FEMA

Job Aid

Federal Insurance and Mitigation Administration

Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA

This Job Aid establishes the use of pre-determined benefits to demonstrate the cost-effectiveness of wind retrofit projects that comply with FEMA P-804, *Wind Retrofit Guide for Residential Buildings*, December 2010 (available at https://www.fema.gov/media-library/assets/documents/21082). This eliminates the requirement for Applicants/subapplicants to conduct a separate benefit-cost analysis for a hurricane wind retrofit project that meets the criteria identified in the table below. The benefits are based on FEMA's existing methodology for evaluating the cost-effectiveness of residential wind retrofit projects and use updated 2014 construction costs for the measures outlined in FEMA P-804.

To qualify for these pre-determined benefits, residential structures as identified in FEMA P-804 (does not include manufactured homes) must be located in the 120-mile-per-hour (mph) basic wind speed zone for Occupancy Category II Buildings per the American Society of Civil Engineers (ASCE) / Structural Engineering Institute (SEI) standard ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures*.

Grant applications must include maps that clearly indicate the structures to be retrofitted as being in this wind zone to be eligible to use the pre-determined benefits. A list of States, boroughs, counties, parishes, and territories that meet the 120 mph requirement is attached:

- ***States, Boroughs, Counties, Parishes, and Territories That Meet the Qualification Requirements for Pre-Determined Benefits*** This includes areas that are completely located within the 120 mph wind zone. These areas are automatically eligible to use the pre-determined benefit costs as long as the application includes a map with the structures clearly indicated on it (see **List 1**).
- ***States, Boroughs, Counties, Parishes, and Territories That Are Partially Located in the 120 mph Wind Zone*** For structures located in these areas FEMA will need to make the determination on a case by case basis if the pre-determined benefits can be used. Applicants/subapplicants will need to submit a map with the structures clearly indicated on it to FEMA, who will then determine if the structure is located in the wind zone and can use the pre-determined benefits (see **List 2**).

The residential wind retrofit projects for the intermediate and advanced package, as discussed in FEMA P-804, are cost effective as long as the total project costs are less than the maximum costs listed in the table below.

Mitigation Package Type	Roof Replacement Project	Maximum Costs
Intermediate Protection	No	$13,153.00
Intermediate Protection	Yes	$24,920.00
Advanced Protection	No	$40,252.00
Advanced Protection	Yes	$52,018.00

Cost estimates submitted for a hurricane wind retrofit project that use the pre-determined benefits must be developed using industry-accepted cost-estimation standards, vendor estimates, or other sources. The costs identified in this Job Aid cannot be used to estimate or develop application project costs. Only documented, eligible costs for completed work will be reimbursed. The estimated costs above may be adjusted by the Applicant or subapplicant using the most current

locality multipliers that are included in industry-accepted cost and pricing guides for construction.

If a multiplier is used, a copy of the source document must be included as part of the grant application for review and the methodology used to determine the increase must be demonstrated. Benefits for wind retrofit cannot be combined with other benefits, such as those from the cost-effectiveness determination for acquisitions and elevations or from the benefit-cost analysis toolkit.

FEMA P-804 does not define which components of the retrofit process are considered eligible as part of a mitigation project. Eligible costs/scope should include inspection of the structure to determine its condition, the mitigation package that would be best suited for the structure, design of the retrofits, labor and materials associated with implementing the retrofit, and construction/post-construction inspections certifying that the work was performed in accordance with the design.

This methodology for wind retrofit cost-effectiveness determinations can be used when submitting applications to the HMGP and PDM programs and can be applied to new applications as well as projects under review. Additionally, pre-determined benefits can be used to evaluate cost overruns for approved projects if a new cost-effectiveness review is required. Applicants and subapplicants are not required to use the pre-determined benefits and can continue to perform analysis using FEMA's Benefit-Cost Analysis Toolkit for each structure.

This determination advances FEMA's commitment to streamline the HMA programs by eliminating the need for an individual benefit-cost analysis for each structure in hurricane-prone and wind-borne debris regions. It also reduces the time and resources needed for data collection, analysis, and review and allows communities to recover from disasters more quickly.

