How To Submit A Successful Subapplication

A deep dive training into how to develop a successful subapplication for the Hazard Mitigation Programs, discussing best practices in each of the elements of the subapplication including Environmental Historic Preservation (EHP), refining the budget narrative, and more.

INTRODUCTIONS

- **Moderator: Concepcion (Conchi) Chavez**
- **Presenter(s):**
- Ella Lockhart, Cal OES
- Kyle Tyson, Cal OES
- Ed Edsten, Cal OES
- Andrea Harvey, FEMA Region 9
- Lisa Holm, FEMA Region 9
- Jakob Crockett, FEMA Region 9
- Justin Killingsworth, Hagerty
- Mikaela Shannon, Hagerty
- Tyler Tinsey, Hagerty

Building Successful Subapplications

Cal OES – Resilience Branch
Hazard Mitigation Summit

December 6, 2024

Cal OES HMA Website

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Agenda:

HMA Eligibility

Notice of Interest (NOI): A Screening Tool

Subapplication Development: Best Practices

Social Vulnerability Index (SVI): Applications and Impact

Environmental Historic Preservation (EHP): Tips from FEMA

Benefit Cost Analysis (BCA): Defining Cost Effectiveness

Hazard Mitigation Planning

HMPs provide entities the ability to receive Hazard Mitigation Assistance (HMA) grant funding, including:

- Hazard Mitigation Grant Program (HMGP);
- Hazard Mitigation Grant Program Post-Fire (HMGP-PF);
- Building Resilient Infrastructure and Communities (BRIC);
- Flood Mitigation Assistance (FMA);
- Flood Mitigation Assistance Swift Current (Swift Current);
- Congressionally Directed Pre-Disaster Mitigation (PDM-C); and
- Safeguarding Tomorrow RLF funds.

HMPs must be updated, receive FEMA approval, and be locally adopted every 5 years to remain eligible.

HMPs may be used as a starting point for critical addendums or other community plans, such as climate action plans or fire protection plans.

FEMA Assistance Program	HMP Required for a State/Tribal Applicant?	HMP Required for a Tribal/Local Sub-Applicant?
Individual Assistance (IA)	No	No
Public Assistance (PA) Categories A and B (e.g., debris removal, emergency protective measures)	No	No
Public Assistance (PA) Categories C through G (e.g., repairs to damaged infrastructure, publicly owned buildings)	Yes	No
Fire Mitigation Assistance Grants (FMAG)	Yes	No
Hazard Mitigation Grant Program Post Fire	Yes	Yes
Hazard Mitigation Grant Program (HMGP) Planning Grant	Yes+	No
Hazard Mitigation Grant Program (HMGP) Project Grant	Yes+	Yes++
Building Resilient Infrastructure and Communities (BRIC) Planning Grant	Yes*	No
Building Resilient Infrastructure and Communities (BRIC) Project Grant	Yes*	Yes**
Safeguarding Tomorrow RLF Program	Yes	Yes

Eligible Mitigation Activity Types

New Plan Creation and Plan Updates (C&CB)	A planning subaward for a new or updated mitigation plan must result in a mitigation plan adopted by the jurisdiction(s) and approved by FEMA, consistent with the regulatory requirements in 44 CFR Part 201 and 44 CFR Part 206 and applicable mitigation planning regulations and policy. *For FMA, a plan must provide for reduction of flood losses to structures for which National Flood Insurance Program (NFIP) coverage is available. Additionally, FEMA will only provide assistance if the community seeking the assistance is participating in the NFIP.*
Planning-Related Activities (C&CB)	Assistance for planning-related activities provides flexibility to further reduce risk and integrate hazard mitigation and resilience principles into other types of ongoing planning and development activities, such as making land use ordinances and building codes more disaster resilient. All planning and planning-related activities must result in a clearly defined product or products.
Project Scoping / Advance Assistance (C&CB)	Project scoping/advance assistance activities are designed to obtain data to complete HMA subapplications in a timely manner, resulting in either an improvement in the capability to identify appropriate mitigation projects or in the development of an application-ready mitigation project.
Technical Assistance (Non-Financial) (C&CB)	**Non-Financial:** Non-Financial Technical Assistance, only available under BRIC, allows communities to support mitigation outcomes to improve resilience to natural hazards, sustain successful mitigation programs, submit high-quality applications, and implement innovative activities to reduce risk. Through non-financial Direct Technical Assistance, FEMA will provide support for both activity-specific needs and community-wide resilience needs.

Eligible Mitigation Activity Types

Partnerships (C&CB)	Partnership activities include coordination with a broad network of partners that include (but are not limited to) all levels of government, the private sector, private nonprofits, and educational institutions to drive investments in mitigation projects, build capability through training and technical assistance, plan for increased resilience, promote mitigation activities, and share information.
Codes and Standards (C&CB)	Projects involving codes and standards—available under HMGP, HMGP-PF, and BRIC—include the development, adoption, evaluation, enhancement, and enforcement of building codes and standards. Eligible activities under these three programs are generally the same, but assistance restrictions (i.e., the ways in which these activities can be funded) differ.
Mitigation Projects	Construction mitigation projects that reduce or eliminate long-term risk to people and property from future disasters. 5% activities such as sirens and early warning systems are eligible for funding, typically not requiring a BCA, just a cost-narrative.

2023 HMA Program and Policy Guide

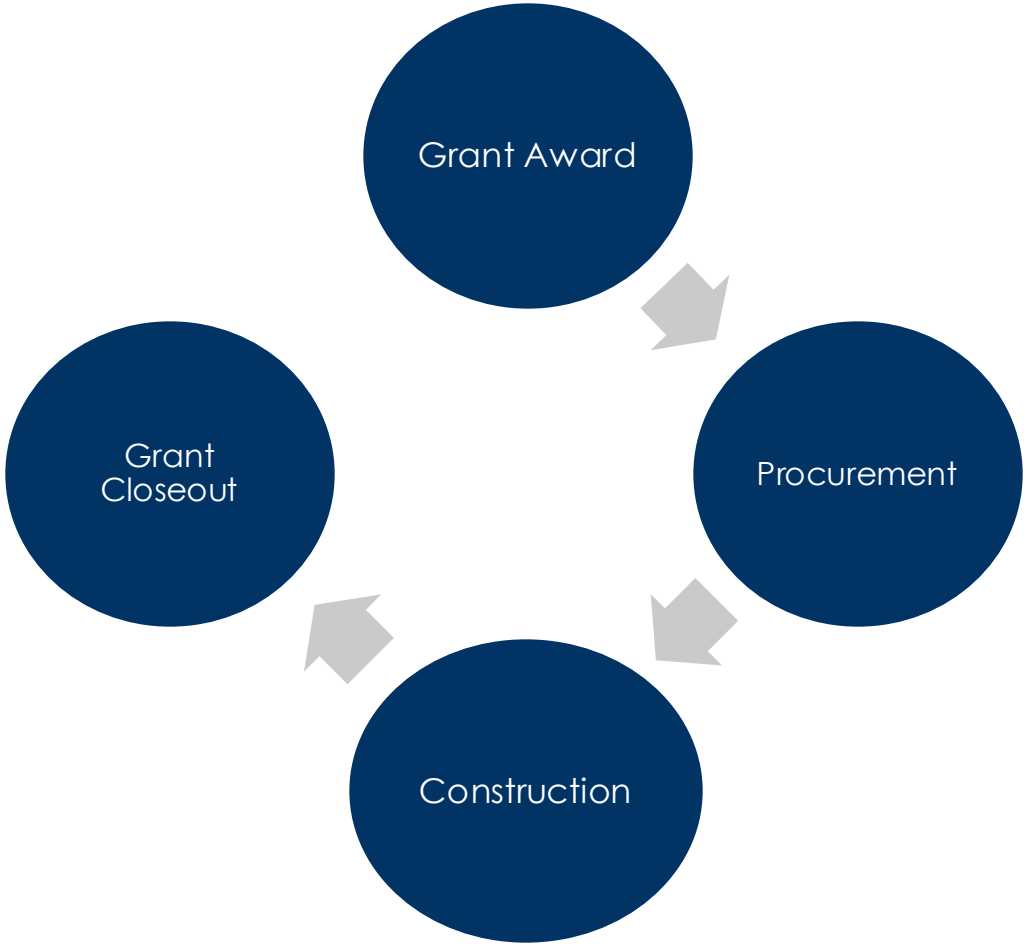
Review Part(s) 4, 11, 12, and 13 for additional information on the subapplication types and eligible activities.

