Hazard Mitigation Assistance
Tips for Application Development

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Learning Objectives:

Scope of Work - Development
Scope of Work - Phased Projects
Budget - Eligible/Ineligible items
Benefit Cost Analysis - High Points
Application Completion - Post timeline
Kentucky Hazard Mitigation Council Meeting

“A Team of Teams – With One Mission: Protecting our Commonwealth”

Quality Application

SCOPE OF WORK

TIME

BUDGET
**Scope of Work (SOW)**

SOW sets the deliverables, identifies the tasks required to complete the proposed activity and defines the tasks to be accomplished in a clear, concise, and meaningful terms.

Describes the problem, the proposed approach, and explains how the outcome will be reached.

Tell me your story by providing the following details in the narrative:

**Who, What, When, Where, Why, and How**
What is the problem to be mitigated?
What is the Hazard you are mitigating?

Is the link between the problem and the proposed solution an eligible mitigation activity?

Refer to your local mitigation plan’s Hazard Identification and Risk Assessment.
Who is affected?

Individual citizens, property owners, businesses, government agencies and neighboring jurisdictions.

To what level are these entities being affected?

How frequent is the event?

Is this a small and impoverished community?

Are the structures older than 50 years?

Have the structures received repetitive damages?
What is the proposed project solution?
Are solutions linked to the mitigation strategy section of your Local Hazard Mitigation Plan?

What other alternative activities did your community discuss before choosing the best solution?

Does the community support this mitigation action?

Does the project solution have adverse affects on the environment?

Does it solve the problem independently?
How will the activity be implemented?  
How will the activity solve the problem?

What is the level of protection?

How long will the project take to complete?

Is it cost effective and technically feasible?

*Requires detailed technical supporting documentation to verify that the project will reduce future hazard levels and damage.
**Where is the project located?**

Need: Addresses, maps, Decimal Longitude/Latitude, Demographics/Topographical description, Project site description

What is the last date of ground disturbance & depth of future ground disturbance (if applicable)?

Are there any environmental or historical/cultural resources in or around the project site location?

What Flood zone is project location in?
Who is performing the work?

Does your community possess the administrative capabilities to administer the project?

Will you need contracted work, or will you be utilizing in-kind services, or a combination?

Do you have the appropriate resources for credentialed and qualified professionals?
SOW Description #1

Varble Town has problems with flooding on Cave Run Road and needs to replace culverts to avoid future damages. Total project cost is $300,000.
SOW Description # 2

Varble Town is proposing to replace an undersized culvert located at the junction of RT 321 and RT 4 in Varble Town KY 44444 (37.55555, -86.11111) from the 40 inch existing pipes to 60 inch corrugated metal pipes to eliminate future flooding and damage to homes adjacent to the project site. In times of moderate rain, the homes along Cave Run Road receive repeated flooding damages and at times the water overtops the road leaving homeowners trapped until the water recedes.

Varble Town is located in a steep region of eastern KY and faces many instances of flooding. Due to our steep topography little rain fall can amount to flash flooding rather quickly. In the last 10 years Varble Town has experienced 5 major flooding events leaving many homeowners displaced and leaving standing water causing health issues. A town meeting was held where the majority of the community agreed the hazard area in question needs to be fixed and the best approach is to upsize the culvert allowing the access water to flow freely through the culvert routing it away from the road and properties. This type of mitigation activity can be found in the local hazard mitigation strategy section on page 230-5. An alternative mitigation activity discussed would be to acquire the structures in the path of the rising flood water to avoid future damage. This, however was not voted on because this is a small community with rich values and the people are not willing to leave it.

The existing 40 inch culvert was installed in the late 1960’s along with the 15 homes along Cave Run Road. This culvert has been maintenance several times and has become an economic strain on our small community. A professional PE was brought in to determine what was necessary to fix the problem and to determine the level of protection for this area. Based on historical data the proposed 60 inch culvert will need to be installed to the 25 year event to avoid future damages.

We have checked records for endangered species, or any other cultural resource and there are no known to this area. Ground disturbance will be at minimal, roughly 7-10 feet in depth to replace and install the new 60 inch culvert. There will be a staging site 300 yards from the project site area located at (37.555345, -86.1111345) that will house the equipment necessary for studies and construction. There will be no borrow and fill sites needed to complete this project. The project site is located in flood zone X.

Varble Town proposes a phased drainage project, with phase 1 being an H&H study and final design, and phase 2 being construction. It will take 3 months for phase 1 leaving 365 days to complete the construction. Varble Town will be utilizing some in-kind services as well as cash for the 13% match. The total project cost is $300,000 including engineering fees.

This type of funding will assist our town in reducing future risk and damage to people and property from future flooding events and is greatly needed.
Phased Projects

When should a project be phased?

