FEMA
MITIGATION INTERIM POLICY
MRR-2-09-1

I. TITLE:

Hazard Mitigation Assistance for Safe Rooms

II. DATE OF ISSUANCE: April 30, 2009

III. PURPOSE:

This policy updates the previous memorandum on this subject (MRR-2-07-1) issued March 7, 2008, to identify revised design criteria eligible to support Pre-Disaster Mitigation program (PDM) and Hazard Mitigation Grant Program (HMGP) safe room activities. Specifically, the revised FEMA Publications 320 *Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business – Third Edition, August 2008* and 361 *Design and Construction Guidance for Community Safe Rooms – Second Edition, August 2008*.

This document describes FEMA's policy on the use of PDM and HMGP funds for safe rooms. This policy will ensure national consistency in the use of PDM and HMGP funds for the construction or retrofit of residential, non-residential, or community safe rooms. These activities are for the hazard mitigation purpose of immediate life safety resulting from structural and building envelope protection against extreme wind hazards for a limited at-risk population that cannot evacuate out of harm's way prior to an event.

For the purposes of PDM and HMGP, the term "safe room" only applies to:

- extreme wind (combined tornado and hurricane) residential and non-residential safe rooms;
- extreme wind (combined tornado and hurricane) community safe rooms;
- tornado community safe rooms; and
- hurricane community safe rooms.

IV. SCOPE AND APPLICABILITY:

PDM

This policy applies to PDM projects for which the application period opens on or after the date of this policy.

HMGP

This policy applies to HMGP projects for which funding is made available pursuant to a major disaster declared on or after the date of this policy.

V. AUTHORITY:

Sections 203 (PDM) and 404 (HMGP) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5133 and 5170c.

VI. BACKGROUND:

The Stafford Act authorizes FEMA to provide funding for the purpose of reducing or eliminating risks to life and property from hazards and their effects. Mitigation grant program regulations and guidance that implement these authorities identify various types of hazard mitigation projects or activities that meet this purpose and may be eligible for funding. These projects represent a range of activities that protect structures, the contents within those structures and/or the lives of their occupants.

Extreme wind mitigation projects including residential, non-residential, and community safe rooms for the hazard mitigation purpose of immediate life safety resulting from structural and building envelope protection are eligible activities under PDM and HMGP. In extreme wind events where there is sufficient warning time such as hurricanes, the general population may be expected to leave the area of anticipated immediate impact and seek shelter outside the at-risk area. However, some people such as first responders and those physically unable to leave the area remain in harm's way. Therefore, for hurricane threats, FEMA will only consider funding extreme wind mitigation projects that are designed for a specific population that cannot remove themselves from harm's way during a land-falling hurricane. In extreme wind events such as tornados, the threat posed affords little to no warning to allow the general population to leave the area of immediate impact and therefore they must seek immediate life safety protection. This limits the potential occupancy of tornado residential, nonresidential, and community safe rooms to onsite occupants only, or to those within close proximity.

PDM and HMGP funds may only be used for safe room projects designed to achieve "near-absolute protection" as described in FEMA Publications 320 and 361. Any lower threshold of protection exposes safe room occupants to a greater degree of risk than is acceptable. In order to provide this acceptable level of hazard mitigation protection during extreme wind events a structure has to meet design criteria intended for this specific purpose, which exceed the design criteria for structure and building envelope protection only. In some cases, these projects also afford some ancillary level of structural and building envelope protection to reduce or eliminate damage to the structure and its contents and to ensure continuation of facility function.

PDM and HMGP funds are not available for general population shelters, including evacuation or recovery shelters intended to provide longer-term services and housing for people leaving the anticipated impact area of an extreme wind event, or because their homes have been damaged or

destroyed by extreme wind events, fire, disasters, or other catastrophes. Such general population shelters are not intended to sustain the extreme wind event and are not required to satisfy the higher design criteria of near-absolute protection consistent with hazard mitigation residential, nonresidential, and community safe rooms as established in FEMA Publications 320 and 361. In addition, the hazard mitigation time of protection for safe rooms is 2 hours for tornado events and 24 hours for hurricane events. These time periods also differentiate hazard mitigation event-only safe rooms from longer-term evacuation and recovery shelters.

