Implementation Guidance for FEMA Mitigation Interim Policy MRR-2-09-1

Hazard Mitigation Assistance for Safe Rooms

FEMA

April 30, 2009

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TABLES

ACRONYM	DEFINITION
ADA	Americans with Disabilities Act
BCA	Benefit-Cost Analysis
EOC	Emergency Operations Center
FEMA	Federal Emergency Management Agency
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
ICC	International Code Council
NFIP	National Flood Insurance Program
NSSA	National Storm Shelter Association
PDM	Pre-Disaster Mitigation

INTRODUCTION

The FEMA Mitigation Interim Policy MRR-2-09-1, *Hazard Mitigation Assistance (HMA) for Safe Rooms* (Safe Rooms Policy), was issued in April, 2009, by FEMA to provide guidance to States, Territories, Tribes, and communities on HMA funding available for extreme wind mitigation activities as provided under the Pre-Disaster Mitigation Program (PDM) and the Hazard Mitigation Grant Program (HMGP). Policy MRR-2-09-1 establishes the eligibility parameters for PDM and HMGP safe room projects including: eligible activities, design standards, flood hazard siting limitations, population protected, period of protection, eligible costs, operation plan, maintenance plan, and cost-effectiveness.

This implementation guidance compliments Policy MRR-2-09-1 through the provision of additional information to ensure that applicant's pursuing PDM or HMGP grant funds for safe room projects adequately understand and address all policy requirements. This guidance is presented in five sections:

Section 1 Population Protected: provides guidance relevant to identifying, quantifying and documenting the at-risk populations from hurricanes and/or tornados eligible for PDM or HMGP consideration. This section provides a description of acceptable population categories threatened by extreme wind events as well as considerations impacting this population's ability to utilize a safe room facility such as travel time, warning time, etc.

Section 2 Eligible Costs: provides two tables that identify the general building systems & components for residential and community safe rooms and identifies the eligibility of each for funding under the PDM and HMGP programs.

Section 3 Operations and Maintenance Plans: provides guidance to assist applicants in understanding operation and maintenance plan requirements. This section details steps as to when draft and final plans are provided in the application and project life-cycle as well as the signature and review responsibilities of local, state and federal officers.

Section 4 Cost-Effectiveness: discusses the total project costs required for the purpose of demonstrating compliance with cost-effectiveness requirements.

Section 5 Summary of Grant Application Requirements: includes a summary of grant application requirements.

1. POPULATION PROTECTED

The Safe Room Policy, Section VII, Part C (page 6), Population Protected and Period of Protection states:

> *FEMA will only consider PDM and HMGP applications for safe room projects that identify the safe room population that must remain behind to face an imminent threat against either, or both, tornado or hurricane hazards. This is the population that the applicant will identify and quantify, so that the anticipated population and resulting size of the safe room can be verified during the grant application review process. This is demonstrated by risk assessment information such as that developed as part of a mitigation plan or evacuation plan.*

Applicants should be mindful that PDM and HMGP funds are not available for general population shelters, including evacuation or recovery shelters. Therefore it is essential that applicants identify the specific hazard mitigation population to be protected otherwise application review may be delayed or an application rejected.

This implementation guidance provides details to assist applicant's to identify, quantify and document the eligible at-risk populations needing hazard mitigation life-safety protection during extreme-wind events, all of which are required in applications for PDM or HMGP funding, as outlined below. Sections 1.1 and 1.2 address hurricane and tornado hazards, respectively, and how at-risk populations are affected by them. This section further describes categories of populations at risk from tornados, hurricanes, or a combination of the two.

Safe Room Policy, Section VII, Part C (page 7), Population Protected and Period of Protection states:

> *The applicant will demonstrate consideration of at least the following components in determining eligible safe room population:*
>
> - *population to be protected within the area at risk of impact by tornado and/or hurricane hazards;*
> - *warning capabilities, logistics, and operations components that support basic safe room functions;*
> - *travel times for the population to be protected to reach the safe room, such that people are not exposed to additional risk when moving to the protected area;*
> - *hazard mitigation time of protection: 2 hours for tornado and 24 hours for hurricane; and*

- *relationship of the population to be protected by the safe room to State or local emergency evacuation requirements.*

The at-risk population identified directly impacts the proposed safe room design size requirements and is another factor that will be verified during the grant review process. This is important to understand because as the Safe Room Policy states, "PDM and HMGP funding will not be provided to support safe rooms that are sized larger than that required to accommodate the identified at-risk population."