Key Point:

Mitigation Project Examples

- Wildfire
  - *Defensible Space*
  - *Ignition-Resistant Construction*
  - *Hazardous Fuels Reduction*
- Flood
  - *Acquisition/Elevation*
  - *Flood Risk Reduction*
  - *Floodproofing*
- Seismic
  - *Structural Retrofit*
  - *Non-Structural Retrofit*
- Drought
  - *Aquifer Recharge, Storage, and Recovery*
- Multi-Hazard
  - *Energy Resilience*
  - *Warning System*

"Shovel-Ready" Projects



Phased Project (Phase I and Phase II)

Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Eligible Mitigation Activity Components

All HMA activities **MUST** demonstrate the following:

1. Natural Hazard Risk Reduction
2. Level of Protection Increase
3. Independent Mitigation Solution
4. Technical Feasibility
5. Cost-Effectiveness
6. Environmental and Historic Preservation (EHP) Compliance

Agenda:

HMA Eligibility

Notice of Interest (NOI): A Screening Tool

Subapplication Development: Best Practices

Social Vulnerability Index (SVI): Applications and Impact

Environmental Historic Preservation (EHP): Tips from FEMA

Benefit Cost Analysis (BCA): Defining Cost Effectiveness

Goals of NOI Submission

- Time and resource management
- Screening tool for eligibility and competitiveness
- Early intervention to flag potential issues
- Determine if potential projects are aligned with FEMA and State funding priorities for mitigation
- All steps occur in the Engage Cal OES Portal

NOI Submission

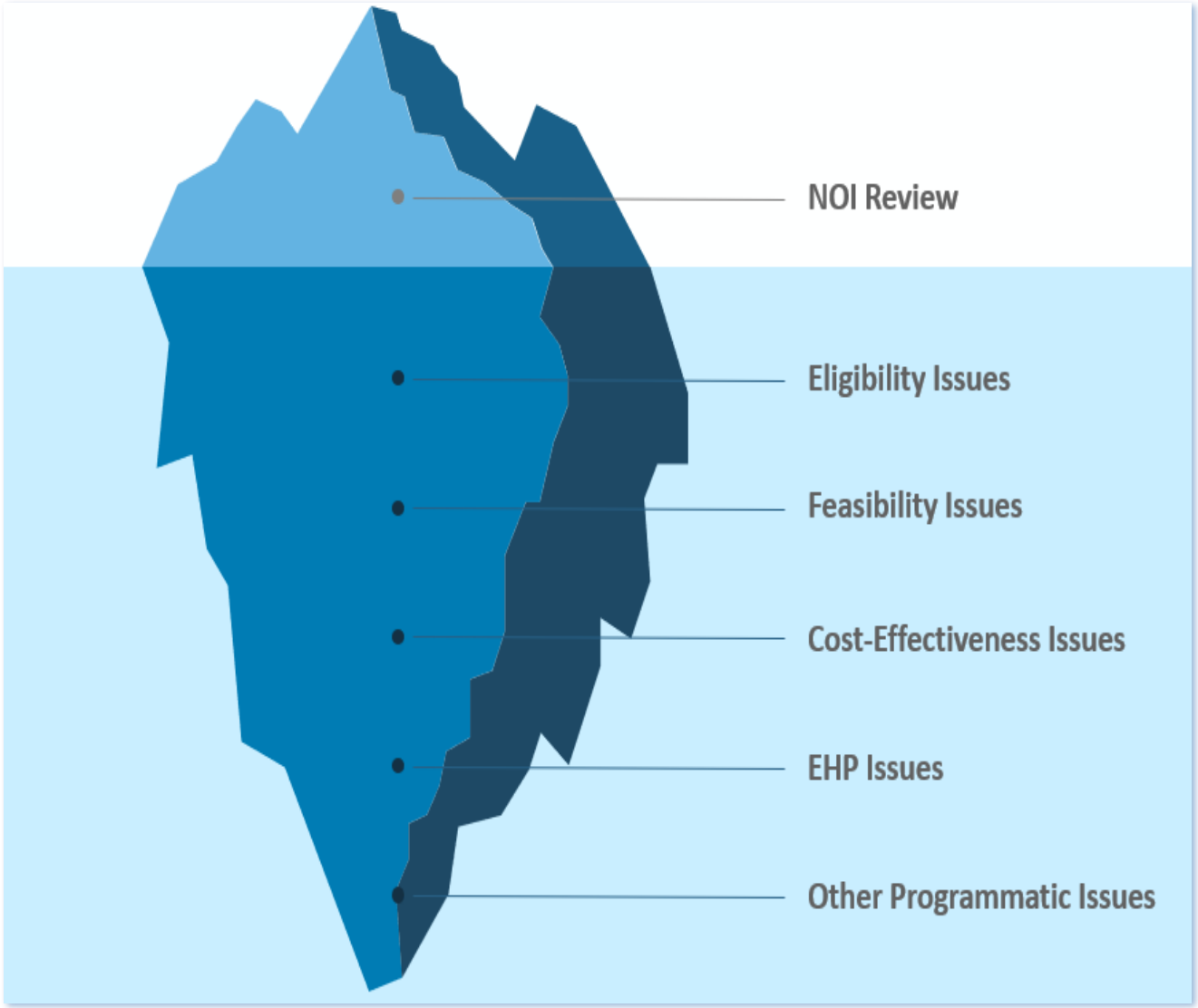
NOI Approval

Subapplication Development

Subapplication Submission

NOIs are Triaging Tools

They are not meant to be full eligibility, feasibility, and cost-effectiveness screening but intended to help the subapplicant determine if the project meets the minimum eligibility criteria and raise potential issues **EARLY** in the process (rather than after subapplication development and subapplication submission)



Project Scoping / Technical Assistance

Identification of the Problem

- Problem statement and history of hazards
- What is the hazard and risk?
- How long has it been occurring?
- What are the damages and loss of function/service?
- Note quantitative and qualitative losses
- Future conditions (SLR, climate impacts, demographic changes, etc.)
- How is climate change worsening the problem?

Potential Projects/Solutions

- Include:
  - Hazard Mitigation Planning
  - Planning Studies
  - Feasibility Studies
  - Capital Project Plans
  - New budgetary need requests
  - Comprehensive stakeholder engagement for project identification
- Do you know if solution is feasible?
- What may be the challenges with implementation?

Technical Assistance (TA)

- Assistance with project scoping
- How to quickly identify projects that may be eligible, feasibility, cost-effective, and competitive
- Goal is to identify projects that will be competitive for the funding opportunity.
- **Focus time and resources on good, fundable projects**

Additional Points:

- Ensure detailed Scope of Work (SoW)
  - Location
  - Purpose
  - Approach
  - Feasibility
  - Expected outcomes
  - Benefits of the activity
- Cost estimate and narrative describing the anticipated costs
- Data collection for cost-effectiveness screening
- A FEMA credible BCA is key. If the project is preliminary, phase the project and include a rerun of the BCA as a Phase I deliverable

Requesting Assistance

Contact the Cal OES **HMA Inbox** to request project scoping or technical assistance support.

Cal OES GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Agenda:

HMA Eligibility

Notice of Interest (NOI): A Screening Tool

Subapplication Development: Best Practices

Social Vulnerability Index (SVI): Applications and Impact

Environmental Historic Preservation (EHP): Tips from FEMA

Benefit Cost Analysis (BCA): Defining Cost Effectiveness

Good Projects vs. Good Subapplications

A project may be innovative, reduce risk, eligible, feasible, and cost effective, but if the subapplication is **not organized** in a way to tell the story well, the good project may go **unnoticed**

- A good subapplication is **clear and concise**
- A good subapplication includes the **HMA triad**
  - The scope, schedule, and budget match and reflect key concepts and deliverables
- A good subapplication is **well documented**
- A good subapplication will reflect (and document) the **competitiveness criteria** as prescribed in the Notice of Funding Opportunity (NOFO)

Identify your level of protection increase clearly

- Difference between repair and mitigation

Explain how your project is an independent mitigation solution

- Not dependent on other projects or funding sources

Remember

Good subapplications make the case for why it is **deserving** of this highly competitive and limited funding stream. Why is this project the best **investment** for **FEMA**?

Subapplication Tips

Less can be more…

- Don't overexplain (be **clear and concise**)
- Don't complete all optional fields if you are reaching
- Cut out superfluous language

Word choice / language matters

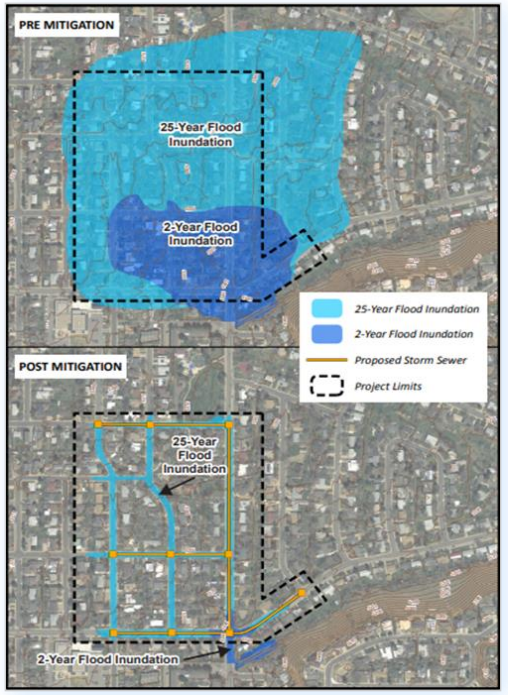
- Don't describe project as fixing a code violation or being non-compliant with current codes
- Don't describe project as old and outliving its project useful life (aging infrastructure)
- Use FEMA friendly language
- Refer NOFO –Technical and Qualitative Evaluation Criteria *BRIC Only
- Strengthening, hardening, resilient, level of protection increase, etc.

