Impact of Recent FEMA Policy Changes on Mitigation Projects

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Jordan Williams

June 5, 2014
<table>
<thead>
<tr>
<th>Regions I-X</th>
<th>Federal Insurance and Mitigation Administration (FIMA)</th>
<th>Response and Recovery</th>
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</table>

FEMA Organization
Response and Recovery

Response Directorate

Recovery Directorate

- Individual Assistance (IA)
- Long-Term Community Recovery
- Public Assistance (PA)
Federal Insurance and Mitigation Administration (FIMA)

Risk Analysis Division
- Flood Map Modernization
- National Dam Safety
- Mitigation Planning

Risk Reduction Division
- Hazard Mitigation Assistance (HMA)
- Community Rating System (CRS)
- National Earthquake Hazards Reduction Program (NEHRP)
- Building Sciences

Risk Insurance Division
- National Flood Insurance Program (NFIP)
PUBLIC ASSISTANCE PROGRAM – 406
MITIGATION

DISASTER ASSISTANCE POLICY 9526.1
MARCH 2010
Public Assistance Categories of Work

- **A** • Debris Removal
- **B** • Emergency Protective Measures
- **C** • Roads and Bridges
- **D** • Water Control Facilities
- **E** • Buildings and Equipment
- **F** • Utilities
- **G** • Parks, Recreational, and Other
Disaster Assistance Policy 9526.1

• Includes activities performed in addition to those required for applicable codes and standards
• **Applied on the parts of the facility that were actually damaged by the disaster**
• Must directly reduce the potential of future, similar disaster damages to the eligible facility.
• Must be **cost effective**

“In some instances, an eligible mitigation measure may not be an integral part of the damaged facility. **FEMA will consider these exceptions on a case-by-case basis.**”
Disaster Assistance Policy 9526.1

VII POLICY B. Mitigation measures must be determined to be cost-effective. Any one of the following means may be used to determine cost-effectiveness:

1. Mitigation measures may amount to up to 15% of the total eligible cost of the eligible repair work on a particular project.

2. Certain mitigation measures (see Appendix A) determined cost-effective, as long as the mitigation measure does not exceed 100% of the eligible cost of the eligible repair work on the project.

3. For measures that exceed the above costs, the Grantee or subgrantee must demonstrate through an acceptable benefit/cost analysis methodology that the measure is cost-effective.
Change to Disaster Assistance Policy 9526.1

The benefit/cost analysis will be based on a comparison of the total project cost to the total cost of the following projected benefits:

<table>
<thead>
<tr>
<th>July 30, 2007</th>
<th>March 30, 2010</th>
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<tbody>
<tr>
<td>1) damage to the facility and its damaged contents,</td>
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<tr>
<td>2) emergency protective measures required as a result of that damage, and</td>
<td>2) emergency protective measures required as a result of that damage,</td>
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<tr>
<td>3) temporary facilities required due to the damage.</td>
<td>3) temporary facilities required due to the damage,</td>
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<td>4) loss of function,</td>
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<td>5) casualty (loss of life and injury), and</td>
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<td>6) cost avoidance (damages avoided in the future due to mitigation measures).</td>
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Benefit-Cost Analysis

2012: PROJECT IMPLEMENTATION

1972: 50-yr flood $50,000 damage

1992: 100-yr flood $100,000 damage

2008: 10-yr flood $10,000 damage

1976: 50-yr flood $50,000 damage
Benefits

- Losses over useful life if NO project is implemented
- Losses over useful life if project is implemented

= Benefits
Benefit-Cost Analysis

Benefit-Cost Ratio (BCR)
Typical HMA Benefit Categories

- Avoided Physical Damages
- Avoided Emergency Response Costs
- Avoided Loss-of-Function Impacts
- Avoided Injuries and Casualties

As of July 2007

As of March 2010
Benefits – Avoided Loss-of-Function Impacts

• Occurs when a building that provides a service, a road, a utility, or a business is interrupted by a natural hazard event.

• Benefits depend on:
  – Value of the function
  – Length of interruption

• Could also include “displacement” - costs for temporary rental facilities while damaged building is being repaired or replaced
Benefits – Avoided Loss-of-Function Impacts

Examples:

• Mechanical equipment for hospital damaged in a hurricane.

• The only river crossing washes out in a flood.