For example, a community may decide to build a dual use facility that includes a tornado safe room function within a community center. The new building project for the community center may include an assembly or multi-purpose room that is 1,185 square feet in area. In order to utilize the space for a community tornado safe room this gross square footage must be reduced to account for egress circulation, partitions, interior columns, furnishings, finishes equipment, and the like. This may be done through exact calculations or through an estimated approach which calculates usable square footage as 85% of the gross square footage. The resulting net usable floor area is what is available to accommodate a limited number of safe room occupants. In this example the 1,185 square feet is reduced to 1,007 usable square feet:

1,185 (0.85) = 1,007 square feet

As per FEMA Publication 361 design criteria a minimum of 5 square feet per safe room occupant must be provided. In this example safe room designers must also account for wheelchair-bound or bedridden occupants. A community safe room should be sized to accommodate a minimum of one wheelchair space (at 10 square feet) for every 200 occupants. Therefore the 1,007 square foot usable floor area will provide enough space for the protection of 200 occupants and would be eligible for HMGP and PDM funding. It would not be reasonable for an application submitted under this example to request usable square footage of 2000 square feet because that size has not been demonstrated as necessary for the identified at-risk population of 200 occupants:

Factor	Contribution	Square Footage
199 occupants	@ 5 s.f. per person	995 s.f.
1 wheelchair occupant	@ 10 s.f. per person	10 s.f.
Total 200 occupants		1,005 s.f.

Applicants should refer to Chapter 3 of FEMA Publication 361 for further guidance on sizing criteria.

As previously stated community safe rooms are intended for a limited at-risk population; however, the criteria for tornados and hurricanes differ in certain applications. When identifying the population at

risk from tornados and hurricanes, the respective mitigation activities should be considered separately and then combined (if both exist). Characteristics such as the size of the targeted area, the warning time before the impact, and the duration of the storm affect the population requiring protection differently; therefore, the population at risk must be determined for each type of event.

The following sections identify issues to consider when applying for funding for a hurricane, tornado, or combined hazard community safe room. Applicants should select the most appropriate population for their safe room project:

- Section 1.1 Population at risk from hurricanes
- Section 1.2 Population at risk from tornados
- Section 1.3 Population at risk from both hurricane and tornados

The steps to identify the populations at risk for each of these hazard categories are further described below.

1.1 Population at Risk from Hurricanes

This section provides information to assist in identifying and defining the population at risk from hurricanes. The section also describes this at risk population to assist an applicant in identifying who may require a safe room facility.

Information Sources

Determining the hurricane safe room population is dependent on the assumptions used in the development and implementation of evacuation or emergency response plans and policies being administered by local, State, and Federal (if applicable) emergency management organizations. Therefore, applicants are encouraged to coordinate with the relevant agency in the jurisdiction developing those plans. In addition, local mitigation plans are required to include a risk assessment that defines the hazard characteristics within an area, and to provide a vulnerability assessment. Evacuation plans are likely more specific in terms of population, but the risk assessment in a community's existing mitigation plan may also be a source for this information. Documentation to support the determination of the at-risk population may be directly related to the planning tools mentioned above and should be included in the application.

Hurricane Population Categories

Generally, two broad categories of potential hurricane safe room occupants may be identified as part of the limited at-risk population in need of life-safety protection. The at-risk population should be accommodated within the safe room for a minimum of 24 hours (the FEMA 361 minimum design occupancy time for hurricane safe rooms). Applicants are encouraged to use

verifiable information such as emergency evacuation plans, local emergency management plans (or other applicable sources) to identify potential safe room occupants from the categories listed below.

Category 1: First Responders

- People who may be required to remain in harm's way, i.e., the civilian personnel of the emergency response services, also known as first responders. These groups include, but are not limited to personnel of fire and police departments, rescue squads, emergency operation centers (EOCs), emergency medical and ambulance services, search & rescue teams and similar personnel that a local community may depend upon for a successful response to an extreme wind event.

Category 2: Critical and Essential Services Personnel and Facility Occupants

- In many cases other critical services personnel may be required to remain in harms way to facilitate the continued operation of certain critical facilities, including long-term care and custodial care facilities, water supply and wastewater facilities, power supply and distribution plants, fuel and other hazardous material storage facilities, communications and data centers, and others that a local community may depend upon for a successful response to an extreme wind event. This category may also include occupants of these facilities such as patients in hospitals, residents of long-term care facilities and prison/jail inmates.

Documentation

Applicants and subapplicants must provide documentation to support the identified at-risk population for the safe room. Applicants must also submit adequate documentation in support of their risk assessment to allow grant program reviewers to make a determination of whether the proposed safe room size is appropriate for the at-risk population identified. The documentation should be sufficiently detailed to be verified during the grant review process. Applicant coordination with the local, State, or Federal (if applicable) agency responsible for developing emergency evacuation plans is critical. Each grant program identifies specific documentation requirements, but in general, evacuation plans, emergency response plans, meeting notes, etc. that can be used to quantify the at-risk population are acceptable. For example, each population category listed above may be part of the affected population identified in an emergency evacuation plan.

In all cases it should be emphasized that planning and operation of PDM and HMGP safe rooms, including the identification of the population to be protected, should not conflict with State and/or local evacuation plans. PDM and HMGP safe room activities should not be used as a substitute for, or as an option for individuals to ignore, local community and/or State evacuation plans or any other law or ordinance.

Travel considerations

The issues to consider in estimating travel time to the safe room facility include: local emergency management and law enforcement requirements, mandatory evacuations, evacuation times from at-risk areas, and any other plans that affect the movement of at-risk populations. Further guidance is provided in Chapter 8 of FEMA 361.