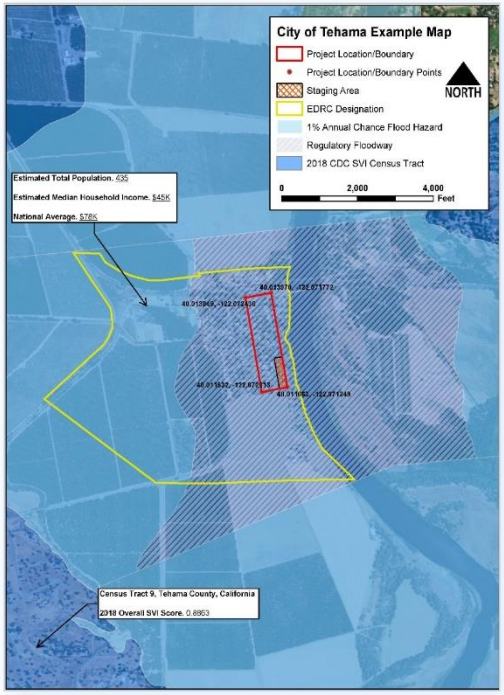
Organize and complete the subapplication knowing that the reviewer may not know the subject matter and may have many subapplications to review

- Make the review process easy for them!
- Explain the problem and hazard
- Sensible file names
  - **Subapplication Tab-[Attachment #]-[File Name]-[version#]**
    - *Community-Attachment 4-Damage History-v1*
- Note where the reviewer should look for material (please refer to file titled X to find a more in-depth explanation of the budget)

General Subapplication Best Practices

- ✓ Reference minimum design criteria and ensure scope of work (SOW) is consistent with criteria
- ✓ If engineering/surveying documents are available, include stamped/sealed reports, plans, figures and/or data
- ✓ If preliminary design not started, describe performance-based design measures, level of protection desired and expected benefitting area
  - *Example: Project will be designed to [describe level of protection, XYZ industry standard]. Upon completion of project, the benefitting area will be to protect [ABC].*
- ✓ Consider program priorities, Notice of Funding Opportunity (NOFO)
- ✓ Consider that mitigation efforts that address multiple hazards may provide greater benefits
- ✓ Leverage opportunities to incorporate nature-based solutions into project scope of work (SOW)
- ✓ Consider opportunities to incorporate community wide mitigation

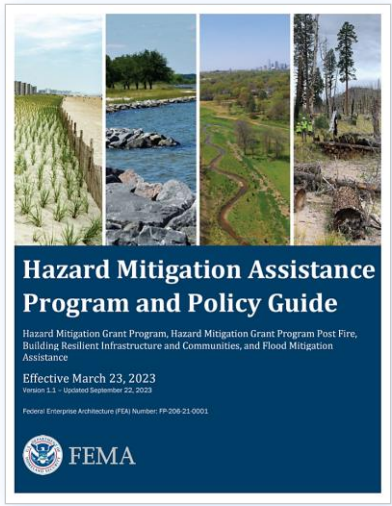


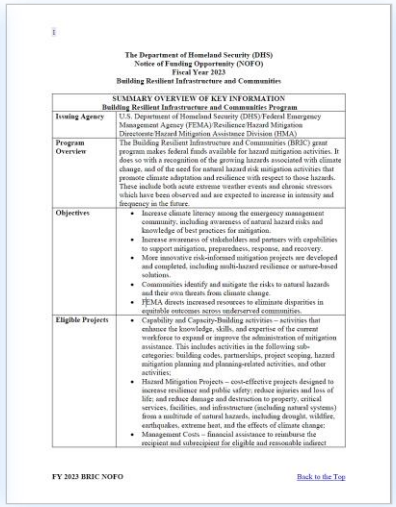


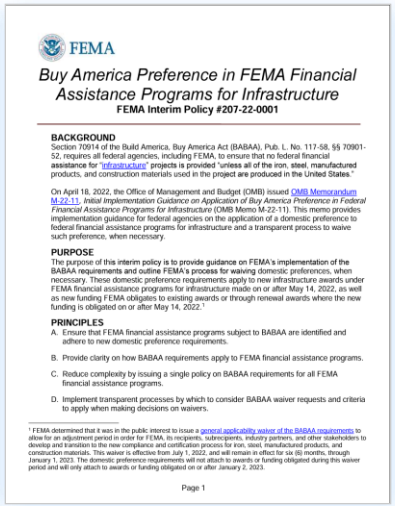
Common Subapplication Pitfalls

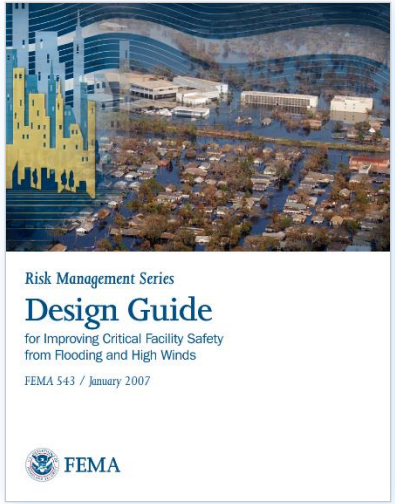
- **Unclear or incomplete scope of work (SOW)**
  - Project description does not clearly state the problem the project is attempting to mitigate
  - SOW conflicts with industry standards

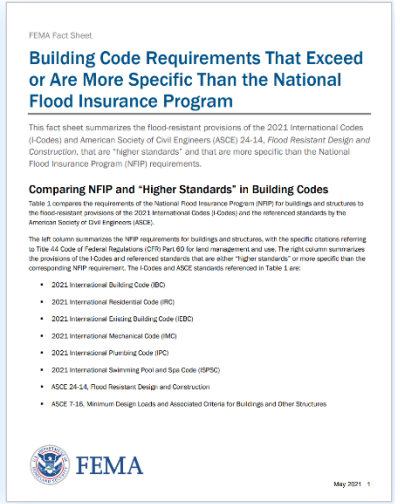
- **Unclear conformance with program requirements**
  - Compliance with Hazard Mitigation Assistance (HMA) Program and Policy Guide
  - Compliance with Building Resilient Infrastructure and Communities (BRIC) program requirements
  - Eligible/ineligible costs
  - Project does not conform with minimum design standards

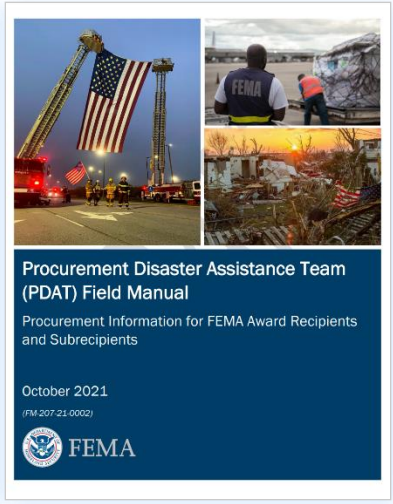












Common Subapplication Pitfalls – Continued

Insufficient documentation

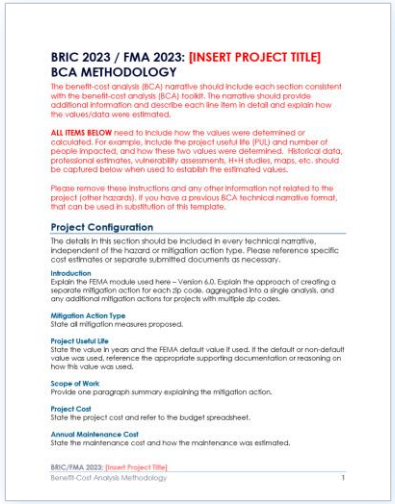
- Lack of technical data and/or preliminary engineering design
- Unclear level of protection
- Assumptions not clearly supported

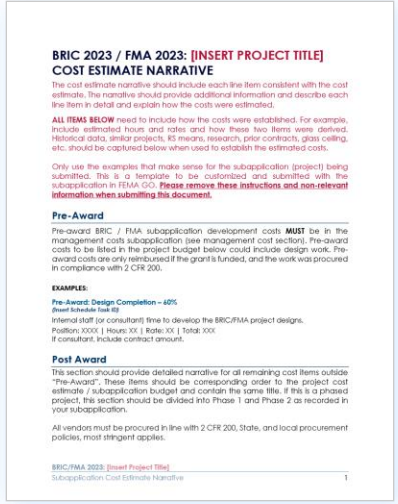
Application inconsistencies

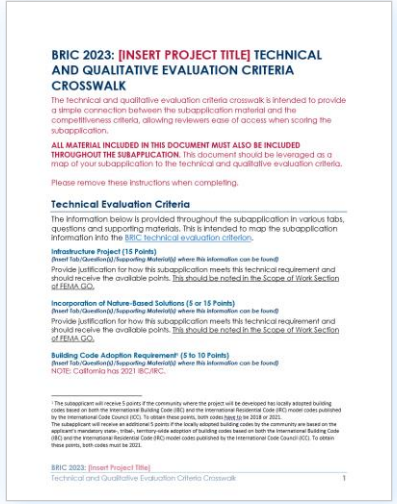
- Conflicts within subapplication sections
- Conflicts between subapplication and Benefit Cost Analysis (BCA)

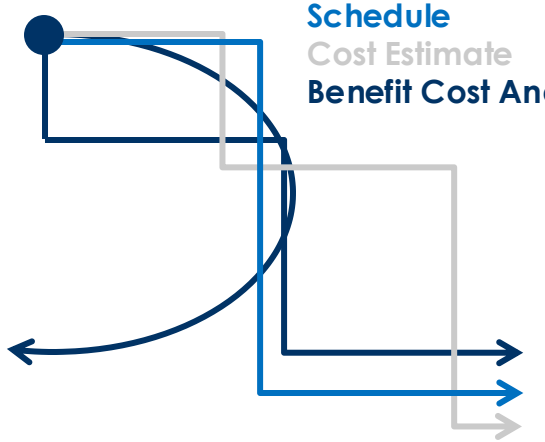
Cost estimate issues

- Incomplete, unreasonable, or unsupported


BRIC 2023 / FMA 2023: [INSERT PROJECT TITLE]
BCA METHODOLOGY


BRIC 2023 / FMA 2023: [INSERT PROJECT TITLE]
COST ESTIMATE NARRATIVE


BRIC 2023: [INSERT PROJECT TITLE] TECHNICAL AND QUALITATIVE EVALUATION CRITERIA CROSSWALK



Eligibility and Common Reasons for Follow-Up

Common Eligibility Issues

- Subapplication type is incorrect
- Period of Performance (PoP) is missing grant closeout
- There is a Duplication of Program (DoP)
- Work has started
- Not an independent mitigation solution
- Local match amount is incorrect, or local match source is not eligible
- Mitigation plan is expired or near expiring

