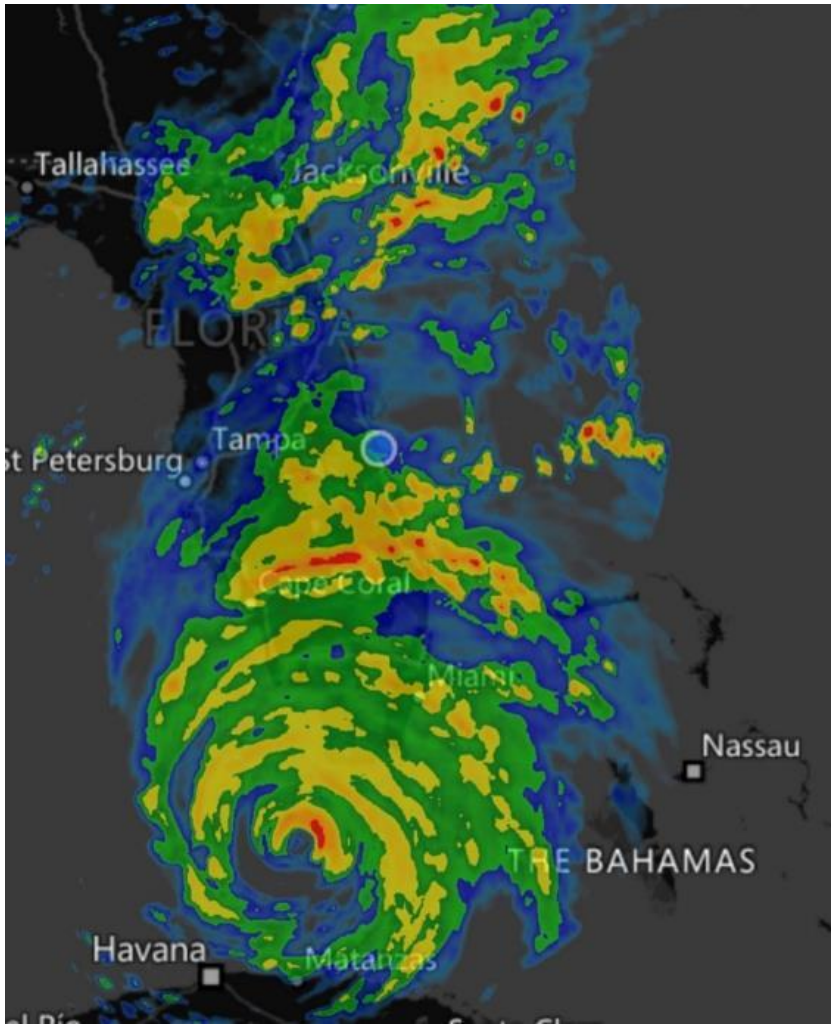
Preservation, Resiliency, and Sustainability in Affordable Housing

May 23, 2024



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Our Thanks to the Florida Housing Catalyst Program

AFFORDABLE HOUSING CATALYST PROGRAM

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Webinar Logistics

- Participants are muted
- Enter your questions in the box in your webinar panel
- Forgot to ask a question or want to ask privately?

  Email chaney@flhousing.org

This webinar is being recorded and will be available at www.flhousing.org

- A survey will immediately follow the webinar; ***please*** complete it!

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Today's Presenters

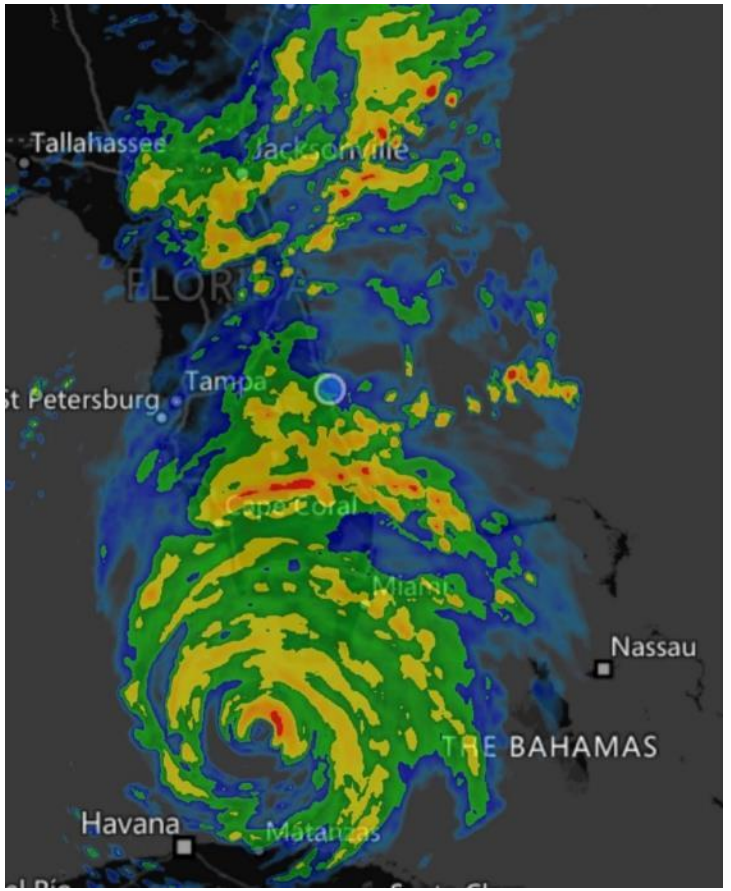
Michael Chaney
Catalyst Program Director
chaney@flhousing.org

Lauren Thornberg
Technical Advisor
thornberg@flhousing.org

CJ Reynolds
Director, Resiliency and Disaster Recovery
reynolds@flhousing.org

Overview of Today's Webinar

- Creating Your Integrated Program
- Single Family Home Mitigation with SHIP
- Mitigation for Multifamily Rental Housing
- Sustainability
- Resilience Strategies



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Why this webinar

- The rise in extreme temperatures increases energy burdened homeowners, renters and property owners
- More intense storms are increasing damage and expenditures
- Housing shortage
- Preserving existing homes is still more affordable than creating new housing.

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Creating Permanent Affordability *and* Livability

Housing built to last 75+ years = 2100

1. proximity to necessities
2. proximity to amenities
3. distance from hazards
4. Rehabbed and designed for extreme heat and flooding

Create an Integrated Approach – Embed Resilience and Sustainability Actions into Preservation

Energy conservation, sustainability, and wind and flood resilience strategies will be incorporated into housing preservation and mitigation programs whenever financially feasible

Key Categories

- Storm/Wind Resilience
- Flood/Disaster Resilience
- Heat Reduction and Energy Savings
- Water Conservation

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Strategic Preservation Program Starts with Assessing Your Housing Stock

- Conduct analysis of assisted and "naturally occurring" affordable housing single family and multi-family properties
  - Where is stock at risk for redevelopment?
  - At risk for surge and/or flooding?
  - Stock age, condition needs upgrades?
- Program goals: increase housing preservation, resulting in XXXX more affordable units over XXX years
- Programs to preserve housing are combined and coordinated with other strategies/funding to address issues:
  - Storm and climate resilience
  - energy conservation
  - Infrastructure improvements
  - formation of community land trusts

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Benefits of Resilient Retrofits

- Avoided losses from storm damage or disruption and faster recovery
- Direct financial savings when measures combine energy and water efficiency
- Insurance: **preserving access to insurance and p**otential for reduced premiums;
- Investing in upgrades today will reduce larger costs in the future
- Community economic vitality: increased renter and homeowner resilience
- Enhanced value, marketability, and access to capital
- Leading real estate firms are starting to assess the resilience of an asset during due diligence before acquisition and incorporating costs of upgrades in the capital expenditure plan, helping incentivize resilience investments even among short-term holders. (ULI report)

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Benefits of Sustainability

- Sustainability improvements help ensure permanent affordability
- Improvements advance community equity – reducing energy cost burden
- Including water conservation reduces municipality wastewater treatment facility expenses
- Supports your Community Climate Goals

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SHIP Provides Mitigation
during Blue Sky Times

Funding Housing Mitigation

SHIP can pay for Mitigation Measures

- Single Family: incorporate into Rehabilitation Strategy
- Also incorporate in new construction projects
- Multifamily: Follow SHIP Rental Rule: Monitor newly constructed or repaired rental units
    - Monitor income and rent affordability annually for at least 15 years

SHIP
housing a stronger Florida

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Incorporate Mitigation into SHIP Strategies

- Homeowner Rehabilitation
- Demolition & Replacement
- Multifamily Rehabilitation
- Acquisition Rehabilitation
- Barrier Free/Accessibility
- Emergency Repairs
- Relocation (New Construction)

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Disaster Mitigation Programs

- **First:** Monitor SHIP rehab and new construction for code compliance
- **Next:** Mitigation involves Hardening, Resiliency, and Sustainability
- Seek additional funding beyond SHIP

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What are the Mitigation Features of Your Housing Assistance Programs?

