory of homes for use in future grant opportunities	• Not all states underwrite the cost of the inspections. • Does not ensure retrofits take place.
Community block grants	Alabama	• Allows for partnering with community organizations. • Can target areas with higher needs and lower resources.	• Need to determine which communities to target. • Objections by areas that do not get block grants.
Contactor training, certification, licensure, and/ or Continuing Education Credits (CEs) to participate in the program	Alabama[66] California[67] Florida[68] Mississippi[69] South Carolina[70]	• Guides homeowners to reputable contractors. • Educates contractors on best practices. • Provides a level of oversight over contractors.	• Need for training and certification infrastructure. • Limits the number of contractors who can participate.

Insurance regulators and retrofit program leaders participating in the FLASH Study[71] provided perspectives on different incentive types based on their short- and long-term experience with each type, including insights about how, or whether, incentives have affected their states' insurance markets. The study revealed additional types of incentives that complement matching grant-based retrofitting programs, and several examples are included in the table below.

Table 4. Market-Based Incentives: Regulators' Perspective

Incentive	Programs With Incentives	Pros	Cons
Mandated homeowners insurance discount - The state requires insurers to offer specific or non-specific premium discounts for retrofits.	Alabama[72] California[73] Connecticut[74] Florida[75] Georgia[76] Maryland[77] New York[78]	• Consistent discounts can be promoted uniformly to consumers. • Level playing field for insurers. • Incentives are in place for all homeowners.	• Requires government mandate. • No longer a point of differentiation among insurers. • Does not factor financial conditions of different-sized companies. • Can discourage new companies from entering a market or existing companies from
Varied homeowners insurance discounts - Offered voluntarily.	Numerous states	• Market-based. No government mandate. • May be promoted in the sales process.	• Difficult for a state to promote as actual discounts may vary. • Some insurers may not offer discounts to incentivize retrofits. • Allows companies the flexibility to differentiate based on their needs and market conditions.
Deductible waiver	Rhode Island[79]	• Requires homeowner awareness and specific mitigation measures	• May not offer enough incentive. A small percentage of the overall cost

Table 4. Market-Based Incentives: Regulators' Perspective (cont.)

Incentive	Programs With Incentives	Pros	Cons
Insurance policy endorsement – FORTIFIED Roof	Alabama[80] Mississippi North Carolina[81]	• Broad impact • Can facilitate widespread use, especially during reroofing	• May increase premium
Sales tax exemption or credit (On certain retrofitting supplies or efforts)	Alabama[82] Florida[83] Louisiana[84] South Carolina[85] Texas[86] Virginia[87]	• Reduces the cost of a retrofit immediately. • Small overall investment per retrofit from the state.	• It may not offer enough incentive. A small percentage of the overall cost.
Income tax credits and deductions	Alabama[88] Colorado[89] Louisiana[90] South Carolina[91]	• Incentivizes retrofit: reduces the ultimate cost of a retrofit. • Broad impact: available to all taxpayers.	• The need to front costs remains a barrier. • Delayed gratification: tax write-off will not typically be taken at the time of construction. • Does not provide an incentive to those who pay little or nothing in income taxes.
Catastrophe Savings Account	Alabama[92] Mississippi[93] South Carolina[94]	• Tax-advantaged account for qualified catastrophe expenses • Incentivizes homeowners to prepare financially for post-disaster recovery	• Contributions over the established cap or spending on non-qualified expenses could result in homeowner tax liabilities and penalties

Premium Discounts – As noted in the chart above, several states provide insurance premium discounts for taking mitigation actions or meeting other standards. Feedback from study participants emphasized the preference for voluntary discount programs that offer flexibility and a range of options.[95] Additionally, programs should consider an annual review, which would allow for adjustments, refinements, and the incorporation of evolving risk factors, ensuring that the discounts remain relevant and efficient for all parties.

Many states base premium discounts on the IBHS FORTIFIED standards.[96] Based on decades of research, FORTIFIED is a voluntary beyond-code construction and re-roofing program that reduces storm damage by strengthening areas of buildings typically vulnerable to high winds and heavy rain. IBHS offers three levels of FORTIFIED designations (Roof, Silver, and Gold) for homes, multifamily properties and commercial buildings. Each designation includes third-part verification of required upgrades, ensuring a consistent level of protection.

The following table captures statutory or other enabling language for various state's premium discount programs.

Table 5. Premium Discount Language

State	Statutory Language or Agency Guidance
Florida	• Fla. Stat. § 627.0629[97] – This statute outlines the requirements and guidelines for insurance companies in Florida to provide premium discounts to policyholders who implement windstorm loss mitigation features to fortify their properties against wind-related damages. • Homes built to the 2001 Florida Building Code or later edition, including the 1994 South Florida Building Code for homes in Miami-Dade and Broward Counties, are automatically eligible for a minimum 68% discount on the windstorm coverage of the premium due to the upgraded requirements, including a roof covering, roof attachment and roof to wall connection.[98]
South Carolina	• S.C. Omnibus Coastal Property Insurance Reform Act of 2007, Act No.78[99] - state law does not specify the amount of the discounts or credits that insurers must offer. The amount and range of premium savings from mitigation credits can vary significantly from one insurer to another. • Coastal homeowner insurers offer, on average, a maximum premium credit of 48% for all mitigation measures combined.[100]
Alabama	• Ala. Act No. 2015-313 modified Chapter 31D of the Insurance Code[101] - allows owners of residential or commercial property in any county in the State, rather than just coastal counties, to receive an insurance premium reduction for retrofitting to strengthen and enhance resistance to hurricane and other windstorm damage. • Bulletin 2016-07[102], IBHS discounts range from 35 percent to 60 percent on the hurricane portion of a policyholder's premium and from 20 percent to 35 percent on the other wind portion.
Texas	• Texas Windstorm Insurance Association (TWIA) offers wind and hail insurance discounts for new homes constructed per the International Residential Code (IRC) or the International Building Code (IBC). In addition, a discount is available for existing structures that retrofit their exterior openings with Windborne debris-resistant products. Tex. Insurance Code Ann. Chapter 2210 (2023).

The NAIC-CIPR compiled information regarding insurance incentives for resilience in its publication, National Association of Insurance Commissioners & The Center for Insurance Policy and Research. 2.4.2020 Research Report. Topic: Funding resources to promote disaster resilience and mitigation.[103]

The report cited two primary insurance incentives for mitigation, including insurance discounts for property risk mitigation activities and state grant programs to provide funding to property owners for mitigation activities. They also report that some states offer tax incentives, including tax-deferred savings accounts and tax-free holidays for construction materials used to mitigate potential damage. These findings are consistent with later findings in the FLASH study. Smart Home America provides a list of states with mitigation discounts and mitigation grant programs[104], and IBHS provides a FORTIFIED Financial Incentives listing of incentives offered by state as well.[105]

4. Evaluate Potential Program Goals and Scope

Establishing clear goals and a comprehensive scope for a residential retrofit program is essential. This playbook section guides critical aspects such as reviewing existing programs, assessing needs, selecting appropriate retrofit activities, targeting the right audience, and devising incentives. A well-defined program scope sets the stage for success.