• A water line with tens of thousands of customers breaks during an earthquake.
Benefits – Avoided Injuries and Casualties

- Based on Willingness to Pay (WTP) values from Federal Aviation Administration (FAA):
  - Fatal: $6,600,000
  - Hospitalized: $1,088,000
  - Treat and Release: $90,000
  - Self Treat: $12,000

- Typically only counted for Tornado and Earthquake projects due to insufficient warning times

- Based on Federal Aviation Administration, 2008, Revised Department Guidance: Treatment of the Value of Preventing Fatalities and Injuries in Preparing...
Example: 2007 Policy

Flooded Wastewater Treatment Plant:
- 25-yr flood
- Emergency Response Costs: Category B PW - sandbagging at site: $200,000
- Physical Damages: Category F PW - $500,000 damages

Hazard Mitigation Project:
- $400,000 to elevate/protect equipment
- 100-year level of protection (residual risk of $100,000 emergency response costs and $200,000 of physical damages)
- 50-year useful life

Benefits: $345,019
BCR: 0.86
Example: 2010 Policy

Adding Loss-of-Function Benefits:

- Loss of function for plant for 1 day
- 10,000 customers lost service due to physical damage
- FEMA standard value of $41/person/day

Benefits: $571,351
BCR: 1.43
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<th>PUBLIC ASSISTANCE PROGRAM –406 MITIGATION</th>
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<tr>
<td>PUBLIC ASSISTANCE ALTERNATIVE PROCEDURE PILOT PROGRAM GUIDE FOR PERMANENT WORK (428) – MAY 2013</td>
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Section 428 – Alternative Procedures Pilot Program for Permanent Work

- Permanent work pilot includes:
  - Grants Based on Fixed Estimates
  - Consolidated Subgrants
  - Elimination of Alternate Project Penalty
  - Use of Excess Funds
PA Alternative Procedures Pilot Program Guide for Permanent Work

“Under standard PA procedures, 406 mitigation funds cannot be retained on alternate projects or improved projects that involve relocation or facility replacement at same site. In an effort to promote greater flexibility in the use of funds after accepting a fixed grant and allow more resilient mitigation with the alternative procedures authorized under Section 428, FEMA may allow the retention of 406 mitigation funds in the aforementioned circumstances on a case-by-case basis where prevention of future similar damage is proven to be of greater or equal benefit than that which would have been achieved with the approved mitigation scope of work in the agreed upon fixed subgrant(s). “
Example: Vermont Waterbury State Office Complex

• Tropical Storm Irene on August 28th, 2011 caused major flooding along Winooski River
• Over 200 homes and businesses were flooded in Waterbury, VT, including the state office complex and the Vermont State Hospital.
• Historic buildings dating back to 1891.
• Approximately 50 severely mentally ill patients and over 1,500 state employees were displaced
Example: Vermont Waterbury State Office Complex

- Largest capitol project in Vermont State history
- The total project — the new building, power plant and historic core renovations — cost $125 million
  - 406 mitigation funds covered approximately $32 million
  - Insurance was expected to provide approximately $18 million
  - State's share is approximately $75 million
- Approximately $600,000 in HMA Funding (404-HMGP) funding was provided for the demolitions of 4 buildings
<table>
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<td>MITIGATION</td>
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| ADDED EFFICIENCIES AND NEW BENEFITS |
Cost Effectiveness Efficiencies

1) Pre-calculated Benefits for Acquisition and Elevation Projects
   - Applies to acquisition and elevation projects in the SFHA
     - Acquisition projects less than $276,000 are cost effective
     - Elevation projects less than $175,000 are cost effective
   - Multiple structures may be averaged
   - May be adjusted by using industry accepted locality multipliers

2) Substantial Damage Waiver
   - Must be in riverine SFHA
   - Only applies to acquisition
Example: Acquisition and Elevation Projects in Colorado

- Preliminary Data in Colorado:
  - 17 projects, over 100 structures
  - Only 3 structures required traditional BCAs

- May still be beneficial to perform a BCA
Environmental Benefits

As of June 2013 FEMA will allow inclusion of Environmental Benefits:

- Applies to PDM, FMA, and HMGP
- Eligible for acquisition projects only
- Environmental Benefits can only be included when the BCR is greater than 0.75
- For riparian area benefit = $37,493/acre/year
- For green open space benefit = $7,853/acre/year
Additional Benefits in BCA Version 5.0

- FEMA BCA Version 5.0 released April 2014
- New benefits included in software
  - Social Benefits: Cost of mental health treatment and lost productivity
  - Nontraditional Benefits:
    - Volunteer Costs
    - Street maintenance
    - NFIP Administration and Claim Costs
- Additional Changes
  - Updated life safety from 5.8 million to 6.6 million
  - Revised methodology for calculating residential displacement costs
Example: Acquisitions Projects in Colorado

– Project 1:
  • Total Cost: $230,000
  • Benefits included: Building Damage, Contents and Displacement
    – BCR = 0.95
  • Adding social and environmental benefits
    – BCR = 1.05

– Project 2:
  • Total Cost: $400,000
  • Benefits included: Building Damage, Contents, Displacement
    – BCR = 0.80
  • Adding social benefits BCR = 1.20
  • Adding social and environmental benefits BCR = 9.3
Conclusions

- More options and flexibility for mitigation during recovery
- Increased alignment of HMA and PA (406) programs
- Added benefits will increase the number of eligible projects
- Reduce time for review and expedite funding
Questions?