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Mitigation Objectives

- Meet Insurance 4 Point Test:
  Roof, Electric, Plumbing, HVAC
- Above the code –wind mitigation and disaster resistant strategies
- Based on leading Certification/Standards

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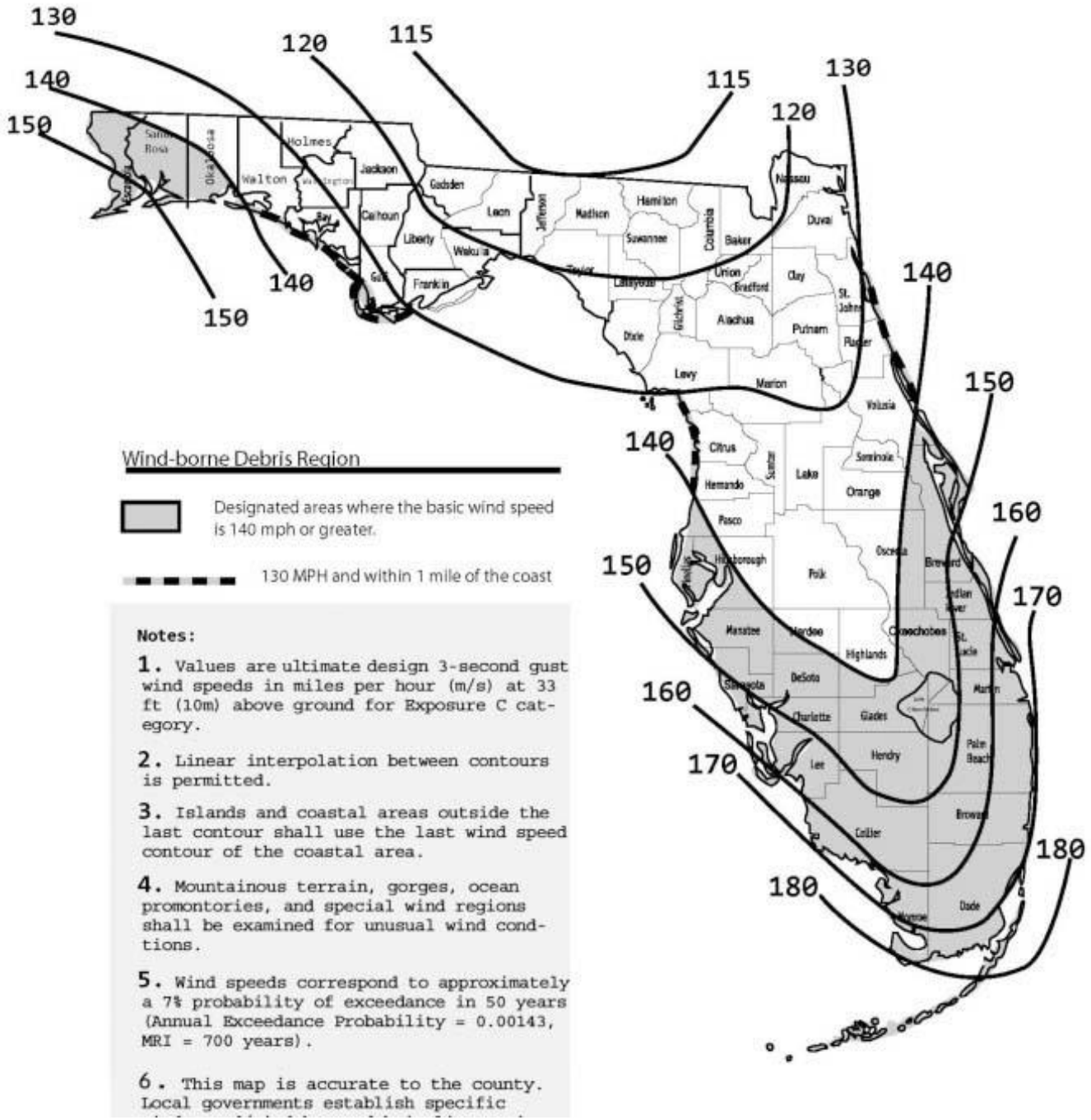
Wind Mitigation

- Location drives your risk factors
- Florida Building Code – High Wind Velocity Regional Map provides guidance



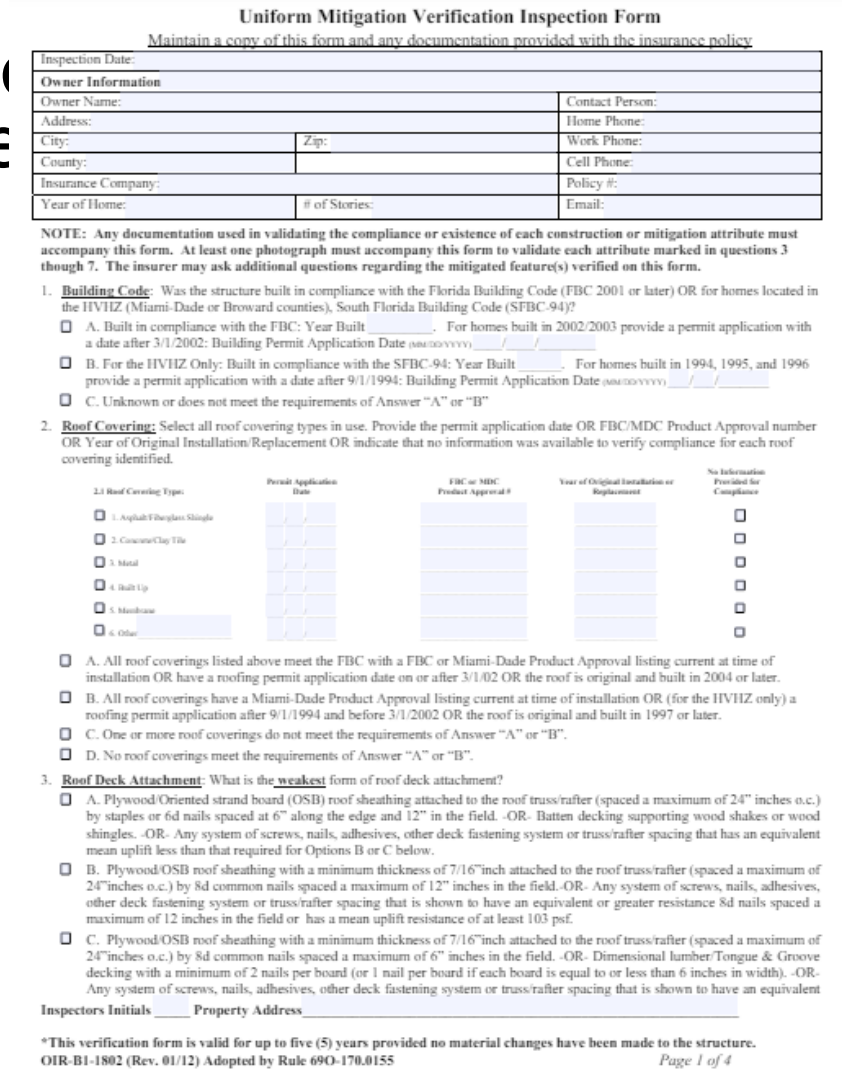
Use the Uniform Wind Mitigation Inspection Form as Your Program "North Star"

Updating your roof retrofits can potentially reduc insurance premiums and the hurricane deductible

Review the Uniform Mitigation Verification Inspection Form approved by the Florida Office of Insurance Regulation and talk with your contractors.

- Specifies construction features which may result in an insurance policy premium discount.
- Provides uniform documentation for all insurance companies to use.
- Inspectors complete the form and take photos.
- Homeowner must provide to their insurance company.

https://www.floir.com/siteDocuments/OIR-B1-1802.pdf



Uniform Mitigation Verification Inspection Form

Maintain a copy of this form and any documentation provided with the insurance policy

Inspection Date:		
Owner Information		
Owner Name:		Contact Person:
Address:		Home Phone:
City:	Zip:	Work Phone:
County:		Cell Phone:
Insurance Company:		Policy #:
Year of Home:	# of Stories:	Email:

NOTE: Any documentation used in validating the compliance or existence of each construction or mitigation attribute must accompany this form. At least one photograph must accompany this form to validate each attribute marked in questions 3 though 7. The insurer may ask additional questions regarding the mitigated feature(s) verified on this form.

1. **Building Code**: Was the structure built in compliance with the Florida Building Code (FBC 2001 or later) OR for homes located in the HVHZ (Miami-Dade or Broward counties), South Florida Building Code (SFBC-94)?
   - ☐ A. Built in compliance with the FBC: Year Built _____. For homes built in 2002/2003 provide a permit application with a date after 3/1/2002: Building Permit Application Date (MM/DD/YYYY) ___/___/_____
   - ☐ B. For the HVHZ Only: Built in compliance with the SFBC-94: Year Built _____. For homes built in 1994, 1995, and 1996 provide a permit application with a date after 9/1/1994: Building Permit Application Date (MM/DD/YYYY) ___/___/_____
   - ☐ C. Unknown or does not meet the requirements of Answer "A" or "B"
2. **Roof Covering:** Select all roof covering types in use. Provide the permit application date OR FBC/MDC Product Approval number OR Year of Original Installation/Replacement OR indicate that no information was available to verify compliance for each roof covering identified.