Consider a Roof Endorsement

- Alabama insurers must offer an endorsement for single-family owner-occupied homes to upgrade a non-FORTIFIED home to an IBHS FORTIFIED Roof™ for a premium.

- Eligible and renewing policies with the Mississippi Windstorm Underwriting Association (MWUA) can re-roof to FORTIFIED for free when a covered claim results in 50 percent or more of a roof being replaced.

- Eligible policies in select territories with North Carolina Insurance Underwriting Association (NCIUA) policies can re-roof to FORTIFIED for free when a covered claim results in roof replacement.

a) Define Eligible Recipients

Use the Assess Community Needs step data to establish who the program should serve. Once you complete an initial evaluation, consider the insurance marketplace/availability to finalize your target audience. Many states have residual market programs that offer policies to high-risk policyholders when they cannot obtain a policy from the private insurance market. Focusing on these policyholders decreases their risk profile, enabling them to enter the private market.

Table 6. Sample Eligibility Criteria Current Mitigation and Retrofit Programs

Alabama	Must own and occupy a single-family home in good repair, in a qualifying county as a primary residence, and provide proof of in-force homeowners policy, wind policy, and flood policy (if the home is in a special flood hazard area). Strengthen Alabama Homes[106]
California	Must own and occupy a house in a designated ZIP code, built before 1980 with a raised foundation or crawl space, and the house built on level or a slightly sloping gradient. No prior completed "brace and bolt" retrofits. Earthquake Brace+Bolt[107]
Florida	Must have a homestead exemption with an insured value of less than $700,000. The initial building permit must have been issued before January 1, 2008. Must have received a free home hurricane inspection through the My Safe Florida Home Program. My Safe Florida Home[108]
North Carolina	Must own a home with a current North Carolina Insurance Underwriting Association (NCIUA)-policy. The home must be located east of the Intracoastal Waterway and the Outer Banks and Barrier Islands of North Carolina. Strengthen Your Roof[109]
South Carolina	Must be a primary residence, owner-occupied home located in the coastal region of South Carolina with an active insurance policy covering the property. The home must be site-built or manufactured/modular with no previously existing damage. The house and homeowner together must not have previously received and utilized an SC Safe Home grant. SC Safe Home[110]

b) Define Eligible Activities

Reference your State Hazard Mitigation Plan to determine the perils and retrofit activities your State Emergency Management Office prioritized. Consider conducting a cost study to determine the average costs of retrofitting activities for your target areas. Use estimation software, data from the state builders' association, or actual quotes to obtain information on project costs, including materials, labor, and equipment. Identify factors that may influence retrofit project costs, such as regional variations, building size, existing condition of the structure, and current market conditions. Table 6 lists various hazards and retrofitting activities.

Table 7. – Retrofitting Activities by Hazard

Hazard	Sample Retrofitting Activities	
Earthquakes	Bolting homes to foundations	Bracing cripple walls and bolt stem walls/reinforcing crawl spaces
	Reinforcing balconies and decks	Strengthening soft and weak story construction
	Securing chimneys and fireplaces	Securing water heaters and appliances
	Installing flexible hoses on gas and water lines	Anchoring rooftop equipment
	Installing gas shut-off valves	Reinforcing hillside house foundations
	Anchoring fuel tanks	
Flood	Elevating indoor electrical systems, appliances, HVAC	Installing backflow valves
	Elevating outdoor appliances, systems, and equipment	Elevating home
	Installing flood vents in unoccupied areas of your home, such as the garage or basement	Anchoring fuel tanks
	Designing a landscape to flow water away from the foundation and home	
Hurricanes	Installing impact-resistant windows and doors/strengthening exterior doors and protecting windows	Strengthening and reinforcing garage doors/Installing a high-pressure-rated garage door
	Installing hurricane shutters	Sealing the roof deck
	Reinforcing roof structures to withstand high winds	Strengthening roof-to-wall connections
	Bracing gable-end walls	Strengthening roof deck connection
	Anchoring structure to the foundation	Securing gazebos, pavilions, and pergolas
	Improving anchorage of attached structures	Bracing soffit covers
	Strengthening your gutters	Securing potential yard debris
	Preparing your trees and landscaping	

Table 7. – Retrofitting Activities by Hazard (Cont.)

Wildfires	Clearing vegetation to create defensible space, emphasizing a 0 to 5-foot clear space	Placing fuel tanks an adequate distance from the home
	Installing spark arrestors and ember-resistant vents and screens	Applying fire-resistant coatings to exterior surfaces/Upgrading to noncombustible siding
	Planting wildfire-resistant landscaping	Using non-combustible decks, porches, fences, and sheds
	Protecting eaves, soffits, vents, and gutters	Installing fire-rated window shutters
	Replacing non-metal vent materials	Upgrading windows to heat and flame-resistant types
	Installing fire-rated garage doors	Installing fire-rated exterior doors
	Re-roofing with fire-resistant materials	Upgrading to residential fire sprinklers

Established third-party, performance-based retrofitting programs provide mitigation specifications that can be referenced or incorporated into a state retrofitting program. For example, IBHS has a program specifically for mitigation of damage caused by high wind and hail including hurricanes and severe convective storms that provides a comprehensive framework for homeowners, contractors, and builders to strengthen homes and buildings through three levels of designation: FORTIFIED Roof™, FORTIFIED Silver™, and FORTIFIED Gold™.[111] Each level corresponds to specific requirements and best practices for roofing systems, walls, windows, doors, and other vulnerable components.

One of the most compelling examples of how FORTIFIED and building codes create successful synergy is in the State of Alabama. Coastal Alabama jurisdictions began adopting and enforcing updated building codes after Hurricane Ivan in 2004 – many using model codes that mirror the requirements of the IBHS FORTIFIED standard. In 2016, with the long-term effects of Hurricane Ivan continuing to disrupt the homeowners' insurance market, the state created Strengthen Alabama Homes, a wind mitigation grant program, which has now issued over 6,600 grants to help homeowners replace their roofs with new ones that meet the FORTIFIED Roof™ standard.