Common RFI Triggers

- Project is not compliant with code
- The problem and mitigation solution are not aligned
- One application lumps several different project types together
- Scope of work is vague
- Scope of work conflicts with work schedule, cost estimate/narrative, or BCA
- Budget narrative lacks detail or supporting documentation
- Sub-applicant is not responsible for Operations and Maintenance (O & M)

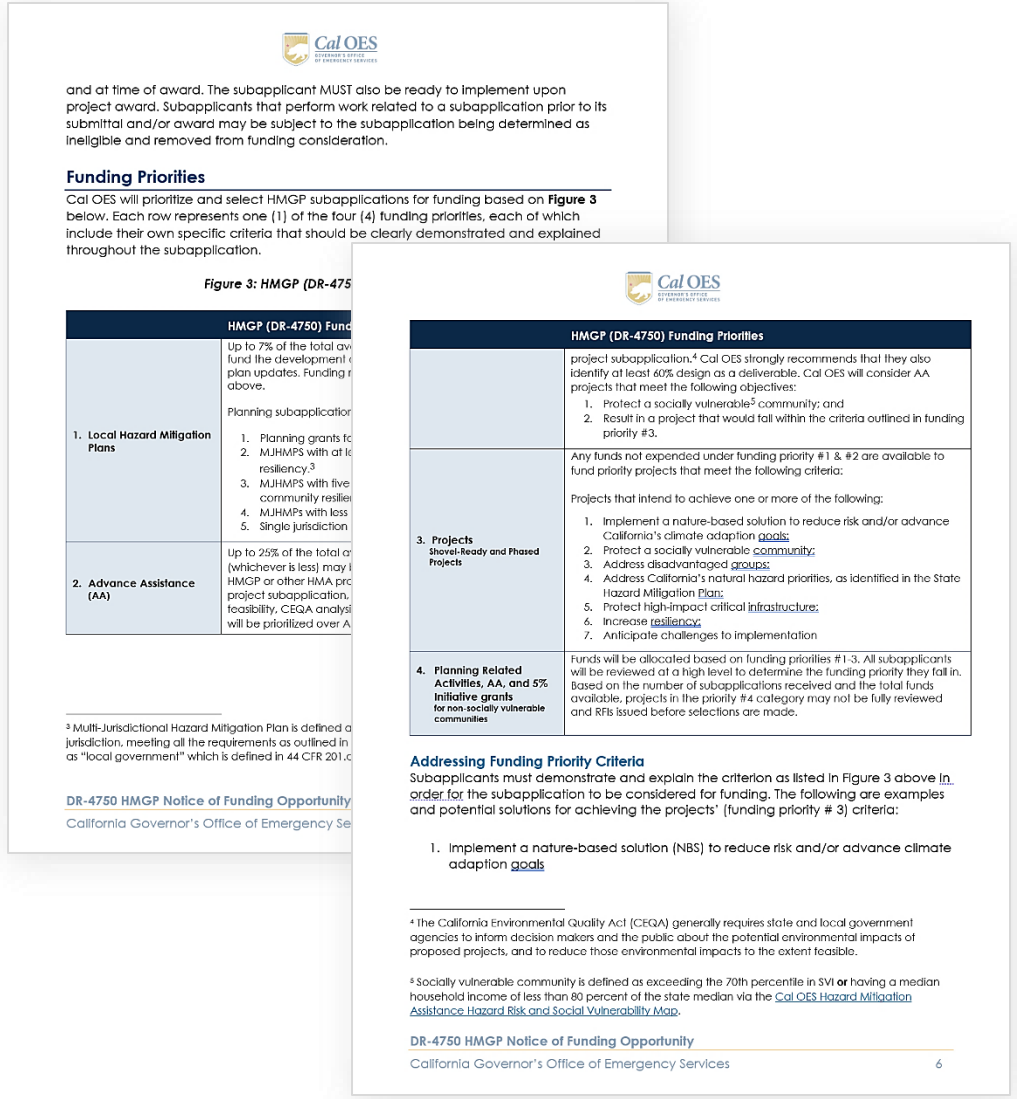
FEMA

NOFO Funding Priority Overview

- The priorities and criteria demonstrate how Cal OES intends to review and select subapplications for funding consideration, as available funding permits.
- Different subapplication types such as Advance Assistance, Planning, 5% Initiatives and Projects priorities are outlined.

Common NOFO funding priorities include:

- Implement a nature-based solution to reduce risk and/or advance climate adaptation goals;
- Protect a socially vulnerable community;
- Address disadvantaged groups;
- Address California's natural hazard priorities, as identified in the State Hazard Mitigation Plan;
- Protect high-impact critical infrastructure
- Increase resiliency;
- Anticipate challenges to implementation
- Subapplication types



Cal OES

and at time of award. The subapplicant MUST also be ready to implement upon project award. Subapplicants that perform work related to a subapplication prior to its submittal and/or award may be subject to the subapplication being determined as ineligible and removed from funding consideration.

Funding Priorities

Cal OES will prioritize and select HMGP subapplications for funding based on **Figure 3** below. Each row represents one (1) of the four (4) funding priorities, each of which include their own specific criteria that should be clearly demonstrated and explained throughout the subapplication.

Figure 3: HMGP (DR-475

HMGP (DR-4750) Fund	
1. Local Hazard Mitigation Plans	Up to 7% of the total av fund the development plan updates. Funding above. Planning subapplication 1. Planning grants fo 2. MJHMPS with at le resiliency.[3] 3. MJHMPS with five community resilie 4. MJHMPs with less 5. Single jurisdiction
2. Advance Assistance (AA)	Up to 25% of the total a (whichever is less) may HMGP or other HMA pro project subapplication. feasibility, CEQA analysi will be prioritized over A

[3] Multi-Jurisdictional Hazard Mitigation Plan is defined a jurisdiction, meeting all the requirements as outlined in as "local government" which is defined in 44 CFR 201.

DR-4750 HMGP Notice of Funding Opportunity

California Governor's Office of Emergency Se

Cal OES

HMGP (DR-4750) Funding Priorities	
	project subapplication.[4] Cal OES strongly recommends that they also identify at least 60% design as a deliverable. Cal OES will consider AA projects that meet the following objectives: 1. Protect a socially vulnerable[5] community; and 2. Result in a project that would fall within the criteria outlined in funding priority #3.
3. Projects Shovel-Ready and Phased Projects	Any funds not expended under funding priority #1 & #2 are available to fund priority projects that meet the following criteria: Projects that intend to achieve one or more of the following: 1. Implement a nature-based solution to reduce risk and/or advance California's climate adaption goals; 2. Protect a socially vulnerable community; 3. Address disadvantaged groups; 4. Address California's natural hazard priorities, as identified in the State Hazard Mitigation Plan; 5. Protect high-impact critical infrastructure; 6. Increase resiliency; 7. Anticipate challenges to implementation
4. Planning Related Activities, AA, and 5% Initiative grants for non-socially vulnerable communities	Funds will be allocated based on funding priorities #1-3. All subapplicants will be reviewed at a high level to determine the funding priority they fall in. Based on the number of subapplications received and the total funds available, projects in the priority #4 category may not be fully reviewed and RFIs issued before selections are made.

Addressing Funding Priority Criteria

Subapplicants must demonstrate and explain the criterion as listed in Figure 3 above in order for the subapplication to be considered for funding. The following are examples and potential solutions for achieving the projects' (funding priority # 3) criteria:

1. Implement a nature-based solution (NBS) to reduce risk and/or advance climate adaption goals

[4] The California Environmental Quality Act (CEQA) generally requires state and local government agencies to inform decision makers and the public about the potential environmental impacts of proposed projects, and to reduce those environmental impacts to the extent feasible.

[5] Socially vulnerable community is defined as exceeding the 70th percentile in SVI **or** having a median household income of less than 80 percent of the state median via the Cal OES Hazard Mitigation Assistance Hazard Risk and Social Vulnerability Map.

DR-4750 HMGP Notice of Funding Opportunity

California Governor's Office of Emergency Services 6

Cal OES GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Funding Priority Criteria – Competitiveness Factors

Implement a nature-based solution (NBS) to reduce risk and/or advance climate adaption goals

- The subapplication must indicate and describe how the project incorporates one or more nature-based solutions. Nature-based solutions are sustainable environmental management practices that: a) restore, mimic, and/or enhance nature and natural systems or processes and b) support natural hazard risk mitigation as well as economic, environmental, and social resilience efforts.
- Nature-based solutions use approaches that include, but are not limited to, restoration of grasslands, rivers, floodplains, wetlands, dunes, and reefs; living shorelines; soil stabilization; aquifer storage and recovery; and bioretention systems.
- Subapplications should state how they address climate impacts related to Sea Level Rise (SLR), drought, increased precipitation, and/or more frequent storms, and also label throughout the scope of work as a climate adaptive project.
- Subapplications should state how the project will make communities more resilient against climate change.
- Projects should also state how they anticipate future conditions (planning, design, and operations) and how the project will help communities better respond to these conditions. Therefore, they should address climate changes, demographic changes, population changes, and/or land use changes.