2.1 Roof Covering Type:	Permit Application Date	FBC or MDC Product Approval #	Year of Original Installation or Replacement	No Information Provided for Compliance
☐ 1. Asphalt/Fiberglass Shingle				☐
☐ 2. Concrete/Clay Tile				☐
☐ 3. Metal				☐
☐ 4. Built Up				☐
☐ 5. Membrane				☐
☐ 6. Other				☐

   - ☐ A. All roof coverings listed above meet the FBC with a FBC or Miami-Dade Product Approval listing current at time of installation OR have a roofing permit application date on or after 3/1/02 OR the roof is original and built in 2004 or later.
   - ☐ B. All roof coverings have a Miami-Dade Product Approval listing current at time of installation OR (for the HVHZ only) a roofing permit application after 9/1/1994 and before 3/1/2002 OR the roof is original and built in 1997 or later.
   - ☐ C. One or more roof coverings do not meet the requirements of Answer "A" or "B".
   - ☐ D. No roof coverings meet the requirements of Answer "A" or "B".
3. **Roof Deck Attachment**: What is the **weakest** form of roof deck attachment?
   - ☐ A. Plywood/Oriented strand board (OSB) roof sheathing attached to the roof truss/rafter (spaced a maximum of 24" inches o.c.) by staples or 6d nails spaced at 6" along the edge and 12" in the field. -OR- Batten decking supporting wood shakes or wood shingles. -OR- Any system of screws, nails, adhesives, other deck fastening system or truss/rafter spacing that has an equivalent mean uplift less than that required for Options B or C below.
   - ☐ B. Plywood/OSB roof sheathing with a minimum thickness of 7/16"inch attached to the roof truss/rafter (spaced a maximum of 24"inches o.c.) by 8d common nails spaced a maximum of 12" inches in the field.-OR- Any system of screws, nails, adhesives, other deck fastening system or truss/rafter spacing that is shown to have an equivalent or greater resistance 8d nails spaced a maximum of 12 inches in the field or has a mean uplift resistance of at least 103 psf.
   - ☐ C. Plywood/OSB roof sheathing with a minimum thickness of 7/16"inch attached to the roof truss/rafter (spaced a maximum of 24"inches o.c.) by 8d common nails spaced a maximum of 6" inches in the field. -OR- Dimensional lumber/Tongue & Groove decking with a minimum of 2 nails per board (or 1 nail per board if each board is equal to or less than 6 inches in width). -OR- Any system of screws, nails, adhesives, other deck fastening system or truss/rafter spacing that is shown to have an equivalent

Inspectors Initials ____ **Property Address** _____

***This verification form is valid for up to five (5) years provided no material changes have been made to the structure.**

OIR-B1-1802 (Rev. 01/12) Adopted by Rule 69O-170.0155 *Page 1 of 4*

Key Strategies for Wind Resistant Homes

The **Uniform Wind Mitigation Form** addresses 7 key aspects

1. Building Code / High Velocity Wind Code
2. Roof covering
3. Roof-deck attachment
4. Roof to wall attachment
5. Roof shape
6. Secondary water resistance
7. Opening Protection

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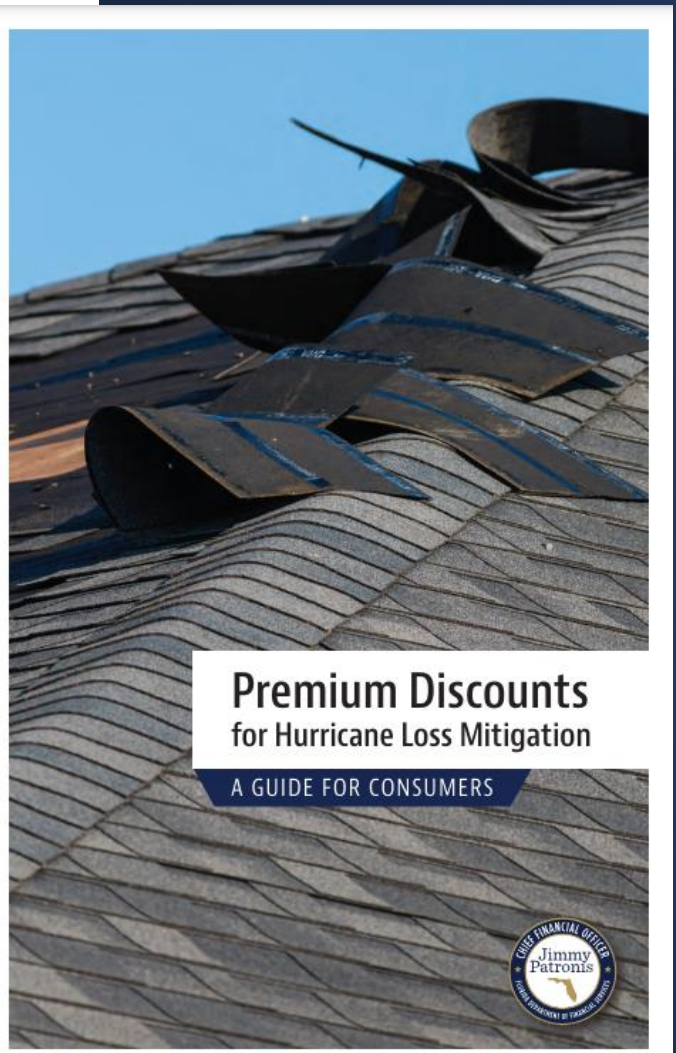
Wind Mitigation Features

- New impact rated windows and sliding doors provide storm protection AND energy savings benefits
- However, if the rehab budget is smaller, and house is generally OK, install opening protection
- Bright Idea: consider a targeted neighborhood wind mitigation program: contract with a company to purchase and install panels in bulk.

Roofs and Insurance Premium Discounts

Florida Office of Insurance Regulation created this simple brochure document to help educate homeowners about roofing conditions, property age and improvements.



https://myfloridacfo.com/docs-sf/consumer-services-libraries/consumerservices-documents/understanding-coverage/consumer-guides/premium-discounts-for-hurricane-loss-mitigation.pdf?sfvrsn=cf7d1fb8_7

Example of Mitigation Features

Brace Bottom Chord of the Gable End

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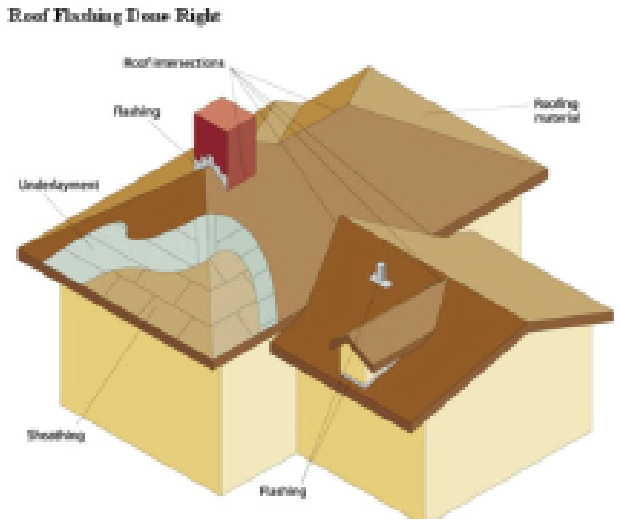
Mitigation

When a garage door fails, it provides not only an entry point for water but also allows for the wind to get under the roof and lift it off the structure.

water intrusion if shingles blow away. Secure all boards with an 8d ring shank nail, which includes grooves in the nail that provide a more secure grip. Use shingles with a high standard. The highest standard is currently for over 130 miles per hour winds and should be installed using the number of fasteners recommended by the manufacturer for high-wind areas.

Roofing Repairs. A roof of a home that does not require roof replacement or any major roofing repairs may also be strengthened by re-nailing the sheathing using 8d ringed shank nails and providing a water barrier on the underside of the roof deck.



Exterior Doors. When completing the rehabilitation of a home, exterior doors and garage doors are most often best replaced with hurricane-rated doors. As an alternative, additional bracing can be applied to existing garage door. Wind resistant doors are heavy, solid, and have at least three and often four mounting brackets with screws that are 2 ½ to 3 inches long. The other side of the door should be secured with a bolt lock that should be 1" long to extend far into the frame and hold the door closed. French doors or double doors should be shuttered.

Flashing. The purpose of flashing on pitched roofs is to direct the flow of water that leaks into the intersection down and away from the structure's interior. Contractors must always lap flashing and other moisture barriers properly. Do not rely on sealant as a substitute for proper lapping. In addition, the following steps are recommended:

- Use fasteners that are compatible with the flashing material.
- Use flashing cement at joints to help secure flashing.
- At roof-to-wall intersections, use step flashing that has a 4-inch vertical leg. Tape the top of step flashing with 4-in. wide self-adhering modified bitumen tape.