The model codes and grants directly impacted and upgraded overall homebuilding quality in coastal Alabama, but they have also had a significant, indirect impact. Alabama has more than 45,000 beyond-code FORTIFIED homes that meet the insurance industry's highest standard. This means that, without any upfront financial assistance, more than 36,000 households elected to build or re-roof their

homes to the higher standards. Contractors recognize the business opportunity of upgraded homes and roofs, and homeowners elected to invest to achieve better insurability and qualify for available premium discounts. These factors have helped to stabilize the insurance market in the state.

c) Define Eligible Geographic Areas

Risk varies widely by geographic location, often even within one state. Areas with high rainfall are more prone to flooding. Regions with high temperatures and dry conditions are more susceptible to wildfires. Geological characteristics, such as proximity to fault lines, present higher seismic risk as coastal areas may fall within hurricane zones.

It is critical to determine where your most significant risks exist and consider targeting your retrofitting program to those areas to create the greatest impact, even if just in the pilot phase. The *Alabama Safe Home* program was initially only available in coastal counties, and the *My Safe Florida Home* program was initially only available in the ASCE-defined Windborne Debris regions. The *Louisiana Fortify Homes* program was initially for homes covered by the state-run Louisiana Citizens Property Insurance Corporation.

The FEMA National Risk Index (NRI) is a comprehensive, open-source tool that helps users define geographic risk. According to FEMA, the National Risk Index (NRI) is "a dataset and online tool to help illustrate the
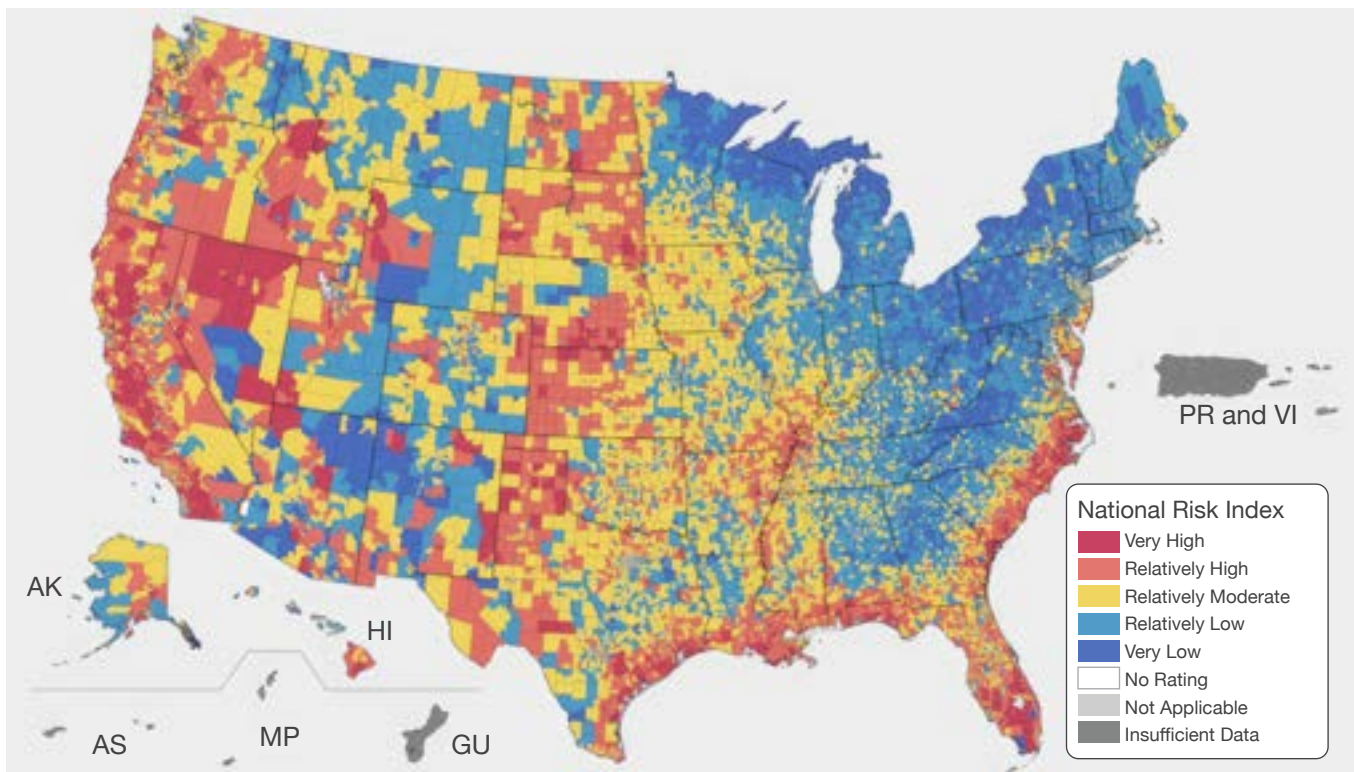
IBHS Research Center

The insurance industry invested to establish the IBHS Research Center to study the impact of severe weather hazards on common residential and commercial construction materials and systems and identify methods to reduce avoidable loss.* The research helps advance building science, structural design, and construction methodologies to create more resilient communities. IBHS is a partner in consumer outreach, educating the public regarding ways building performance commonly fails to withstand the impact of natural perils.

The NAIC entered into a Memorandum of Understanding with the IBHS in July 2023 to provide state insurance regulators access to its research and other Member-only content to help expand opportunities for collaboration on mitigation and disaster preparedness.**

* Insurance Institute for Business & Home Safety. Types of Risk Research.

** NAIC. (2023, July 31). NAIC Signs Memorandum of Understanding with IBHS, Obtains Access to Top-Tier Building Science Research

National Risk Index
- Very High
- Relatively High
- Relatively Moderate
- Relatively Low
- Very Low
- No Rating
- Not Applicable
- Insufficient Data

United States Communities most at risk for 18 hazard types, including avalanche, coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane, ice storm, landslide, lightning, riverine flooding, strong wind, tornado, tsunami, volcanic activity, wildfire, and winter weather." The risk index "provides a baseline relative risk measurement for each U.S. county and Census tract."

FEMA designed and built the NRI through cooperative work with partners, and FEMA must review and update it at least every five years. Additionally, the Community Disaster Resilience Zones (CDRZ) Act of 2022 requires the President to identify and designate "community disaster resilience zones." The Act empowers the President to provide financial, technical, or other assistance to support resilience for mitigation projects planned in the designated zones to provide

vulnerable communities increased access to federal grants through enhanced resources and lower cost-share requirements.

NAIC supports providing publicly available information to inform consumers about natural hazard risks and offered to collaborate with FEMA in designating CDRZ communities. The NAIC commented on FEMA's request for information regarding the CDRZ and NRI, stating, "… the NAIC supports advancing public risk assessment tools, like the National Risk Index, to inform not only property buyers, but local planners, developers, real estate professionals, and homebuilders."[112] Access to insurance is a critical component of resilience and should be considered when selecting the zones. Areas with insurance coverage gaps will likely need a more significant share of federal, state, and local assistance following a disaster. Communities at high risk of natural

hazards with low insurance take-up rates will take longer to recover if they can recover at all.

