



# Ecosystem Service Benefits in Benefit-Cost Analysis for FEMA's Mitigation Programs Policy

## FEMA Policy FP-108-024-02

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### BACKGROUND

On June 18, 2013, FEMA released the policy, *Considerations of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Assistance Programs* (FP-108-024-01). This policy introduced the allowance of ecosystem service benefits if the Benefit-Cost Ratio (BCR) of acquisition/open space project was 0.75 or greater using traditional risk reduction benefits.

FEMA's policy clarification, *Benefit-Cost Analysis Tools for Drought, Ecosystem Services, and Post-Wildfire Mitigation for Hazard Mitigation Assistance*, issued on May 27, 2016, stated the inclusion of ecosystem service benefits in the Benefit-Cost Analysis (BCA) was no longer limited to only acquisition/open space mitigation activities. The clarification authorized the use of ecosystem service benefits for all mitigation project types when the mitigation project was calculated to have a BCR of 0.75 or greater using traditional risk reduction benefits.

### PURPOSE

This policy provides guidance for using ecosystem service benefits in the evaluation of the cost-effectiveness of mitigation projects funded under FEMA's Hazard Mitigation programs and rescinds FP-108-024-01 and eliminates the BCR 0.75 requirement, allowing consideration of ecosystem service benefits for a project regardless of BCR value. FEMA rescinds that policy in recognition that the natural environment is an important component of a community's resilience strategy.

This update allows for easier inclusion of nature-based solutions into risk-based mitigation projects. Since FEMA does not limit the inclusion of similar categories of benefits in the BCA, removing the BCR value limitation on ecosystem service benefits aligns this policy with FEMA's other BCA guidance and reduces the complexity of Hazard Mitigation Assistance (HMA) programs.

This policy applies to application periods opened on or after the date of signature of this policy for HMA. This policy applies to incidents declared under the Robert T. Stafford Disaster Relief and Emergency Assistance Act on or after the date of signature for Section 406 Public Assistance (PA) Mitigation.



## PRINCIPLES

Alignment of FEMA’s methodologies to assess cost-effectiveness through BCA with Office of Management and Budget (OMB) Circular A-94.

## REQUIREMENTS

### USE OF ECOSYSTEM SERVICE BENEFITS IN BENEFIT-COST ANALYSIS

**Outcome:** Ensure HMA applicants and subapplicants and PA Mitigation recipients and subrecipients understand how ecosystem service benefits can be utilized as part of a FEMA BCA.

1. The primary purpose of FEMA’s Hazard Mitigation programs is to protect lives and/or reduce or eliminate future property and infrastructure damage. FEMA recognizes the natural environment is an important component of a community’s resilience strategy.
2. OMB Circular A-94 states analyses should include comprehensive estimates of the expected benefits and costs to society. The BCA can include ecosystem service benefits for relevant projects regardless of the BCR calculated for the activity using traditional risk reduction benefits.
3. The use of ecosystem service benefits applies to all types of HMA and PA Mitigation projects eligible under FEMA’s mitigation programs and resulting in the restoration or enhancement of the natural environment.
4. Pre-calculated benefits cannot be combined with benefits from a traditional BCR calculated using FEMA’s BCA Toolkit for purposes of aggregation of benefits. The application of “excess” benefits from the pre-calculated structures cannot be applied to the structure(s) analyzed using a traditional BCA or vice versa. Ecosystem service benefits cannot be combined with pre-calculated benefits.
5. The use of ecosystem service benefits is reserved for satisfying the cost-effectiveness requirement for eligible HMA projects and PA Mitigation projects; this policy does not affect other programmatic eligibility requirements for projects proposed through either HMA or PA Mitigation.

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## ADDITIONAL INFORMATION

### REVIEW CYCLE

FEMA will evaluate this policy every four years following the date of publication and will incorporate it into the next version of the *Hazard Mitigation Assistance Guidance*.

### AUTHORITIES

- A. Sections 203 and 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5133, 5170c), as amended
- B. Section 1366 of the National Flood Insurance Act of 1968 (NFIA), as amended
- C. 44 Code of Federal Regulations (CFR) 79.6, 206.226, 206.434
- D. Office of Management and Budget (OMB) Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*

### DEFINITIONS

**Benefit-Cost Analysis (BCA):** A quantitative analysis used to assess the cost-effectiveness of a hazard mitigation measure by comparing the project's avoided future damages to the costs over the project lifetime.

**Benefit-Cost Ratio (BCR):** A numerical expression of the cost-effectiveness of a project calculated as the net present value of total project benefits divided by the net present value of total project costs.

**Ecosystem Service Benefits:** Ecosystem service benefits are the contributions the project provides to an ecosystem that benefits the environment and human populations such as air quality, water filtration, and recreation space.

### QUESTIONS

Direct questions to the FEMA HMA Policy, Tools and Training Branch at [fema-hma-grants-policy@fema.dhs.gov](mailto:fema-hma-grants-policy@fema.dhs.gov).