- Phased projects are only eligible under the Hazard Mitigation Grant Program (HMGP)
- Limited to complex projects
- To complete the Phase I design, engineering, Environmental/Historic Preservation and or feasibility study
Prescreening Process for a Phase I Approval

• State or Tribal (Standard or Enhanced) Mitigation Plan
• Justification for selection of the proposed project
• Potential cost-effectiveness
• Environmental/Historic Preservation Review
• Hydrologic and Hydraulic or other relevant technical data
Phase I Conditional Approval

Once Phase I is complete, a technical review is performed on the Phase I deliverables:

- Hydrologic and Hydraulic or Other Relevant Technical Data
- Preliminary Engineering Design – design and layout based on technical data.
- Executive Order 11988 – compliance with floodplain management requirements
- Refinement of the Cost-Effectiveness Assessment – Benefit Cost Analysis performed to determine the effectiveness of the overall project
- Environmental/Historic Preservation Review
Phased Projects

- Phase I activities are included in the period of performance for the overall project.

- Total period of performance for new projects is 36 months from the FEMA application deadline.
**Phase II Approval**

Once the project is deemed eligible, technically feasible, cost effective and compliant with EHP requirements, approval is granted for Phase II Construction.
Benefit Cost Analysis

- Mitigation projects must be cost effective to be eligible for funding as demonstrated by a FEMA-validated BCA.

- If the benefits are greater than costs, the project is cost-effective.
  - The BCA evaluates the future benefits (projected losses avoided) of the project in relation to the project costs.
Benefits

• Direct damages to buildings, contents, and infrastructure
• Avoided deaths and injuries
  – Flash Flood; # x Value of a Statistical Life (VSL) ~ $6.6 million
• BCA 5.1 Benefits Features
  – Volunteer Costs: Flood fighting costs avoided
  – Street Maintenance Costs: larger acquisition/relocation projects, future costs avoided if infrastructure is removed
  – Mental Stress & Anxiety: Flood, DFA (# persons x $2443)
  – Lost Productivity: Flood, DFA (# workers x $8736)
  – NFIP Administration & Claim Costs: Avoided future need for insurance policy
  – Loss of Function for Critical Services
• Avoided loss of function for economic impacts (roads, bridges, utilities)
• Environmental impacts (Acquisition)
  – Green Space = $7853/acre/year
  – Riparian = $37,493/acre/year
Costs

Items to consider:

• Costs appropriate for the project
• Costs in present-day dollars
• Costs are well documented and from a credible source
• Contingencies (limited applicability)
• No administrative costs (project management costs are eligible for both pre-award and post-award)
• No lump sum project costs
Budget Considerations

- HMGP and PDM/FMA require a detailed line item budget.
- PDM/FMA do not allow cost overruns, so the budget should be as accurate as possible.
- For HMGP phased projects, both phases require a budget in the application.
  \[ \text{Phase 1} + \text{Phase 2} = \text{Total Project Costs} \]
- FEMA HMA Guidance provides project type-specific eligible and ineligible budget items.
Budget Considerations:  
Contingencies

A contingency cost is an allowance in the total cost estimate to cover situations that cannot be fully defined at the time the cost estimate is prepared but that will likely result in additional eligible costs.

Allowances for major project scope changes, unforeseen risks, or extraordinary events may not be included as contingency costs.

For project applications, cost estimates may include contingencies; however, the recommended total contingency range is **1 to 5 percent**. (May be raised to 7 percent for historic properties as defined under the NHPA)

Contingency costs should be included as a line item in the budget section of a project application. As with other line items in the budget, the subapplicant should justify the contingency estimate based on the nature of the proposed project. The total project cost, which may include contingencies, will be the one used to compute the BCA.
Budget Considerations:

Contingencies

Contingency funds are not automatically available for use. Prior to their release, contingency funds must be re-budgeted to another direct cost category.

Post-award changes to the budget require prior written approval from FEMA.

The written request should demonstrate what unforeseen condition related to the project arose that required the use of contingency funds.
Budget Considerations

The following types of post-award changes to budgets will require the prior written approval of FEMA:

Non-construction projects:
- Adjustments of more than 10 percent in any direct cost categories where the awarding Agency’s share exceeds $100,000
- Any changes that would result in additional funding to the grant (HMGP)

Construction Projects:
- All construction cost adjustments that lead to the need for additional funds (HMGP)
- Any changes to access contingency funds and re-budget to another direct cost category
BCA Methods

- Full Data Version 5.1
- Damage Frequency Assessment Version 5.1
- Substantial Damage Waiver
- Pre-Calculated Benefits for Acquisition/Demolition or Elevation
- Greatest Savings to the Fund
- Tornado Safe Room Version 5.1
- Landslide Stabilization
- Landslide Methodology for Acquisition/Demolition
- Sinkhole Methodology for Acquisition/Demolition
- Earthquake Version 5.1
- Statement of Cost Effectiveness
  - Initiatives
  - Land Value for SD Acquisitions
Full Data: Flood Module

Analyzes flood hazard conditions before and after mitigation

- DFIRM
- Flood Insurance Study
  - Flood Profile
    - Streambed & 10, 50, 100, 500 Year Event Elevations
    - Associated Discharges
- First Floor Elevation
- Building Description (one story, basement, square footage)
- Acreage (green space, riparian)
- Building Replacement Value
- # of Residents (employed)
- Project Costs
Damage Frequency Assessment

For use when accurate hazard and/or structural information is unavailable. DFA can be used to analyze buildings, roads, utilities, and bridges.

