



## Wind Retrofit Worksheet

For preliminary Benefit Cost Analysis conducted by the State Mitigation Technical Team

Applies for the following mitigation activities: **WIND RETROFIT which includes Opening Protection, Load Path, Roof, Code Plus activities.** For assistance, contact the State of Florida Mitigation Technical Unit.

**IMPORTANT:** This worksheet is required as part of your application. The State of Florida Mitigation Technical Unit will conduct a Benefit Cost Analysis (BCA) for your project and the following information is needed to evaluate cost effectiveness. Once a preliminary BCA is completed, the reviewer will contact you to collect support documentation.

**NOTE:** A complete worksheet will expedite the Technical Review.

### Requirements

To complete a successful project application, a minimum amount of technical information is required for review. Data collected in this worksheet will provide reviewers with preliminary information necessary to evaluate project eligibility, feasibility, and cost effectiveness. Carefully review and confirm that you are aware of the following information.

Under the Hazard Mitigation Grant Program (HMGP), a wind retrofit project is only intended to protect the building envelope and the building contents. Wind retrofit projects are not evaluated by the criteria contained in the standards of FEMA P-361 Safe Rooms for Tornadoes and Hurricane Guidance; therefore, they do not provide "near-absolute protection" to building occupants during a high wind event. The sub-applicant must understand that the structure may have vulnerabilities due to age, design and location that may result in damage to the structure from wind events even after completing a wind retrofit project funded under HMGP.

Wind Retrofit (Non-Residential or Multi-Family Residential): Wind protections must follow the recommendations from a Hurricane Retrofit Building Assessment conducted by a professional engineer or licensed architect, utilizing the methodology provided in Chapter 3 of FEMA P-804 that is used to determine whether a structure is a good candidate for a wind retrofit and identifies the retrofits to be performed on the structure. Wind protections shall be provided on any other opening such as vents, louvers and exhaust fans. The project shall conform with the design criteria found in ASCE 7 standards. All installations shall be in strict compliance with the Florida Building Code or Miami Dade Specifications. All materials shall be certified to meet wind and impact standards. The local municipal or county building department shall inspect and certify installation according to the manufacture specifications.

Wind Retrofit (Residential): Wind protection shall be provided on any other opening such as vents, louvers, and exhaust fans. The project shall comply with the guidelines outlined in the Department of Homeland Security, Federal Emergency Management Agency guidance manual FEMA P-804, Wind Retrofit Guide for Residential Buildings, the recommendations from a Hurricane Retrofit Building Assessment conducted by a professional engineer or licensed architect, utilizing the methodology provided in Chapter 3 of FEMA P-804 that is used to determine whether a structure is a good candidate for a wind retrofit and identifies the retrofits to be performed on the structure, and the design criteria found in ASCE 7 standards. All installations shall be in strict compliance with the Florida Building Code or Miami Dade Specifications and all materials shall be certified to meet wind and impact standards. The local municipal or county building department shall inspect and certify installation according to the manufacture specifications.

*I confirm that I have reviewed the requirements listed above (signature):*

FEMA has approved an approach to demonstrating cost-effectiveness for certain projects based on pre-calculated benefits which requires minimal documentation if certain requirements are met.

**BEFORE PROCEEDING TO THE NEXT SECTION PLEASE SELECT AN OPTION BELOW:**

Does your project meet all the requirements from any of the below FEMA memorandums?

- [Cost Effectiveness Determination for Non-Residential Hurricane Wind Retrofit Measures Funded by FEMA.](#)
- [Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA.](#)

- Yes (Only complete Section I of this worksheet)       No (Complete all sections of this worksheet)

For additional resources, please refer to [FEMA Technical Review Job Aid](#) for Wind Retrofit projects.



# MITIGATION

## Wind Retrofit Worksheet

### Section I – Project General Information

<i>Project Name:</i>	<i>Worksheet completed by:</i>  <i>Name:</i>  <i>Title:</i>
<i>Sub-Applicant:</i>	
	<i>Phone:</i>  <i>Email:</i>

### Section II – Project Cost Information

<i>Mitigation Project Cost:</i>	<i>Annual Maintenance Cost:</i>
---------------------------------	---------------------------------

### Section III – Project Specific Information

The table below allows data entry for up to 6 locations. If your project has more than 6 locations, you can either submit a second Wind Retrofit Worksheet or attach a separate list, providing the information requested below and in Section IV, as applicable.