Funding Priority Criteria – Competitiveness Factors

Social Vulnerability	• Benefit a community that exceeds the 70th percentile in SVI **or** have a median household income of less than 80 percent of the state median via the **Cal OES Hazard Mitigation Assistance Hazard Risk and Social Vulnerability Map**. • The subapplication **should** include maps demonstrating the project benefitting area and individual census tracts for the socially vulnerable population.
Address Disadvantaged Groups	• The subapplication should specifically note what disadvantaged groups (e.g., those with access and functional needs, children, individuals with disabilities, religious / racial / ethnically diverse backgrounds, people with limited English proficiency, etc.) will benefit from the project.
Advance Whole Community Risk Reduction	• The project's benefitting area should protect at least 30% of the population. It should also detail how the estimated percentage of those experiencing community-wide benefits was calculated.
Address California's Natural Hazard Priorities identified in the State Hazard Mitigation Plan	• Projects that address the highest-ranking natural hazards, as ranked by the Hazard Impact Rating outlined in **Volume 2 (Risk Assessment)** the **2023 State Hazard Mitigation Plan** (SHMP), will receive more points than those that address lower-ranked natural hazards in the 2023 SHMP.

Funding Priority Criteria – Competitiveness Factors

Protect High-Impact Critical Infrastructure	• The subapplication must explain how the project mitigates natural hazard risk to critical physical structures, facilities, and systems that provide support to a community, its population, and its economy.
Increase Resiliency	• The subapplication must explain what would happen to the community if the mitigation action were not implemented (e.g., damages, loss of service / function, morbidity / mortality). • The subapplication should also detail the proposed level of protection increase due to the implementation of the mitigation action.
Implementation Measures	• The subapplication should address how the grant will be managed (if awarded) to keep the mitigation action on time, within budget, and within the approved scope of work (e.g., what technical and managerial staff / resources are available to successfully implement the project?). • The subapplicant must also indicate if they applied for grant management costs.

Addressing Funding Priority Criteria – Subapplication

Language specifically addressing the funding priority criteria should be included in the following locations:

- Scope of Work – Project Information
  - *"Brief Summary"*

Scope of Work – Project Alternatives

- *"Proposed Action"*
- *"…impacts to the community/property"*
- *"…area and population impacted"*

- Scope of Work – Problem Statement
  - *"Problem to be mitigated"*

- Scope of Work – Solution Description
  - *"What is the mitigation action?"*
  - *"…protection from future natural hazards"*
- Scope of Work – Supporting Documentation
  - *Project benefitting area map demonstrating protection to **socially vulnerable** communities, percent of **population being impacted**, high-impact **critical infrastructure** being protected*

Keep In Mind

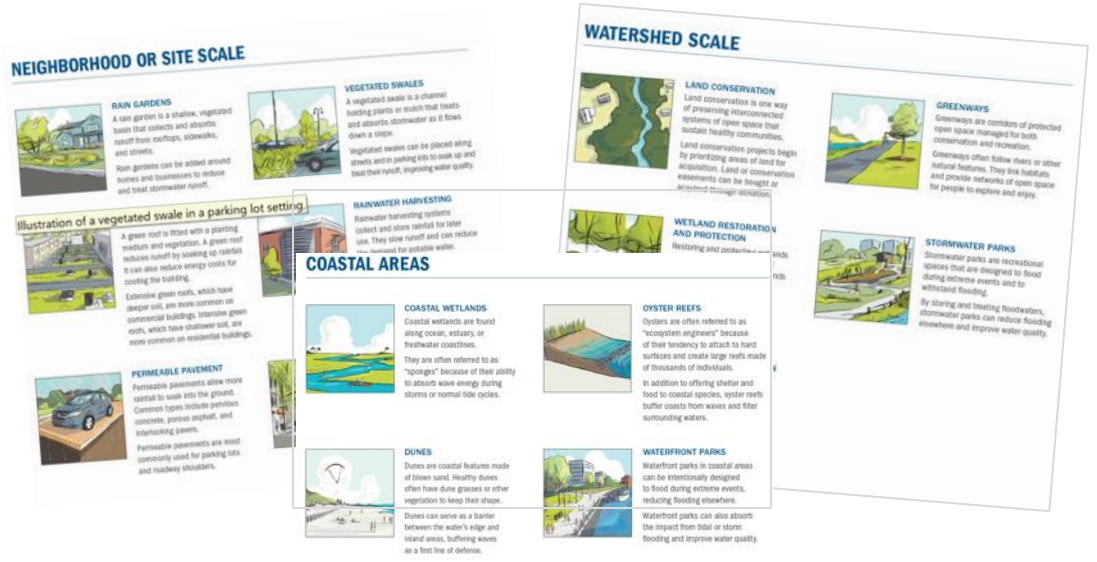
Subapplications that address and fully substantiate more than one of the funding priority criteria will be the most competitive.

Climate Adaptive Projects with Nature-Based Solutions (NBS)

- The subapplication must describe how the project incorporates one or more nature-based solutions
- NBS are sustainable environmental management practices that restore, mimic, and/or enhance nature and natural systems and support natural hazard risk mitigation as well as economic, environmental, and social resilience efforts
- Incorporate climate impacts including sea level rise, drought, increased precipitation, and more frequent storms.
- Anticipate the future conditions and how the project will ensure the community is more resilient against climate change. These include climate impacts, demographic changes, population changes, and land use changes.

Remember

Nature-based solutions are approaches that include, but are not limited to, restoration of grasslands, rivers, floodplains, wetlands, dunes, and reefs; living shorelines; soil stabilization; aquifer storage and recovery; and bioretention systems.



Socially Vulnerable Communities

Communities:

Either a group of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals, where either type of group experiences common conditions.

Socially Vulnerable Communities:

Agencies should consider appropriate data, indices, and screening tools to determine whether a specific community is disadvantaged based on a combination of variables.

Variables:

- Low income, high and/or persistent poverty
- High unemployment and underemployment
- Racial and ethnic residential segregation, particularly where the segregation stems from discrimination by government entities
- Linguistic isolation
- High housing cost burden and substandard housing
- Distressed neighborhoods
- High transportation cost burden / low transportation access
- Limited water and sanitation access
- Disproportionate impacts from climate change
- High energy cost burden and low energy access
- Job lost through the energy transition
- Access to healthcare

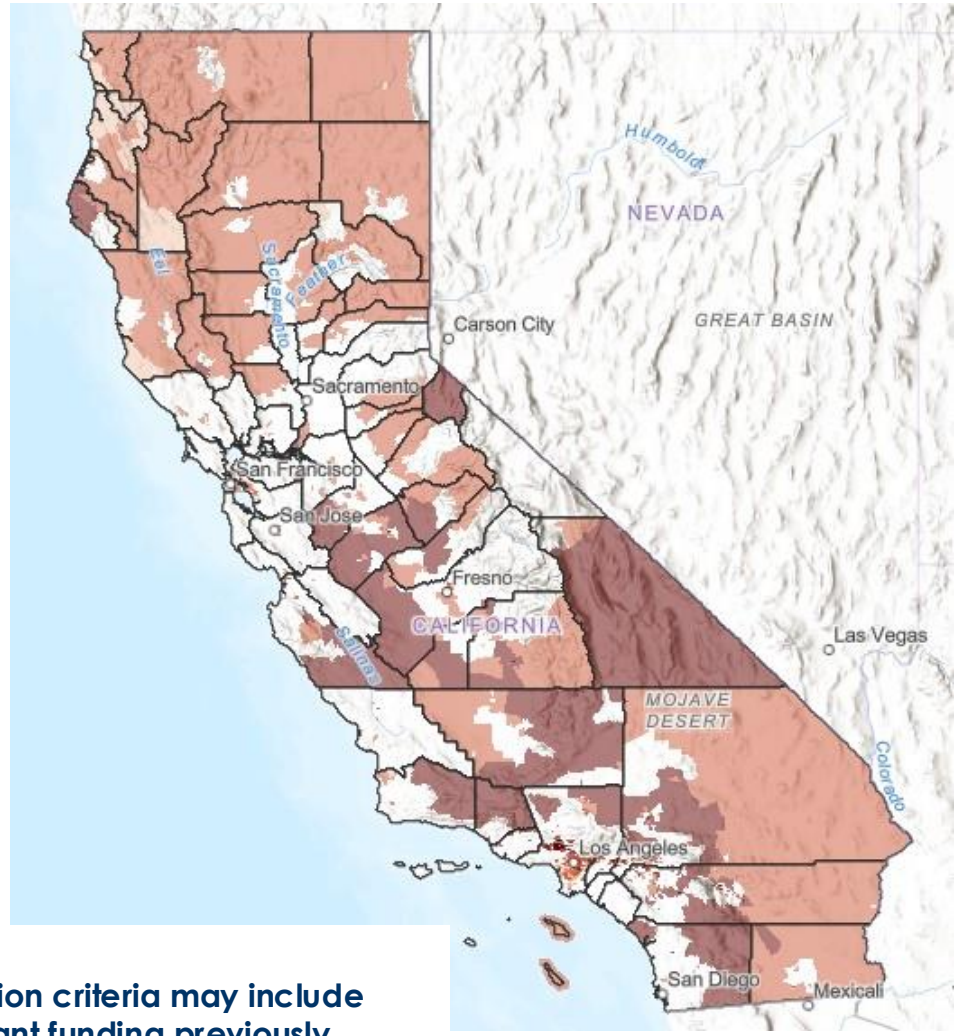
Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Social Vulnerability - HMGP

Cal OES leadership determines the level of impact social vulnerability has on prioritization. From the DR-4758/4769 NOFO (May 2024):

- "The subapplication must indicate and describe the protection to a socially vulnerable community. The subapplication should include maps demonstrating the project benefitting area and individual census tracts for the socially vulnerable population. The primary source for determining social vulnerability is the Cal OES Hazard Mitigation Assistance Hazard Risk and Social Vulnerability Map."