5. Identify Potential Funding Sources

Funding for residential retrofitting programs can come from various sources, depending on the program's objectives, scale, and specific requirements. In most cases, states provide the initial investment to pilot or start a retrofit program, leveraging one or more of the following methods:

- Legislative Appropriations: State governments may allocate funds from the state budget to support retrofitting programs. These appropriations can provide additional funds to supplement insurance assessments, ensuring sufficient resources are available to fund the grants.

- Bond Measures: In some cases, states may issue bonds to fund mitigation programs and initiatives. Bond measures involve borrowing money by issuing government bonds that are repaid over time.

- Insurance Premium Assessments: Some states implement insurance premium assessments or surcharges to fund mitigation programs. These assessments are typically added to property insurance policies and are used to generate revenue for mitigation efforts.

Table 8. Funding Mechanisms for Existing Retrofit Programs

Alabama	Approximately $10M in annual program funding comes from the insurance industry via premium tax collected by the state. It is not funded from the State's general budget or tied to a federally funded program.[113]
California	The California Residential Mitigation Program (CRMP) and FEMA grants fund the Earthquake Brace and Bolt retrofit grant program.[114]
Florida	The State initially created the My Safe Florida Home Program in 2006 with $250 million appropriated for the program. In 2022, it revived the program with a legislative appropriation of $150,000,000 for 2022-2023, with $115,000 for mitigation grants. Florida funded $100,000,000 for mitigation grants in the 2023-2024 budget, and in additional legislation, it funded another $176.17 million for grant applications.[115]
Louisiana	The state Treasury created the *Louisiana Fortify Homes Fund* as a special fund.[116]
South Carolina	Funded by premium taxes from the South Carolina Wind and Hail Underwriting Association and one percent of the annual premium taxes to the Department of Insurance, as well as state appropriations, if any, and any supplementation from the federal government.[117]

Table 9. Federal Grants and Funding Sources Available Pre- and Post-Disaster

Agency	Funding or Grant Program[118]
FEMA	Hazard Mitigation Grant Program (HMGP)
FEMA	Hazard Mitigation Grant Program (HGMP) Post-Fire Assistance
FEMA	Building Resilient Infrastructure and Communities (BRIC) Fund
FEMA	Flood Mitigation Assistance Grant (FMA)
FEMA	STORM Act - State Revolving Loan Program for Hazard Mitigation
HUD	Community Development Block Grants
Small Business Administration (SBA)	Disaster Loan Assistance

FEMA maintains a Building Codes Funding Opportunities webpage that links users to various funding streams throughout the agency that can be used to fund building code-related activities. Additionally, the ICC maintains an interactive resource regarding available federal funding.[119]

Phase A Recap: Plan Your Program

1. Develop a Team
2. Assess Community Needs, Gather Data, and Analyze
3. Review and Select Homeowner and Community Adoption Incentives
4. Evaluate Potential Program Goals and Scope
5. Identify Potential Funding Sources

B | Structure Your Program and Build Support

This section will provide key insights to consider when administering and implementing a residential retrofit program. It focuses on identifying and discussing successful program elements from a management perspective by answering questions such as, "How can we identify and establish the optimal support services?" "What can I learn from others' experiences?" "What pitfalls should I avoid?"

1. Design Your Program

Completing the planning actions in Phase A will give you the information you need to

design your program here in Phase B.

Common core elements that should be included are:

- Program Objective and Scope: Clearly state the purpose and objectives of the residential retrofitting program. Define the specific hazards or risks the program aims to address, such as hurricanes, earthquakes, floods, or energy inefficiency. Outline the program's scope, including the types of retrofit measures covered, eligible properties, and target beneficiaries.

- Funding Mechanisms: Specify the funding sources and mechanisms for the program. Identify the dedicated funding streams, such as state appropriations, grants, insurance assessments, bonds, or public-private partnerships.

- Eligibility Criteria: Establish the criteria that homeowners or properties must meet to be eligible for the program. This may include factors such as property location, age of the property, income levels, or specific eligibility requirements based on hazards or retrofitting objectives.

- Retrofitting Measures: Define the specific retrofitting measures or actions that qualify for assistance under the program. This could include standards for building code compliance, structural reinforcement, installation of hazard-specific mitigation features, or other

relevant retrofitting activities. Provide flexibility to accommodate emerging technologies and changes in programs such as FORTIFIED.

- Funding Sources, Allocation, and Prioritization: Identify and secure your initial funding and then establish criteria for allocating funds to eligible homeowners or properties. Develop a system for prioritizing projects based on risk levels, potential impact, or other criteria.

- Program Administration and Oversight: Designate the agency or department responsible for administering the program. Establish program oversight, audits, and reporting mechanisms to ensure effective implementation and accountability. Include funding for staff and other administrative purposes.

- Public Awareness and Outreach: Include provisions for public awareness campaigns to educate homeowners about the program, its benefits, and the importance of residential retrofitting. Consider the development of educational materials, workshops, or outreach events to promote participation and community engagement.

2. Establish Program Oversight

As with any state program, the administrator can choose between internal management with its staff, outsourcing program management to a third-party vendor, or

a hybrid of both. Considerations for each process follow.

- **Internal Management Considerations** - During research interviews, existing program administrators identified several advantages for managing retrofitting programs internally. They include direct control, oversight, and alignment with specific state goals, regulations, and policies. Additionally, an in-house team may have a deeper understanding of local dynamics, enabling quicker decision-making and responsiveness to challenges as they occur. However, internal management comes with its own unique set of challenges. It requires dedicated staff, resources, and expertise, which may strain existing capacities and budgets. Furthermore, establishing the necessary infrastructure, systems, and processes can be time-consuming and may delay the program's initial implementation.

- **External Management Considerations** - Conversely, contracting program management to a third party can provide specialized expertise, streamlined operations, and access to established networks. It can reduce the burden on state staff and leverage the experience and efficiency of external entities. However, reliance on a third party may entail additional costs and reduced control over program implementation.

Managing a residential retrofit program internally or outsourcing to third-party providers requires careful consideration. Internal management grants more significant control over the program's design, implementation, and monitoring, allowing for tailored solutions and direct oversight. However, it may also demand substantial resources, expertise, and administrative capacity, particularly for more extensive or multi-year programs. On the other hand, outsourcing to contractors can offer specialized expertise, streamlined processes, and access to a broader network of contractors and service providers.