List 1: States, Boroughs, Counties, Parishes, and Territories That Meet the Qualification Requirements for Pre-Determined Benefits

State/Territory	Borough/County/Parish	State/Territory	County/Parish
Alabama	Baldwin	Florida	Bay
Alabama	Clarke	Florida	Bradford
Alabama	Conecuh	Florida	Brevard
Alabama	Covington	Florida	Broward
Alabama	Escambia	Florida	Calhoun
Alabama	Geneva	Florida	Charlotte
Alabama	Mobile	Florida	Citrus
Alabama	Monroe	Florida	Clay
Alabama	Washington	Florida	Collier
Alaska	Aleutians East	Florida	DeSoto
Alaska	Aleutians West	Florida	Dixie
Alaska	Anchorage	Florida	Duval
Alaska	Bethel	Florida	Escambia
Alaska	Bristol Bay	Florida	Flagler
Alaska	Dillingham	Florida	Franklin
Alaska	Juneau	Florida	Gilchrist
Alaska	Kenai Peninsula	Florida	Glades
Alaska	Ketchikan Gateway	Florida	Gulf
Alaska	Kodiak Island	Florida	Hardee
Alaska	Lake and Peninsula	Florida	Hendry
Alaska	Nome	Florida	Hernando
Alaska	Prince of Wales - Outer Ketchikan	Florida	Highlands
Alaska	Sitka	Florida	Hillsborough
Alaska	Skagway – Hoonah- Angoon	Florida	Holmes
Alaska	Wade Hampton	Florida	Indian River
Alaska	Wrangell-Petersburg	Florida	Lake
Alaska	Yakutat	Florida	Lee
American Samoa	Territory Wide	Florida	Levy
Connecticut	Middlesex	Florida	Manatee
Connecticut	New Haven	Florida	Martin
Connecticut	New London	Florida	Marion
Connecticut	Tolland	Florida	Miami-Dade
Connecticut	Windham	Florida	Monroe
Florida	Alachua	Florida	Okeechobee

State/Territory	Borough/County/Parish	State/Territory	County/Parish
Florida	Orange	Louisiana	Lafayette
Florida	Osceola	Louisiana	LaFourche
Florida	Palm Beach	Louisiana	Livingston
Florida	Pasco	Louisiana	Orleans
Florida	Pinellas	Louisiana	Plaquemines
Florida	Polk	Louisiana	St. Bernard
Florida	Putnam	Louisiana	St. Charles
Florida	Santa Rosa	Louisiana	St. James
Florida	Sarasota	Louisiana	St. John the Baptist
Florida	Seminole	Louisiana	St. Martin
Florida	St. Johns	Louisiana	St. Mary
Florida	St. Lucie	Louisiana	St. Tammany
Florida	Sumter	Louisiana	Tangipahoa
Florida	Union	Louisiana	Terrebonne
Florida	Volusia	Louisiana	Vermilion
Florida	Walton	Louisiana	Washington
Florida	Washington	Louisiana	West Baton Rouge
Georgia	Bryan	Massachusetts	Barnstable
Georgia	Camden	Massachusetts	Bristol
Georgia	Chatham	Massachusetts	Dukes
Georgia	Effingham	Massachusetts	Essex
Georgia	Glynn	Massachusetts	Middlesex
Georgia	Liberty	Massachusetts	Nantucket
Georgia	Long	Massachusetts	Norfolk
Georgia	McIntosh	Massachusetts	Plymouth
Guam	Territory Wide	Massachusetts	Suffolk
Hawaii	Statewide	Mississippi	Forrest
Louisiana	Acadia	Mississippi	George
Louisiana	Ascension	Mississippi	Greene
Louisiana	Assumption	Mississippi	Hancock
Louisiana	Calcasieu	Mississippi	Harrison
Louisiana	Cameron	Mississippi	Jackson
Louisiana	Iberia	Mississippi	Jones
Louisiana	Iberville	Mississippi	Lamar
Louisiana	Jefferson	Mississippi	Marion
Louisiana	Jefferson Davis	Mississippi	Pearl River