Dry Floodproofing: This is a method of sealing buildings to keep water out, which can prevent damage to critical systems and mechanical equipment, reduce recovery time

Generator

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Renovations/Disaster Mitigation for a Group Home

- ARC Group Homes in Marion County
- Two buildings renovated in 2010 & 2012 with CDBG funding
- 2019 Mitigation paid with SHIP Funds

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Provided Generator for Group Home

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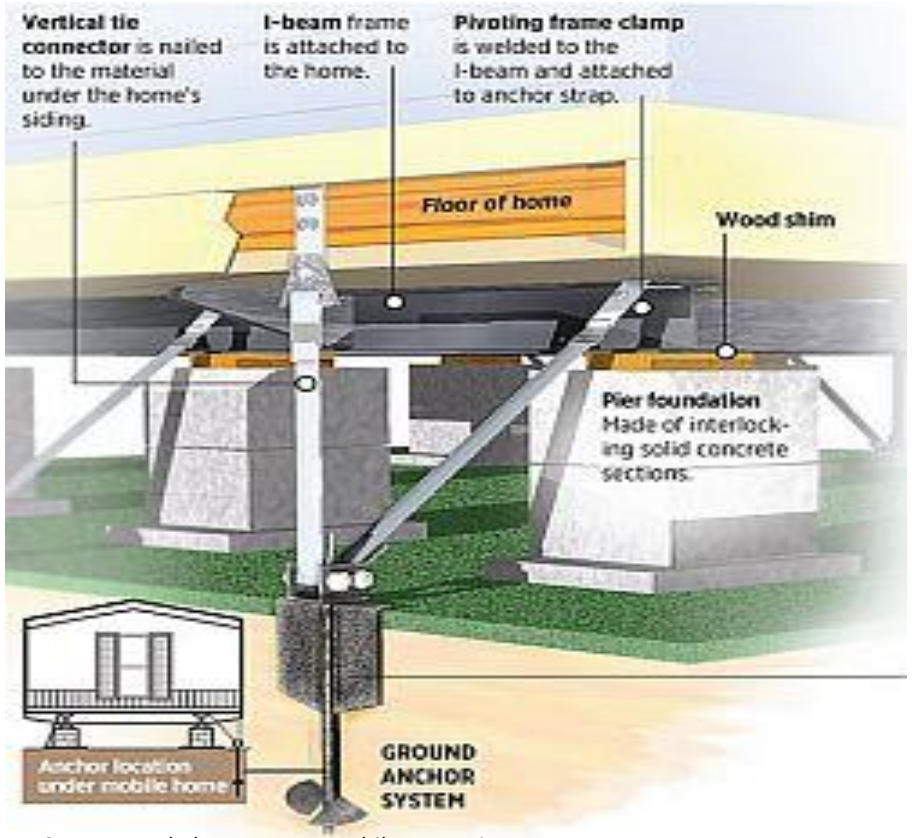
Mobile Homes Tie-Downs and Enhancements

- Replace older mobiles homes (pre-1994) with modern manufactured housing that meets current building codes.
- Make newer mobiles homes resilient with tie-downs, window films, and carport anchoring.



Source: Underhome Armor. Mobile Home Tie Downs.

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What are the Mitigation Features of Your Housing Assistance Programs?

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Funding for Home Hardening

Guidance provided on April 25th Webinar sponsored by Duke Energy

- Review recording at https://www.linkedin.com/posts/florida-housing-coalition_integrating-energy-efficiency-into-rehabilitation-activity-7189261399309590528-Ke4r?utm_source=share&utm_medium=member_desktop
- SELF Home Loan Program
- SHIP
- Hurricane Loss Mitigation Program
- My Safe Florida Home

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DIVISION OF EMERGENCY MANAGEMENT
FDEM
OFFICE OF THE GOVERNOR

DUKE ENERGY

BUILDING A SMARTER ENERGY FUTURE®

Rental Housing Mitigation

SECTION SIX

and deter mold growth. Effective dry floodproofing requires a design by a qualified engineer and should include:

- Sealing cracks or openings on exterior walls or the foundation.
- Covering entry points below the Design Flood Elevation (DFE).
- Protecting against and remove seepage inside the building.
- Protecting mechanical and electrical systems.

Wet Floodproofing: This approach allows unoccupied portions of a building to be flooded during a storm. It is available for older buildings that may not be designed to withstand the hydrostatic pressure that occurs with dry floodproofing (blocking water from entering the building). This method allows water to flow through a building in a controlled way. The space can then be dried after flood water has receded. Electrical panels, mechanical equipment, gas and electric meters and shut-offs should be relocated from flood-prone areas to locations above the DFE. If that is not possible, they should be protected in place.

Site Perimeter Floodproofing: With this approach, temporary physical barriers may prevent floodwaters from reaching the building and does not require modifications to the building structure. These include:

- Sandbags- Although inexpensive and effective, they are heavy and hard to transport.
- Water-inflated tube systems- These large vinyl, rubber or polyethylene tubes are typically filled from a fire hydrant, then anchored to the ground. Due to freshwater buoyancy in salt water, they are not recommended for coastal flooding zones.
- Panelized systems installed into foundation slots- Temporary flood panels can be fitted into permanent slots.

Backwater Valves: Sewage backflow occurs when storm water backs up into a building basement or unoccupied area because of sewer line blockage or storm drain overflow due to flooding. A backwater valve is a relatively inexpensive retrofit that can prevent significant problems from sewer line failure by blocking reverse flow from entering the building through wastewater pipes.

Sump Pumps: These remove water which accumulates in the low points in a building. They are an effective and affordable way to reduce costly flood damages. Design sump pumps to handle moderate flooding but not catastrophic flooding such as a coastal storm surge.

1. Wet Floodproofing example
2. Sandbags used for perimeter floodproofing
3. Inflatable barrier, an example of a water-inflated tube system to reduce flooding
4. Backstop valve that prevents sewage backflow due to flooding
5. Sump pump drains water from buildings

Review Florida Rental Housing Inundation Model

https://vimeo.com/368867659

Amount of SHIP Available for Rental Mitigation

100 % Allocation

- 65% Homeownership Set aside
- 10% Admin

25% of Allocation Available for Rental New Construction or Rehabilitation

+ PLUS all Program Income

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Sustainability

Extreme Heat and Health

- Heat has detrimental and potentially deadly effects
  - Heat exhaustion
  - Heatstroke
  - Can trigger heart issues and breathing problems
  - Psychologically taxing
- Some populations at greater risk
  - Older adults
  - Children, especially infants
  - Low-income families
  - People experiencing homelessness
  - People with pre-existing illnesses
  - People with mental illness
  - People with disabilities
  - Frontline & communities of color
  - People who work or play outdoors
  - Pregnant people

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Adding Energy Improvements to Local Government Programs

- Integrate green building and energy savings programs for income-eligible homeowners to keep homes cooler, lower energy use

- Example: City of Largo Program (LHAP)
  - Energy conservation
  - 0% interest for health/safety/energy efficiency home improvements, forgiven if homeowner stays in home for 15 years
  - Up to $5,000 energy grant for home improvement, including roof replacement, for eligible low-income households

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Largo -Eligible EE Rehabilitation Improvements

- Water saving plumbing fixtures
- Additional attic insulation to R-30
- Hip roof design for all new construction and reframing
- Hurricane clips to existing roof constructions
- Secondary water membranes for roofs
- Pre-engineered roof trusses to reduce waste
- Reflective striping on roofs
- Attic ventilation to include solar attic fans
- Programmable thermostats
- Ceiling fans
- SEER upgrades higher than code
- Energy Star appliances
- Exhaust fans in all kitchens and baths
- Utilize LED lighting
- Vinyl soffit and fascia
- Low odor and low VOC paints
- Seal ductwork
- Windows with impact glass
- Caulking and weather stripping
- Gutter/downspouts and door awnings
- Metal studs where possible
- Insulated concrete form
- Hurricane rated entrance and garage doors
- Contractor recycling of demolished materials
- Limit house sizes for reconstruction and new construction
- Design placement and layout for energy efficiency

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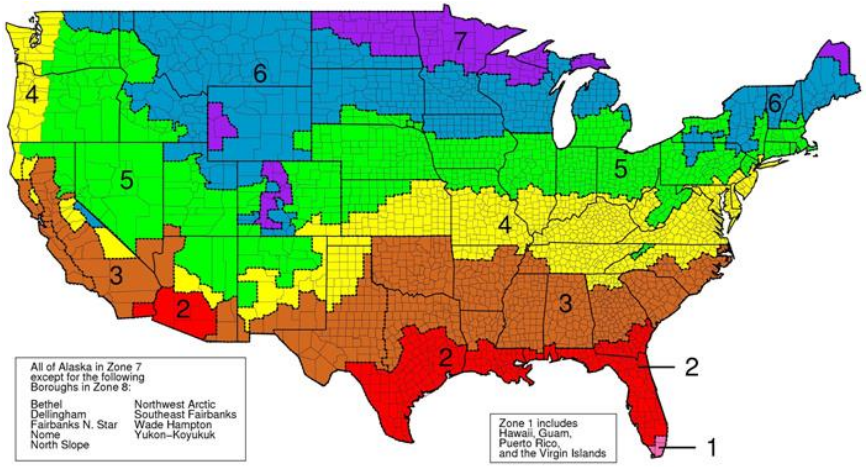
Practical Fixes: Attic and Building Insulation

Most older buildings don't have enough insulation.