The FLASH feasibility study determined that a hybrid approach, combining internal management and third-party support, is a common choice, enabling insurance departments to capitalize on their strengths while leveraging external capabilities for specific program aspects.

3. Implement Enabling Strategy Via Legislative or Regulatory Process

The above analysis steps will provide the data and insights needed to start crafting legislation or regulatory language to authorize and fund a retrofit program. Be sure to consider any necessary contractor or inspector training or licensing protocols you may need to specify as part of your legislation or rulemaking.

When drafting the legislation, ensure it aligns with your State's legal framework and is feasible to implement. Our research insights from interviews with states that have an established program uncovered several pitfalls to avoid:[61]

- Mandating wind premium insurance discounts

- Not providing the flexibility to retrofit for multiple perils

- Not including adequate funding for staff and technology needs

- Not providing enough authority to update the program without going through the legislative process

4. Design and Structure Program Management and Support Services

Various types of support services are needed to run a retrofit program efficiently. Creating a user-friendly website with a customer relationship management system, vendor management for inspectors and contractors, fraud prevention procedures, accounting, and record management should be considered.

a) Digital and Online Solutions

Creating an online solution for a residential retrofitting program offers convenience, efficiency, and accessibility for participants. While all states have an online registration system, functionality greatly varies from State to State. Key considerations to discuss when defining your registration system include:

- Dedicated Program Website: Design and develop a dedicated website for the residential retrofitting program. The website can include a registration form, program information, eligibility criteria, FAQs, and any other relevant details. Participants can access the website and complete the registration process online.

- Online Registration Form: Build an online registration form that captures all the necessary information from participants. The form should include fields for personal details, property information, and other required documentation.

- User Account System: Implement a user account system that allows participants to create individual accounts. This feature enables users to save their progress, track their applications, and receive updates or notifications about the program. User accounts also simplify future interactions with the program, such as submitting additional documentation or checking the status of their applications.

- Online Document Upload: Enable participants to securely upload their required documents, such as identification, insurance documents, property information, contractor estimates, or income verification, through the online registration portal.

- Online Scheduling: Incorporate an online scheduling system to allow participants to book inspections or contractor visits.

- Automated Confirmation and Communication: Set up automated confirmation emails to acknowledge successful registrations and provide participants with essential program

Table 10. Comparison of Custom vs. Generic Software

	Pros	Cons
Custom Solution	Offers flexibility and customization options	Requires time, technical expertise, and resources
	Provides direct control and oversight	Can be more expensive compared to third-party platforms
	Facilitates closer collaboration and coordination with other state departments and agencies	Strains existing capacities and budgets
	Enables quicker decision-making and responsiveness to community needs	May be time-consuming to establish the necessary infrastructure and processes
	Provides a deep understanding of local dynamics and specific requirements	May delay program implementation
	Offers ownership and control over technology stack and data	Relies on in-house staff availability and expertise
Generic Soultion	Provides specialized expertise and efficiency	Allows reduced control over program implementation
	Leverages established networks and streamlined operations	May introduce additional costs and ongoing subscription fees
	Relieves the burden on internal staff	May make alignment with state-specific requirements challenging
	Provides access to continuous support, updates, and feature enhancements	Could lock in vendors, reducing flexibility to switch platforms
	Offers scalable solutions and infrastructure management	Limited customization options and flexibility
	Provides built-in security measures and compliance certifications	Dependency on the platform provider for support and updates
	Integrates capabilities with existing systems	Data migration challenges if switching platforms

details. Use email or SMS notifications to communicate updates, reminders, or requests for additional information throughout the registration process.

- Data Security and Privacy: Implement appropriate security measures to protect participants' personal information and ensure compliance with data protection regulations. Utilize secure server connections (HTTPS), encrypt sensitive data, and follow your State's best data storage and handling practices.

- Mobile-Friendly Design: Optimize the online registration process for mobile devices to accommodate participants who prefer to access the program through smartphones or tablets.

- States can create an online solution by developing a custom digital presence or leveraging existing third-party platforms. The following table provides a comprehensive overview of the pros and cons of developing a custom solution or opting for a third-party platform. Understanding these factors will inform decisions, considering flexibility, control, costs, expertise, scalability, and ongoing support. Additionally, consider compatibility with legacy programs and other state systems.

- Fraud prevention strategies are essential whether an online solution is custom or leverages a third-party platform. FLASH research identified fraud as a

critical concern for existing programs. Below are fraud-prevention strategies to consider:

- Verification of Participant Information: Require participants to provide verifiable personal information during registration. This can include identity verification documents such as government-issued I.D.s, proof of address, or utility bills. Verify the authenticity of these documents through manual checks or by utilizing identity verification services.

- Ownership Verification: Request participants to provide documentation proving their ownership or legal right to participate in the program. This may include property deeds, lease agreements, or property tax documents. Cross-reference the provided information with official records or databases to validate ownership.

- Fraud Detection Tools and Algorithms: Utilize fraud detection tools and algorithms to identify suspicious patterns or anomalies in the registration data. These tools can flag fraudulent submissions based on duplicate registrations or inconsistent information.

- Contractor or Inspector Accreditation: Require participants to engage certified or accredited contractors for retrofitting work. Establish a list of approved contractors and validate their credentials, licenses, and insurance.

Maintain a system for tracking contractor performance and addressing any complaints or disputes.

- Data Validation and Cross-Referencing: Validate the accuracy and consistency of the data provided by participants. Perform cross-referencing checks against external databases or internal records to ensure the information aligns with existing data sources.

b) Identify Protocols and Training for Inspectors and Contractors

Inspectors and contractors are essential service providers for a retrofitting program. Establishing licensing and training guidelines for these key players is critical to program integrity. The study considered many critical factors when establishing inspector and contractor guidelines. These include state or local licensing requirements, building code effective years, insurance requirements, and third-party certified providers such as FORTIFIED evaluators and contractors.

(1) Inspectors

Inspectors validate the retrofit options available to the homeowners and ensure program eligibility. Homeowners receive detailed reports and recommendations on structural retrofit options based on the property inspection completed by the inspector.

The State should evaluate and consider certification or licensing requirements for building inspections and retrofit specialties.

Experience conducting assessments and a solid understanding of local building codes and standards are essential prerequisites. It is essential to keep these considerations in mind when developing inspection guidelines:

- **Certification and Licensing:** Inspectors must hold relevant certificates or licenses related to building inspections, structural assessments, or specific retrofit specialties. Some states require inspectors to attend training if the program creates a custom inspection report.

- **Insurance and Liability Coverage:** Mandate the level of professional liability insurance or errors and omissions insurance to protect inspectors and homeowners in case of errors, omissions, or unforeseen issues during inspections.