Basic warning capabilities

In addition to design and construction criteria, an adequate warning system must be in place to notify prospective community safe room occupants when they should evacuate to the safe room facility. Occupants of homes (residences) with a residential safe room are assumed to use that room and require no evacuation and only a minimal travel time. Applicants for community safe room projects must demonstrate that the at-risk population can be properly notified to allow sufficient travel time to the community safe room.

Period of protection

As identified in the Safe Room Policy, Section VII, Part C, and FEMA 361 requirements, the hazard mitigation time of protection for safe rooms is a minimum of 24 hours for hurricane events.

1.2 Population at Risk from Tornados

This section provides information to assist in identifying and defining the population at risk from tornados.

Tornado safe room populations are determined based on limited warning times (minutes, not days) and the maximum reasonable travel time for potential safe room occupants to reach the safety of the facility. At-risk populations that cannot reach the safe room in a reasonable time (this topic is discussed later in this document) are not considered as potential occupants of the safe room.

Tornados strike without timely warning, often depriving the at-risk population of sufficient time to seek safety. Only about 20 minutes (or less) of warning time may be provided before a tornado strikes. For a limited or no-warning storm event, at-risk individuals have various degrees of vulnerability.

Two aspects of vulnerability should be considered in identifying and quantifying the population at risk from a tornado:

1. **The physical characteristics of the built environment (buildings or other structures) in which the population resides.**

Buildings differ in their susceptibility to damage from a tornado, and therefore, the building occupants are exposed to varying risks of injury or death. Individuals living in non-engineered housing, older housing, and manufactured housing are more susceptible to catastrophic damage from a tornado; hence, they are extremely vulnerable.

2. **The ability of the population to mobilize to the safe room during a tornado, irrespective of where they are located.**

While a 20-minute warning may be sufficient time for an able-bodied adult to find adequate shelter; this is not the case for the very young, the elderly, the sick or frail, or those with impaired mobility. These groups require the greatest level of assistance, time to mobilize, and attention during an emergency.

Documentation

Applicants and subapplicants must provide documentation to support the identified at-risk population for the safe room. Applicants must also submit adequate documentation in support of their risk assessment to allow grant program reviewers to make a determination of whether the proposed safe room size is appropriate for the at-risk population identified. The documentation should be sufficiently detailed to be verified during the grant review process. Applicant coordination with the local, State, or Federal (if applicable) agency responsible for developing emergency action plans is critical. Each grant program identifies specific documentation requirements, but in general, emergency response plans, area maps, building construction drawings, meeting notes, etc. that can be used to quantify the at-risk population are acceptable. In addition, local mitigation plans are required to describe the vulnerability of their community and structures, and in particular vulnerability of special high-risk populations and therefore may also be a source for this information. It is essential that applicants provide this information otherwise application review may be delayed or an application rejected.

Travel time considerations

The two vulnerability aspects listed above will facilitate identifying and targeting high concentrations of at-risk populations. The most effective tornado safe rooms minimize occupants' travel time. Consequently, on-site community safe rooms, built either as integral parts of a building or as separate structures, offer the greatest level of protection to occupants. Community safe rooms in hospitals, schools, long-term care centers, and other facilities that house highly vulnerable populations are most successful in minimizing the risks. These safe rooms may be designed to serve the community at large in addition to onsite residents. In such cases, the population of the safe room is limited by the respective proximity of potential

occupants to the safe room, which is defined by the maximum allowed travel time and/or the maximum distance to the safe room.

The distance from the safe room for the at-risk population is based on a maximum walking travel time of 5 minutes or a maximum driving travel distance of approximately 0.5 mile. When considering a single- or dual-use community safe room, the 5-minute walk time or the equivalent 0.5 mile driving distance must be calculated by the actual travel route or pathway which a pedestrian or a driver will be required to follow. This pathway should not be restricted, bottlenecked, or obstructed by such barriers as multi-lane highways, railroad tracks, bridges, or similar facilities or topographic features. Traffic congestion (including parking constraints) during the movement of the potential at-risk population to the safe room once a storm watch/warning notification is issued should be considered when defining the at-risk population for the community safe room. In either case, whether walking or driving, prospective safe room occupants must be able to safely reach the facility within 5 minutes of receiving a tornado warning or notice to seek shelter.

Basic warning capabilities and logistics

Both a residential and a community safe room, as defined by the Safe Room Policy, are built and operated for the purpose of saving lives during extreme wind storms. In addition to design and construction criteria, an adequate warning system should be in place to notify prospective safe room occupants when they should evacuate to the safe room facility. This is especially critical for tornados, for which the warning time is very short. The safe room facility must open its doors to admit occupants and provide them with the services they need in a timely manner. Further guidance is provided in FEMA 361, Chapter 9.

Period of protection

As identified in Safe Room Policy Section VII, Part C, and FEMA 361 requirements, the hazard mitigation time of protection for safe rooms is a minimum 2 hours for tornado events.