DOE Energy Star Program

- Zone 1: Monroe, Miami-Dade, Broward, Palm Beach, Collier = FBC Min ceiling R-Value 30
- Zone 2: Rest of Florida FBC Ceiling Min R-Value 38



Energy Star recommendations for home insulation

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Energy Rebate Programs

- Check local utility provider(s) for retrofit rebate programs, where customers can receive utility rebates for energy efficiency home upgrades
- Example: Duke Energy
  - Customers complete online home energy check
  - Augment your SHIP programs – Webinar
  - Or promote Eligible customers may qualify for incentives or rebate offers:
    - Single family: attic insulation, duct test and repair, high efficiency HVAC replacement, energy-efficient windows
    - Multifamily and manufactured homes: HVAC replacement
- Duke webinar

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New Funding Resource for Clean Energy and Energy Efficiency: Solar For All

- Biden-Harris Administration Inflation Reduction Act created the **Greenhouse Gas Reduction Funds** to prioritize households and businesses that lack access to **financing**, providing low-income families with funding to implement projects to reduce energy, carbon, pollution.
- **Solar For All** program just announced in April 2024

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Solar for All Eligible Projects

Eligible projects include:

- Single family rooftop solar
- Multifamily rooftop solar
- Community solar
- Battery storage
- Energy efficiency upgrades (new roofs, windows, insulation, etc.)
- Commercial building retrofits (smart lighting, HVAC upgrades, etc.)
- Home electrification (heat pumps, electric water heaters, etc.)
- EV charging infrastructure

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Accessing the Funding

- Florida families, nonprofits and small businesses can access funding through two organizations
  - The Southeast Rural Power (SE Rural Power Coalition) — 7-state program led by Groundswell, includes rural Florida, received $156 million
  - Florida Solar For All led by Solar and Energy Loan Fund (SELF) received $156 million
- Program funds will primarily accelerate solar deployment among single family homes, with a smaller proportion supporting multifamily and solar resiliency projects

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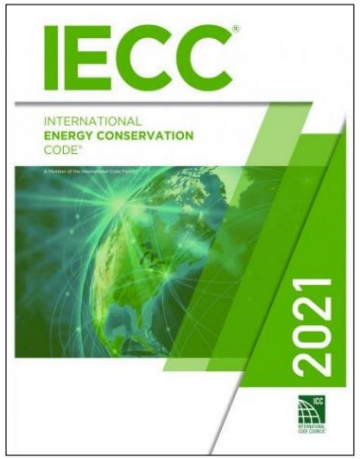
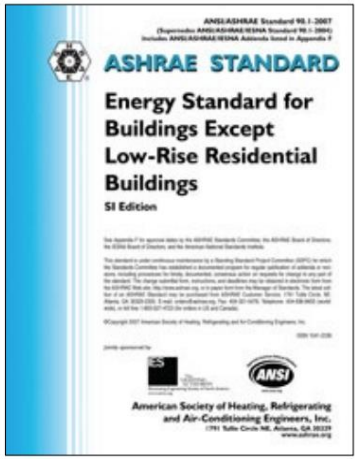
Federal and State Codes updated to IECC 2021 Minimum Energy Standard

- Effective December 2023, Florida Building Code adopted the 2021 International Energy Code Council standard
  - https://codes.iccsafe.org/content/FLEC2023P1/preface
- In April 2024, HUD and USDA announced their adoption of 2021 IECC minimum energy standards to lower costs for Homeowners and Renters
  - HUD last updated energy codes in 2015 using the IECC 2009 edition for single family/low rise buildings and 2007 edition of ASHRAE 90.1 for multifamily.
- *Energy cost savings for 2021 IECC are estimated by DOE to be almost 35% over the current HUD-USDA standard from 2009*

Single Family and Low Rise Multifamily



Multifamily 4+ Stories



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HUD and USDA Financed Programs Impacted by the New Energy Standards

This impacts **new construction** for specific HUD and USDA financed programs:

- FHA-insured single family and multifamily homes
- Housing Trust Fund
- HOME Investment Partnerships Program, Rental Assistance Demonstration (RAD)
- Project Based Vouchers
- Public housing Capital Fund, Capital Fund Financing Program,
- Choice Neighborhoods
- Section 202 Supportive Housing for the Elderly,
- Section 811 Supportive Housing for Persons with Disabilities
- USDA Direct Home Loan and Guaranteed Home Loan programs.

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Green Certifications for Multi-Family Homes

Florida Housing Finance Corporation requires the inclusion of green building features that promote energy and water efficiency and healthy living practices in affordable homeowner and rental homes financed by FHFC.

FHFC-Funded Rental Properties

- Developers seeking financing through FHFC competitive, rental "Request for Applications" (RFA) process are required to include certain green building and energy efficiency features in all units within the development, as specified in the RFA.
- Criteria include features such as low or no-VOC paint, low-flow water fixtures, Energy Star rated appliances and specifications for air conditioning and heating systems.
- 50% of the RFAs also require the selection of one of the following Green Building Certification Programs for all new construction or redevelopment projects: **Leadership in Energy and Environmental Design (LEED)**; **Florida Green Building Coalition (FGBC)**; **ICC 700 National Green Building Standard (NGBS)**; or **Enterprise Green Communities**.

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Sustainability Certification Programs

Florida Green Building Coalition (FGBC);

Enterprise Green Communities

Leadership in Energy and Environmental Design (LEED);

ICC 700 National Green Building Standard (NGBS);

FGBC FLORIDA GREEN BUILDING COALITION | Enterprise®

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About Florida Green Building Coalition

- Florida-specific criteria, including disaster mitigation category, ensures buildings are resilient and best suited for its environment
- As a non-profit corporation, FGBC resources, including scoring sheets, reference guides and policies are all available free of charge on the Florida Green Building Coalition website
- Flexible scoring program provides users with many choices when certifying
- Third-party certification provides direct access to evaluators, ensuring a smooth process

FGBC
FLORIDA GREEN BUILDING COALITION

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What does the Florida Green Standard Cover?

- **Energy Performance** – Exceeding code requirements and reducing energy costs
- **Water Conservation** – Reducing water usage both inside and outside the home
- **Site Conditions** – Minimal site disturbance and utilization of native plants
- **Healthier Home** – Use of products and materials to create a healthier interior environment
- **Materials** – Use of locally produced, resource-efficient materials and recycled content
- **Disaster Mitigation** – The ability to withstand natural disaster and pests such as termites

FGBC five standards:

- Homes
- Commercial
- High Rise Residential
- Developments
- Local Governments

	FGBC Home Score	Version 12 Rev 1.0
Category	Your Score	Required Min - Max
Category 1: Energy	0	30 - 75
Category 2: Water	0	15 - 40
Category 3: Lot Choice	0	0 - 15
Category 4: Site	0	5 - 30
Category 5: Health	0	15 - 35
Category 6: Materials	0	10 - 35
Category 7: Disaster Mitigation	0	5 - 30
Category 8: General	0	0 - 40
Total:	0	
Total Need:	180	The Total Need number will automatically adjust as points are earned for each criteria in the checklist.
Certified Home Score	-80	
	Failed	

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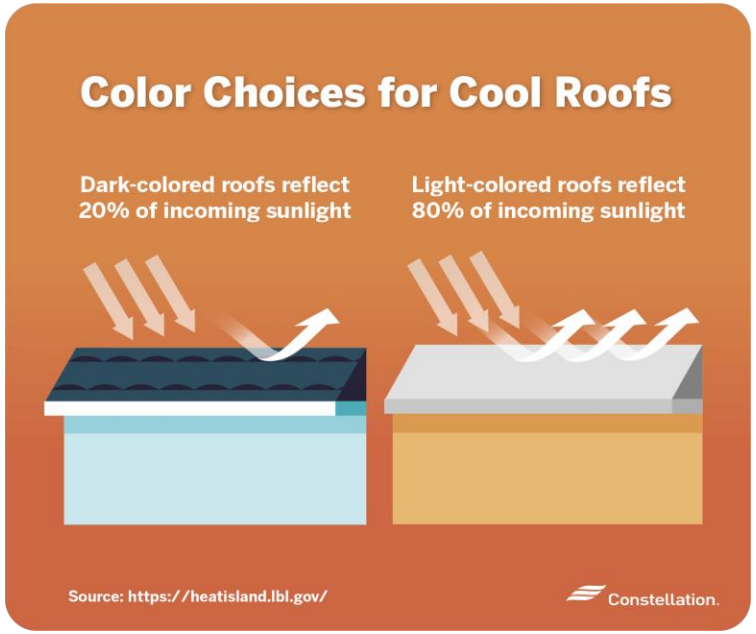
Creating Cool Communities: Roof Color, Slope and Products



The Heat Island Group at Lawrence Berkeley National Laboratory estimates a clean white roof will stay 55 degrees cooler than a darker one.