- **Record Keeping and Reporting:** Require inspectors to maintain accurate records of their inspections, including photo documentation, reports, and recommendations provided to homeowners. This ensures consistency, transparency, and accountability throughout the program and facilitates monitoring, evaluation, and future improvement efforts. Consider developing a system that all inspectors can use to upload their reports so data can be searchable.

Table 11. Inspection Fee - Responsible Party

	State/Department	Homeowner
Alabama		X
Florida	X	
Mississippi	X	
North Carolina	X	
South Carolina[120]		X - $150 - $250*
Texas[121]	X (TDI pays if new construction or verifiable repairs)	X (TWIA – homeowner pays if construction completed or existing features)

*Cost Controlled

Once a program sets participation guidelines, the next step is deciding whether the State or homeowners will cover the inspection cost.

Free inspections can incentivize homeowners to participate in the program, as they do not need to bear an immediate financial burden. This approach may attract a larger number of participants and increase program uptake. However, there are challenges to this approach. The State may face an increased financial burden, requiring sufficient budget allocation for inspection costs and increased administrative complexities, including the need for billing systems, payment processing, and budget management.

On the other hand, if homeowners bear the cost of inspections, it can incentivize them to take responsibility for the retrofit process and have a greater sense of ownership and commitment to the program, leading to increased involvement and accountability. Moreover, this approach can alleviate the financial burden on the State, allowing for the efficient allocation of resources to other aspects of the program. However, requiring homeowners to pay for inspections may pose a barrier to participation, particularly for low-income households or those facing financial constraints.

(2) Contractors

While many contractor details, such as retrofit activities, qualifications, and payment structure, would be completed in Steps One and Two, states still have several decisions to consider when structuring contractor services. States with modern, up-to-date building codes and substantial licensing requirements typically do not require additional training for their contractors. It may benefit states without modern building codes to require additional training for contractors specific to the retrofit

Table 12. Retrofit Program - Contractor Requirements

	Licensing Requirements	Training Requirements	Insurance Requirements
Alabama	X	X	X
California	X	X	X
Florida	X		X
South Carolina	X	X	X

covered by the grant program.

Many states leave the contractor selection decision to the homeowner. However, in Texas, they assign contractors to the homeowners. Both approaches are viable and depend on the State's staffing and priorities. Table 12 provides an overview of contractor requirements for existing programs.

Program administrators can enhance program outcomes and ensure participant satisfaction by prioritizing the selection of skilled professionals, implementing robust training and certification requirements, and adopting suitable software solutions. The more attention to support services given during planning, the more likely programs will succeed.

c) Prevent Fraud

As with all financial products, it's critical to take proactive steps to prevent fraudulent activity to maintain the program's integrity and sustainability. Programs can prevent fraud through planning and using proven policies and practices. Programs should anticipate efforts to falsify documents to

obtain lower insurance premiums, mispresent property information, or misrepresent retrofitting completion status. Verification and validation processes, including quality assurance reinspection, cross-referencing data from multiple sources, requiring minimum licensing and experience requirements, and developing training and education requirements for inspectors and contractors, can create a strong deterrent against fraudulent behavior.

d) Build and Launch an Outreach and Marketing Strategy

Effective marketing and outreach efforts enable program administrators to create citizen awareness and understanding about the retrofit program. They will maximize program visibility, generate inspection sign-ups, motivate eligible grant recipients to act, and help promote overall community disaster resilience as a social value.

The following table outlines different program communication strategies and tactics that can help promote your retrofitting or other

Table 13. Marketing and Outreach Strategies/Tactics

Objective	Strategies	Tactics		
Increase program awareness	Increase traffic to the program homepage	Content Marketing	Banner Ads	
		Pay Per Click (PPC)	Video PSAs/YouTube Ads	
		Radio Ads	Virtual events	
	Secure interviews on radio and television stations to promote the program	Media pitching	News releases	
		OP-ed's	Podcasts	
	Embed branding and promotion into in-person events	Hurricane preparedness workshops	HOA/Council/Townhall/CERT Meetings	
Increase submitted applications	Promote incentives and benefits for program participation	Insurance discount calculator/widget	Social media campaign	
	Establish an accessible, intuitive, and easy-to-understand submission process	Online status tracker	Online portal and submission process	Helpline/Call Center Assistance
Increase confidence in the DOI and retrofit program	Incorporate community providers and stakeholders as program ambassadors	Incorporate audience-specific influencers/spokespeople into campaigns	Recruit community providers of contractors and inspectors that service and have relationships within targeted communities	
Provide resources to complete retrofitting	Provide alternative financing sources	Provide information on third-party financing/grant(s) via the website. (e.g., CDBG, FEMA, NVOAD, PACE, SHIP, SBA, and other grants, etc.)		

resilience program efforts.

FLASH Study participants with program experience reported that identifying and recruiting allies in related industries is one of the most critical and effective tactics available to generate program interest. These stakeholders include builders, code officials, home inspectors, insurance companies, insurance agents, local elected officials, realtors, and trade associations. Consider outreach to these professionals and organizations to create a coalition to support your efforts. Develop templates and customizable outreach and marketing materials they can use to help spread the word about your program and its benefits.

Phase B Recap: Structure Program and Build Support

1. Design Your Program
2. Establish Program Oversight
3. Implement Enabling Strategy Via Legislative or Regulatory Process
4. Design and Structure Program Management and Support Services

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C | Implement, Maintain, and Grow Your Program

1. Develop a Pilot Program

Once you have collected data, outlined the project, and established a support coalition, consider establishing a pilot program before implementing a full-scale retrofit initiative. A pilot program allows program administrators to test and fine-tune a program's effectiveness, gain valuable insights, and identify potential challenges on a smaller scale before committing to a larger endeavor.

During the pilot phase, select participating homeowners and properties carefully to ensure a diverse representation of building types and demographics. As data is collected and evaluated, program administrators can access the program's impact, measure its cost-effectiveness, and adjust strategies as needed.

The results from the pilot program can lay a solid foundation for a comprehensive residential retrofit program and create support for legislation to enact a statewide retrofit program.

2. Measure Success, Evaluate, and Report Outcomes

States typically require annual evaluation reports to the legislature detailing the program's performance, outcomes, and areas for improvement. Funding sources may also have evaluation and reporting requirements. By systematically assessing the program's performance and results, policymakers and stakeholders can gauge its effectiveness, identify areas for improvement, and make data-driven decisions to make program enhancements.