Furthermore, the planning and operation of PDM and HMGP safe rooms should not conflict with State and/or local evacuation plans. PDM and HMGP safe room project 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.

VII. POLICY:

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:

- where it provides immediate life-safety protection in the target area of impact of a striking hurricane and/or tornado;
- where it is designed only to the extent it is necessary for the limited population that must remain in the impact strike area during a hurricane and/or tornado event, to the extent necessary for the limited time period that a hurricane and/or tornado event is occurring;
- where the mitigation measure is consistent with the identified risk to be mitigated;
- where the mitigation measure is not located in a flood hazard area where the flood waters have the potential to endanger occupants within the safe room;
- where the mitigation measure is constructed with criteria recognized by FEMA to afford near-absolute protection and verified by a licensed design professional;
- where allowable safe room project costs are directly related to and necessary for the hazard mitigation purpose of providing immediate life safety resulting from structural and building envelope protection to the limited population required to remain in the impact zone during an extreme wind event;
- where adequate operations and maintenance planning are demonstrated;
- where the mitigation measure is demonstrated to be cost-effective, and
- where other applicable PDM and HMGP program conditions are demonstrated, as shown in PDM and HMGP program-specific guidance.

Accordingly, this policy establishes the following eligibility parameters for PDM and HMGP safe room projects:

- eligible activities;
- design standards;
- flood hazard siting limitations;
- population protected;
- period of protection;
- eligible costs;
- operation plan;
- maintenance plan; and
- cost-effectiveness.

A. Eligible Activities and Design Standards.

Extreme wind mitigation project activities for the design and construction of new safe rooms, as well as for the design and retrofitting of existing buildings or portions thereof for the hazard mitigation purpose of immediate life safety resulting from structural and building envelope protection from tornado and/or hurricane hazards, are eligible for PDM and HMGP funding consideration. These mitigation activities are available to residential, non-residential, and public structures. In all cases these projects must result in a completed safe room constructed with criteria recognized by FEMA to afford near-absolute protection and verified by a licensed design professional.

Eligible safe room activities are limited to:

- extreme wind (combined tornado and hurricane) residential, non-residential safe rooms; and
- extreme wind (combined tornado and hurricane) community safe rooms; and
- tornado community safe rooms; as well as
- hurricane community safe rooms.

PDM and HMGP funds are not available for general population shelters, including evacuation or recovery shelters.

To qualify for PDM and HMGP funding, a safe room provides near-absolute protection when it complies with FEMA recognized design and construction criteria, codes, or standards. Any safe room designed to a lower design criteria, and hence, providing a lower level of protection results in a greater degree of risk than is acceptable to FEMA and is, therefore, not eligible for PDM and HMGP funding. FEMA recognizes acceptable life safety protection for safe room occupants if project application

documentation shows that the safe room project meets or exceeds the criteria set forth in the publications or standards listed below:

- FEMA Publication 320 *Taking Shelter From the Storm: Building a Safe Room For Your Home or Small Business – Third Edition, August 2008;* or
- FEMA Publication 361 *Design and Construction Guidance for Community Safe Rooms – Second Edition, August 2008.*

In addition, the *Standard For the Design and Construction of Storm Shelters* (ICC-500), a consensus standard from the International Code Council (ICC) is acceptable for use in designing PDM and HMGP safe rooms only when incorporating specific recommendations outlined in FEMA Publications 320 and 361. FEMA has identified specific design criteria in FEMA Publications 320 and 361 to be more conservative than what is presented in the ICC-500 due to both emergency management considerations and maintaining near-absolute protection.

