FEMA BRIC: Funding Opportunities for Nature-Based Solutions

August 29, 2022

Agenda

Welcome

Alyssa Mann, The Nature Conservancy

Blythe Denton, CA Office of Emergency Services

BRIC Overview

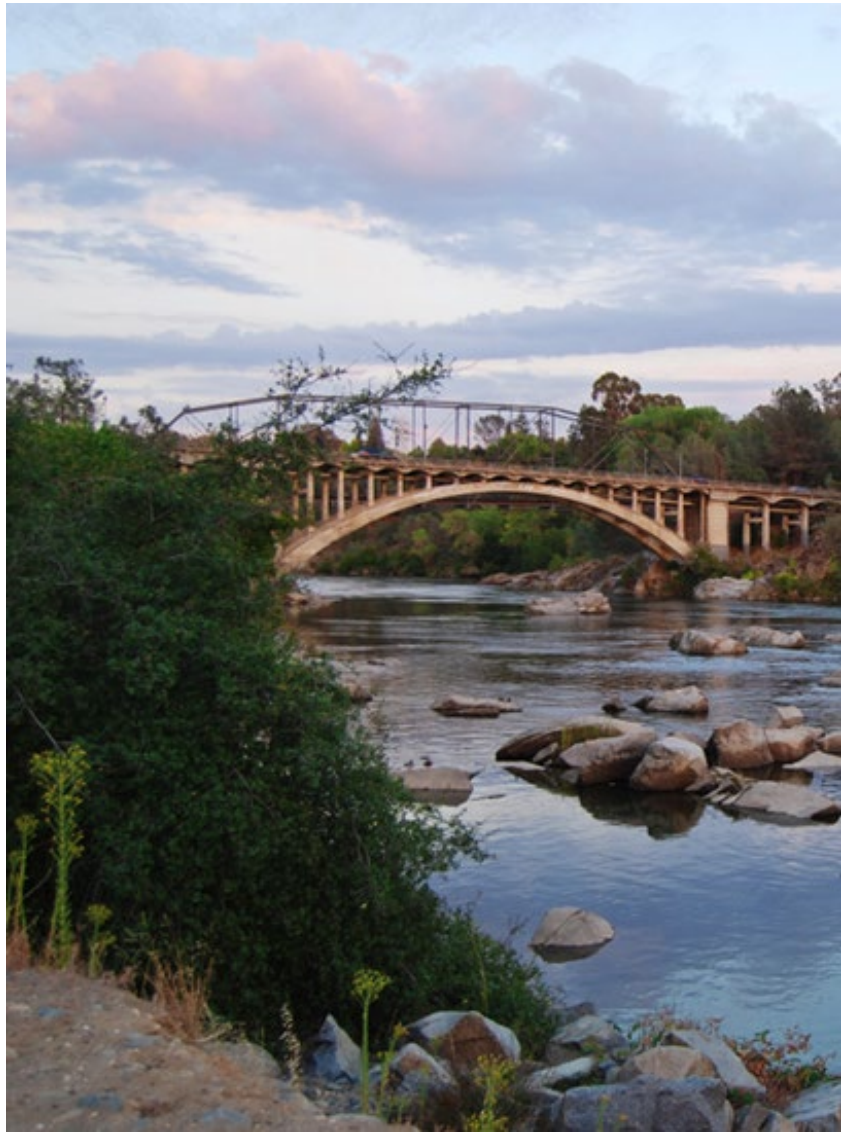
Madison Elliott, CA Office of Emergency Services