However, to conduct thorough evaluations and generate accurate reports, it is vital to have a well-structured plan for data collection from the outset. Gathering relevant data upfront not only streamlines the evaluation process but also prevents additional costs and efforts required on the backend to recreate or secure essential information. Our research indicated some key data elements that should be tracked and reported:[122]

- **Participation Metrics:** Track the number of homeowners or properties participating in the program during the reporting period, including the total number of inspections completed, grant applications received, average grant amount, and completed retrofit projects. This measurement helps gauge the program's reach and engagement levels.

- **Insurance Savings:** Establish a data collection method to identify pre- and post-retrofit annual insurance premiums and deductibles so you may calculate and verify any changes generated by the retrofits. This step is essential as information from participating homeowners that validates savings (discounts, credits, or lower deductibles) can help establish and maintain value for leadership investment in your program.

- **Retrofit Measures:** Record the types of retrofit measures implemented. This measurement provides insights into the most commonly adopted retrofit actions and helps identify trends and focus areas. It also informs budget projections.

- **Quality Assurance Inspections:** Consider conducting post-inspections on completed retrofit projects to work quality. The evaluations can provide an unbiased assessment and reveal challenges or insights for program improvement.

- **Cost-effectiveness:** Evaluate the program's cost-effectiveness by tracking the total investment in retrofit projects, including any financial incentives or grants provided to homeowners. Use the FEMA pre-calculated benefits to determine a return on investment. Another option is to use reports such as the NIBS: *Natural Hazard Mitigation Saves* 2019 Report or FEMA *Building Codes Save: A Nationwide Study* to project losses avoided.

- **Customer Satisfaction:** Gather participant feedback through surveys or interviews to gauge their satisfaction with the program, including their experience with contractors, the application process, and the overall outcomes.

- **Equity and Accessibility:** Analyze data related to the demographic profile of program participants to assess the program's equity and accessibility. This includes tracking the representation of low-income households, minority communities, or historically disadvantaged areas to ensure equitable distribution of program benefits.

3. Grow and Sustain Your Program

Insurance availability and affordability disruptions following natural disasters can create the executive and legislative elected leadership support necessary to establish and implement a retrofit program. The heightened public interest, political will, and popularity of matching grants get new efforts off and running. But how can states maintain existing funding and public interest as time passes? How can leaders sustain funding support after the disaster memories fade? Moreover, how can states maintain, grow, and expand their programs?

Combining building codes for new construction and retrofitting for older, existing homes and buildings is the essential combination of strategies that create resilient homes. But how can regulators take on these dual roles in addition to their more traditional duties?

The Concept

The FLASH Study identified a solution for those looking to begin a new program and for regulators looking to sustain and grow existing retrofit programs with increased building code awareness and advocacy along the way. The concept is to create a *Resilience Services HUB*.

During March, as part of the FLASH Study, participants joined a product prototyping workshop process to conceptualize a method to support regulators in their resilience leadership efforts. The participants

concluded that NAIC and FLASH could design a "Resilience Services HUB solution" – with a suite of support services for state insurance departments staffed by an engagement team and housed at NAIC-CIPR. The hub could include data analysis, subject matter expertise, counsel, resources, needs assessments, site visits, or temporary staffing. The engagement team could act as consultants for insurance departments considering, planning, implementing, or strengthening retrofit incentive programs.

Research Insight

Insurance commissioners identified the following categories of resources/services as a priority for developing the Playbook and HUB concept:

1. Guidance setting up licensing or training programs for contractors and staff involved in retrofit incentive programs

2. Outreach/messaging/communication strategies for promoting retrofit incentive programs

3. IT platforms/support

4. Guidance on different ways to set up a retrofit incentive program

FLASH – CIPR Study. 2023. *Research & Insights on How to Support State Insurance Departments in Retrofitting Older Buildings.*

A centralized knowledge or services hub is a powerful solution, as selecting the right support services is paramount in launching and managing a residential retrofit program. The study participants concluded that a "hub" could help program leaders overcome start-up barriers by providing easy access to best practices, proven products, ideal protocols, forms, model legislative language, etc.

The concept includes five types of support that would anchor a *Resilience Services HUB*:

1. A suite of downloadable "plug and play" resources that states could use to promote, develop, or strengthen a retrofit incentive program. These could include model statutes, template promotional materials, planning documents, software, and financial guidance.

2. An innovation lab that would analyze program results and resource use and develop ways to optimize or improve program offerings. This could include financing, legislative guidance, and more tailored resources.

3. A list of outside partners interested in advancing resilience that states could tap for specific assistance or partnerships. This could include partners who supply materials, offer financing support or expertise, or supply contract staff.

4. A community of practice that connects experts such as FLASH and early adopters with their peers and those

getting programs off the ground. Potential community members would be identified and recruited by the engagement team. The team would also facilitate communication and meetings within the community.

5. An advocacy effort that promotes shared standards (e.g., FORTIFIED), private sector engagements, and improved federal support (e.g., reforms to federal grant processes).

Advice and resources would provide a shared, consistent message, promote best practices, and be "plug and play" or as simple to use as possible.

Supporting the effort would be a customer relationship management (CRM) platform, where the community of practice members, supporting organizations such as FLASH and IBHS, the NAIC engagement team, and other supporters could track state programs and tag each other with updates and leads, ensuring maximum support and a consistent message throughout the process.

Prototype Testing
Once the workshop participants identified and defined the hub concept, the study team led them through a prototype testing exercise. The exercise allowed potential users to examine the proposed concept and provide feedback about it and the specific

resources and services it might provide. They also identified the top priority services. They cited the highest priority for resources and services—and the biggest hurdle to implementing a program—as funding, followed by getting buy-in from the right people. Other important aspects of the hub included leveraging partners and peer support, making all recommendations and resources easily adaptable and tailored to a state's specific situation, and reducing the time burden on those implementing a retrofit incentive program as much as possible. These ideas were outlined in a set of Guiding Principles for the *Resilience Services HUB*.

Resilience Services HUB Recap

Creating a centralized retrofit incentive support hub would be welcomed by state insurance regulators. It could quicken the adoption of state retrofit incentive programs, boosting the nation's resilience to perils such as earthquakes, flooding, hurricanes, tornadoes, and wildfires. The heart of such a support hub would be an "engagement team" housed in an existing organization, such as NAIC-CIPR. The hub would offer counsel, resources, advocacy, and connections to peers, experts, and partners, with an initial focus on funding streams, legislation, communication, and best practices.

Phase C Recap: Implement, Maintain, and Grow Your Program

1. Develop a Pilot Program
2. Measure, Evaluate, and Report
3. Grow and Sustain Your Program

6

SOCIAL VALUE

Creating a
Culture of
**Disaster
Resilience**

Creating an environment where strong homes are valued and recognized as essential requires market demand, public policy, and targeted programs that underpin a social value for resilience in the face of disasters. The necessary elements generate public awareness, understanding, acceptance, and purchasing behavior, reflecting a desire for strong homes.