State/Territory	Borough/County/Parish	State/Territory	County/Parish
Mississippi	Perry	South Carolina	Berkeley
Mississippi	Stone	South Carolina	Charleston
Mississippi	Wayne	South Carolina	Clarendon
New Jersey	Cape May	South Carolina	Colleton
New York	Suffolk	South Carolina	Dillon
North Carolina	Beaufort	South Carolina	Dorchester
North Carolina	Bladen	South Carolina	Florence
North Carolina	Brunswick	South Carolina	Georgetown
North Carolina	Carteret	South Carolina	Hampton
North Carolina	Columbus	South Carolina	Horry
North Carolina	Craven	South Carolina	Jasper
North Carolina	Currituck	South Carolina	Marion
North Carolina	Dare	South Carolina	Williamsburg
North Carolina	Duplin	Texas	Aransas
North Carolina	Hyde	Texas	Bee
North Carolina	Jones	Texas	Brazoria
North Carolina	Lenoir	Texas	Brooks
North Carolina	New Hanover	Texas	Calhoun
North Carolina	Onslow	Texas	Cameron
North Carolina	Pamlico	Texas	Chambers
North Carolina	Pender	Texas	Colorado
North Carolina	Robeson	Texas	DeWitt
North Carolina	Sampson	Texas	Fort Bend
North Carolina	Tyrell	Texas	Galveston
North Carolina	Washington	Texas	Goliad
Puerto Rico	Territory Wide	Texas	Hardin
Rhode Island	Bristol	Texas	Harris
Rhode Island	Kent	Texas	Hidalgo
Rhode Island	Newport	Texas	Jackson
Rhode Island	Providence	Texas	Jefferson
Rhode Island	Washington	Texas	Jim Wells
Texas	Kenedy	Texas	Liberty
Texas	Kleberg	Texas	Matagorda
Texas	Montgomery	Texas	Orange
Texas	Nueces	Texas	Refugio
South Carolina	Beaufort	Texas	San Patricio

State/Territory	Borough/County/Parish	State/Territory	County/Parish
Texas	Victoria		
Texas	Waller		
Texas	Wharton		
Texas	Willacy		
U.S. Virgin Islands	Territory Wide		

List 2: States, Boroughs, Counties, Parishes, and Territories That Are Partially Located in the 120 mph Wind Zone

State/Territory	Borough/County/Parish	State/Territory	County/Parish
Alabama	Butler	Georgia	Wayne
Alabama	Choctaw	Louisiana	Allen
Alabama	Coffee	Louisiana	Beauregard
Alabama	Crenshaw	Louisiana	East Baton Rouge
Alabama	Dale	Louisiana	Evangeline
Alabama	Houston	Louisiana	Pointe Coupee
Alabama	Marengo	Louisiana	St. Helena
Alabama	Wilcox	Louisiana	St. Landry
Alaska	Haines	Maine	York
Alaska	Matanuska-Susitna	Maryland	Wicomico
Alaska	North Slope	Maryland	Worcester
Alaska	Northwest Arctic	Massachusetts	Hampden
Alaska	Skagway	Massachusetts	Hampshire
Alaska	Valdez-Cordova	Massachusetts	Worcester
Alaska	Yukon-Koyukuk	Mississippi	Clarke
Connecticut	Fairfield	Mississippi	Covington
Connecticut	Hartford	Mississippi	Jasper
Connecticut	Litchfield	Mississippi	Jefferson Davis
Delaware	Sussex	Mississippi	Lawrence
Florida	Baker	Mississippi	Pike
Florida	Columbia	Mississippi	Smith
Florida	Jackson	Mississippi	Walthall
Florida	Lafayette	New Hampshire	Hillsborough
Florida	Liberty	New Hampshire	Rockingham
Florida	Nassau	New Hampshire	Strafford
Florida	Suwannee	New Jersey	Atlantic
Florida	Taylor	New Jersey	Burlington
Florida	Wakulla	New Jersey	Monmouth
Georgia	Brantley	New Jersey	Ocean
Georgia	Bulloch	New York	Nassau
Georgia	Charlton	New York	Queens
Georgia	Evans	North Carolina	Bertie
Georgia	Screven	North Carolina	Camden
Georgia	Tattnall	North Carolina	Chowan

State/Territory	Borough/County/Parish	State/Territory	County/Parish
North Carolina	Cumberland	Texas	Tyler
North Carolina	Greene	Texas	Walker
North Carolina	Hoke	Texas	Washington
North Carolina	Johnston	Virginia	Accomack
North Carolina	Martin	Virginia	Chesapeake
North Carolina	Pasquotank	Virginia	Northampton
North Carolina	Perquimans	Virginia	Virginia Beach
North Carolina	Pitt		
North Carolina	Scotland		
North Carolina	Wayne		
South Carolina	Allendale		
South Carolina	Bamberg		
South Carolina	Barnwell		
South Carolina	Calhoun		
South Carolina	Darlington		
South Carolina	Lee		
South Carolina	Marlboro		
South Carolina	Orangeburg		
South Carolina	Richland		
South Carolina	Sumter		
Texas	Austin		
Texas	Duval		
Texas	Fayette		
Texas	Grimes		
Texas	Jasper		
Texas	Jim Hogg		
Texas	Karnes		
Texas	Lavaca		
Texas	Live Oak		
Texas	McMullen		
Texas	Newton		
Texas	Polk		
Texas	San Jacinto		
Texas	Starr		