

# Retrofitting

**There's plenty you can do to strengthen your home so that it will stand up to a hurricane.**

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In the aftermath of recent hurricanes, it appears that new houses hold together well in a storm and that hip roofs are more wind-compatible than gable roofs. That's reassuring, except for people who own older houses and/or gable roofs. Short of buying a new house or rebuilding their old one, what can they do to make their homes safer in a hurricane? Plenty. It's a process called retrofitting. The goal is to strengthen the weak parts of the house -- the gable end of the roof, the shingles and roof sheathing, and the junction of the roof framing and the walls. It doesn't have to be expensive. You can spend less than \$300 following one suggested checklist, \$1,000 to \$3,000 following another. Or you can go all out and spend much more.

## Evaluating your house

The first step in deciding whether your house needs retrofitting is to inspect it. Look at the roof. How old is it? Does it show signs of wear, with loose or curled shingles and deteriorated flashing around chimneys and other openings? Has it leaked in more than just a spot or two? Have it evaluated by a roofing inspector, and if it needs to be replaced, that presents a good opportunity for retrofitting.

Also, is your garage door braced? Are large tree limbs hanging over the house? How well has the house been maintained? Is the siding in poor condition?

"A failure to maintain the home even as it was built is a large, contributing factor to all of this damage" seen after hurricanes, said Longboat Key building inspector Chris Zorn.

"Deferred maintenance in a few areas, it doesn't take much. ... If the wood is rotted, the game is over. Do a thorough investigation, and if you don't feel up to it, get an inspector, a contractor friend, or your son or daughter to go on one of hundreds of Web sites that have checklists on them."

## The environment

A house that's in an open location or within 1,500 feet of open water is at special risk of high winds in a hurricane, according to "A Homeowner's Guide to Hurricane Retrofit," by the Institute for Business and Home Safety (IBHS). You can download the publication at <http://tinyurl.com/nh83f>.

Other risks include nearby outbuildings, fences, carports, pool cages and awnings. It pays to strengthen these structures, because the cost of repairing or replacing them falls within the hurricane deductible for many homeowners. Trees should be kept in good shape, and lawn furniture and other nonstructural items should be stored inside before a hurricane

approaches. Landscape pebbles and gravel can also become destructive wind-borne debris. Replace them with mulch.

Now if you could just get your neighbors to do the same.

## **Shingles and sheathing**

Your house's roof is a system, made up of shingles, underlayment, sheathing and trusses. Weakness in any part of the system can undermine the whole. So make sure your shingles are in good condition and firmly attached. Wind can destroy a house in two ways: It can knock it over with a devastating blow, or it can gnaw at it until it fails. Wind that gets under shingles can pull at a roof, making a small hole into a big one.

"Use roofing mastic (applied with a caulking gun) to glue the first row of shingles all the way around the house," said Sarasota remodeling contractor John King of Rampart Homes. "At the top on the caps (shingles that sit atop the roof's ridge), make sure they're all good and solid. Most major failures happen at the cap or the starter row. Get your ladder and work your way around."

Then, in the cool of the morning, go into your attic and look at how the roof decking is attached to the rafters, said King. If you see staples popping through, that's bad. The new code requires that sheathing be attached with nails. When replacing the roof, make sure nails are used, accurately. Roofers use nail guns; make sure a hammer is used for that final, firming blow. "People get a little in a hurry with their nail guns," said veteran remodeling contractor Danny Lipford of Mobile, Ala., and host of "Today's Homeowner." "You can walk through just about any newly framed house and see a ton of nails missing. You have to think, 'I wonder if they know it missed, and I wonder if they put another nail in beside it.'" Another way to secure sheathing is to glue it to the rafters. From inside the attic, use a caulking gun to run a quarter-inch bead of wood adhesive along the roof deck on each side of its connection to the rafter or truss chord. Do this in the cool of the day.

## **Saving the gables**

Novelist Nathaniel Hawthorne made them famous in his 1851 novel, "The House of the Seven Gables." But in 1992, gable roofs became notorious because of Hurricane Andrew, which tore apart the unbraced, shoddily constructed gables of homes built in the decade before. Now, gables are again being disparaged in favor of hip roofs, which slope upward from each wall to a common ridge in the middle of the roof. Hips are good, gables are bad, or so goes the common wisdom.

But what are you supposed to do if your house has gables, tear it down? Not quite. Besides, gables often are more architecturally interesting than hips. So let's save the gables by bracing them. "If they have a gable end," said King, "I strongly recommend they go up in the attic and run some good 2-by-4s, No. 2 or Southern yellow pine, and butt them up against the bottom chord of the truss and run it up against that gable end. Run it back five or six trusses. Run another one from the bottom of the truss to the top chords. You've got this 'X' piece that is transferring those loads to keep the gable end from blowing in at the bottom or blowing in at the top. You want to go up there early in the morning. You don't even need an air gun. Just nail it on every truss. It probably took me an hour to do one."

## Anchors and garage doors

The most ambitious retrofit project is adding hurricane straps, clips and anchors to tie the roof to the walls and foundation -- just like new houses are required to have under the new Florida building code. But often, this is work for a contractor.

Something you can do yourself is securing your garage door. Garage doors that are not reinforced are particularly troublesome in hurricanes because they tend to act as large sails. The wind blows the door out of the roller track, slamming it down on the cars, and, worse, lifting off the roof.

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Reinforcing kits are available, and you can rig up bracing with 2-by-4s. The Institute for Business and Home Safety publication explains how to do this. But it's probably worth it to hire a pro to permanently reinforce the door. A reinforced door is heavier, meaning the springs have to be adjusted or replaced. And that is no job for an amateur -- the springs are dangerous.

"We make the door as current to the building code as we can," said Ingrid Johns, office manager of Access Garage Door in Sarasota, one of many companies that can perform this retrofit. "We add (horizontal) struts to the back of each panel, and add heavy-duty hinges. The hinges are what hold the rollers into the track, so you want those to be beefed up. You don't want it to be on there so secure that it rips the jambs right off, so we beef up the track onto the jambs. We change the rollers and beef up the track by adding support brackets to the track, which is held to the wood."

The cost for the two-hour job is \$550 for a standard two-car door and \$425 for a standard one-car door, including parts and labor.

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