FLASH and its partners have been moving public opinion in this direction for twenty-five years through strategies leveraging risk communication research, award-winning messaging campaigns, coalition-building, and leadership dialogue. Still, with the average American seeing at least 6,000 messages daily, the competition for their attention can be fierce.

Many insurance regulators and companies leverage FLASH public outreach initiatives, recognizing the value of turnkey, technically accurate, and proven public outreach programs to jumpstart and sustain their resilience messaging efforts.

The following are some FLASH risk communication projects, initiatives, and

events. These assets are open-source for regulators and are available for use, adaptation, and customization. They are also examples of template programs that can be incorporated into the proposed Resilience Services HUB once developed.

- [Buyer's Guide to Resilient Homes](#) – Resilient homebuying publication and website

- Turn Around: Don't Drown – Flood safety public outreach campaign (Partnership with NOAA)

- [If Disaster Strikes, Will You Be Covered?](#) – Insurance and mitigation publication

- [National Hurricane Resilience Initiative - #HurricaneStrong](#) – Partnership with FEMA and NOAA

- [Ready Business](#) – Workshop series for businesses and organizations through Partnership with FEMA (Earthquake, Inland Flood, Hurricane, Severe Winds, and Power Outage)

- [Strong-Homes Resilient Rebuilding Initiative](#) – Partnership with nonprofit build organizations

- [No Code. No Confidence. - Inspect2Protect.org](#) – Building code lookup tool and retrofit campaign

- Tornado-Strong.org - Outreach campaign promoting tornado safety and storm shelters

One of the concepts identified in the proposed Hub includes establishing a "Community of Practice" to energize and sustain regulators' resilience efforts. A community of practice (CoP) is a group of people "informally bound together by shared expertise and passion for a joint enterprise."[123] CoPs have existed for centuries, for example, artisans in ancient Greece and guilds in the Middle Ages.[124] The CoP is as longstanding as the tradition of people sharing their experiences through storytelling.

The NAIC-CIPR, FLASH, IBHS, Smart Home America, Robert Wood Johnson Foundation, and other organizations sustain activities and efforts that drive resilience. Their efforts illustrate components of the existing CoP that could be more formally leveraged to support regulators' resilience leadership efforts.

Examples include:
- Each year, FLASH brings together many of our nation's most recognized and trusted voices across many professions,

including broadcast meteorology and the greater "weather enterprise," to attend the [National Disaster Resilience Conference.](#) The annual thought leader forum and gathering of partners galvanize leaders and trusted allies around new engineering insights, science, policy, and practical solutions to advance building codes and retrofitting as critical activities to protect communities from disasters.

- The NAIC Catastrophe Modeling Center of Excellence works with catastrophe model vendors to develop insights for state insurance regulators regarding the risk of natural hazards in their state. State insurance regulators can leverage this information to regulate their insurance markets more effectively and inform and educate consumers.

- The NAIC-FEMA Advisory Group can be used to increase communication and coordination between state insurance regulators and the emergency management community, particularly at the federal level, but also to ensure cross-collaboration across functional areas of risk management to ensure consistent consumer messages before, during and after disaster events.

- NAIC-CIPR can collaborate with State Hazard Mitigation Officers (SHMO) to enhance State Hazard Mitigation Plans through catastrophe modeling and other enhanced risk identification tools. This

can help create a more holistic resilience strategy for states.

- The "Institutes" Catastrophe Resiliency Council partners with the insurance industry to drive standards for catastrophe models. The models can be leveraged to justify mitigation and develop incentives for mitigation action. This can reduce the risk of property loss and make insurance more affordable and available for mitigated properties.

- American Risk and Insurance Association (ARIA) researchers partner with NAIC-CIPR to develop research insights to drive policy that results in more resilient homes and communities to withstand the impact of natural hazards. Their research can help drive funding toward areas with the greatest need for mitigation, stabilizing economies and resulting in more stable property insurance markets.

- The Robert Wood Johnson Foundation partners with organizations like NAIC-CIPR in resilience strategies that seek to monetize and incentivize resilience through philanthropic funds. Their grant support made the feasibility study possible.

All of the above initiatives represent an informal CoP that serves to strengthen and sustain a national marketplace for resilience that supports individual states' efforts. ∎

7

CONCLUSION

Achieving and **Sustaining Resilience**

States face challenges to achieving and sustaining resilience as they move through the seesaw of disasters and market disruption cycles. Many, including Alabama, California, Florida, Louisiana, Minnesota, Mississippi, and South Carolina, are actively pursuing or implementing programs to stabilize private insurance markets and help offset volatility created by climate and weather-driven events. They take these actions as they recognize that strong homes underpin long-term market stabilization by providing safety, shelter, and a consistent and reliable business case for capital investment that produces affordable and available insurance coverage.

Studies prove resilient housing is most economically delivered by new home construction using model building codes. Still, while less efficient, we can improve older housing through retrofitting programs. Regardless of the method followed, the overarching resilience driver is a marketplace where awareness creates acceptance and demand by builders, buyers, insurers, lenders, leaders, realtors, and sellers for homes that can bounce back after disasters.

Federal leaders from FEMA and the White House are investing unprecedented human and financial resources to support effective building code policy in recognition of its power to stabilize markets and shorten disaster recovery timeframes. With their enhanced support, state and local leaders enjoy powerful resources to help lead building code policy at the state and local levels.

NAIC-CIPR and FLASH created the Playbook for state insurance regulators who wish to undertake the above-described actions. The Playbook is a tool that can inform and support strategies to help advance DisasterSmart goals for those leading resilience initiatives.

Through the research project outlined in this paper, regulators and insurance department staff identified a promising solution, a Resilience Services HUB (HUB), for those starting or growing a retrofitting program or looking to lead resilience. The HUB would provide a suite of support services staffed by a team and housed at NAIC-CIPR. The team would serve as consultants for insurance departments on retrofit programs, outreach initiatives, or advocacy efforts. It would include counsel, cutting-edge data analysis, modeling, a resource library, and all-hazard subject matter expertise. The HUB would provide best practice insights and services while fostering a Community of Practice to help ensure that it adapts to meet states' evolving needs. ■

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Disclaimer

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117 S.C. Code § 38-75-485 (C)(4) (2023) "The department shall use its best efforts to obtain grants or funds from the federal government to supplement the financial resources of this program. In addition to state appropriations, if any, this program must be implemented by the department through the use of the premium taxes due to this State by the South Carolina Wind and Hail Underwriting Association, and one percent of the premium taxes collected annually and remitted to the Department of Insurance." https://www.scstatehouse.gov/code/t38c075.php.

[118] Table does not list every available funding source.

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