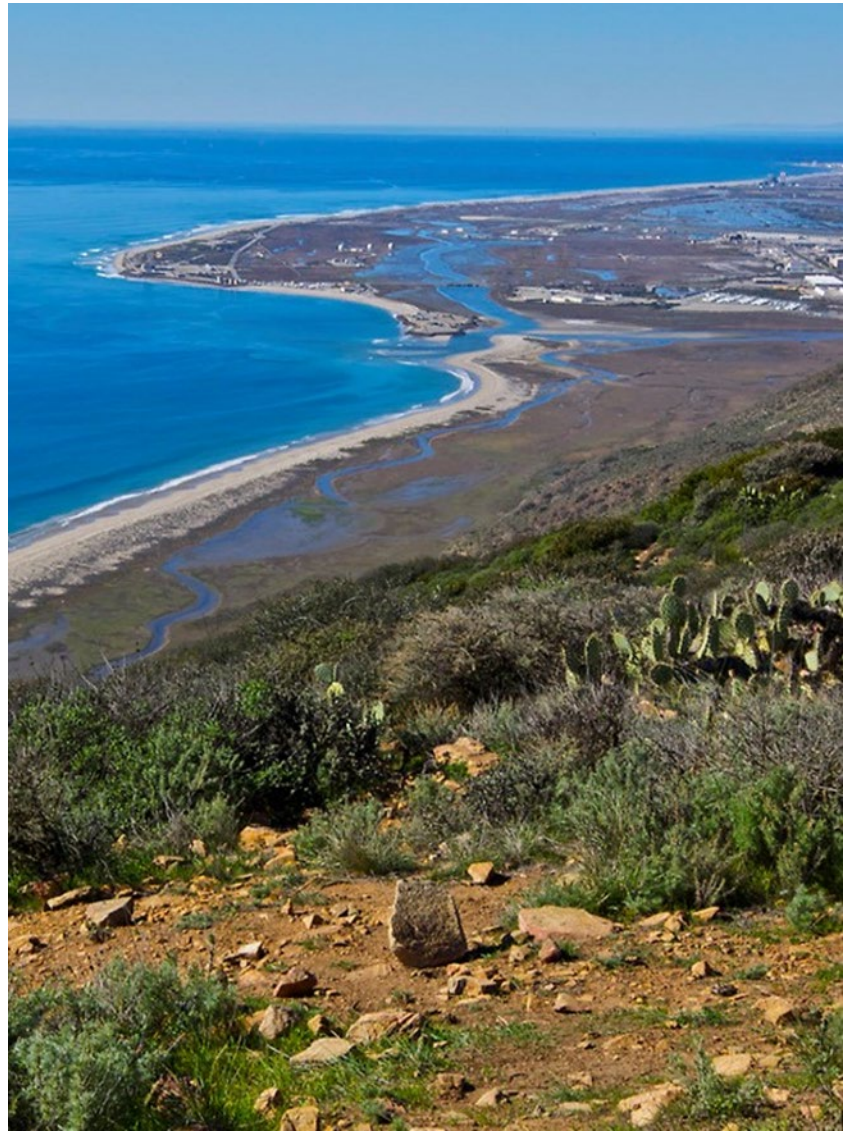
BCA & Nature-based Solutions

Johnny Mojica, Radbridge LLC

Q&A Session

Nature-based solutions for hazard risk reduction





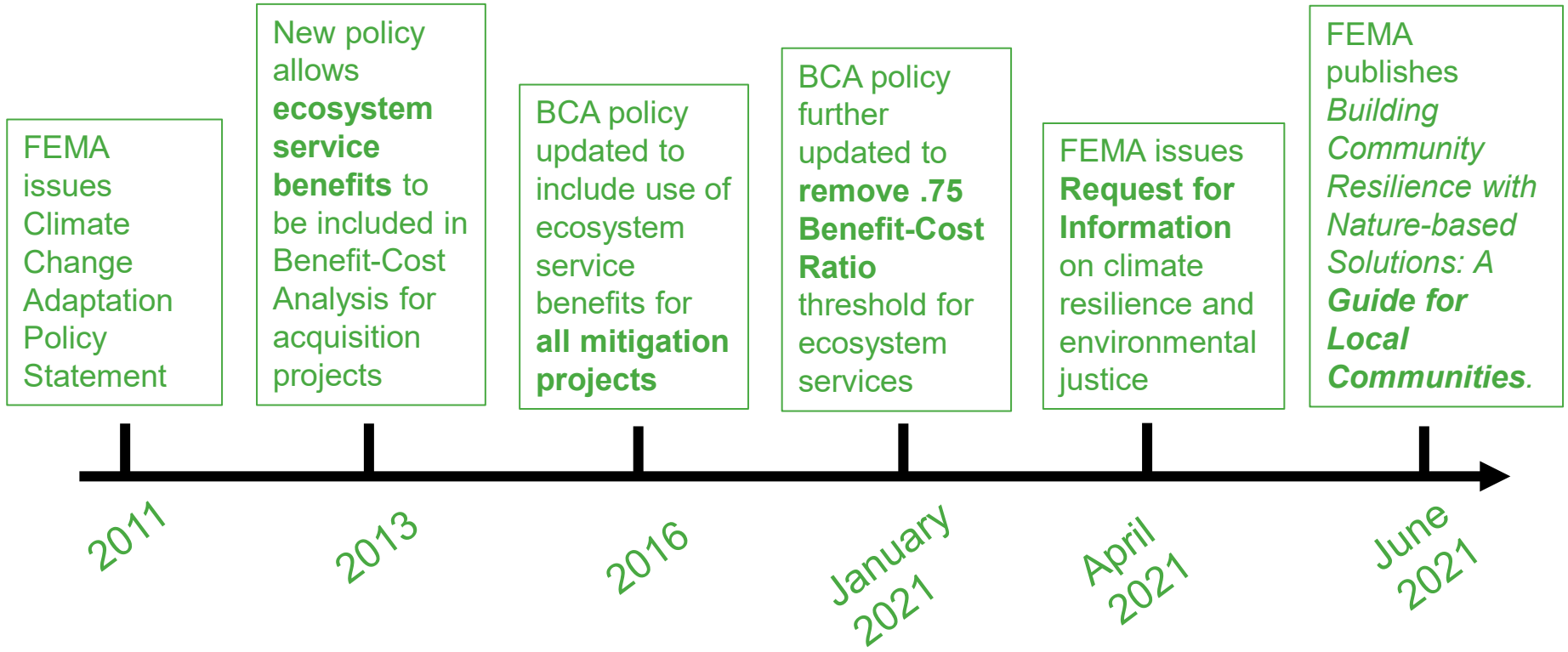
Why are NBS Important?

Environmental Benefits

Economic Benefits

Social Benefits

FEMA shift in policy to support nature-based solutions



Source: Land Trust Alliance, Chelsea Welch

FEMA defines NBS

"Sustainable planning, design, environmental management, and engineering practices that weave **natural** features or processes into the built environment to build more resilient communities."

TNC-FEMA Partnership

- Shared interest in maximizing and facilitating the use of FEMA programs and expanded mitigation dollars for nature-based strategies.
- Cooperating Technical Partners (CTP) - The Nature Conservancy-CA and FEMA Region IX
- Challenges, barriers, and opportunities for NBS in FEMA's hazard mitigation funding programs
- CA Pipeline of NBS projects
- Resources, outreach & technical assistance, case studies

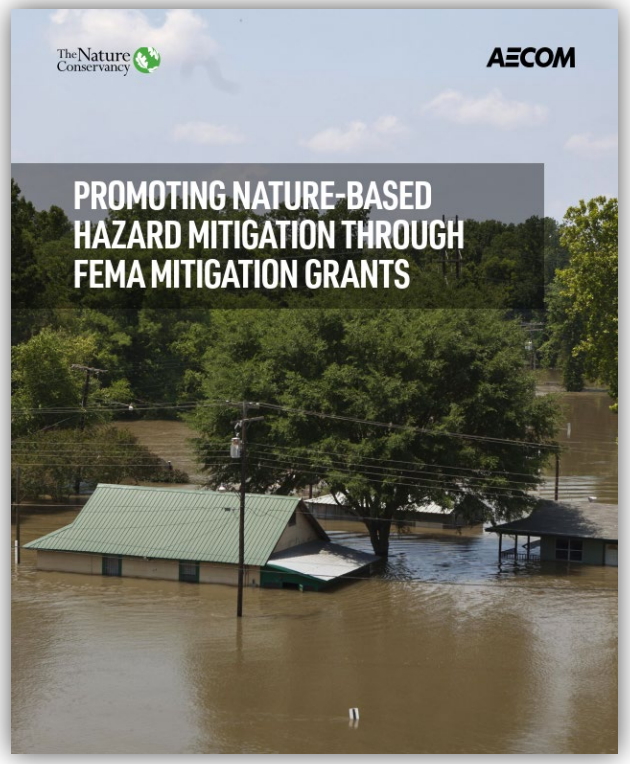
The Nature Conservancy
Protecting nature. Preserving life.™