ID	Project Location (address)	Type of Wind Retrofit (Residential, Non-Residential, Code Plus)	Construction Type	Building Size (Sq.Ft.)	Number of Stories	Code Plus Only, Design Wind Speed (MPH)
1.						
2.						
3.						
4.						
5.						
6.						

**BEFORE PROCEEDING TO THE NEXT SECTION PLEASE ANSWER THE FOLLOWING QUESTIONS:**

Is the existing roof of the building(s) protected to withstand the wind speed requirements in the project area in accordance with the effective code requirements and local standards?

Yes (I can demonstrate the roof is in compliance with effective code requirements and local standards)

No (I am proposing to retrofit / replace the existing roof)

Are you protecting all exterior openings including but not limited to doors, windows, skylights, vents, louvers, and exhaust fans?

Yes (I am protecting all exterior openings)

No (Not all exterior openings will be protected)

Please explain:



### Section IV - Loss of Service

For each project location identified in Section III, please select only **one** type of facility, as applicable, and provide responses below

Structure ID 1.	Structure ID 2.
<input type="checkbox"/> <b>Fire Station</b> How many people are served by the Fire Station?  Does the fire station provide Emergency Medical Services (EMS)? <input type="checkbox"/> Yes <input type="checkbox"/> No  Provide the address of the nearest fire station:  Provide the address of the nearest fire station with EMS:	<input type="checkbox"/> <b>Fire Station</b> How many people are served by the Fire Station?  Does the fire station provide Emergency Medical Services (EMS)? <input type="checkbox"/> Yes <input type="checkbox"/> No  Provide the address of the nearest fire station:  Provide the address of the nearest fire station with EMS:
<input type="checkbox"/> <b>Police Station</b> How many people are served by this police station? How many police officers work or report to this police station? How many police officers have a designated office space at this police station?	<input type="checkbox"/> <b>Police Station</b> How many people are served by this police station? How many police officers work or report to this police station? How many police officers have a designated office space at this police station?
<input type="checkbox"/> <b>Hospital</b> How many people are being served by this hospital? Provide the address of the nearest hospital capable of providing the same type of service: How many people are being served by the nearest hospital capable of providing the same type of service?	<input type="checkbox"/> <b>Hospital</b> How many people are being served by this hospital? Provide the address of the nearest hospital capable of providing the same type of service: How many people are being served by the nearest hospital capable of providing the same type of service?
<input type="checkbox"/> <b>Other Non-Residential Building</b> Specify Facility Name What is the Annual Operational Budget for this facility?	<input type="checkbox"/> <b>Other Non-Residential Building</b> Specify Facility Name What is the Annual Operational Budget for this facility?
<input type="checkbox"/> <b>Residential Building</b> Secondary Water Resistance? <input type="checkbox"/> Yes <input type="checkbox"/> No Roof-Wall Connection: Roof-Deck Attachment:	<input type="checkbox"/> <b>Residential Building</b> Secondary Water Resistance? <input type="checkbox"/> Yes <input type="checkbox"/> No Roof-Wall Connection: Roof-Deck Attachment:



### Section IV - Loss of Service (continued)

For each project location identified in Section III, please select only **one** type of facility, as applicable, and provide responses below

#### Structure ID 3.

**Fire Station**

How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?  Yes  No

Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

How many people are served by this police station?

How many police officers work or report to this police station?

How many police officers have a designated office space at this police station?

**Hospital**

How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

How many people are being served by the nearest hospital capable of providing the same type of service?

**Other Non-Residential Building**

Specify Facility Name

What is the Annual Operational Budget for this facility?

**Residential Building**

Secondary Water Resistance?  Yes  No

Roof-Wall Connection:

Roof-Deck Attachment:

#### Structure ID 4.

**Fire Station**

How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?  Yes  No

Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

How many people are served by this police station?

How many police officers work or report to this police station?

How many police officers have a designated office space at this police station?

**Hospital**

How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

How many people are being served by the nearest hospital capable of providing the same type of service?

**Other Non-Residential Building**

Specify Facility Name

What is the Annual Operational Budget for this facility?