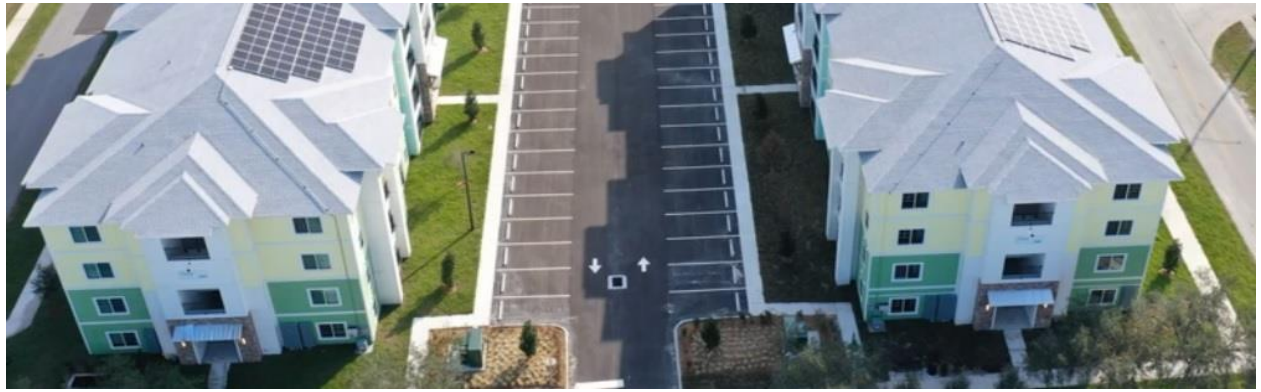
Primary mechanism - reflect sunlight and reduce absorption into the structure

Corporate studies indicate that new lighter colored roofing products are performing better than in the past.

Advanced cooling roofing materials sell at parity or a modest premium.

Learn about product performance and costs.

https://heatisland.lbl.gov/coolscience/cool-roofs



City of Largo's Grand Oak

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Cool Housing: Adapting For Increasing Heat

Integrated approach to designing or retrofitting existing properties.

- Minimize heat exposure and heat gain and reduce energy consumption.
  - Reduce heat gain from windows and doors – exterior shade structures
  - Create cool roofs
  - Increase green, natural surfaces and reduce concrete/asphalt
  - Add shade structures for outdoor spaces

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Cool Housing: Post Disaster Resilience

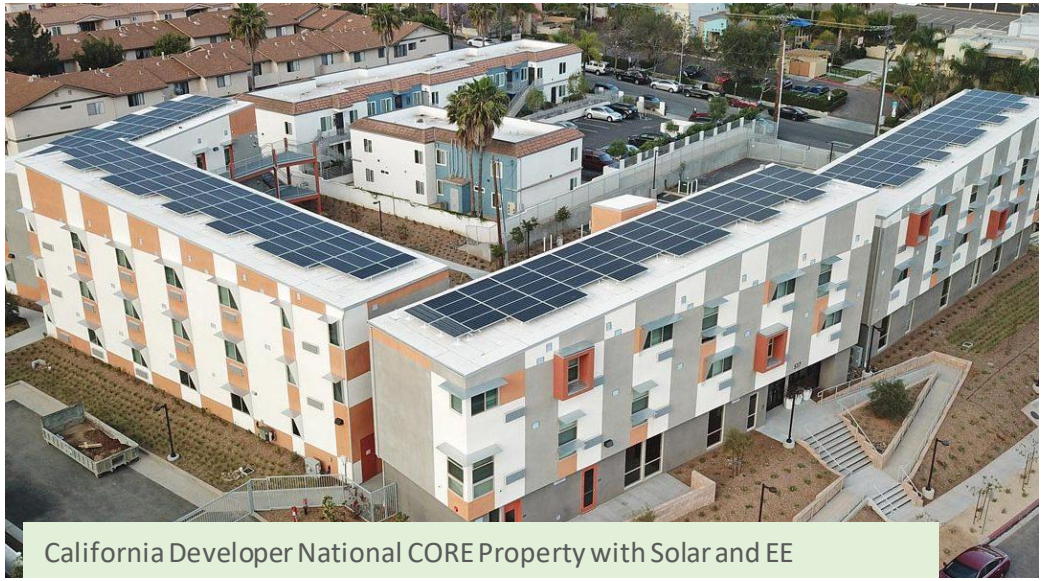
Community Room at Terwilliger Place AH for Veterans VA

Hurricane/storm survivors are at increased health risks due to long-term power outages and damaged properties

Older, disabled and high floor residents are at more risk to heat

New multi-family energy resilience for disaster preparedness:

- Design/retrofit community rooms to serve as cooling spaces, include refrigerators for medicine
- Ensure elevator functionality
- Clean energy backup power for 96 hours
- Design split electrical system to support those systems
- Contact Solar Energy Loan Fund (SELF) funded projects



California Developer National CORE Property with Solar and EE

Shade Systems Reduce Heat Gain to Windows and Doors

Exterior shade devices can prevent interior heat gain

- Awnings, shutters and louvres
- Overhangs and porches

Of course, must also address wind/hurricane safety requirements

Cool Housing: Address South and West Face

- Focus on the South and West sides, which are exposed to the greatest amount of sun to reduce the interior heat with shade structures
- Four sides do not need to have equal shading

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Add Shade Structures and Plants to Outdoor Spaces

- Design spaces for SUMMER in Florida
- Provide shade for multiple seating areas, address the hottest hours and protect from rain
- Plant native, heat/drought tolerant vegetation and trees
- Enable early morning and evening use with solar and LED lighting

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Other Program and Policy Recommendations for "Cool Buildings"

- Meet with Building Department and Sustainability team to review LEED, FBC and other updated standards
- Develop/include specifications in your contracts for new Affordable Housing construction and retrofit
- Create a Technical Amendment to the FBC for new residential and commercial buildings;
- Require government-owned and publicly assisted buildings to upgrade within X years;
- Create construction design guides based on LEED, other parameters;
- Establish a sustainability fund for the collection of ordinance waiver fees.
- In 2014 Miami Beach created a Cool Roof Tool Kit and Ordinance

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Resources: Heat and Energy Building Standards

- 2023 Florida Building Code, Energy Conservation, Eighth Edition
- Energy Star Roofing Program
- Department of Energy Zero Energy Ready Home Program
- HUD's Federal Register Announcement of adherence to IECC standards for minimum energy efficiency requirements

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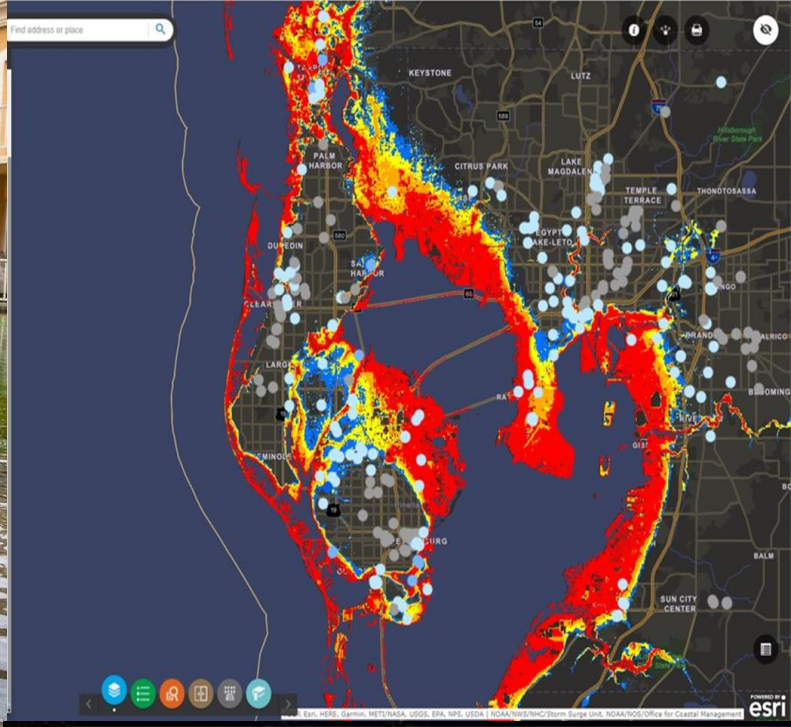
Resilience to Flooding



Resources & Innovations

READY TO RESPOND

Strategies for Multifamily Building Resilience



Disaster Preparedness for Affordable Housing Organizations

Enterprise green communities®

https://keepsafeguide.enterprisecommunity.org/sites/default/files/strategies-for-multifamily-building-resilience_1.pdf?fid=2154&nid=4325