EARTH ECONOMICS

radbridge

The TNC NBS Guidebook

Connecting NBS with hazard mitigation funding



www.nature.org/FEMAguide

aecom.com

More Resources Coming…

Screening Tool for NBS

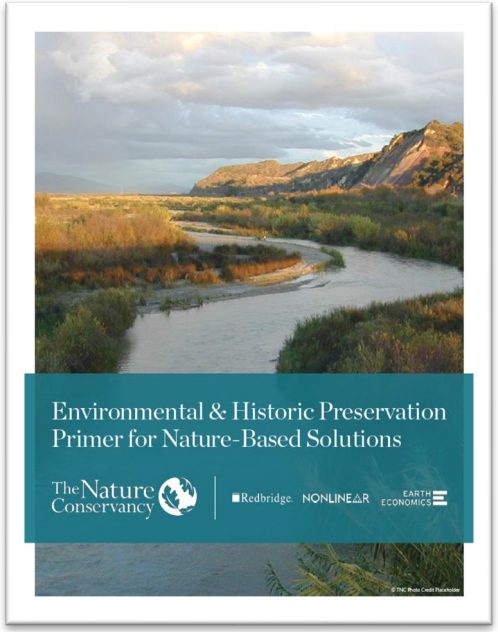
- With input from reviewers and users, developing a simple screening tool to help potential subapplicants:

1) Understand what's required for their projects to meet FEMA requirements (eligibility, feasibility & effectiveness, cost-effectiveness, and EHP compliance)

2) More efficiently define and develop their NBS project ideas into competitive subapplications

EHP Guide for NBS

- The Environmental & Historic Preservation (EHP) review is often cited as one of the most daunting, time-consuming, and costly steps
- The goal of the guide is to provide a simple guide that provides context and best practices specific to nature-based projects, drawing on substantial volume of info available and interviews with experts and users



* We are a resource to you! Reach out to us. We'll be doing workshop sessions to discuss ideas, requirements, BCAs, etc.

TNC POCs: Alyssa.Mann@tnc.org, Deborah.Glaser@tnc.org

Nature-Based Hazard Mitigation

Building Resilient Infrastructure and Communities (BRIC) Funding Opportunity

August 29, 2022

www.caloes.gov

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Webinar Overview

All attendees please mute upon joining

During the presentation, use the chat feature to ask questions

Q and A will occur at the end

BRIC 2021 Lessons Learned

BRIC 2022: Get Ready

BRIC Case Studies

Prepare California Match & Next Steps

Hazard Mitigation Assistance (HMA) Grants

BRIC funding:

FLOOD MITIGATION ASSISTANCE (FMA)

Purpose: FEMA funded, State administered program and not directly tied to a disaster declaration; reduce NFIP claims

Cycle: Annual

Local Match: 0%, 10%, or 25%

FY 2022 Funding*: $800M - nationally competitive program

BUILDING RESILIENT INFRASTRUCTURE AND COMMUNITIES (BRIC)

Purpose: FEMA funded, State administered program and **not** directly tied to a disaster declaration; high-impact, neighborhood scale projects

Cycle: Annual

Local Match: At least 25% or 10% for economically disadvantaged rural communities (EDRC)

FY 2022 Funding*: ~$2.3B - nationally competitive program

HAZARD MITIGATION GRANT PROGRAM (HMGP)

Purpose: FEMA funded, State administered program and directly tied to a disaster declaration; break cycle of repetitive losses