B. Flood Hazard Siting Limitations

To be considered for funding, PDM and HMGP safe room projects will include maps or other documentation that identifies the projects' location relative to the floodplain. FEMA does not support the placement of safe rooms where floodwaters have the potential to endanger their occupants, therefore FEMA Publications 320 (Section II, pages 23 and 24) and 361 (Chapter 3, pages 3-28 through 3-33 and Chapter 5, pages 5-14 through 5-17) outline specific flood hazard siting limitations. To be eligible for PDM and HMGP funding, FEMA will only consider applications for residential, non-residential and community safe rooms consistent with FEMA Publications 320 and 361 located outside the following high hazard areas:

- The Coastal High Hazard Area (VE zones) or other areas known to be subject to high-velocity wave action; or
- Areas seaward of the Limit of Moderate Wave Action (LiMWA) where mapped, also referred to as the Coastal A Zone in ASCE 24-05, or
- Floodways.

In addition, residential and non-residential safe rooms consistent with FEMA Publication 320 may not be located in:

- Areas subject to coastal storm surge inundation associated with a Category 5 hurricane (where applicable, these areas should be mapped areas studied by the U.S. Army Corps of Engineers (USACE), NOAA, or other qualified sources).

FEMA Publications 320 (Section II) and 361 (Chapter 3) provide additional flood hazard design criteria that should be adhered to when designing and constructing safe rooms.

C. Population Protected and Period of Protection.

To be eligible for funding under PDM and HMGP, FEMA will only consider safe room projects that provide hazard mitigation to a specific population facing the immediate threat of impact from a land-falling hurricane or a strike from a tornado.

To be considered, PDM and HMGP applications for safe room projects will demonstrate design for life safety protection for a duration related to the specific period of onset for the tornado event and/or for the hurricane event. The hazard mitigation time of protection for safe rooms, consistent with the ICC-500 standard requirements, is to provide 2 hours of protection for tornado events and 24 hours of protection for hurricane events.

As previously stated, the 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 project 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.

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.

For tornados, this population is generally limited to the family or group of families that live in the dwelling or dwellings served by the safe room, workers that are provided access to a safe room at their place of business, or individuals that occupy or are provided access to an on-site community safe room, built either as an integral part of the building or as a separate structure. In addition, due to the short time period between tornado identification and impact, these at-risk populations must be within close proximity to the safe room in order benefit from it. Populations that cannot reach the safe room in a reasonable time, or that are not granted access to the safe room, are not considered potential occupants of the safe room.

For hurricanes, this population is comprised of individuals that must stay in the area that may be impacted by the extreme wind hazard and includes first responders, critical and essential services personnel and facility occupants who cannot otherwise safely evacuate on their own from the path of a hurricane.

The identification of the population to be protected directly impacts safe room size requirements. 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. Therefore, PDM and HMGP safe room project applications are subject to the floor area per occupant space requirements and size limitations identified in the design criteria recognized in Section A of this Interim Policy. These standards are generally prescriptive (e.g., FEMA Publication 320) or performance-based (e.g., FEMA Publication 361). For example, the following size limitations apply to residential and non-residential safe rooms utilizing the prescriptive designs provided in FEMA Publication 320.

- *Prescriptive residential safe room designs provided in FEMA Publication 320 for either, or both, tornado or hurricane hazards:* The maximum floor dimensions are 14 feet by 14 feet square, providing 196 square feet of safe room space. The maximum residential safe room safe occupancy should not exceed 16.
- *Prescriptive non-residential safe room designs provided in FEMA Publication 320 for tornado only:* The maximum floor dimensions are 14 feet by 14 feet square, providing 196 square feet of safe room space. The maximum non-residential safe room safe occupancy should not exceed 33.
- *Prescriptive non-residential safe room designs provided in FEMA Publication 320 for combined tornado and hurricane:* The maximum floor dimensions are 14 feet by 14 feet square, providing 196 square feet of safe room space. The maximum non-residential safe room safe occupancy should not exceed 8.

In addition, PDM and HMGP safe rooms are not intended to protect thousands of potential occupants within a single community safe room. The emergency management considerations necessary to afford protection to thousands of occupants in large, public venues such as stadiums or amphitheaters are beyond the scope of PDM and HMGP community safe rooms and therefore are not eligible for PDM or HMGP funding. The emergency management considerations of such facilities require attention to behavioral and other non-engineering planning issues that directly affect the life safety for thousands of people are consistent with evacuation and recovery shelters, not PDM and HMGP safe rooms. Examples of emergency management considerations include egress timing for thousands of people in a stadium, how to manage a large group of individuals, and security issues.

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.

D. Eligible Costs.

Allowable costs for PDM and HMGP safe room projects are those project components such as 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. This applies to safe rooms that are either retrofits of existing facilities or new construction projects, and applies to both single and multi-use facilities.

FEMA will only consider as eligible costs those that are consistent with FEMA approved performance criteria (FEMA 320, 361), which generally includes:

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;
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 general, FEMA may allow hazard mitigation funding consideration for all necessary code-required mitigation-related project components. However, 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.

Ineligible costs include, but are not limited to:

1. Project components not directly related to the hazard mitigation purpose as described in this policy, such as:

- General evacuation studies or plans; and

2. Project components not consistent with FEMA approved performance criteria (FEMA 320, 361) such as:
   - Inadequate designs;
   - Inadequate structural systems;
   - Inadequate protective envelope; and
3. The cost of any functionality or outfitting not directly required to meet FEMA approved performance criteria such as:
   - auditorium seating, sports equipment, furniture, interior or exterior decorative elements and fixtures, floor treatments;
4. Operation and maintenance of safe rooms; and
5. Costs associated with the acquisition of land.

E. Operations and Maintenance Plan.

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 Appendices C and D.

Subgrantees will provide a draft operations and maintenance plan to the grantee prior to performing any retrofit or construction activities as part of the funded project. The grantee will provide the draft plan to FEMA after they have affirmed its general consistency with FEMA 361 criteria. FEMA will then review the draft plan and determine if it is consistent with FEMA 361 criteria. Grantees may only approve the start of retrofit or construction activities after they receive FEMA's determination of the draft plan's consistency with FEMA 361 criteria.

Subgrantees will provide a final operations and maintenance plan to the grantee before project close-out. The grantee will provide the final plan to FEMA after they have affirmed its general consistency with FEMA 361 criteria. FEMA will then review the final plan and determine if it is consistent with FEMA 361 criteria.

F. Cost-Effectiveness
PDM and HMGP safe room and community shelter projects requesting funding must demonstrate their cost-effectiveness through an acceptable benefit-cost analysis (BCA). The PDM applicant and/or subapplicant or the HMGP grantee and/or applicant must use a FEMA-approved methodology to determine the BCA. FEMA's BCA software may be obtained by contacting the BCA helpline via phone: 1(866) 222-3580 or email: bchelpline@dhs.gov or the applicable FEMA Regional Office.

G. Other general requirements
Mitigation activities must adhere to all other PDM or HMGP statutes, regulations, and requirements that apply to this funding category, including: Sections 203 and 404 of the Stafford Act; Hazard Mitigation Grant Program (44 CFR Subpart N); Mitigation Planning (44 CFR Part 201); Floodplain Management and Protection of Wetlands (44 CFR Part 9); Environmental Considerations (44 CFR Part 10), Uniform Administrative Requirements (44 CFR Part 13); Floodplain Management (44 CFR Part 60); other applicable federal environmental and grants management requirements; as well as applicable program guidance.

VIII. ORIGINATING OFFICE:

Mitigation Directorate (Risk Reduction Division, Grants Policy Branch)

IX. SUPERSESSION:

This policy supersedes previous mitigation policies and guidance related to this subject including:

- FEMA Mitigation Interim Policy MRR-2-07-1, "Hazard Mitigation Assistance for Safe Rooms," dated March 7, 2008.

X. REVIEW DATE:

Not later than three years from date of publication.

for Ed Connor
Acting Assistant Administrator
Mitigation Directorate