Pre-Calculated Benefits & Benefit Cost Analysis (BCA)

Tom Hughes , PEMA SHMO

HMA
Hazard Mitigation Assistance

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LYCOMING COUNTY

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Emergency Management
Montour County

HM Application Development Process

-- Benefit Cost Analysis

Pre-Calculated Costs

FEMA BCA Software/Info

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FEMA Pre-Calculated Benefits

To Streamline the grant application process FEMA has released Pre-calculated analyses for several eligible projects:

Acquisitions and Elevations in the Special Flood Hazard Area (SFHA)

Residential Hurricane Wind Retrofits

Non-Residential Hurricane Wind Retrofits

Individual Tornado Safe Rooms

Hazard Mitigation Grant Program Post Wildfire

Acquisition & Elevation of SRL properties not in SFHA

FEMA Pre-Calculated Benefits (Continued)

- The pre-calculated benefits and benchmark costs are not intended to drive actual project costs or to serve as detailed project cost estimates. Individual project cost estimates must be based on industry standards, vendor estimates or other acceptable sources.

- Projects must still meet all other grant requirements. https://www.fema.gov/grants/guidance-tools/benefit-cost-analysis

- FEMA Cost Effectiveness Memo
  - Acquisition/Demolition $360,000 Total Project Cost in the SFHA
  - Elevation of Structures $228,000 Total Project Cost

- Check Pre-Calculations in the 2023 HMA Guidance as well.

FEMA Pre-Calculated Benefits (continued)

- Mitigation/Reconstruction in the Special Flood Hazard Area – Basically, a demo/rebuild, in the same footprint raised $205,000 fed cap
- Residential Hurricane Wind Retrofit – Must be located in a 120 MPH Wind Zone, Has Mitigation Package Type, Roof Replacement & Maximum costs for the project from $13k-$52k
- Non-Residential Hurricane Wind Retrofit – Must be less than 10% of the Building Replacement Value – 2 Options for Doors/Windows openings
- Individual Tornado Safe Room - $4,065.90 for HMGP Disaster Fund FEMA P-320, Taking Shelter From the Storm -,Building a Safe Room For your Home or Small Business, or FEMA P-361, Design and Construction Guidance for Community Safe Rooms -
- Hazard Mitigation Grant Program Post-Fire

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FEMA Pre-Calculated Benefits (continued)

- In 2015 FEMA Released 3 more activities

- Aquifer Storage & Recovery
- Floodplain & Stream Restoration
- Flood Diversion & Storage (Known as Climate Resilient Mitigation Actions or CRMA)
- Hazard Mitigation Grant Program Post-Fire Mitigation Actions

- So, FEMA then released the following Benefit-Cost Analysis (BCA) Toolkit updates to cover:

- Aquifer Storage and Recovery BCA Tool
- Ecosystem Service Benefits Calculator
- Supplemental BCA Guidance for Floodwater Diversion & Storage Projects
- Supplemental BCA Guidance for Floodplain and Stream Restoration Projects
- Pre-Calculated benefits for Post-Wildfire & Stream Restoration Projects

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FEMA Substantially Damage Determination

- The decision about a structure being “substantially damaged” is made at the local government level, generally by a building official or floodplain manager.

- Substantial damage applies to a structure in a Special Flood Hazard Area (SFHA) – or a1-percent-annual-chance floodplain – for which the total cost of repairs is 50 percent or more of the structure’s market value before the disaster occurred, **regardless of the cause of damage.**

- This percentage could vary among jurisdictions, however, must not be below NFIP standards. If the substantial damage calculation is to be used for the NFIP benefit, Increased Cost of Compliance, the qualifying damage must be from flood only and the community’s declaration must state so.

FEMA Substantially Damage Determination

For example, if a structure's market value before the damage was $200,000 and repairs are estimated to cost $120,000, that structure is substantially damaged. Land value is excluded from the determination.

- If a building in a floodplain is determined by the local official to be substantially damaged, it must be brought into compliance with local floodplain management regulations. Owners may decide to:
  - Elevate their structures, or change them in some other way to comply with those local floodplain regulations and avoid future losses;
  - Relocate or demolish the structure; or,
  - Flood proof a non-residential structure.
- **PEMA/FEMA can use this determination/documentation for a BCR of = 1.0**

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Imminent Danger

FEMA has determined that the acquisition and relocation or demolition of structures (residential or nonresidential) subject to sinkhole hazards is an eligible activity under the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation (PDM) program

- To be eligible for funding, the Applicant must submit supporting documentation that the cause of structural damage is sinkhole-related and at least partially due to a natural geologic process;
- The documentation must be prepared and signed by an appropriately registered, certified, or licensed state or local professional engineer, architect, landscape architect, or geologist;
- Documentation of disturbances around the structure may also be included; however, the primary eligibility factor must be evident from structural damage from a sinkhole;
- All other applicable eligibility considerations described in the Hazard Mitigation Assistance Guidance (dated February 27, 2015) also apply.