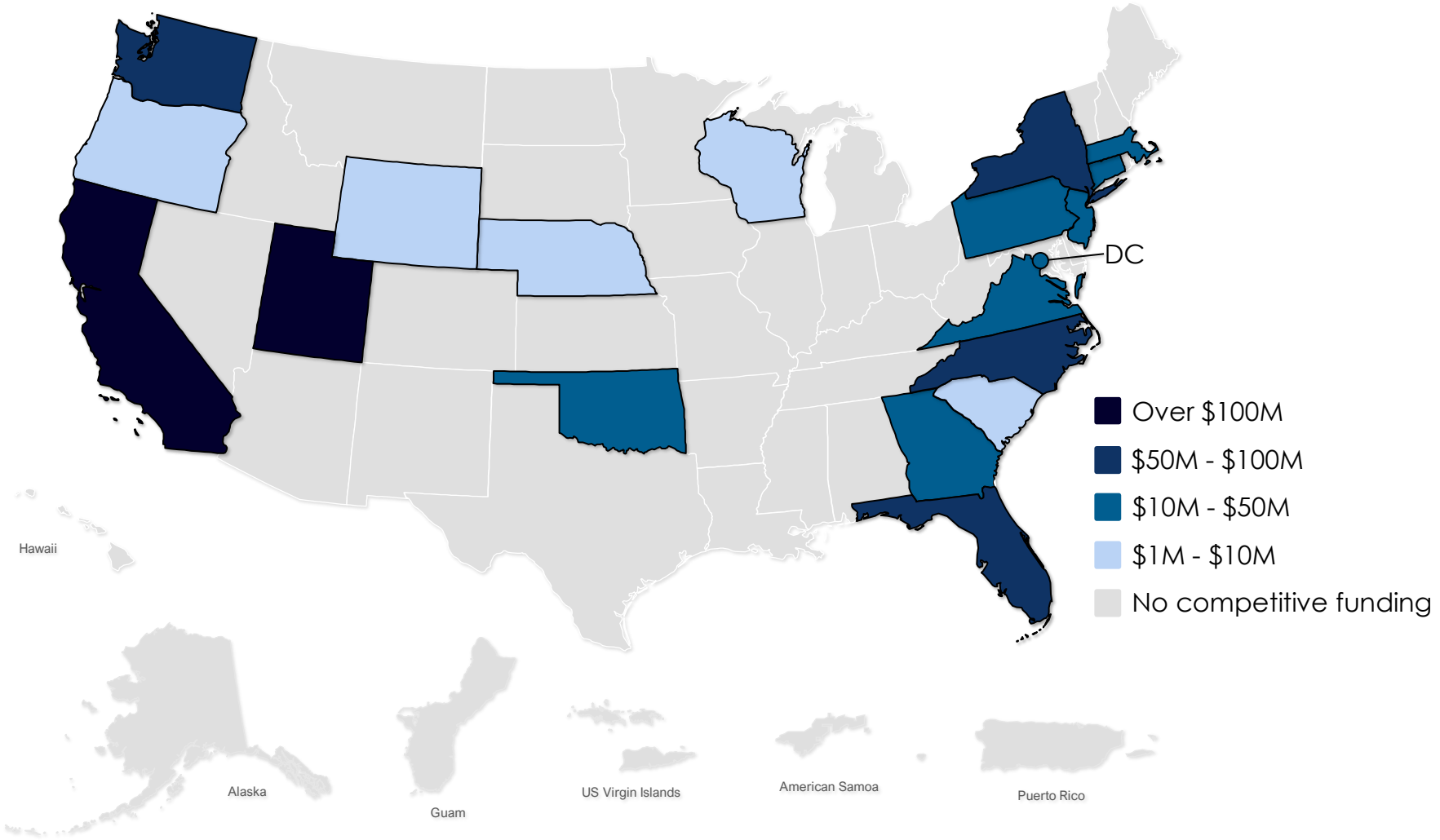
Cycle: Post-Disaster

Local Match: 25%

FY 2022 Funding*: Varies year to year - competitive within each state

* Federal Share

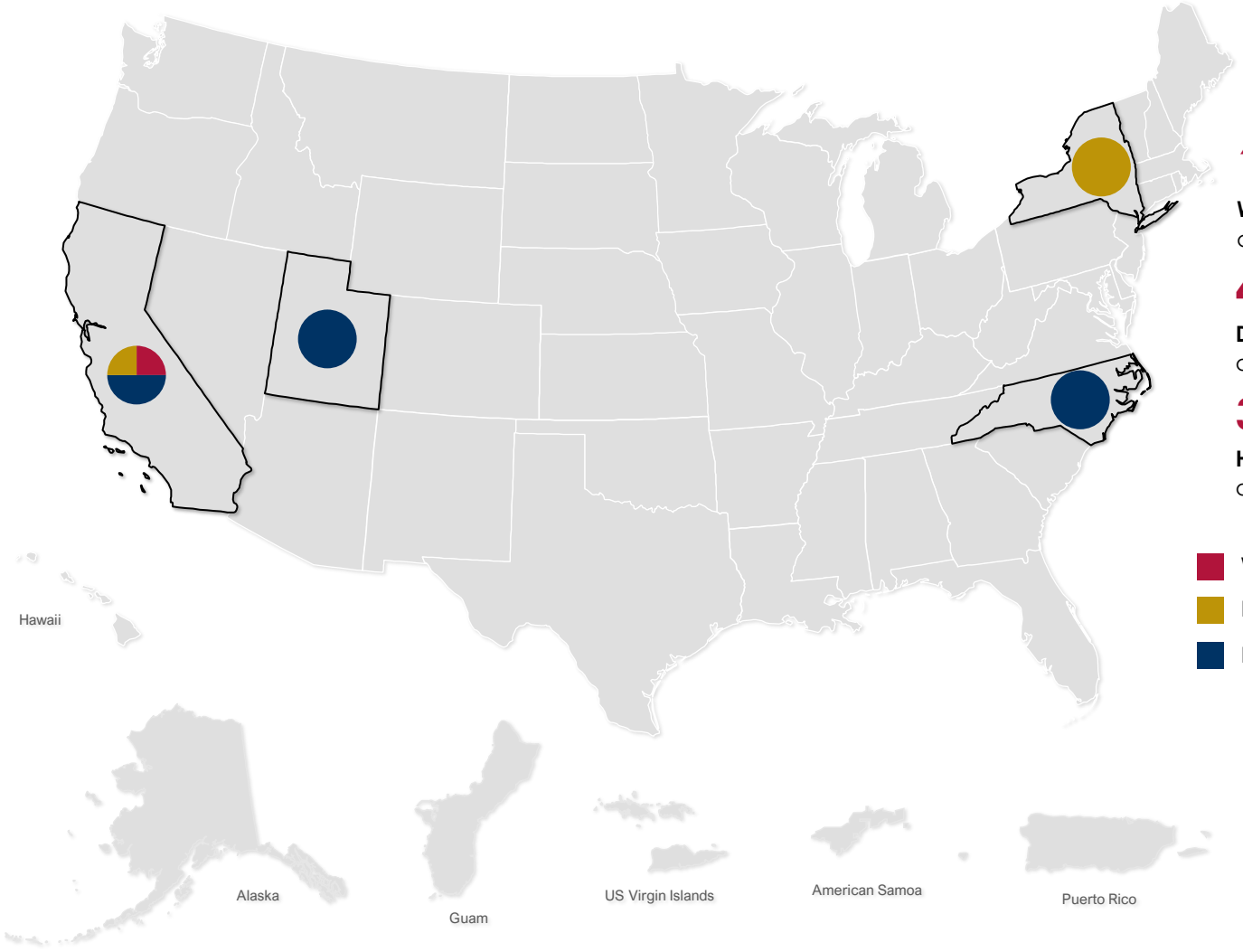
BRIC 2021 – National Competitive Mitigation Projects



National BRIC 2021 Numbers:

- **53** competitive projects selected
  - 19 selected applicants, all FEMA Regions received at least one competitive mitigation project this year
- The average project dollar amount is **$15M** (smallest is $189K and the largest is the program max at $50M)
- **49%** of selected projects meet one or more of the Justice40 interim criteria
- Success rate of **14%** in 2021 – compared to 4% in 2020

BRIC 2021 – Wildfire, Drought, Heat Mitigation



1

Wildfire Mitigation project was approved

4

Drought Mitigation projects were approved

3

Heat Mitigation projects were approved

- Wildfire
- Heat
- Drought

2020 vs 2021:

- The first year of BRIC included **one** competitive wildfire project funded and there were **no** heat or drought projects selected
- This year, **one** wildfire, **three** heat, and **four** drought competitive projects were selected
  - **California**
    - 1 Wildfire
    - 1 Heat
    - 2 Drought
  - **New York**
    - 2 Heat
  - **North Carolina**
    - 1 Drought
  - **Utah**
    - 1 Drought

Climate Adaptation

The expansion of funding to drought and extreme heat hazards in BRIC is a deliberate decision to make communities more resilient to climate change and extreme weather events.