1.3 Population at Risk from Both Hurricanes and Tornados

Many areas in the United States are subject to both hurricane and tornado hazards. When building a safe room to protect from both hazards, the population at risk must be determined independently for each hazard. When designing a **combined** safe room for both tornado and hurricane hazards, the most restrictive design criteria for these hazards provided in FEMA Publication 361 must be used. There is not necessarily one set of complete criteria for each hazard. For that reason, design engineers should pay close attention to the criteria outlined in FEMA Publication 361 when designing a combined safe room for both tornado and hurricane hazards.

2. ELIGIBLE COSTS

The Safe Room Policy, Section VII, Part D (page 8), Eligible Costs states:

> *Allowable costs for PDM and HMGP safe room projects are those project components such as the design and building costs directly related to and necessary for the hazard mitigation purpose of immediate life safety resulting from structural and building envelope protection to the limited population that must remain in the impact area during an extreme wind event.*

As stated above, funding for safe room construction is provided only for the expenditures that directly relate to, and are necessary for, provision of basic safe room functions. Safe room project costs typically include eligible expenditures for design, construction, and administration of the project. Conversely, costs associated with providing facilities for any function that is not essential for life-safety protection of occupants are not eligible. If a safe room facility can fulfill its basic function of life-safety protection for the occupants during a storm without a building feature or component that provides conveniences or additional comfort, costs associated with that feature or component are not eligible. Examples of such features include flooring, seating, or food preparation facilities. This is significant for dual-use community safe rooms, which are designed to provide other functions for their day-to-day operations. Applicants should not request nor should they reasonably expect consideration for these and other non-mitigation related components.

As stated in the Policy, "in the case of retrofits, pre-existing conditions of code non-compliance that local or State officials are obligated to remedy are not eligible for hazard mitigation funding consideration." However, eligible costs may include code-required mitigation-related components and above-code components, as long as all components contribute to the near-absolute protection criteria set forth in FEMA 320 and FEMA 361.

Program Funding Limits

Potential applicants should understand that HMGP or PDM grant funding for safe room projects is subject to all program-specific rules and regulations including any pre-determined limitations on the Federal share of project costs. Detailed information on funding program limits can be found in the PDM and HMGP sections of the HMA guidance, *Hazard Mitigation Assistance Program Guidance.* Potential applicants should also consult their State Hazard Mitigation Officer for details on funding limitations.

Cost Estimates

Applications must include detailed, line item costs in the project cost estimates submitted for safe room projects. Well-documented project cost estimates contain quantities, unit costs, and a source for each unit cost. In contrast, lump-sum cost estimates do not provide quantities and unit

costs required to evaluate the accuracy of the project cost estimate. Lump-sum cost estimates are not acceptable.

Under the HMGP and PDM grant programs, project cost estimates include unit costs related to the proposed square footage of the protected area or areas of the safe room. These unit costs may also be related to the protected population (occupants) of the safe room.

Table 2-1

Table 2-1 in this section may be used to assist in identifying mitigation related components which are eligible for PDM and HMGP funding under the Safe Room Policy. Important notes regarding the contents of the table are provided following the table.

Table 2-1. Eligible and Ineligible Components of Residential and Community Safe Rooms

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
Systems and Components Defining the Safe Room Space						
Foundation, structural systems, walls, and ceiling/roof (new construction and retrofit) that directly support or protect the building cladding providing near-absolute, life-safety protection	Available criteria include FEMA 320 and 361.	Eligible	Eligible	Eligible	Eligible	Eligible
Doors and Windows	Available criteria include FEMA 320 and 361.	Eligible	Eligible	Eligible	Eligible	Eligible
Protection of exterior above-ground generators and/or electrical, ventilation, or communication equipment	Available criteria include FEMA 320 and 361.	Eligible	Eligible	Eligible	Eligible	Eligible
Common "Best Practice" Components (Recommended by FEMA)						
Signage	Available criteria include FEMA 320 and 361.	Ineligible	Eligible	Eligible	Eligible	Eligible
Communications	Required by 361 (Chapters 8 and 9 for emergency communications to and from the safe room).	Eligible	Eligible	Eligible	Eligible	Eligible
Local Area Network (LAN) drops and wiring	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Components Where Function Meets FEMA Protection Criteria						
Alternate Source of Power (e.g., generator, battery)	As specified in 320 or 361 requirements. Capacity should be limited to the load required for life-safety protection: a minimum of 2	Eligible	Eligible	Eligible	Eligible	Eligible