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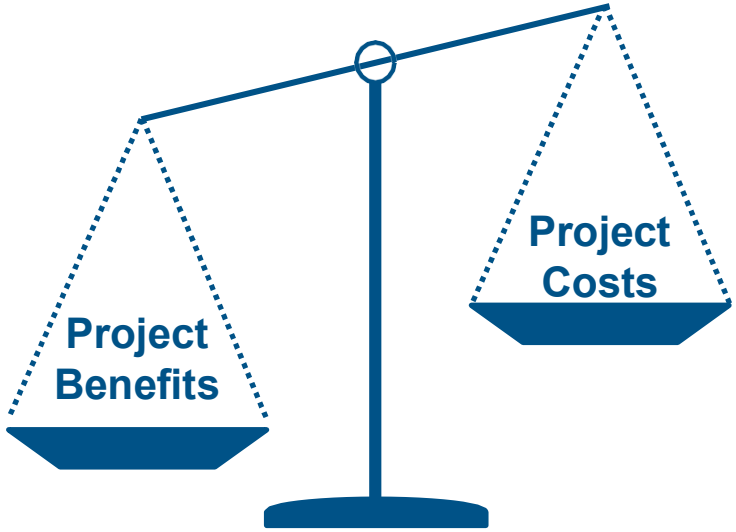
Benefit-Cost Analysis (BCA)

BASIC CONCEPTS

What is Benefit-Cost Analysis (BCA)?

Is a project "worth it"?

Cost-effective



The process of quantifying the benefits of a project, and comparing it to its costs.

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Cost Effectiveness

If benefits of a project are greater than costs, then it is considered cost-effective.

The BCA calculates the Benefit-Cost Ratio (BCR).

$$\frac{\text{Benefits}}{\text{Costs}} = \text{BCR}$$

If BCR >=1.0 then the project is cost-effective.

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Calculation of Benefits in Mitigation

The benefits are the future costs or losses that can be avoided by completing a mitigation project.

$$\frac{\textit{Benefits}}{\textit{Costs}} = \textit{BCR}$$

Benefits* = *Costs Before Mitigation – Costs After Mitigation

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Reasons to do a BCA

Cost-Effectiveness
Determine if a project is a good investment for the public compared to the status quo.

Most cost-effective alternative
BCAs can help set priorities among projects.

Powerful tool for "selling" good mitigation projects to the communities involved.

Why BCA is needed for Mitigation?

Required component for most HMA projects

Required for some 406 (Public Assistance) mitigation projects

Helps communities make informed decisions about their risks and money and prioritize projects

FEMA's cost-effectiveness requirement

Legislative branch (Statutory):

Robert T. Stafford Disaster Relief and Emergency Assistance Act

Executive branch (Regulatory):

Title 44 Code of Federal Regulations (44 CFR)