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BRIC 2021 Lessons Learned

BRIC 2022: Get Ready

BRIC Case Studies

Prepare California Match & Next Steps

YR 2022 BRIC NOFO Overview

~$2.3 BILLION

Total available BRIC funding (federal share)

ALLOCATED UP TO:

$112 MILLION

State and Territory Allocation

1. Management costs
2. Mitigation projects
3. Capability – and – Capacity – Building (C&CB)

- Building code activities
- Partnerships
- **Project scoping**
- Mitigation planning and planning-related activities

ALLOCATED UP TO:

$50 MILLION

Tribal Set-Aside

4. Management costs
5. Mitigation projects
6. Capability – and – Capacity – Building (C&CB)

- Building code activities
- Partnerships
- Project scoping
- Mitigation planning and planning-related activities

ALLOCATED UP TO:

$2.13 BILLION

National Competition for Mitigation Projects

7. Management costs
8. Mitigation projects

- $50 million project cap (fed share)

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BRIC 2022 Timeline

2022 | 2023

AUGUST

- FY 2021 competitive project selections are announced
- FEMA NOFO **8/12/2022**
- Issue 2 CFR 200 compliant RFPs for subapplication support if needed

SEPTEMBER

- Cal OES BRIC NOI period opens from **9/1/2022 to 9/16/2022**
- FEMA GO opens **9/30/2022**

OCTOBER - DECEMBER

- Cal OES provides technical assistance and webinars to subapplicants with approved NOIs
- Develop subapplications **(due to OES on December 2, 2022)**
- Respond to Cal OES RFIs as needed

JANUARY

- Cal OES finalizes subapplications to be submitted to FEMA by **January 25, 2023**

MARCH - MAY

- Allocation (C&CB) Rd I announced
- FEMA reviews subapplications for eligibility / technical scoring criteria
- National Technical Review (NTR) reviews competitive subapplications
- Qualitative review panels are convened

AUGUST

- BRIC 2022 competitive projects adjudicated, and selections are announced
- FEMA NOFO for BRIC 2023 expected in **mid-August**

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Building Blocks of BRIC

1. Eligible subapplicant
2. FEMA approved mitigation plan
3. No construction or groundbreaking before grant award
4. Approved Notice of Interest (NOI)
5. Scope of Work with a clear level of protection increase
6. Benefit Costs Analysis (BCA)
7. Local Match and/or overmatch
8. Period of Performance (POP) of 36 months (or longer with reasonable justification)
9. Not dependent on other projects or funding sources (standalone mitigation solution)
10. Must comply with 2 CRF 200 and National Environmental Policy Act (NEPA)
11. Reimbursement based grant with eligible grant management costs and pre-award costs

Eligible:

Local governments, State agencies, cities and townships, counties, special districts, and tribal governments

Not Eligible:

Businesses, individuals, and Private Non-Profits (PNPs)

BRIC Project Overview

- Level of protection **increase**
- **Natural** hazard mitigation (not manmade hazard)
- Must **reduce risk** as a primary benefit
- Clearly explain how the project protects **critical infrastructure**
- Note how the project addresses **ancillary benefits** like improvement to air/water quality, public health, and the economic opportunity
- Relevant **changing/future** conditions and how the project will protect the community now and in 20-50 years
- Call out new and **innovative** ideas
- Use **reliable** data sources and assumptions (cite this data)
- Ensure to include **Management Costs**
- Include **CEQA** if applicable
- Impact **socially vulnerable** and **disadvantaged communities**

BRIC Project Attributes

NATURE-BASED SOLUTIONS

- 55% of the selected California competitive projects included NBS
- One or more NBS should be included as a functional component of the project's scope

CLIMATE CHANGE

- Sea level rise, more precipitation, more frequent storms, and drought
- Climate adaptive projects that address climate change impacts
- The project should make the community resilient against climate change

FUTURE CONDITIONS

- 100% of selected projects included future conditions
- Climate, demographic, population, and land use changes
- Anticipate and respond to future conditions
- Address in planning, design, and operational phases
- Help communities respond to these conditions

ELIGIBLE

+

FEASIBLE

+

COST-EFFECTIVE

+

COMPETITIVE

=

BRIC PROJECT

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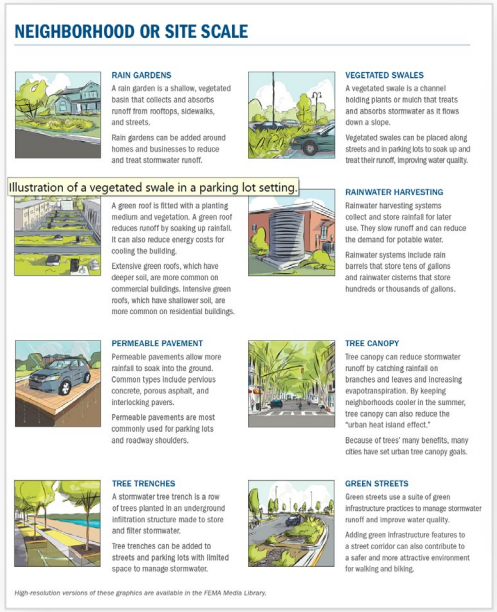
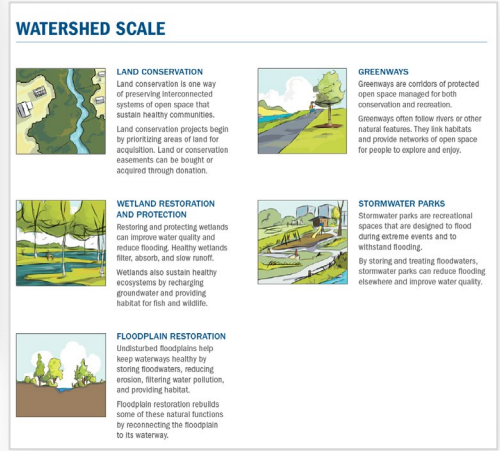
Nature-Based Solutions (NBS)

- 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
  - Detention basin pools provide salmonid species with a low-flow sanctuary
  - Enhance approximately 5 acres of western snowy plover breeding habitat by placing oyster shells or pea gravel to enhance the breeding habitat of endangered bird species

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.