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
	hours for tornados and 24 hours for hurricanes.					
Equipment and Supplies (i.e., fire extinguishers, first aid kits)	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Ineligible	Eligible	Eligible	Eligible	Eligible
Ventilation	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Permanent Electrical Lighting	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Emergency Electrical Lighting	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Permanent Electrical Outlets	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Emergency Electrical Outlets	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
Upgrade of an electrical or ventilation system for protected portions of the structure (required for safe room installation)	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Upgrade of an electrical or ventilation system for unprotected portions of the structure (not required for safe room installation)	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Steps/stairs, elevators/lifts for safe room ingress-egress	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Americans with Disabilities Act (ADA) entrances for ingress-egress	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Toilets and Hand Washing Facilities located within the safe room	As specified in FEMA 361 criteria; and also in compliance with minimum local building code provisions.	Ineligible	Eligible	Eligible	Eligible	Eligible
Compliance with FEMA Safe Room Policy, FEMA 320, and FEMA 361 for Design Flood Criteria and Floodplain Management	As specified in 320 or 361 requirements, where compliant with minimum local building code provisions, and in accordance with MRR-2-09-1.	Eligible	Eligible	Eligible	Eligible	Eligible
Design and Construction Components						
Planning/Engineering/Architecture/Design Fees	Only planning/design costs required for the safe room, utility	Eligible	Eligible	Eligible	Eligible	Eligible

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
	protection, and travel/time accessibility. Must comply with unit cost allowances.					
Engineering Peer Review of Safe Room Design Criteria (limited to systems and components providing life-safety protection). This cost may be included in the design cost/engineering fee but may also be singled out as a line item cost.	Only additional engineering review of plans/design required for the safe room, utility protection, and occupant protection. Must comply with unit cost allowances for design fees.	Eligible	Eligible	Eligible	Eligible	Eligible
Excavation	As required for excavating the required foundation for the safe room; such as, interior foundation (e.g., interior column footing), exterior foundation, underground placement of safe room, or underground placement of electrical lines.	Eligible	Eligible	Eligible	Eligible	Eligible
Below Ground Electrical Lines for Safe Rooms within Another Structure	Compliant with minimum local building code	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Below Ground Electrical Lines from Structure to Exterior Safe Room	Compliant with minimum local building code	Eligible	Eligible	Eligible	Eligible	Eligible
Moisture Protection	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Eligible	Eligible	Eligible	Eligible	Eligible
Surveys, Tests, Soil Borings, etc. for Protected Portion	As specified in FEMA 320 or 361 criteria. Compliant with minimum local building code provisions when used as a safe room or A-3 occupancy.	Ineligible	Eligible	Eligible	Eligible	Eligible
Generally Ineligible Components (Non-						

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
Essential to Protection)						
Safe Facility Maintenance	As per HMA Program Guidance, FEMA is not responsible for project maintenance.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Rest room fixtures that are not the minimum code required for toilet and hand washing facilities within the safe room	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Paint on walls and ceilings for the safe room	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Floor coverings – Subfloors as is appropriate and adequate for use in a safe room	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Floor covering for the unprotected portion of the project	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Finishes that enhance basic wall/ceiling paint or floor covering	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Removal of structures from developed land	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Kitchen cabinets, countertops, and kitchen equipment	See "Storage areas for food, water and equipment" below.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Storage areas for food, water, and equipment	FEMA 361 includes the recommendation for food and water storage within the safe room in section 8.6.1. FEMA 361 also identifies safe room equipment that should be stored within the safe room. See sections 8.6.3 and 9.1.8 and Table 9.1.	Ineligible	Eligible	Eligible	Eligible	Eligible
Security cameras and EOC-type equipment	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Purchase of land	Not a design requirement of	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible

Building Systems & Components	Design Criteria	Residential Safe rooms 1 & 2 Family Dwellings	Non-Residential, Dual-Use Tornado Safe Room	Non-Residential, Single-Use Tornado Safe Room	Non-Residential, Dual-Use Hurricane Safe Room	Non-Residential, Single-Use Hurricane Safe Room
	FEMA 320 or FEMA 361.					
Landscaping	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible	Ineligible	Ineligible	Ineligible
Site work not related to the protected portion (excavation, grading, parking, sidewalks, etc.)	Not a design requirement of FEMA 320 or FEMA 361.	Ineligible	Ineligible except for sidewalks necessary for access	Ineligible except for sidewalks necessary for access	Ineligible except for sidewalks necessary for access	Ineligible except for sidewalks necessary for access

Eligible Costs Table Notes:

1. Parking, and all non-building elements that support getting occupants from the parking area to the safe room area, are ineligible costs. These costs include, but are not limited to the parking areas/surfaces, weather protection structures, walkways, stairs and railings, and signage otherwise not needed for pedestrian access unless required by the Americans With Disabilities Act (ADA).
2. Community-wide, mass notification systems are not eligible costs for safe room projects. Only warning systems necessary to notify prospective safe room occupants along with communications equipment directly supporting the safe room function are eligible costs.
3. Safe rooms must comply with minimum square footage requirement presented in FEMA 361 when applying for Federal funding. However, when additional space per occupant is provided, this typically reduces the benefit-cost ratio for the safe room project. Currently, no exceptions or provisions allow for the additional benefit to be credited due to the use of facility (such as an EOC, a hospital, a special needs shelter, etc.). FEMA 361 square footage criteria are net square footages (usable) for the safe room (protected) area.
4. When a safe-room is a single-use space or any other space that has not otherwise been classified for use or occupancy, the occupancy should be defined as A-3 as defined in Section 303 of the 2006 (or most current edition) of the International Building Code. This occupancy designation will provide the criteria needed for defining other non-safe room design parameters from the building code for the safe room space, including, but not limited to, lighting, toilet and hand washing fixtures, ventilation, etc.