Office of Management and Budget (OMB) Circular A-94

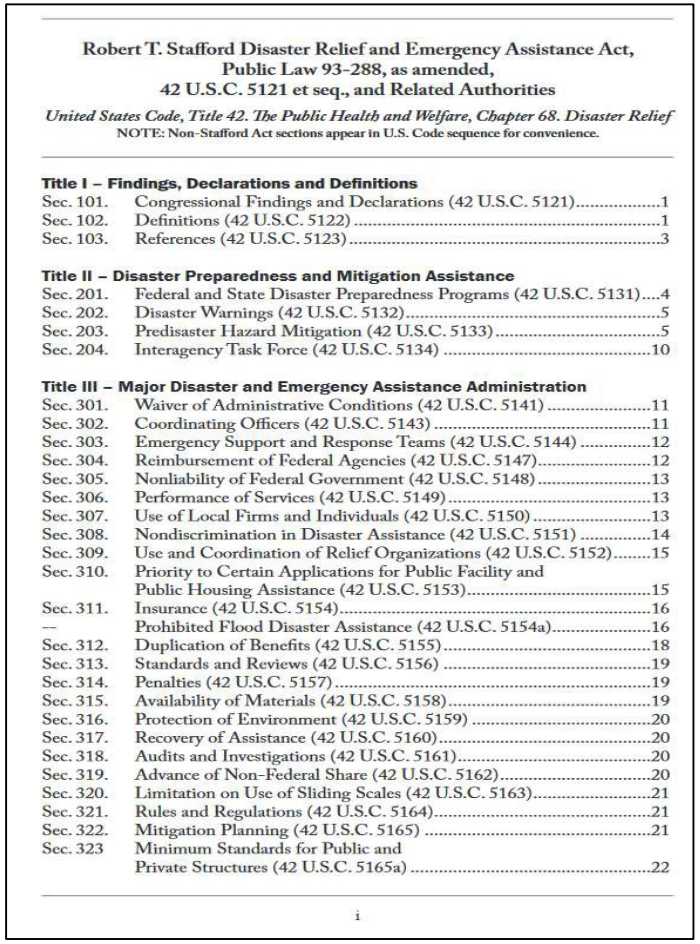
The Stafford Act

Section 203 (PDM):

"The President may establish a program to provide technical and financial assistance to States and local governments to assist in the implementation of predisaster hazard mitigation measures that are cost-effective…"

Section 404 (HMGP):

"The President may contribute up to 75 percent of the cost of hazard mitigation measures which the President has determined are cost-effective..."



Robert T. Stafford Disaster Relief and Emergency Assistance Act,
Public Law 93-288, as amended,
42 U.S.C. 5121 et seq., and Related Authorities

United States Code, Title 42. The Public Health and Welfare, Chapter 68. Disaster Relief
NOTE: Non-Stafford Act sections appear in U.S. Code sequence for convenience.

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[Link]

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Code of Federal Regulations 44 CFR

44 CFR

Parts 78 (Flood Mitigation Assistance)
and 206 Subpart N (HMGP)

state that:

cost-effectiveness is a requirement of receiving mitigation grant funds.

Link

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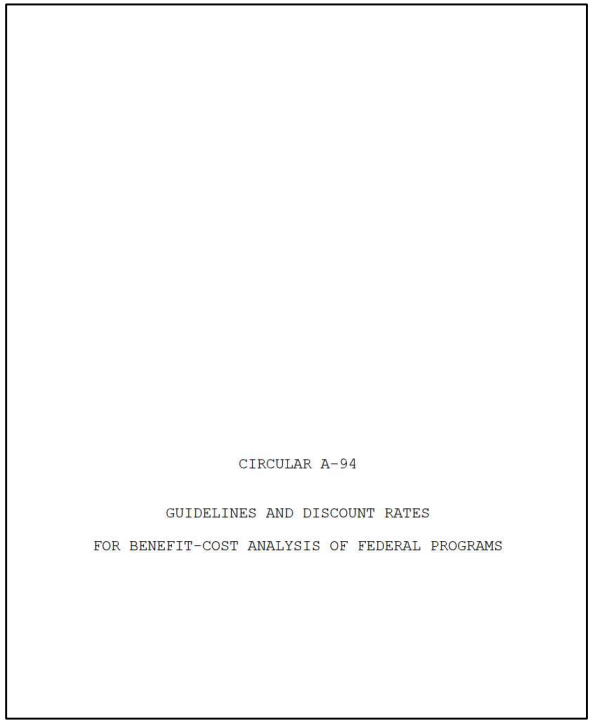
OMB Circular A-94

Purpose is to "promote efficient resource allocation through well-informed decision-making by the Federal Government."

Circular A-94 provides guidance on how to perform BCA.

FEMA's BCA Toolkit, was developed in accordance with the guidance in Circular A-94 to simplify the BCA process.


CIRCULAR A-94

GUIDELINES AND DISCOUNT RATES

FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS

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Do BCAs work?

Loss Avoidance Studies after a disaster, calculate how much was avoided in damages through the projects and show cost-effectiveness.

Nationwide, mitigation projects save $6 for every $1 invested.

https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report

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What types of projects require a FEMA BCA?

Almost ALL mitigation projects require a BCA.

