



Federal Insurance and Mitigation Administration

Residential Hurricane Wind Retrofits

What are residential hurricane wind retrofit projects?

Residential hurricane wind retrofit projects, or wind retrofits, are enhancements made to strengthen the roofs, walls, doors and windows to minimize damage to homes from wind and wind-driven rain caused by high-wind events such as hurricanes.

FEMA developed the guidance, [P-804 Wind Retrofit Guide for Residential Buildings \(2010\)](#), to encourage wind mitigation of existing residential buildings in hurricane-prone regions. Although the guidance is created for coastal properties, it contains elements that could be useful for properties inland.

What information is available in FEMA’s guidance, P-804?

The guidance provides technical information needed for selecting and implementing wind retrofit projects for homes in all coastal regions. This guidance identifies three packages of mitigation measures for residential wind retrofit projects: Basic, Intermediate, and Advanced.

Homeowners should work with their contractor, local government official, and a design professional (if necessary) to determine which package of retrofit activities is most appropriate for their home.

Intermediate Mitigation Package Retrofits
Includes the Basic Package retrofits plus: <ul style="list-style-type: none"> Protecting windows and entry doors from wind-borne debris Protecting garage doors from wind pressure and garage door glazing from wind-borne debris Bracing gable end walls Strengthening connections of attached structures
Advanced Mitigation Package Retrofits
Includes the Basic and Intermediate Package retrofits plus: <ul style="list-style-type: none"> Developing a continuous load path Protecting windows, entry doors, and garage doors from wind pressure

Are there FEMA funds available for wind retrofit projects?

FEMA offers two Hazard Mitigation Assistance (HMA) grant programs that provide funds for cost effective residential wind retrofit projects. These programs are the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program. Both of these programs share the same purpose of protecting communities from natural disasters, but they have different periods of funding availability.

The HMGP provides funds to eligible states, tribes, territories and local communities after Presidentially declared disasters to protect public or private property through various mitigation measures. The PDM program is a nationally competitive program that provides funds to eligible states, tribes, territories and local communities for hazard mitigation planning and mitigation projects on an annual basis. FEMA generally funds up to 75 percent of eligible project costs. The homeowner must provide a 25 percent

Basic Mitigation Package Retrofits		
Option 1:	OR	Option 2:
Improvements with roof covering replacement		Improvements without roof covering replacement
<p>Additional Required Retrofits</p> <ul style="list-style-type: none"> Strengthening vents and soffits Strengthening overhangs at gable end walls Protecting openings per the Intermediate Package, if located in the wind-borne debris region 		

match, unless the local government has identified an alternative payment method. The state or grantee may have a different cost-sharing strategy. The 25 percent match can derive from both cash or in-kind sources. Additional information on these programs can be found at www.fema.gov/hazard-mitigation-assistance.

Individual homeowners cannot apply directly to FEMA for HMA funding. To find out about potential funding for wind retrofit projects, homeowners should contact their [State Hazard Mitigation Officer](#).

How is cost effectiveness typically determined?

All projects submitted to FEMA's HMA grant programs for funding must be cost effective. A project is considered cost effective if the benefits of it are sufficient to justify the costs to complete it. Benefits may include avoided damages, loss of function, and displacement. The typical way to demonstrate cost-effectiveness is to calculate the benefit-cost ratio.

FEMA's Benefit-Cost Analysis (BCA) toolkit calculates the benefit-cost ratio of projects and demonstrates whether or not the costs of projects exceed the benefits they will provide. In recent years, FEMA has created a more efficient method for determining the cost effectiveness of wind retrofit projects, the hurricane retrofit pre-calculated benefits.

What are the hurricane retrofit pre-calculated benefits?

The hurricane retrofit pre-calculated benefits are pre-determined benefits for residential structures located in an area that has the potential to experience 120 mile-per-hour (mph) or greater wind speeds. These benefits are based on FEMA's existing methodology for evaluating the cost-effectiveness of residential wind retrofit projects and utilizes updated 2014 construction costs for the measures outlined in the guidance.

To achieve a higher level of protection, the pre-calculated benefits only apply to the Intermediate and Advanced mitigation packages and must follow FEMA's guidance. This correlates with the [Insurance Institute for Business and Home Safety's Silver and Gold levels of protection](#) to retrofit a home.

The following benefits apply to the packages in the 120-MPH or greater wind zones:

Mitigation Package	Roof Replacement	Pre-Calculated Benefit
Intermediate	No	\$13,153.00
Intermediate	Yes	\$24,920.00
Advanced	No	\$40,252.00
Advanced	Yes	\$52,018.00

If the retrofit project total cost is less than the pre-calculated benefit in the above chart, it is considered to be cost effective. Benefits should not be treated as equal to costs. Applicants still need to demonstrate costs are necessary, reasonable and allocable.

Why are these pre-determined benefits important?

The hurricane wind retrofit pre-calculated benefits eliminates the requirement for HMA grant program applicants to conduct a separate benefit cost analysis for a hurricane wind retrofit project. This will help cut down the application development timeframe and associated costs.

The use of the pre-calculated benefits also encourages mitigation in high-wind impact areas. Retrofit projects mitigate damage to buildings and contents leading to greater community resilience. Homeowners interested in life-saving protection during extreme wind or tornado events should refer to the FEMA publication [P-320 Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business \(2014\)](#).

Useful Links and Resources

For more information on cost-effectiveness for residential hurricane wind retrofit measures, see the job aid: [Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA](#)

For more information on FEMA's Benefit-Cost Analysis Toolkit, visit: www.fema.gov/benefit-cost-analysis