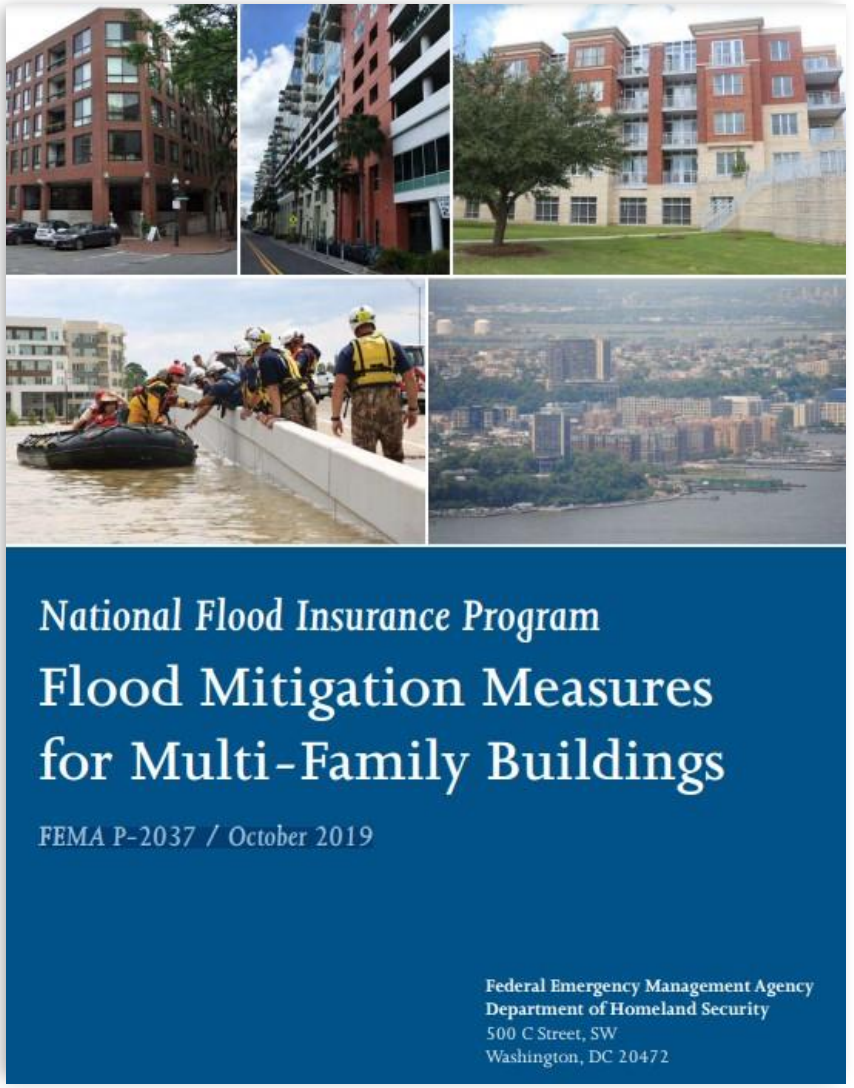
National Flood Insurance Program (NFIP) Flood Mitigation Measures for Multi-Family Buildings

Excellent guide for multi-family properties

150+ pages

FEMA P-2037 / October 2019

https://content.govdelivery.com/attachments/USDHSFEMA/2020/06/24/file_attachments/1481529/16-J-0218_Multi-FamilyGuidance_06222020.pdf



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NFIP FEMA Multi-Family Guide Contents

- Site characteristics that influence flood risk
- Cross-reference to technical guides
- Insurance considerations
- Mitigation measures
  - Elevation
  - Wet Floodproofing
  - Dry Floodproofing
  - Elevating or Relocating Equipment
  - Dry Floodproofing Building Utility System Rooms and Creating Vaults
  - Repurposed Lowest Floor

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NFIP Minimum Requirements for New Construction and Substantially Improved Buildings

Multitudes of standards, building code requirements --consult guides for specific technical requirements, depending on flood zone and location flood characteristics.

NFIP performance requirements for new construction and substantial improvement or **repair of substantial damage of existing construction in SFHAs** specify:

- Elevation – BFE, no first floor
- Designed and adequately anchored to prevent flotation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads.
- Materials resistant to flood damage.
- Construction practices which minimize flood damage – breakaway walls, vents etc.
- Electrical, HVAC, plumbing, and other services are designed and/or elevated to prevent water from entering components.

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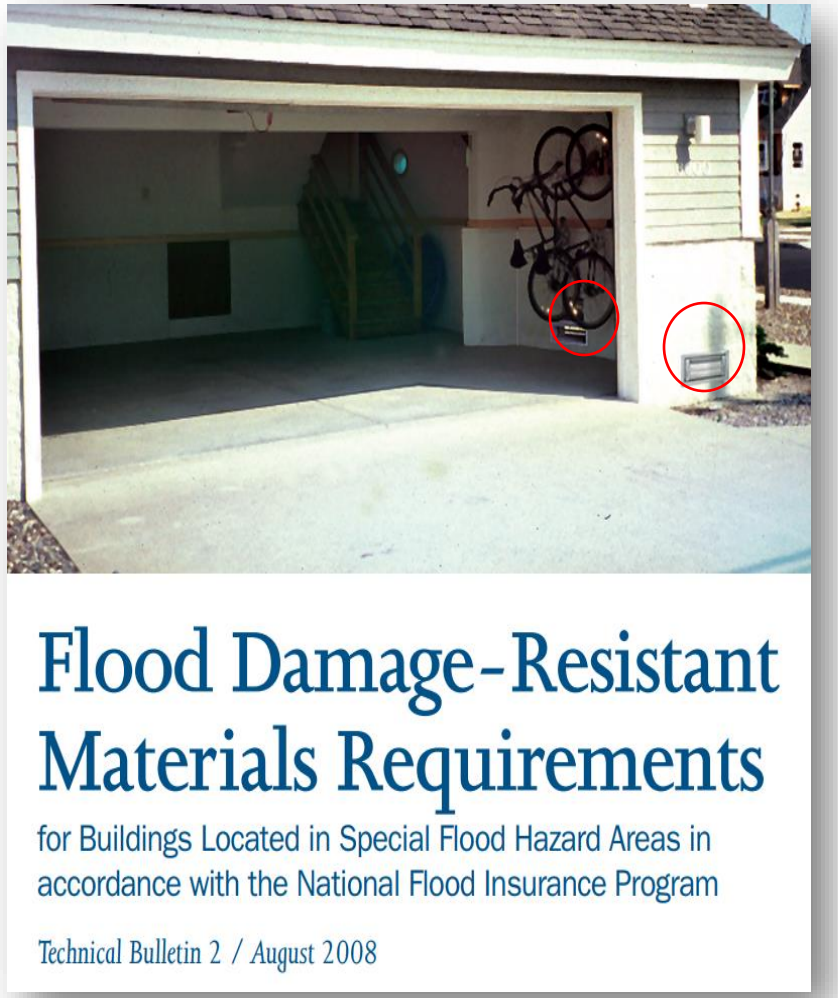
Wet Flood Proofing Retrofits

Key principle: Implement resilience rehab or repair that will reduce future damage and expenses caused by flooding, and support more rapid recovery.

- Consider these strategies for homes in high-flood risk areas
- Develop a checklist
- Update your RFQ for your contractors

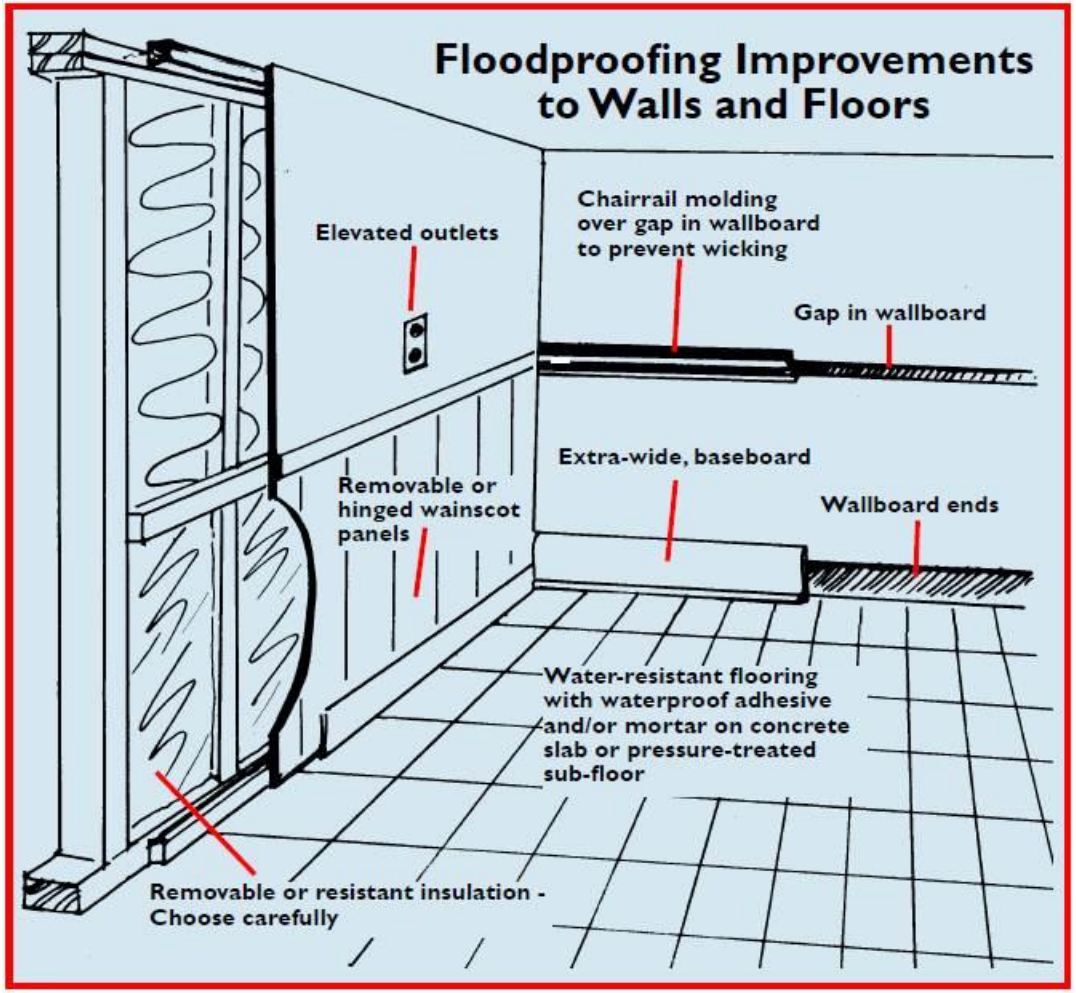


Lower portion of wall is masonry and includes several flood vents

https://www.fema.gov/sites/default/files/2020-07/fema_tb_2_flood_damage-resistant_materials_requirements.pdf