Exceptions:

1. **Projects for which benefits & costs can't be quantified:**
   - **Mitigation planning**
   - **Public education and outreach**
2. **Projects that qualify for "pre-calculated benefits" don't require a standalone BCA.**

FEMA's Pre-calculated Benefits

Project Type	Maximum Project Cost	Notes
Acquisitions in SFHA	$360,000/property	Property must be in SFHA. See memo for details.
Elevations in SFHA	$228,000/property	Property must be in SFHA. See memo for details.
Residential hurricane wind retrofits	Ranges from $13,153-$52,018/property	Only certain states and counties eligible. Maximum cost depends on type of work being performed; see Job Aid for details.
Non-residential hurricane wind retrofits	10% of Building Replacement Value (BRV)	See memo for details.
Residential tornado safe rooms	Ranges from $3,936-$20,067/property	Maximum cost depends on state; see Job Aid for details.
Post-wildfire mitigation	$5,250/acre	See Policy Clarification for details.

What ARE considered Benefits

- Avoided physical damage
- Loss of service/function
- Displacement costs
- Social benefits
- Environmental benefits
- Emergency management (debris removal & volunteers)
- NFIP administration costs
- Injury or death

What are NOT considered benefits

Subjective or non-quantifiable:

- Ease of project
- Aesthetic value of project

Not impacted by the project.

Indirect benefits:

- Changes in gross regional economic product, incomes, or employment
- Avoided criminal justice system costs for disaster-related crime

Duplication of Benefits & Programs

Duplication of benefits:

- Counting same benefits in two different projects.
- Counting same benefits on multiple structures in your project.

Duplication of programs:

- Project falls under another federal program.

What are considered costs?

Construction costs

Other project-related costs such as title searches, permits, etc.

Maintenance costs

Any in-kind contributions or match from the recipient or subrecipient

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What are not considered costs?