Under the current Safe Room Policy, for each structure type, eligible project costs are limited to:

- **Protection by design components** (see Table 2-2), including and limited to safe room portion of envelope (walls, ceilings, doors, windows, as specified in FEMA 320 and 361).
- **Ancillary, "best practice" components** (see Table 2-2) recommended by FEMA 320 and 361, including standby (back up) power, communications, and emergency electrical lighting limited to safe room portion of the building.
- **Design and construction components** (see Table 2-2) for safe room portion only, including engineering fees and excavation.
- **Required features by function** (see Table 2-2) (necessary for safe room function and habitation) components, including ventilation, permanent electrical lighting, steps for ingress/egress, toilets and hand washing facilities, etc. for the normal use of the safe room when eligible according to Table 2-1. Some of these features may be recommended, but FEMA does not pay for these elements.

Ineligible costs are **non-essential components** including any above-code, code-required, or below-code components not necessary to provide for minimum life-safety protection in the safe room area. Table 2-2 presents examples of five safe room projects and their eligible costs.

Table 2-2. Example Eligible Costs by Safe Room Type

Residential Safe Room	**Tornado or Hurricane Safe Room, New Construction or Retrofit, Interior, or Exterior**	**Example:** Interior basement safe room, new construction. **Eligible Costs:** Eligible project costs include: • Protective safe room envelope (walls, ceiling, and door) • Required FEMA 320 best-practice components • Design and construction costs for safe room portion only • Required safe room components, such as permanent electrical lighting, and ventilation as specified in FEMA 320
Community Safe Room – Retrofit	**Single-Use Tornado or Hurricane Safe Room, Retrofit**	**Eligible Costs:** Costs eligible for FEMA cost-share include: • Components or hardening activities that meet FEMA 361 wind mitigation criteria • Required FEMA 361 best-practice components including signage, communications, standby (backup) power sources • Construction and design fees • Required components, such as electrical lighting, ventilation, (may only be necessary for hurricane safe rooms), toilets and hand washing facilities as specified in FEMA 361 **Ineligible Costs:** Non-mitigation performing components not identified in FEMA 361.

	Dual-Use Tornado or Hurricane Safe Room, Retrofit	**Eligible Costs:** Costs eligible for FEMA cost-share (limited to designated mitigation-performing areas of the structure) include: • Costs to harden walls, floors, ceilings/roofs, windows in safe area only • Standby (Back up) power sources for safe room area only • Any local code-required items, including toilet and hand washing facilities, electrical lighting, and ventilation limited to the safe room area **Ineligible Costs:** Non-mitigation-performing components not identified in FEMA 361, including items relating to non-shelter use **such as auditorium seating, sports equipment and fixtures, floor treatments, bathroom fixtures (other than code-required toilets and hand washing fixtures specified by the FEMA safe room publications), etc.**
Community Safe Rooms – New Construction	**Single-Use Tornado or Hurricane Safe Room, New Construction**	**Eligible Costs:** Costs eligible for FEMA cost-share include: • Walls, floors, ceilings/roofs, doors and windows included in the safe room. • Required FEMA 361 best-practice components including signage, communications, standby (backup) power sources, and construction and design fees • Local code-required items, including toilet and hand washing facilities, electrical lighting, ventilation, ADA entrances (ADA entrances are federally mandated but also required by local code) **Ineligible Costs:** Non-mitigation performing components not identified in FEMA 361.
	Dual-Use Tornado or Hurricane Safe Room, New Construction	**Eligible Costs:** Costs eligible for FEMA cost-share (limited to the safe room area of the structure) include: • Walls, floors, ceilings/roofs, doors and windows included in the safe room portion of the facility. • Required FEMA 361 best-practice components including signage, communications, standby (backup) power sources • Construction and design fees • Local code-required items, including toilet and hand washing facilities, electrical lighting, and ventilation **Ineligible Costs:** Non-mitigation-performing components not identified in FEMA 361, including items relating to non-shelter use **such as auditorium seating, sports equipment and fixtures, floor treatments, bathroom fixtures, etc.**

3. OPERATIONS AND MAINTENANCE PLANS

The Safe Room Policy requires applicants to submit a descriptive statement regarding the Operations and Maintenance (O&M) Plan with any safe room grant application. The policy states in Section VII (page 3):

> *FEMA will consider an extreme wind event mitigation activity consisting of the retrofit or construction of a residential, nonresidential, or community safe room (single- or multi-use) to be an eligible project type for PDM and HMGP grant awards as follows:*
>
> - *[In the 7th bullet:] where adequate operations and maintenance planning are demonstrated;*

And further states in Section VII, Part E (page 9):

> *To be considered for funding, PDM and HMGP community safe room project applications will include a statement acknowledging that the requested community safe room will be operated and maintained in a manner that will achieve the proposed hazard mitigation. FEMA will only consider operations and maintenance plans that are consistent with criteria available in FEMA Publication 361 Design and Construction Guidance for Community Safe Rooms Chapter 9 and the samples provided in Appendix C and D.*