Cal OES Hazard Exposure and Social Vulnerability Map



HMGP scoring prioritization criteria may include subapplication type, grant funding previously received, and use of nature-based solutions, among others.

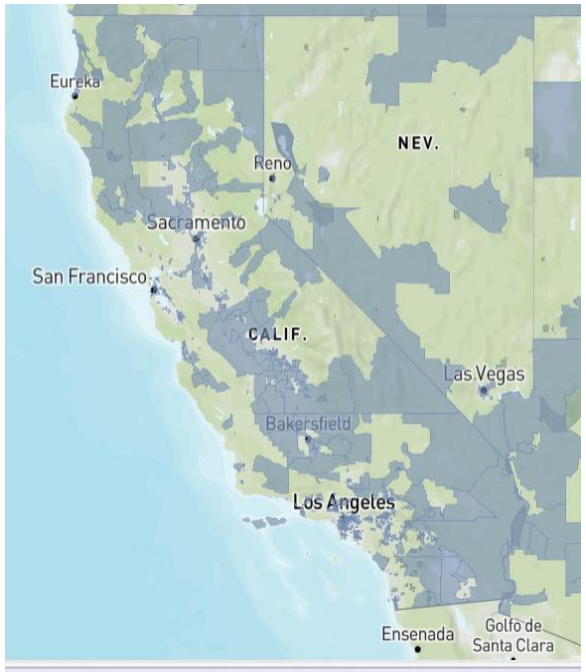
Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Social Vulnerability – BRIC / FMA

- The **Climate and Economic Justice Screening Tool (CEJST)** is a geospatial mapping tool that identifies areas across the nation where communities are faced with significant burdens.
- **Community Disaster Resilience Zones (CDRZ)** the Community Disaster Resilience Zones Act (P.L. 117-255)—law signed by President Biden on Dec. 20, 2022—aims to build disaster resilience by creating and designating resilience zones. FEMA targets the Census tracts identified as disadvantaged communities most at-risk to natural hazards.

CDRZ Mapping Tool

CEJST Mapping Tool



Justice40 Initiative 2023 Selection Statistic

Nationally, ~67% of total funding for selected subapplications benefit socially vulnerable and disadvantaged communities. ~70% of competitive mitigation projects.

Cal OES
GOVERNOR'S OFFICE OF EMERGENCY SERVICES

Environmental Laws Addressed Within the Subapplication

- National Environmental Policy Act (NEPA)
- Endangered Species Act (ESA)
- Section 106 of the National Historic Preservation Act (NHPA)
- Clean Water Act (CWA)
  - 401, 402, and 404
- Clean Air Act (CAA)
- Migratory Bird Treaty Act (MBTA)
- Executive Orders
  - 11988 Floodplain Management
  - 11990 Protection of Wetlands
- All State and Local Laws and Regulations
  - CEQA

EHP Information and Documents to Include in Subapplication

- Project Description
  - GIS Maps and Photos
    - Ground disturbing Activities
    - Location, Depth, Dimensions
    - Proximity to Water
    - Zoning Information/Land Ownership
- Environmental Requirements
  - Known Biological Resources
  - Known Archaeological and Cultural Resources
  - Wetlands/Water/Coastal Zone
  - Air Quality Impacts
- Hazardous Materials
  - Location of Disposal and Permits to Handle Hazardous Material
- Geotechnical Studies
  - Treat as a typical project
- CEQA
  - Exemptions
  - Initial Study
  - Environmental Impact Report
- **Hazard Mitigation Assistance Grants Environmental and Historic Preservation Information Checklist**
  - **MUST BE INCLUDED WITH ALL APPLICATIONS!**

Agenda:

HMA Eligibility

Notice of Interest (NOI): A Screening Tool

Subapplication Development: Best Practices

Social Vulnerability Index (SVI): Applications and Impact

Environmental Historic Preservation (EHP): Tips from FEMA

Benefit Cost Analysis (BCA): Defining Cost Effectiveness

Environmental and Historic Preservation (EHP)

FEMA's Office of Environmental Planning and Historic Preservation reviews FEMA-funded projects and activities to ensure they comply with various federal laws.

All project subapplications are reviewed regardless of potential environmental impacts.

Each sub-application must include a completed EHP Checklist, except for planning projects.

Provide supporting documents and any previous environmental studies or consultations if applicable.

EHP Considerations for Successful Applications

- Advantages of Phased and Advance Assistance Projects
- What Every Applications Needs
- Considering Ground, Vegetation, and Structural Disturbance
- Defining Project Alternatives
- Project Streamlining
- Barriers to Review and Project Clearance

Federal Procurement Requirements

- All vendors involved in the project must be properly procured in line with 2 CFR 200.317-.327, State, and Local standards – the most stringent applies
  - Full and Open Competition is KEY
- The procurement requirements apply to all grant related costs (pre-award, management costs, and implementation)
- Be mindful, conflict of interest can occur if a vendor assists with the subapplication and is subsequently awarded a contract for implementation
  - To avoid COI, the original procurement would include all services needed and follow all 2 CFR 200 additional requirements

COI Resource

FEMA Job Aid for COI as it relates to contractor support for HMA subapplication development

Agenda:

HMA Eligibility

Notice of Interest (NOI): A Screening Tool

Subapplication Development: Best Practices

Social Vulnerability Index (SVI): Applications and Impact

Environmental Historic Preservation (EHP): Tips from FEMA

Benefit Cost Analysis (BCA): Defining Cost Effectiveness

Benefit-Cost Analysis (BCA)

Cal OES – Resilience Branch
Hazard Mitigation Summit

December 5, 2024

Cal OES HMA Website

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Cost-Effectiveness

- The Stafford Act is the basis for FEMA mitigation programs, and it established *cost-effectiveness* as an eligibility criterion.

- A cost-effective mitigation project results in more avoided $ damages over its useful life than it costs initially

- FEMA uses **benefit-cost analysis (BCA)** to determine cost-effectiveness. There are a few exceptions such as pre-determined benefits that apply in limited circumstances (certain elevations and acquisitions, with very specific criteria)

- FEMA requires the use of its software, available via download

Cost-Effectiveness

The term **risk** is used frequently in the context of hazard mitigation

- Risk is defined as future losses
- BCA is a statistical comparison of **current risk vs. the risk after a project** is implemented
- The difference in risk before and after a project is implemented (statistically) is then compared to the cost
- If the risk reduction is greater than the cost, the project is considered cost-effective **IF the analysis has been done correctly** (i.e. correct methodology, good data)
- In order to compare different kinds of losses, risk is monetized in BCAs, expressed as losses in dollars
- There are three general categories of risk used in hazard mitigation benefit-cost analysis: direct physical damages, loss of function, and deaths/injuries.

Benefit-Cost Analysis (BCA)

- Used to determine cost-effectiveness
- Project must achieve a Benefit Cost Ratio (BCR) ≥ 1.0
- Must use **FEMA BCA Toolkit V.6.0** (this is the BCA software)
- Benefits in a FEMA BCA are any future costs or losses that are avoided as a result of the mitigation project (risk reduction)
- BCAs must be based on a correct methodology, and all data inputs must be accurate and supported with credible documentation
- Can include ecosystem benefits and social benefits
- Benefits can include, but are not limited to:
  - Direct damages (structure & contents damage, etc.)
  - Loss of function
  - Displacement costs
  - Response / recovery costs

$$BCR = \frac{\text{Benefits}}{\text{Costs}} \geq 1.0$$

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Recent Updates

- The discount rate policy was changed in 2023 after the Office of Management and Budget (OMG) updated Circular A-94 (https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf)

- The BCA Toolkit V6.0 was recently updated to reflect the new default discount rate value of 3.1%, a change from 7%

- Reducing the discount rate from 7.0% to 3.1% in cost thresholds for pre-calculated benefits
  - For example,
    - Acquiring structures in the special flood hazard area (SFHA) increased from $360,000 to $775,411

- Projects with a total cost under $1 million, at the time of submission, may be evaluated for cost-effectiveness with a narrative

- The BCA Toolkit V6.0 factors in new future climate impacts for flood projects

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Common Pitfalls

- X Cost estimate is incomplete, unreasonable, or unsupported
- X Vulnerability analysis results includes mitigation solutions other than the proposed project
- X Regional estimates are used rather than best available, site-specific data
- X Outdated data
- X Assumptions not clearly supported
- X Changing default values without required supporting documentation
- X Lack of scenario events or lack of more frequent events (smaller events)
- X Over-estimating the project useful life
- X Assuming the project is 100% effective at reducing future damages and losses (i.e., no after-mitigation damages)
- X Using the wrong module, or using a module incorrectly
- X Not accounting for true maintenance costs
- X Incorrectly assuming recurrence intervals are equal to how often something happens within a certain time interval
- X Market-Value Not equal to the building replacement value (BRV)

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Pre-Testing

Lower bound and upper bound analysis methods provide the estimated probabilities in achieving a favorable BCR (1.0 or higher).