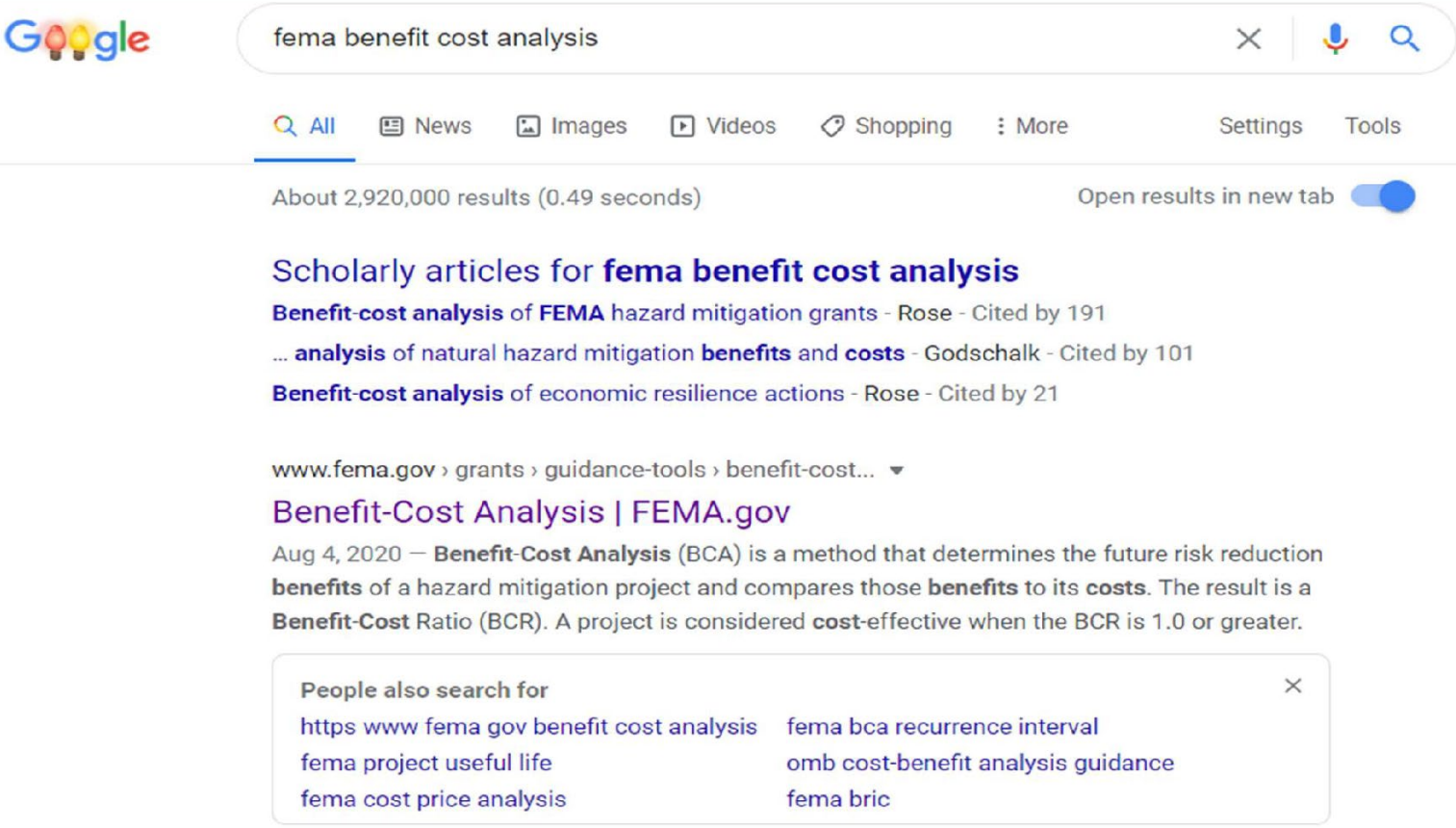
Reduced tax base

Indirect economic losses

Transfer payments: insurance premiums

(including flood insurance)

FEMA BCA Toolkit



Benefit-Cost Analysis

Benefit-Cost Analysis (BCA) is a method that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs. The result is a Benefit-Cost Ratio (BCR). A project is considered cost-effective when the BCR is 1.0 or greater. Applicants and subapplicants must use FEMA-approved methodologies and tools—such as the BCA Toolkit—to demonstrate the cost-effectiveness of their projects.

Benefit-Cost Analysis Toolkit

To help complete an analysis within the required guidelines, you must use the BCA Toolkit, which is a calculator developed using FEMA-approved methodologies and tools to show the cost-effectiveness of your projects. Do your BCA early in the project development process to make sure you will meet the cost-effectiveness eligibility requirement.

Download the BCA Toolkit Version 6.0

Installation Instructions

Release Notes July 2020

Guidance and Tools

Benefit-Cost Analysis

Training Materials

Procurement Under Grants

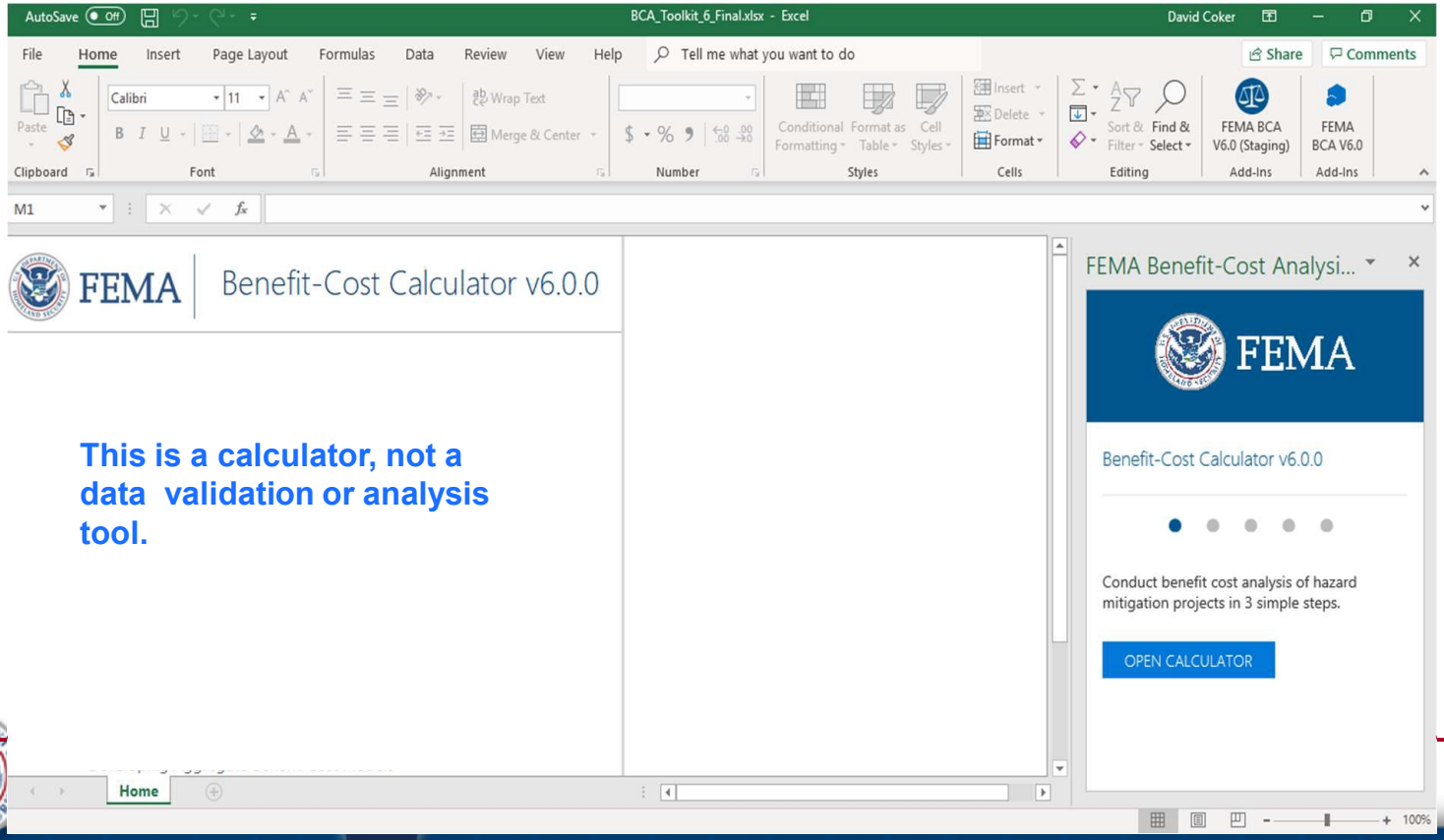
Environmental & Historic Preservation Guidance