**Residential Building**

Secondary Water Resistance?  Yes  No

Roof-Wall Connection:

Roof-Deck Attachment:



### Section IV - Loss of Service (continued)

For each project location identified in Section III, please select only **one** type of facility, as applicable, and provide responses below

Structure ID 5.

**Fire Station**

How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?  Yes  No

Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

How many people are served by this police station?

How many police officers work or report to this police station?

How many police officers have a designated office space at this police station?

**Hospital**

How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

How many people are being served by the nearest hospital capable of providing the same type of service?

**Other Non-Residential Building**

Specify Facility Name

What is the Annual Operational Budget for this facility?

**Residential Building**

Secondary Water Resistance?  Yes  No

Roof-Wall Connection:

Roof-Deck Attachment:

Structure ID 6.

**Fire Station**

How many people are served by the Fire Station?

Does the fire station provide Emergency Medical Services (EMS)?  Yes  No

Provide the address of the nearest fire station:

Provide the address of the nearest fire station with EMS:

**Police Station**

How many people are served by this police station?

How many police officers work or report to this police station?

How many police officers have a designated office space at this police station?

**Hospital**

How many people are being served by this hospital?

Provide the address of the nearest hospital capable of providing the same type of service:

How many people are being served by the nearest hospital capable of providing the same type of service?

**Other Non-Residential Building**

Specify Facility Name

What is the Annual Operational Budget for this facility?

**Residential Building**

Secondary Water Resistance?  Yes  No

Roof-Wall Connection:

Roof-Deck Attachment:



### **Section V – Additional Information**

*Please use this page to expand on the information provided above or to include any additional information relevant to the proposed mitigation project.*



### WIND RETROFIT WORKSHEET INSTRUCTIONS

Refer to the instructions below to complete the Wind Retrofit Worksheet using the best available data.

#### Section I – Project General Information

**Project Name:** Enter the name of the project title. The title should be short but descriptive (e.g., City of Orlando, Fire Station No.5, Wind Retrofit).

**Sub-Applicant:** Enter your organization's legal name.

**Worksheet completed by:** Enter name, title, phone number, and email of the person completing this Worksheet. This person must have the knowledge and/or the resources to accurately answer all questions and provide supporting documentation, as needed. Information may come from multiple creditable sources.

#### Section II – Project Cost Information

**Mitigation Project Cost:** Enter the total cost of the project. A lump sum on this worksheet is acceptable for preliminary BCA, but a detailed breakdown attached to your application is required.

**Annual Maintenance Cost:** Enter the cost associated with maintaining the effectiveness of the components installed as part of the wind retrofit project.

#### Section III – Project Specific Information

**Project Location:** Provide a description of the specific geographical location(s) of the project to include full address(es) with street name and number, city, state, and zip code. For multiple locations, please provide information on Section V of this worksheet.

**Type of Wind Retrofit:** From the dropdown menu option, select the proposed type of project:

- **Residential Wind Retrofit:** Wind retrofit projects for one- and two-family residential buildings must be designed in conformance with the design criteria found in FEMA P-804 and the locally enforced building code. Identify the proposed action and level of wind retrofit based on the results of the building assessment outlined in the methodology indicated in Chapter 3 of FEMA P-804. Hurricane wind retrofit projects for one- and two-family residential buildings typically fall into one of three packages: basic, intermediate and advanced mitigation. An engineer, architect, building official or contractor may be required to assist in collecting the necessary information for the mitigation project.

- **Non-residential Wind Retrofit:** Wind retrofit projects for non-residential or multi-family residential buildings must be designed in conformance with the design criteria found in ASCE 7 and the locally enforced building code. Identify the proposed action and level of wind retrofit based on conducting a building assessment outlined in FEMA P-804. An engineer, architect, building official, or contractor may be required to assist in collecting the necessary information for the mitigation project.

- **Code Plus:** New construction that is designed to exceed local building code requirements. The grant will only fund the difference between building up to code and building above code requirements.

**Construction Type:** The type of construction refers to the primary building material of the structure. A structural engineer, contractor, or building inspector can provide assistance with determining the type of construction. From the dropdown menu option, select the construction type for each building:

- **Concrete:** Reinforced concrete construction.
- **Manufactured Home:** Manufactured building attached to a permanent foundation.
- **Masonry/CMU:** Masonry wall construction, including concrete masonry unit (concrete block).
- **Steel:** Steel frame construction.
- **Wood:** Wood frame construction.