Lower Bound Analysis - *Rarely Used for Seismic Projects*

- Intentionally under-estimate inputs (frequency, damages, time of lost function, etc.)
- If analysis yields a ratio >1.0, then it will likely be successful with more accurate data

Upper Bound Analysis

- Intentionally over-estimate inputs
- If analysis yields a ratio <1.0, then it will likely be unsuccessful with more accurate data

Recommendations

Mitigation projects must be cost-effective in order to be eligible.

- Conduct the BCA pre-test before expending time and resources in the Scope, Schedule, and Budget of the subapplication.
- Pre-test results provide valuable insight to the level of effort needed to develop a FEMA credible BCA.
- Identify the credible data sources to support BCA inputs. Is it obtainable?

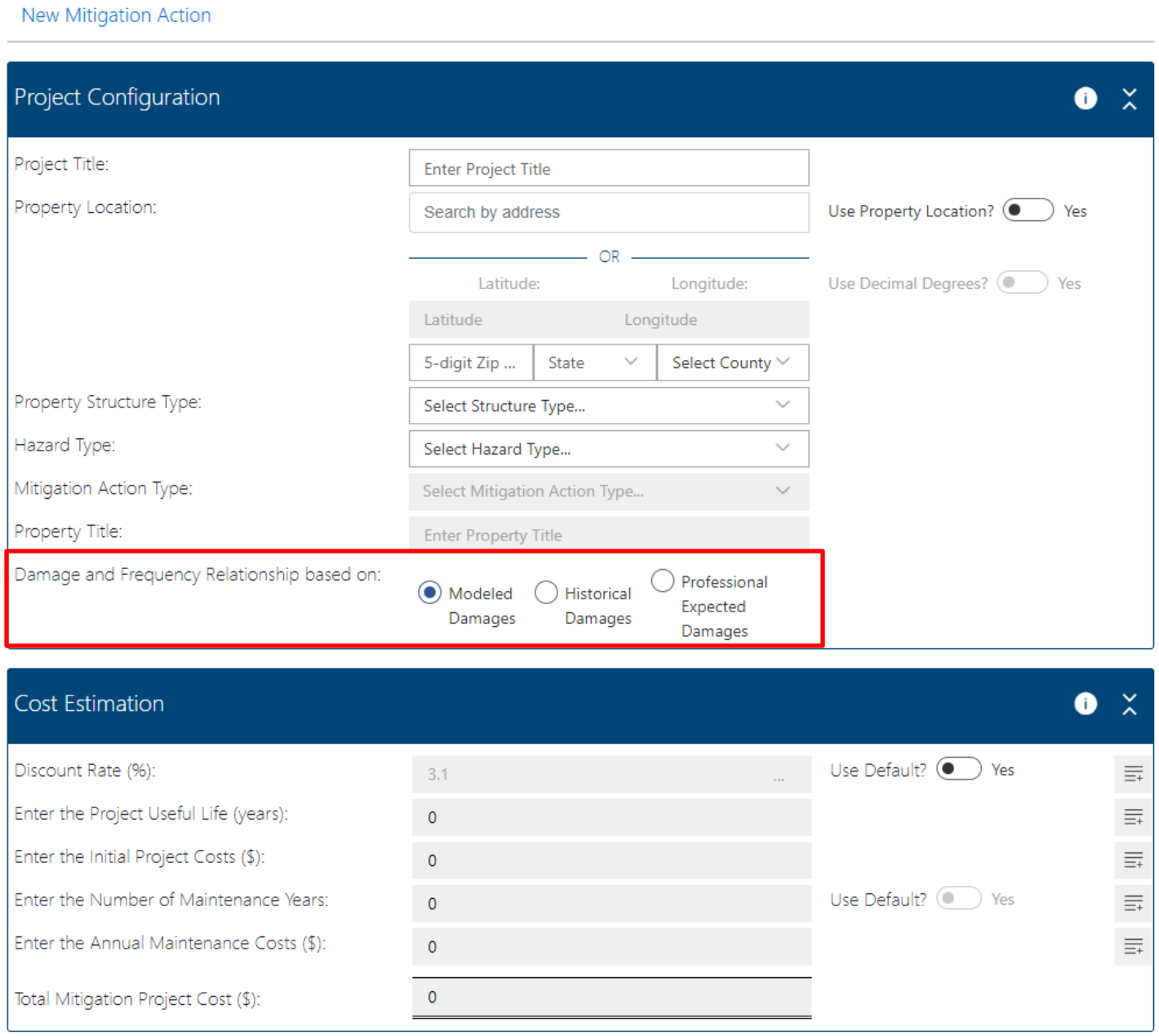
Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

BCA Approaches

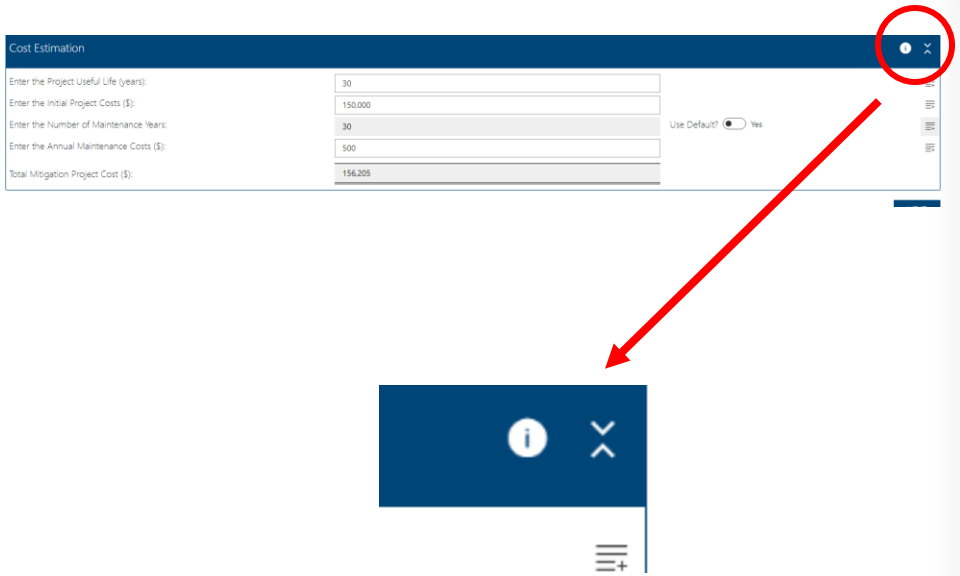
- Modeled Damages
- Historical Damages
- Professional Damages
- Pre-Calculated Benefits
- Less than $1 Million

Values need to align with total project cost and maintenance & reporting commitment within the subapplication



BCA Project Useful Life

- Project useful life should reflect FEMA standard values—provide supporting material for deviations
- Depends on project type and scope of work



- PUL Summary Tables available in the FEMA BCA Calculator Help function:

PUL Summary Tables

Flood

Project Type	Useful Life		Comment
	Standard Value	Acceptable Limits (documentation required)	
Acquisition / Relocation			
Acquisition / Relocation	100	100	
Building Elevation			
Residential Building	30	30-50	
Non-Residential Building	25	25-50	
Public Building	50	50-100	
Historic Buildings	50	50-100	
Mitigation Reconstruction			
Mitigation Reconstruction	50	50	
Infrastructure Projects			
Major Infrastructure (dams, levees)	50	35-100	
Concrete infrastructure, flood walls, roads, bridges, major drainage system	50	35-50	
Culverts (concrete, PVC, CMP, HDPE, etc.)	30	25-50	Culvert **with** end treatment (i.e., wing walls, end sections, Culverts (concrete, PVC, CMP, HDPE, head walls, etc.)
	10	5-20	Culvert **without** end treatment (i.e., wing walls, end sections, head walls, etc.)
Pump stations, substations, wastewater systems, or equipment such as generators	50	50	Major (power lines, cable, hardening gas, water, sewer lines, etc.)
	5	5-30	Minor (backflow values, downspout disconnect, etc.)
Other Flood Mitigation Project Types			
Floodplain and Stream Restoration	30		Higher PUL values acceptable with documentation
Flood Diversion and Storage	30		Higher PUL values acceptable with documentation