BRIC 2021 Lessons Learned

BRIC 2022: Get Ready

BRIC Case Studies

Prepare California Match & Next Steps

Case Study: Imperial Beach, California

Project Title: Bayside Community Resiliency: The Living Levee Project

Municipality: City of Imperial, California

Amount of Award: $21.7 million

Program: BRIC

Scope of Work: This project benefits Bayside Community in the northern portion of Imperial Beach. The area currently experiences significant damages due to coastal flooding and rainfall. The project implements a living levee, stormwater retention and wetland system to mitigate current flood hazards and future sea level rise hazards, and preserve coastal resources. The project area is also located along a 1.2 mile segment of the existing Bayshore Bikeway.

NBS Component: Living levee (pedestrian and bike corridor), stormwater retention basin, wetland.

Case Study: Orange County, California

Project Title: Nature Based Shoreline Adaptation Project

Municipality: Orange County Parks, California

Amount of Award: $14 million

Program: BRIC

Scope of Work: The project addresses long-term shoreline erosion, coastal flooding and sea level rise on critical infrastructure along a 1,150-foot area of Pacific Ocean coast through the implementation of a hybrid, vegetated dune covering a 60-foot wide buried cobble berm system. The dune structure raises the shoreline elevation and minimizes inland flooding by capturing wind-blown sand.

NBS Component: Vegetated dune, coastal shoreline protection.

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Case Study: Nevada County, California

Project Title: Wildfire Retrofitting for Climate Resiliency

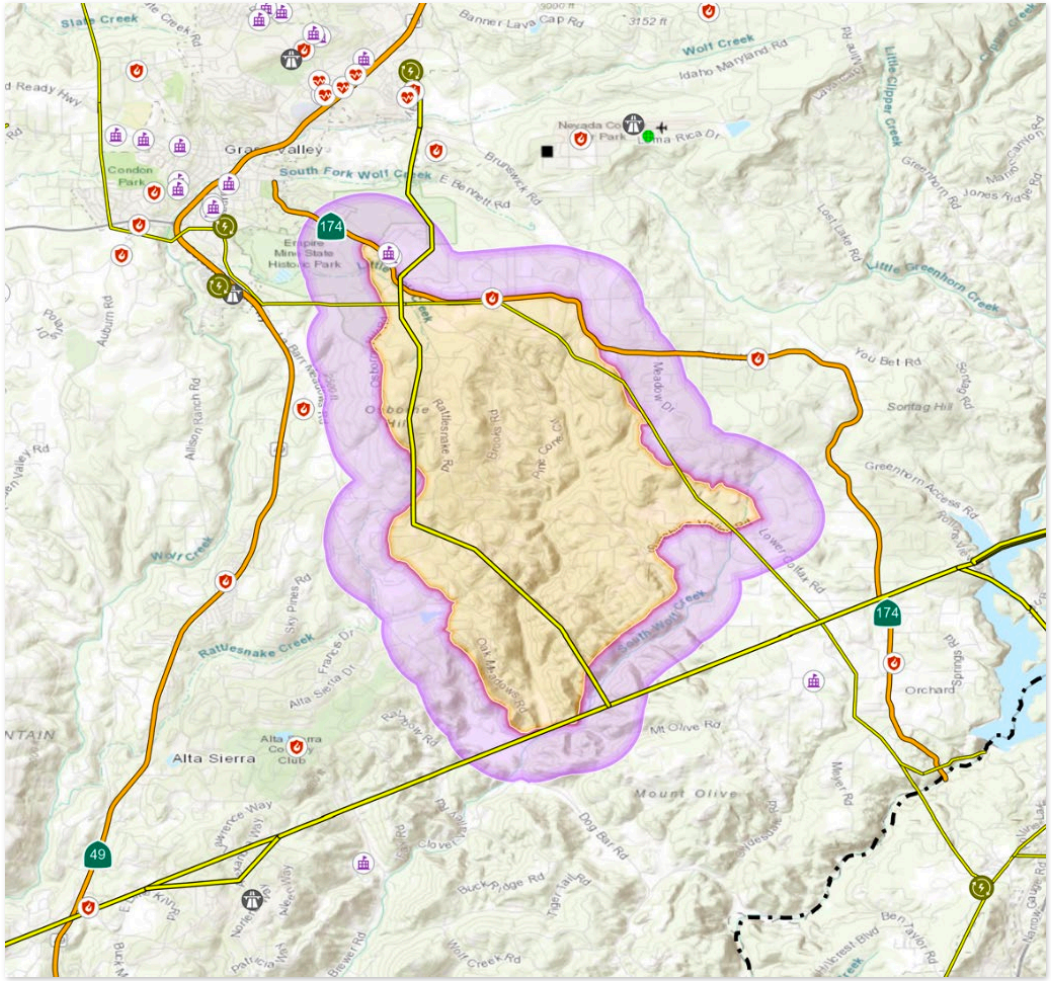
Municipality: Nevada County, California

Amount of Award: $43.4 million

Program: BRIC

Scope of Work: Rural Nevada County proposed home hardening, defensible space vegetation management, landscape level fuel management, and community education to address heavily forested, mountainous terrain that is subject to extreme fire danger and drought. The fuel modification will be managed by grazing goats, capable of reaching areas people and machinery may not access without ground disturbance.

NBS Component: Livestock grazing for fuels management.