**Building Size:** For both residential and non-residential buildings, enter the total size consists of the total enclosed area within the building that is being mitigated. For residences, this includes finished and unfinished basements, and the entire living space; however, it does not include porches, garages, or other outside areas. The total size of the building can be found on tax records, appraisals, and surveys.

**Number of Stories:** Enter the number of stories above ground for each building. This information may be verified through city or county property records or from building permit information.

**Code Plus Only, Design Wind Speed (MPH):** If you are proposing a Code Plus project, enter the wind speed that the building will be designed to withstand. This value must be higher than the code required wind speed for the project area.



### Section IV – Loss of Service

#### FIRE STATION

**How many people are served by the Fire Station?** Enter the number of people served by the fire station. If only one fire station serves the entire population of a community, that number may be used. For larger communities with multiple fire stations, only the population directly served by the station being mitigated can be used. Documentation for the service population can come from the fire station, local planning office, or other creditable source.

**Does the fire station provide Emergency Medical Services (EMS)?** Select “Yes” if the fire station provides EMS or has EMS trained personnel; Otherwise, select “No”.

**Provide the address of the nearest fire station:** The nearest fire station would serve as an alternative station to provide fire protection due to loss of function of the fire station being mitigated.

**Provide the address of the nearest fire station with EMS:** The nearest fire station would serve as an alternative station to provide EMS and fire protection due to loss of function of the fire station being mitigated. (If the nearest fire station also provides EMS, please provide same address).

#### POLICE STATION

**How many people are served by this police station?** Enter the number of people served by the police station. If only one police station serves the entire population of a community, that number may be used. For larger communities with multiple police stations, only the population directly served by the station being mitigated can be used. Documentation for the service population can come from the police station, local planning office, or other creditable source.

**How many police officers work or report to this police station?** Enter the number of sworn officers that work or report at this location.

**How many police officers have a designated office space at this police station?** Enter the number of police officers that have a designated office space at this police station. It is assumed that police officers with a designated office space would be restricted to perform their regular duties if the police station were shut down due to a disaster. This information is necessary to estimate the loss of function due to the increased crime caused by a reduction of police officers in service.

#### HOSPITAL

**How many people are being served by this hospital?** Enter the number of people being served by this hospital. Only the population directly served by the hospital being mitigated can be used. Documentation for the service population can come from the hospital, local planning office, or other creditable source.

**Provide the address of the nearest hospital capable of providing the same type of service:** Identify the nearest

hospital capable of providing similar services as the hospital being mitigated.

**How many people are being served by the nearest hospital capable of providing the same type of service?** Enter the number of people served by the nearest hospital capable of providing the same service. Only the population directly served by the alternative hospital can be used. Documentation for the service population can come from the alternative hospital, local planning office, or other creditable source.

#### OTHER NON-RESIDENTIAL BUILDING

**Specify Facility Name:** Enter the name of the facility that will be mitigated.

**What is the Annual Operational Budget for this critical facility?** Enter the annual budget for the building that is being mitigated. If the building houses multiple local agencies, the cumulative budget should be used. Alternately, if the annual budget is for an entire school district and one of the buildings is being mitigated, documentation should include how the annual budget was calculated for the single school building.

#### RESIDENTIAL BUILDING

**Secondary Water Resistance:** Select “Yes” if there is a secondary water resistance barrier to prevent water penetration through the roof decking after the loss of the roof covering. Otherwise, select “No”.

**Roof-Wall Connection:** Indicates if the structural system of a building can transfer loads from the roof to the foundation. In general, a strap would provide positive connection from the roof framing to the walls, better connections within the wall framing, and connections from the wall framing to the foundation system. From the dropdown menu option, select the existing roof-wall connection:

- Strap
- Toe-Nail

**Roof-Deck Attachment:** Refers to the spacing of the nails that support the roof decking. From the dropdown menu option, select the existing roof-deck attachment:

- 6d @ 6”/12”
- 6d/8d Mix @ 6”/6”
- 8d @ 6”/12”
- 8d @ 6”/6”