Pre-Calculated Benefits

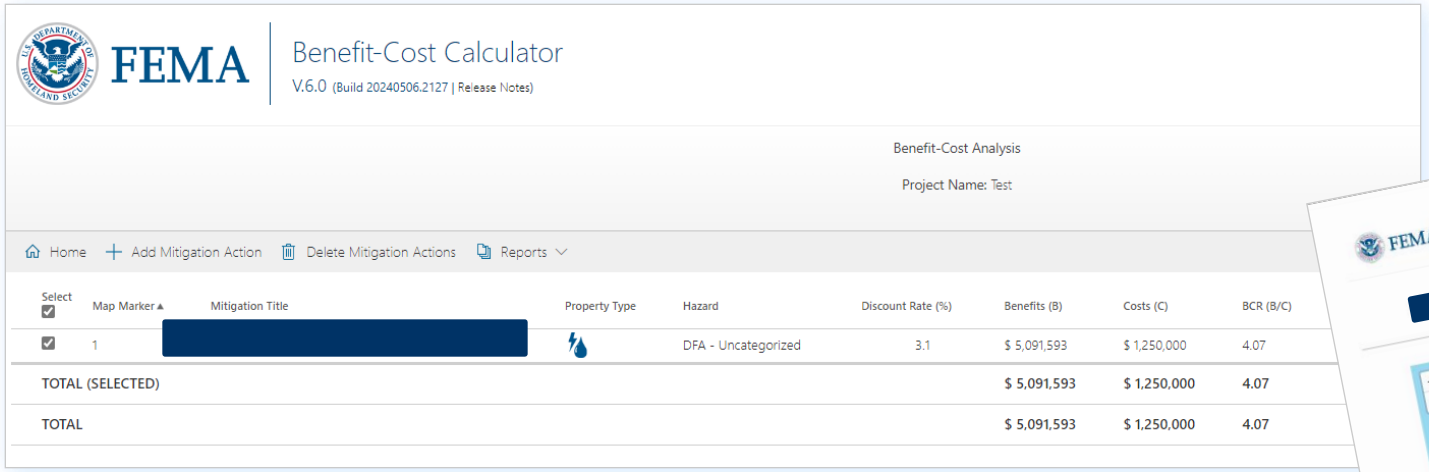
Mitigation Project type	**Pre-Calculated Benefit Value**	**Additional Information and Resources**
Acquisitions		
Acquisitions in the Special Flood Hazard Area (SFHA)	$775,411 per structure	For guidance and documentation requirements, refer to Sections B.1.1.4.1.1, B.1.1.4.1.3, and B.1.1.4.1.4 of the HMA Program and Policy Guide, pages 285 and 287
Acquisitions of Repetitive Loss and Severe Repetitive Loss properties located outside the SFHA	$775,411 per structure	For guidance and documentation requirements, refer to Sections B.1.1.4.1.2, B.1.1.4.1.3, and B.1.1.4.1.4 of the HMA Program and Policy Guide, pages 285-287 To read about how the pre-calculated benefits were determined, see the Acquisition BCA Efficiencies for HMA Programs Methodology Report[1]

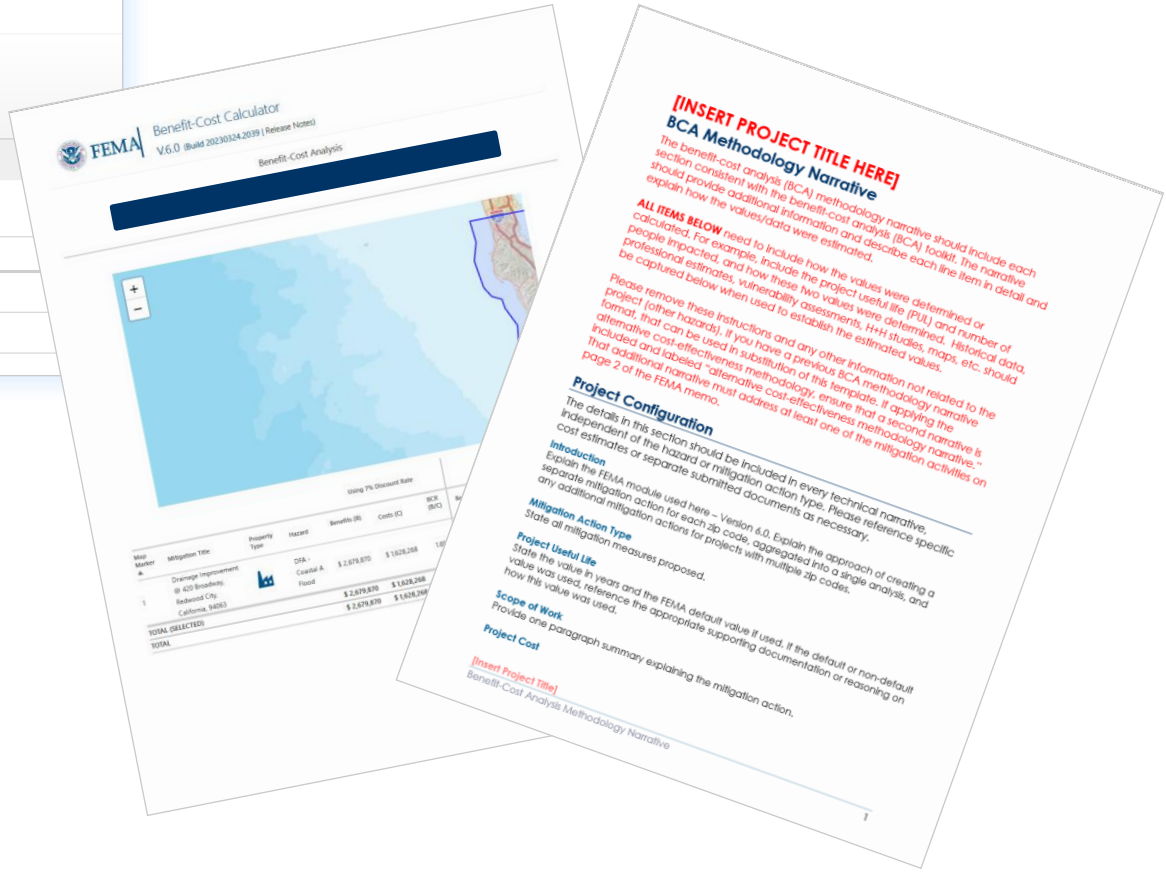
- Updated Pre-Calculated Benefits Example
- All Pre-Calculated Benefits by Mitigation Project Type can be found on the FEMA website: https://www.fema.gov/grants/guidance-tools/benefit-cost-analysis/streamlined-bca

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

BCA Documentation Examples





Required BCA Documentation

1. BCA Toolkit version 6.0
2. Final BCA Report pdf
3. BCA Methodology Narrative
4. Supporting Documentation

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

Explanation and Documentation

For all projects:

- Use data from ***credible and reliable*** sources (Federal, state, local agencies)
- Provide ***complete technical support data*** – copy of hazard data or reports from other agencies, print data from websites and attach PDF(s).
- Explain and ***provide justification*** for data that supersedes standard FEMA data
- ***Organize the data*** via a list of attachments
- *Cite the location of BCA relevant data* within the support data (i.e., report name, page no., etc.)
- ***Do not assume*** that the review has access to the same online data that the user does

Documentation for Projects Less Than $1 Million

- Subapplicants may provide a cost-effectiveness narrative—instead of conducting a traditional BCA—for projects with a total cost of less than $1 million.
- A cost-effectiveness narrative is a written description, including both qualitative and quantitative data, of how a proposed mitigation project would benefit the community by protecting lives and the built environment.
- Quantitative data included in the narrative should be supported with documentation (e.g., historical damages, credible pricing estimates, calculations of the benefitting population).
- FEMA will validate the cost-effectiveness narrative and estimate and record a Benefit-Cost Ratio (BCR) for the project during its review.

Key Points

Example Questions to Answer in the Cost Estimate Narrative

•How often does the disaster being mitigated occur?

•How many people benefit from the proposed mitigation project, and how was this number determined?

•What structures, infrastructure, and / or building contents, if any, will be damaged if the project is not implemented?

•What public services and / or businesses, if any, would lose function during future hazard events if the project is not implemented?

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Benefit-Cost Analysis Summary – Recommendations

- Pre-Test BCAs
- Participate in hazard-specific webinars
- Ask questions in technical assistance calls
- Develop a solid methodology
  - Clear and concise – explain approach and assumption in detail.
  - Provide supporting documentation for every non-FEMA default value data input.
- Provide proper documentation, including the BCA technical report and electronic format (excel, zipfile)

FEMA BCA 6.0 Software

Download from the FEMA website:
fema.gov/grants/guidance-tools/benefit-cost-analysis

- Any technical or installation issues, contact the FEMA BCA Helpline
- Software runs via excel, with a plug in
- Depending on the methodology, the software has various default data that applies to specific hazards and project types

Additional Resources

- Hazard Mitigation Assistance (HMA) Guidance and Addendum
- FEMA Benefit-Cost Analysis
- HMA Job Aids
- Cal OES Hazard Mitigation guidance materials and BCA one-pagers →

- **FEMA BCA Helpline:**
- Email: bchelpline@fema.dhs.gov
- Phone: 1-855-540-6744

Benefit Cost Analysis

- BCA for Acquisition/Demolition and Relocation Projects
- BCA for Drainage Improvement
- BCA for Drought Programs
- BCA for Elevation Projects
- BCA for Floodproofing Projects
- BCA for Generator Projects
- BCA for Landslide Mitigation and Slope Stabilization Projects
- BCA for Mitigation Reconstruction Projects
- BCA for Safe Room Projects
- BCA for Seismic Infrastructure Mitigation Projects
- BCA for Seismic Non-Structural Projects
- BCA for Seismic Structural Retrofit Projects
- BCA for Tsunami Vertical Evacuation Projects
- BCA for Wildfire Projects
- BCA for Aquifer Storage and Recovery (ASR) Projects

Agenda:

- Cost-Effectiveness
- Recent Updates
- Common Pitfalls
- Pre-Testing
- BCA Approaches
- Data and Documentation
- Benefit-Cost Analysis Summary
- Q&A

Thank You / Contact

Send all questions to the Technical Assistance team's email box:

ResilientCA@CalOES.ca.gov

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

CA Hazard Mitigation Summit 2024
Cal OES Resilience Branch

Welcome, please take your seats.
The presentation will begin shortly.

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES