

## Roof and Attic Ventilation (Bronze\*)



Hurricane damage usually starts with the roof, so that is the place to start to make your home less vulnerable. If the roof is old or showing signs of damage or decay and needs to be replaced, re-roofing will significantly strengthen your home against hurricanes. The roof cover should be removed down to the sheathing. Sheathing should be checked for any damage and replaced as needed. Choose a high-wind rated roof cover and make sure ridge and off-ridge vents also are rated for high winds. Prepare to be able to shutter any gable end vents before a storm strikes or replace them with products rated for resistance to wind-driven rain intrusion. Soffits are vulnerable during a hurricane, so check the attachments. If your home has a gable end with a roof overhang greater than 12 inches, have the structure of that overhang checked and, if needed, braced. Find specific recommendations for how to carry out these retrofits at [www.DisasterSafety.org/FORTIFIED](http://www.DisasterSafety.org/FORTIFIED).

If you are not ready to re-roof, check vents to be sure they will stay in place and are of the proper type and strength to resist high winds and wind-driven rain. Strengthen the fastening of the roof sheathing to the roof structure and provide a secondary water barrier by having a closed cell urethane-based adhesive spray foam applied from inside your attic. The structure of the supports for gable end overhangs should also be checked and the connections strengthened, if needed.

## Protect the Rest of the Building Envelope (Silver\*)



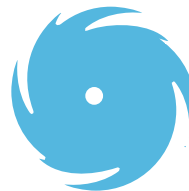
Older entry doors and particularly double doors and garage doors may be weak points where wind pressures and wind borne debris may force them open or push them out of their tracks. Glass windows, glass in doors and sliding glass doors are susceptible to failures from both pressure and wind borne debris impact. When any of these openings are breached, wind and water can enter your home and completely ruin the inside.

In older homes, which are not well connected from top to bottom, the failure of a large window or a door can allow enough wind pressure to build up in your home that it almost doubles the effects of the winds howling around the outside. This can lead to significant structural failures. Installing shutters over these openings or replacing them with wind and wind borne debris impact-rated products can help hold your home together and reduce the chances of wind and water getting inside.

## Addressing Key Structural Weaknesses (Silver\*)



Porches and overhangs and gable ends are the most frequent places where structural damage occurs. Many of the columns that support porch roofs or overhangs provide support for the weight of the roof, but provide little resistance to uplift forces. In a hurricane, these forces can actually be much larger than the weight of the roof it is expected to support. Making sure that the columns are adequately connected will also make sure they are tying down the roof as well as holding it up. Large gable end walls are frequently much weaker than they should be and need to be braced and tied into the roof and ceiling structure to keep them from being damaged during a hurricane.



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# REDUCING HURRICANE RISK

## Residential



The coastal area from Texas to Maine is home to tens of millions of people with \$9 trillion worth of insured property that is exposed to the threat of hurricanes. Building science research has identified the areas of a home most at risk from hurricane-force winds and rains. The following information offers guidance for strengthening these areas, which will lead to a reduced risk of damage, fewer repairs, and also may qualify your home for a designation through the IBHS FORTIFIED for Existing Homes™\* program.

*\*IBHS FORTIFIED for Existing Homes™ program offers three levels: Bronze, Silver and Gold designed to help strengthen existing homes through retrofit techniques that will ward off damage from specific natural hazards. For more information visit [www.DisasterSafety.org/FORTIFIED](http://www.DisasterSafety.org/FORTIFIED).*

## Gable Ends – (Silver\*)

IBHS' FORTIFIED for Existing Homes™ program provides specific guidance for the retrofits below. Contact IBHS at [info@ibhs.org](mailto:info@ibhs.org) or (813) 286-3400.

**Overhangs** – If the gable end overhang is supported by beams that cantilever over the top of the gable wall and connect back to the second truss or rafter at the gable end, beams need to be strapped down to the wall to help resist wind forces. The end of the beam should be attached to the second truss or rafter using a joist hanger.

**Bracing the Gable Wall** – Improving the attachment of the roof sheathing will fix one of the most prevalent types of failures that occur at gable ends during hurricanes. However, due to poor construction and attachments of gable end walls, it is frequently necessary to improve the strength of the wall structure by adding studs and strengthening connections to the roof structure, the ceiling framing and to the wall below.

## Gable End Vents – (Bronze\*)

Shutter before a storm hits to keep large quantities of water from being driven into the attic. Use plywood or other flat sheet shutters to seal the opening or consider replacing existing vents with a product rated for resistance to wind-driven rain.

## Garage Doors – (Silver\*)

Look for a sticker indicating pressure rating suitable for your location. If there is no sticker, consider three options:

1. Install after-market vertical braces that are code approved and available at a local home improvement store.
2. Check with the door manufacturer for a kit to strengthen the door and its track so that it has the properties found in new wind-rated doors appropriate for your location.
3. Replace the door with one that is pressure or pressure and impact-rated; see local code requirements.

## Entry Doors – (Silver\*)

Replace with pressure and impact-rated door or shutter with a pressure and impact-rated product. Keep at least one protected entry door operable from inside the home.

## Off-ridge Vents<sup>a</sup> – (Bronze\*)

Consider replacing any off-ridge vents not rated for high wind applications and wind-driven rain resistance; consult a reputable roofer.

## Ridge Vents<sup>b</sup> – (Bronze\*)

Ridge vents are the last thing installed so they can be easily replaced. Choose vents rated for water intrusion resistance in high winds; look for a baffle or trip that keeps water from being pushed up into the vent so that rain is pulled away. The vent should be adequately fastened to roof deck.



## Soffits – (Bronze\*)

Check the condition and width of the overhang (perpendicular to the wall) of aluminum or vinyl soffit covers. Replace corroded material covers. Check the attachment to the wall and eave; panels 12 inches or longer perpendicular to the wall should have a wood support near the middle of the panel. For IBHS guidance on how to retrofit vinyl and aluminum soffit panels, visit [www.DisasterSafety.org/hurricane](http://www.DisasterSafety.org/hurricane).

## Porch Roofs – (Silver\*)

Have the posts and the connections at the top and bottom of the posts checked to make sure that they can hold down the roof as well or better than they hold up the roof. If needed, install specialized brackets to connect the column to the foundation and to the roof structure above.

## Roofs – (Bronze\*)

Choose a high-wind rated system: for shingle roofs older than 15 years, damaged shingles, and when reroofing.

1. Strip off existing material down to the roof sheathing.
2. Replace any damaged or decaying sheathing.
3. Re-nail the roof sheathing over the entire roof by adding 8d ring shank nails (visit [www.DisasterSafety.org/hurricane](http://www.DisasterSafety.org/hurricane) for additional guidance).
4. Apply secondary water barrier and appropriate wind resistant underlayment.
5. Install a high-wind rated roof cover.

## Windows – (Silver\*)

Select appropriate shutters or replace the windows with impact-rated products. Permanently install any necessary wall-mounted hardware for removable shutters before a storm threatens; number shutters and keep all the removable hardware accessible for quick installation. IBHS offers a Shutter Selection Guide at [www.DisasterSafety.org/hurricane](http://www.DisasterSafety.org/hurricane).

## Sliding Glass Doors – (Silver\*)

Shutter or replace with pressure and impact-rated product. Permanently install any necessary hardware for removable shutters before a storm threatens; number shutters and keep all the removable hardware accessible for quick installation. IBHS offers a Shutter Selection Guide at [www.DisasterSafety.org/hurricane](http://www.DisasterSafety.org/hurricane).