Community safe rooms, as defined by the Safe Room Policy, are built and operated for the purpose of immediate life safety protection during extreme wind hazards. To achieve this purpose, community safe rooms must be built to the design criteria specified in Section VII, Part A of the Safe Room Policy, and they must admit occupants and provide them with the services they need in a timely manner. Consequently, the Safe Room Policy requires that all community safe room applications provide a clear and succinct statements acknowledging that the requested community safe rooms will be operated and maintained in manner that will achieve the proposed hazard mitigation. Therefore it is essential that applicants provide this information otherwise application review may be delayed or an application rejected. In addition, a signed draft O&M plan will be provided at pre-construction and a signed final, approved O&M plan will be provided at close-out for evaluation of community safe room funding applications. Again, it is essential that this information be provided otherwise project implementation may be inhibited.

The following steps outline the O&M Plan requirements for projects seeking FEMA grant funding, details for each step are provided in the subsections below.

Step 1. (3.1) Descriptive Statement of O&M Plan (due at time of application);

Step 2. (3.2) Draft O&M Plan (due prior to any retrofit or construction); and

Step 3. (3.3) Final O&M Plan (due prior to project close-out).

3.1 Descriptive Statement of O&M Plans

A statement acknowledging the requirement for an O&M plan for the community safe room should be included in the grant application. At a minimum, it should include a description of the maintenance procedures, as well as a brief statement about the operation of the safe room when opened for use. The statement should also provide basic information about how the safe room will be used, including a description on initiating use, a discussion of the warning system, and basic procedures for opening the doors to the public and key components of the safe room maintenance procedures. Finally, the statement should identify the office that will be responsible for the operation and maintenance of the safe room.

3.2 Draft O&M Plans

The development of a Draft O&M Plan should be coordinated with the appropriate entities both using and operating the community safe room and signed by appropriate officials in these organizations.

A Draft O&M Plan must be submitted at pre-construction and at a minimum must include the items identified in the operations and maintenance component lists below. The Draft O&M Plan may be based on preliminary engineering drawings. FEMA 361, Chapter 9 and Appendices C and D, provide additional information on the O&M components. The O&M plans should include, but not be limited to, the following components:

Operations Components:

- Community organization(s) responsible for operating and maintaining the community safe room, such as the local emergency management office. Include contact information for the relevant office(s).
- Command and management roles and responsibilities for key individuals, such as the overall safe room manager and site coordinator and their essential duties; and/or the agency responsible for fulfilling these roles.
- Major tasks the safe room management team will perform during a *tornado/hurricane watch* issued by the National Weather Service.
- Major tasks the safe room management team will perform during a *tornado/hurricane warning* issued by the National Weather Service.
- General operation tasks performed in the community safe room from the time the emergency is announced to the time occupants may safely leave the community safe room.

Maintenance Components:

Assurance from the organization responsible for operating and maintaining the community safe room of the following during the useful life of the community safe room:

1. Non-mitigation uses will not prohibit the use of the community safe room to perform its hazard mitigation purpose of life-safety protection. This will ensure the approved safe room occupancy is available at all times.
2. Regular maintenance will be scheduled and performed by a designated party during the useful life of the community safe room.
3. Basic exterior and interior signage will be posted as is necessary and appropriate for adequate safe room operations.
4. A redundant power source, such as batteries or generators, is available to provide standby (emergency) power for lighting and ventilation for the community safe room in the event of primary power failure, as required.
5. The community safe room inventory will include essential equipment and supplies such as communications equipment, emergency equipment, first-aid supplies, water, and sanitary supplies.

A Draft O&M Plan is required before any retrofit or construction activities begin. Draft O&M Plans must include:

1. Both the operations and maintenance components listed above.
2. The signature of the subgrantee for the approved application.
3. The signature of authorized officials from the identified community organization(s) responsible for operating and maintaining the community safe room, if different than the subgrantee

Grantee Review of Draft O&M Plan

The Safe Room Policy specifies that the Grantee affirm the Draft O&M Plan is consistent with FEMA 361 criteria by:

1. Reviewing the draft plan to ensure it addresses both the operations and maintenance components as well as the signature requirements listed above.
2. Coordinating with the subgrantee to address any missing components and/or signatures not included in the draft plans.
3. Transmitting the Draft O&M Plan to FEMA with a written statement affirming its consistency with FEMA 361 criteria.

FEMA Review of Draft O&M Plan

The Grantee will be informed in writing once FEMA has determined the Draft O&M Plan is consistent with FEMA 361 criteria. This will allow the Grantee to inform the subgrantee that they may begin retrofit or construction activities. FEMA comments on the Draft O&M Plan must be addressed before FEMA makes a final determination of consistency.