The DFA module calculates benefits based upon:

- Historic damages from at least three prior events with unknown recurrence intervals OR
- Expected damages from two events with different recurrence intervals
- Project costs

Residual damages must be entered based upon the estimated level of protection that the mitigation project will provide.
Substantial Damage (SD) Waiver: Acquisitions

Damage of any origin sustained by a building whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50 percent of the market value of the building before the damage occurred.

Acquisition (and subsequent demolition) of a substantially damaged structure located in a riverine SFHA on a preliminary or effective FIRM is considered cost effective. A statement of cost effectiveness for the value of the land to be purchased must be included with the SD assessment.

Documentation of the SD determination by a credible official is required. FEMA’s Substantial Damage Estimator Tools are available at [www.fema.gov](http://www.fema.gov).
Pre-Calculated Benefits: Acquisition & Elevation

FEMA analyzed 11,000+ acquired or elevated structures and determined that structures located in the 100 year floodplain [aka 1% chance zone, Special Flood Hazard Area (SFHA)] have benefits of $276,000 and $175,000, respectively, and are cost effective mitigation projects if average total costs per structure are:

$276,000 or less for acquisition/demolition
$175,000 or less for structural elevation

DFIRM required for documentation.
Greatest Savings to the Fund (GSTF)

- For acquisition or relocation activities for severe repetitive loss properties that are not determined to be cost effective using FEMA-approved cost-effectiveness options, property owners may alternatively receive the calculated expected savings to the NFIF as provided by the GSTF value.
- The GSTF calculation measures the expected savings of a mitigation project over a specific time period, usually 30 years or 100 years, depending on the mitigation project.
- Using past NFIP claims, the total expected future insurance claims can be projected. GSTF is calculated by subtracting total expected future insurance premiums from expected future claim payments.
Tornado Safe Room

- Location
- Safe room type (stand-alone, retrofit, community, etc.)
- Target population within 0.5 mile radius of site
- Types of areas population will come from (manufactured housing, public buildings, open space, etc.)
- Gross area & usable area of safe room
- Project cost
Landslide Stabilization

- Building Replacement Value (BRV)
  - How much it would cost per square foot to construct a new, similar building
- Square footage of structure(s) to be protected
- Project costs

BRV + Contents Value Cost
Landslide Acquisition/Demolition

- BRV
- Number of occupants
- Emergency Response Costs (if applicable)
- Project costs

Benefits are based on the replacement value of the house, contents value, displacement costs, and 5 percent of the economic value of fatalities.

Applicants are required to attest that the structure is within 5 years of imminent collapse because of landslide hazards.
Sinkholes: Acquisition/Demolition

- BRV
- Number of occupants (residence)
- Displacement Days
- Relocation Costs and/or Losses (business)
- Emergency Response Costs (if applicable)
Earthquake

- Project Description
  - Structural Retrofit
  - Bracing of Non-Structural Elements
  - Other
- Physical Address & Coordinates (decimal)
- Estimated Costs
- Useful Life
- Soil Type
- Ground Motion Values
Earthquake

- Functional Downtime
- Item Replacement Value
- Fall Impact Area
- Total Building Area
- Occupancy Data
- Casualty Rates
- Secondary Damages (Before & After)
- Facility Type for Loss of Services
Initiatives

Initiative mitigation projects are eligible activities for which the benefits are difficult to quantify, such as emergency warning systems and educational campaigns.

In lieu of a BCA, initiative applications should include a statement of cost effectiveness that demonstrates the mitigation value of the proposal.
Application Completion-Post Timeline

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[Diagram of application completion timeline with decision points and timelines for various processes such as eligibility, completeness, and response times from state/tribal and FEMA tasks.]

** At any point in the RFI process, FEMA can formally deny the application (if sufficient information is not provided) and it is no longer necessary to continue the RFI process.
Hazard Mitigation Assistance Guidance

https://www.fema.gov/media-library/assets/documents/103279

Hazard Mitigation Assistance Addendum

www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Addendum_022715

Hazard Mitigation Scope of Work


Hazard Mitigation Benefit Cost Analysis

www.fema.gov/benefit-cost-analysis
Contact Information

• Kentucky Emergency Management, Hazard Mitigation Office
  Geni Jo Brawner, State Hazard Mitigation Officer
  100 Airport Road, Third Floor
  Frankfort, KY 40601
  502-607-5797 or 877-634-8175 phone
geneva.j.brawner.nfg@mail.mil

• Kentucky Emergency Management, Hazard Mitigation Office
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QUESTIONS