Case Study: Menlo Park, California

Project Title: Menlo Park SAFER Bay Project

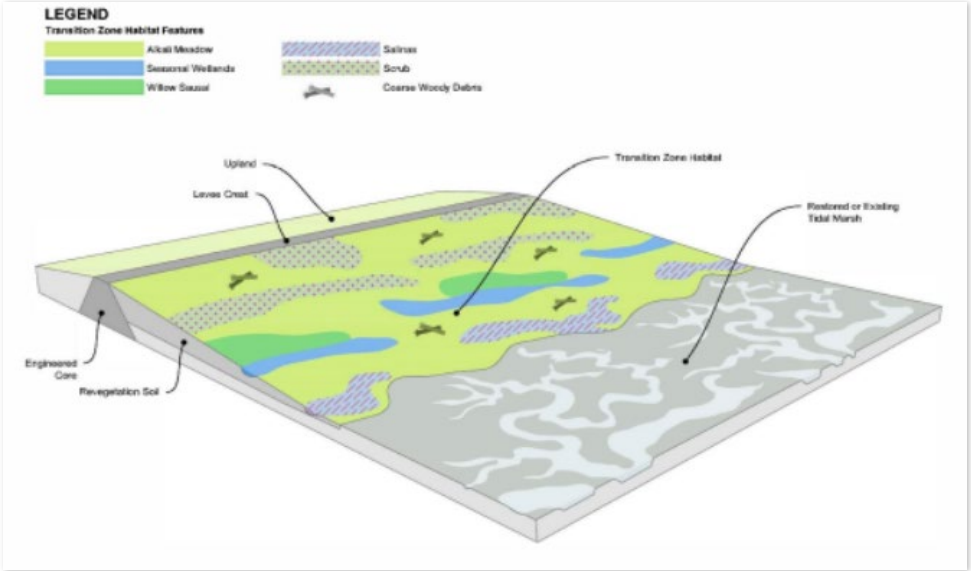
Municipality: City of Menlo Park, California

Amount of Award: $50 million

Program: BRIC

Scope of Work: The Menlo Park SAFER Bay Project involves environmental documentation and permitting, public outreach, field investigation and design, and construction for nature-based solutions to tidal and sea-level rise flooding along a 3.7-mile alignment of the southeast San Francisco Bay shoreline near the City of Menlo park. Flood control elements will be designed to provide a 100-year level of flood protection in addition to 3.5 feet of sea-level rise.

NBS Component: Ecotone levee, pond restoration activities.



BRIC 2021 Lessons Learned

BRIC 2022: Get Ready

BRIC Case Studies

Prepare California Match & Next Steps

Prepare California Match Initiative Eligibility

- BRIC subapplicants may be eligible to receive Prepare California Match, which provides local match (25% non-federal cost share) to qualified entities for competitive and project scoping activities

- Scoping activities need to include:
  - Nature-Based Solutions or activities involving heat, drought, or utility protection (i.e., undergrounding or microgrids)

- Competitive projects must incorporate:
  - Community engagement, partnership building, or other outreach activities
  - Demonstrates effective risk reduction and resiliency, community wide
  - Nature-based solutions, future conditions, ancillary benefits, innovation, and climate adaption
  - BCEGS rating for residential and commercial of 5 or less (1-5)
  - Well-defined implementation plan
  - Maximize the FEMA BRIC technical and qualitative scoring rubrics

Cal OES Funding Priorities:

- Demonstrate a significant level of protection increase and benefits to eligible socially vulnerable and high hazard risk communities.
- Demonstrate effective risk reduction and resiliency on a community wide scale.
- Use nature-based solutions, advance climate adaptation goals, and/or have other defined ancillary benefits.
- Consider future conditions in project planning and design.

Keep In Mind:

BRIC subapplicants that do not meet the criteria for Prepare California Match, are still able to apply for BRIC, but will be responsible for the non-federal cost share

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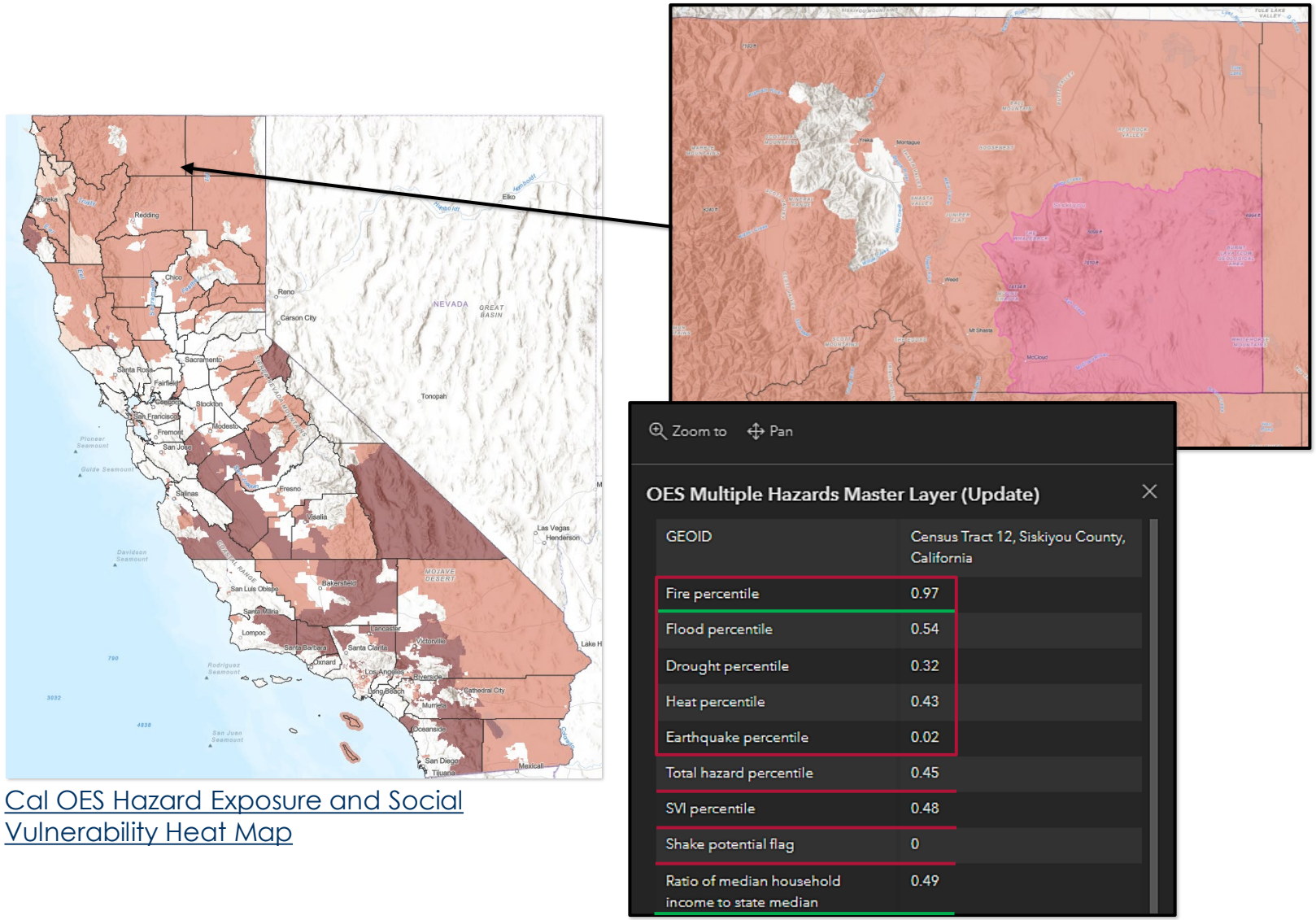
Prepare California Match Map