Additional information on plan components is provided in FEMA 361, Chapters 3, 5, 8, and 9:

- Maximum Occupancy (FEMA 361, 3.3.1, 3.4.1, and 3.5.1)
- Warning Signals (limited information in FEMA 361, 5.4 and 5.5)
- Access & Entry (FEMA 361, 4.4 and 8.4)
- Signage (FEMA 361, 9.4)
- Parking (FEMA 361, 5.4)
- Pets (FEMA 361, 5.4)
- Special Needs Populations (FEMA 361, 8.7)
- Emergency Provision such as food and water, sanitation management (FEMA 361, 8.9)
- Identified non-mitigation uses of the community safe room (FEMA 361, 5.2.2).

3.3 Final O&M Plans

The development of a Final O&M Plan should be coordinated with the appropriate entities both using and operating the community safe room and signed by appropriate officials in these organizations.

A Final O&M Plan is required before project close-out. The Draft O&M Plan should be updated to reflect the actual design and construction of the safe room and include any other changes that may have been required due to construction, access issues or other relevant factors.

Final O&M Plans must include:

1. Operations and maintenance components listed above.
2. The signature of the subgrantee for the approved application.
3. The signature of authorized officials from the identified community organization(s) responsible for operating and maintaining the community safe room, if different than the subgrantee

Grantee Review of Final O&M Plan

The Safe Room Policy requires that the Grantee affirm that the Final O&M Plan is consistent with FEMA 361 criteria by:

1. Reviewing the final plans to ensure they address both the Operations and Maintenance components as well as the signature requirements listed above
2. Coordinating with the subgrantee to address any missing components.
3. Transmitting the Final O&M Plan to FEMA with a written statement affirming its consistency with FEMA 361 criteria.

FEMA Review of Final O&M Plan

The Grantee will be informed in writing once FEMA has determined the Final O&M Plan is consistent with FEMA 361 criteria. FEMA comments on the Final O&M Plan must be addressed before FEMA makes a final determination of consistency. Grantees not completing a Final O&M Plan at closeout will be subject to recoupment of grant funds as determined by FEMA.

4. COST EFFECTIVENESS

The Safe Room Policy, Section VII, Part F (page 9), Cost Effectiveness states:

> *PDM and HMGP safe room projects requesting funding must demonstrate their cost-effectiveness through an acceptable benefit-cost analysis (BCA).*

This section discusses the total project costs required for the purpose of demonstrating compliance with cost-effectiveness requirements. The total project cost for BCA purposes is equal to the sum of all eligible costs necessary to achieve life-safety protection. Applicants should refer to the Eligible Costs section of this guidance to help identify the full range of components that make up these necessary costs. As identified in the Policy safe room project costs typically include:

1. *Design activities;*
2. *Site preparation and building foundation materials and construction;*
3. *Structural systems capable of resisting the design wind loads (including roof decking and roof support structures);*
4. *Protective envelope components such as:*
   - *walls, ceiling/roof systems and doors; and*
   - *other retrofit hardening activities that meet FEMA approved performance criteria; and*
5. *Functional components such as:*
   - *permanent electrical lighting, ventilation, heating/cooling, toilets and hand-washing facilities consistent with FEMA approved performance criteria; and*
   - *signage, emergency communications equipment, back-up power generation for the safe area; and*
6. *Operations and Maintenance Plan development*

In some cases, the total project costs of a safe room for a large community may exceed the funding limits of the HMGP or PDM grant program. In these instances, the actual total project cost must be used in the BCA. The grant program funding limit (which would be less than the actual project cost) may not be used as the total project cost entered into the BCA.

Similarly, some applications may not request PDM or HMGP funds up to the available federal cost share. In these cases the application must still use the sum of all required, not just requested costs, necessary to achieve the hazard mitigation purpose of immediate life safety protection.

5. SUMMARY OF GRANT APPLICATION REQUIREMENTS

To be eligible for FEMA grant funding, safe room applications and subapplications must provide documentation to show:

1. Compliance with the FEMA Mitigation Safe Room Policy
2. Compliance with relevant HMGP and PDM Program guidance requirements
3. Compliance with local planning, zoning, building, and other applicable codes

In addition to these three basic requirements, all applications and subapplications must include:

1. Population at risk:
    a. Documentation on the composition, size, and rationale for including each group designated as an at-risk population.
    b. For tornado residential and community safe rooms, documentation must show how the designated population would reach the safe room within the prescribed time limit after notification.
    c. For hurricane safe rooms, documentation must demonstrate that each group comprising the at-risk population belongs to one of the categories specified in this guidance.
2. Travel limitations:
    a. For tornado community safe rooms, travel limits are 5 minutes for the occupants who will be walking or the maximum distance of 0.5 mile from the safe room for those driving. This means that the population relied upon as the potential occupants of the safe room must reside or work in buildings that are no more than 0.5 mile away from the safe room.
    b. For hurricane safe rooms, travel times are not limited.
3. A Benefit Cost Analysis (BCA) performed using the latest available and approved BCA tools.
4. A description of the approach the subapplicant will use in preparing the O&M Plan.
5. Closeout Requirements
    a. Final approved O & M Plan

b. Photos of the project site before and after construction

c. Latitude / Longitude at the project site

d. Vicinity Map and map of SFHA if applicable