FEMA Grants Outcomes (FEMA GO)

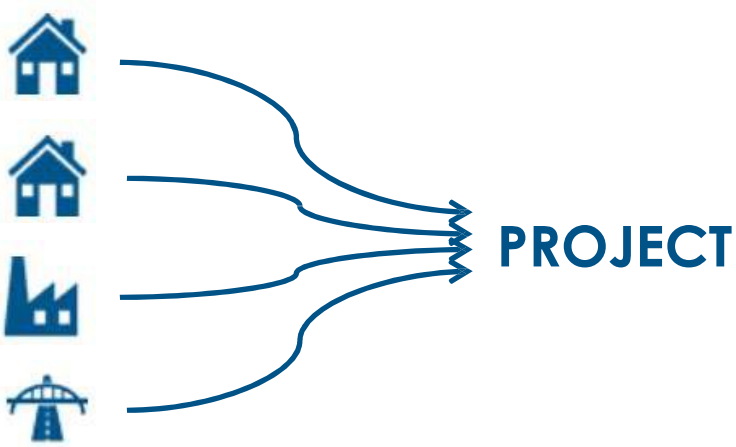
Non-Disaster Grants Management System

FEMA's BCA Toolkit

An Excel-based tool developed in accordance with guidelines in OMB Circular A-94, to calculate a BCR.



FEMA's BCA Toolkit Calculations



What do I need to start my BCA?

- Project title
- Property location
- Property structure type
- Hazard type
- Mitigation action type
- Hazard data, damage history, or expected damages estimated by a qualified professional
- Project cost estimate
- Project useful life

Frequency & Damage Relationship

Modeled Damages :

- Location-specific hazard data, such as Flood Insurance Study (FIS).
- Hurricane wind, tornado or hurricane safe room, wildfire, drought, or seismic building mitigation project.

Historical Damages:

- Damage history for the property.

Professional Expected Damages:

- Expected damages estimated by a qualified professional.

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FEMA's BCA Helpline

- Phone: 1-855-540-6744, 9 am-5 pm (EST) M-F
- Email: bchelpline@fema.dhs.gov
- BC Helpline staff can answer questions and provide guidance but cannot perform or review BCAs.

FEMA's BCA is Cool

Download the BCA Toolkit:

www.fema.gov/benefit-cost-analysis

Questions, further training?

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Project Types Discussion

Typically Eligible HMA Projects

- Property Acquisition and Structure Demolition
- Property Acquisition and Structure Relocation
- Structure Elevation
- Mitigation Reconstruction
- Dry Floodproofing of Historic Residential Structures
- Dry Floodproofing of Non-residential Structures
- Localized Flood Risk Reduction Projects
- Structural Retrofitting of Existing Buildings
- Non-Structural Retrofitting of Existing Buildings & Facilities
- Infrastructure Retrofit
- Soil Stabilization
- Project Scoping – Individual Home and Community Flood







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Homework Assignment Discussion

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Thank You!

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