Wet Flood Retrofits: Resilient Materials

- Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials.
- Use marine-grade plywood, pressure-treated and decay-resistant wood.
- Water resistant insulation
- Replace internal walls with cement board, concrete – consider half-walls or anticipated flood levels
- Installation techniques prevent wicking up
- Replace wooden doors with metal or other flood resistant options
- Water resistant insulation.



Wet Flood Retrofits: Elevation

Elevating mechanicals and electrical service can reduce damage, save money and recovery time

- Elevate utilities and service equipment.
- Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto secure pedestals or platforms at least 1 foot above the potential flood elevation.
- High-risk zones -- going to or above the regulatory flood elevation for the property as adopted by your community.

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Wet Flood Retrofits: Flood Vents

Key principle: Allow flood waters to move in and out quickly to reduce structural damage

Flood “vents” are small protected and permanent openings that allow floodwater to flow through a building.

- Helps prevent structural damage caused by hydrostatic pressure buildup from floodwaters.
- Relieves pressure from the foundation walls

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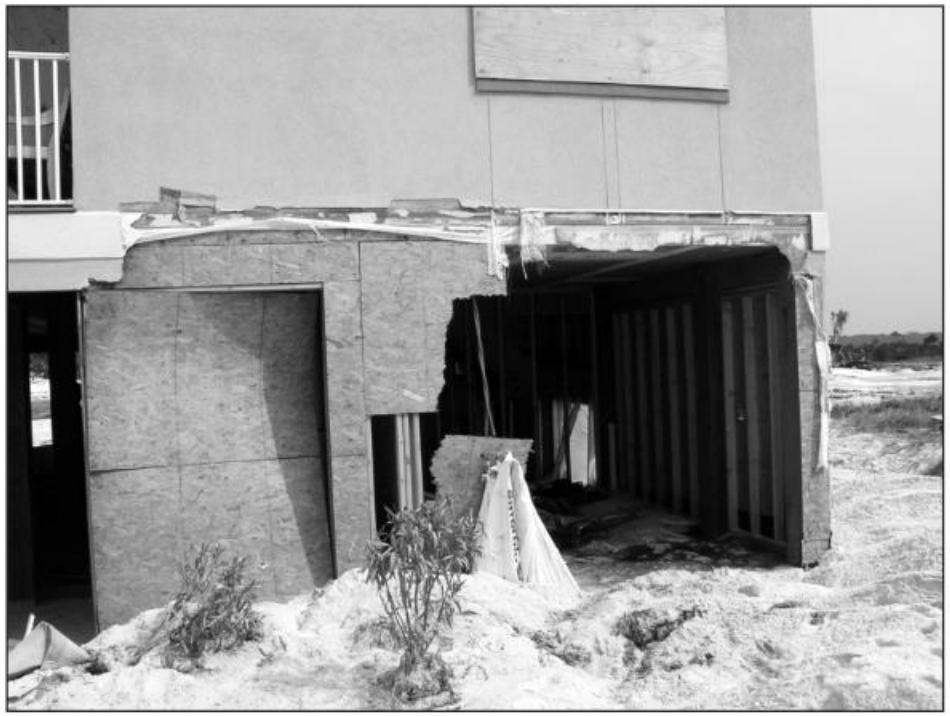
Wet Flood Proofing: Break Away

Key principle: Allow flood waters to move around the structure without causing catastrophic damage.

For elevated homes in flood zones, stairs and lower level walls need to be built in a specific manner.

- Vertical portion (the riser) needs to be connected loosely.
- Walls are connected loosely
- This allows it to "breakaway" without causing more damage to the house and structure.
- FEMA Free of Obstruction Guide 2020



Non-compliant breakaway wall

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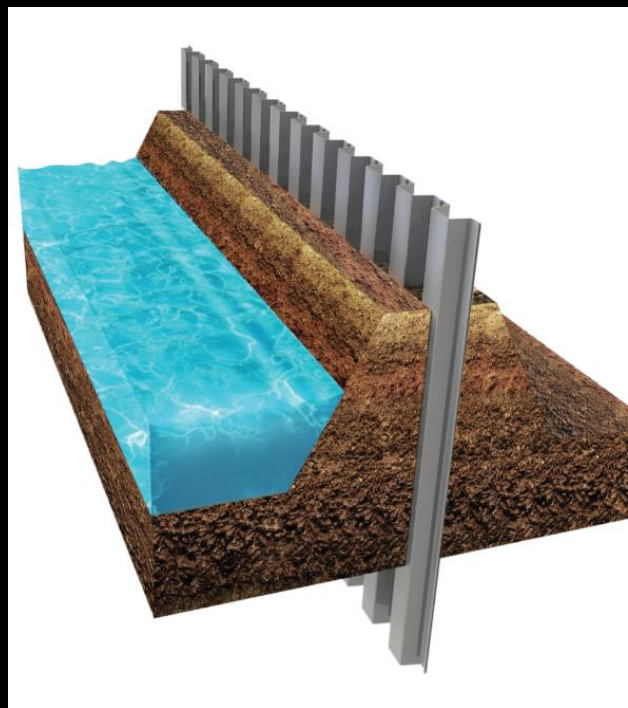
Flood Retrofits: Barriers

Products provide some protection against slow rising water.

- Heavy duty baffle plates with secure tracks for doors and patio doors.
- Removable flood walls – fence like structures with reinforcement
- Berms and sheet pile "fences"

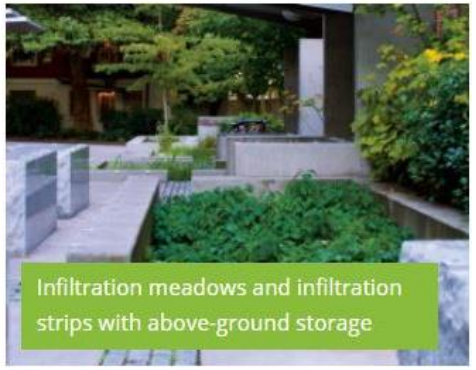


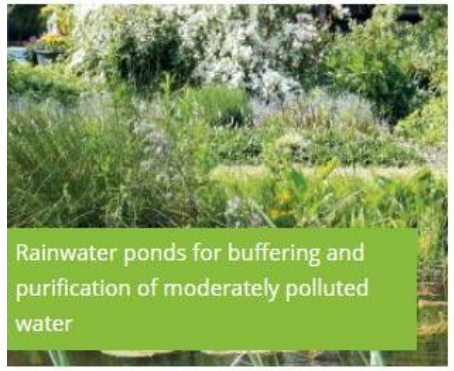
Green Infrastructure to Reduce Site Flooding

Combines traditional stormwater engineering with natural landscape architectural strategies to address flood risks and needs of the site.

Benefits include

- Reducing volume to stormwater systems and streets.
- Green spaces amenities for residents.
- Reduces heat gain to nearby properties.
- Improved water quality, ecosystem health
- Maintenance is different, not more costly





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Landscaping Strategies

- Assess the property to understand how it may contribute to flood risk.
- Use natural and hybrid infrastructure strategies to divert water away from the home and into local storm drains.
- Look at the slope, consider regrading certain areas
- Remove unnecessary concrete and replace with permeable materials.

Bringing It All Together

Update the preservation and rehab programs to integrate resilience and sustainability measures to strengthen your communities' housing.

- Storm/Wind and Flood Resilience
- Heat Reduction and Energy Savings
- Water Conservation
- Landscaping

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Questions, Answers Evaluation

Please Complete the Evaluation!

Michael Chaney
Catalyst Program Director
chaney@flhousing.org

Lauren Thornberg
Technical Advisor
thornberg@flhousing.org

CJ Reynolds
Director, Resiliency and Disaster Recovery
reynolds@flhousing.org

Technical Assistance is Available

Available Daily: 1 (800) 677-4548

Options for Further Assistance Include:

- Phone and Email consultation
- Site Visits

Register at www.flhousing.org for:

- Workshops
- Webinars