[Cal OES Hazard Exposure and Social Vulnerability Heat Map]

Eligibility Criteria

- Above 0.70 in the SVI percentile

– or –

- Less than 0.80 in the "ratio of median household income to state median"

– and –

- Above 0.85 in any of the five hazard categories,

– or –

- Above 0.70 in overall hazard exposure,

– or –

- Have 1g or higher in the shake potential flag category

Prepare California Match Considerations

- To be most competitive, the **hazard and project should align** – meaning, if the high hazard is flooding (70th percentile or above), that the project submitted for Prepare California consideration should be a flood project.
- The **project's benefiting area** must be eligible – this can sometimes differ from the project's location.
- Only **subapplicants eligible for BRIC** (FEMA's criteria) are eligible for the Prepare California Match.
  - Per FEMA, PNPs, businesses, and individuals are not eligible
  - Must apply as a subapplicant through Cal OES to be eligible for the Prepare California Match
- The eligible subapplicant MUST have a **hazard mitigation plan** approved and adopted by 12/2/22. There are no exceptions.
- To be most competitive for BRIC, subapplicants should consider **overmatching** (if awarded Prepare California Matching funds) - subapplicants should provide an additional 5% (or 2% EDRC) non-federal share to receive the additional 5 points in the technical evaluation criteria.

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Prepare California Match Notice of Interest (NOI)

- Title your NOI as follows, **Prepare California Match: BRIC 2022 - Subapplicant name and activity**. Example – Prepare California Match BRIC 2022 Muccio County Floodplain Restoration & Levee Resiliency Project
- In the brief summary, note the area that will benefit from the project. Include the **census tract** number(s) for the project benefiting area in this summary
- For the **lat / long**, note the project's benefiting area. This will be checked against the Prepare California Match map to verify eligibility for the Match program
- For the NOI's source of non-federal cost share, write in **"State Funding through Prepare California Match"** – Note if you intend to also overmatch with the additional 5% / 2% (EDRC) non-federal cost share
- Include **Prepare California Match criteria and priorities in the NOI** (BCEGS, NBS, climate adaptive, etc.) – utilize the **what is the mitigation action** field
- If the NOI is approved, Cal OES will give further instructions on how / where to include the Prepare California Match information in the FEMA GO subapplication

Prepare California Match - BRIC subapplicants should clearly describe in the NOI[2] how their mitigation action fulfills both the above mentioned program criteria **and** one or more of the funding priorities (as applicable). NOIs also need to describe how the mitigation action will directly and primarily benefit a specific eligible socially vulnerable and high hazard risk community.

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Get Ready for BRIC 2022

- Go to the Cal OES BRIC **website**
- Cal OES will offer a NOI webinar on 8/31/2022
- Complete a NOI (period opens on 9/1/2022 and closes on 9/16/2022)
- Attend the FEMA BRIC **webinars**
- Attend any State Cal OES sponsored **BRIC webinars**
- Read the **FEMA BRIC NOFO**
- Obtain your **BCEGS rating**
- Obtain Unique Entity Identifier **(UEI)**
- Register in the System for Award Management **(SAM)**
  - SAM can take up to 4 weeks
  - Entities registering in SAM.gov are assigned a Unique Entity ID as a part if the registration process
  - Existing SAM account holders, ensure account is **ACTIVE**
- Register for a **FEMA GO account**

Q&A

Send all additional project scoping, TA, and other questions to Cal OES Hazard Mitigation Assistance at:

HMA@caloes.ca.gov

Benefit-Cost Analysis & Nature-Based Solutions

Johnny Mojica
Principal, Radbridge

Agenda

- Key Concepts
- Benefit-Cost Analysis
- Ecosystem Services
- Case Studies

Hazard Mitigation

Any sustained action taken to reduce or eliminate the long-term risk to life and property from hazards.

- *FEMA*

Nature-Based Solutions

Sustainable planning, design, environmental management, and engineering practices that weave natural features or processes into the built environment to build more resilient communities.

- FEMA

Ecosystem Services

Direct or indirect contributions that ecosystems make to the environment and human populations.

- *FEMA*

FEMA's Ecosystem Services Policy Milestones

Timeline

2013: Initial ecosystem services policy

- Limited to acquisition & relocation/demolition projects

2016: Policy expansion, new eligible project types

- Post-wildfire mitigation
- Aquifer storage & recovery (drought mitigation)
- Floodplain and stream restoration
- Flood diversion and storage
- Green infrastructure/other nature-based solutions

2020: Ecosystem services policy update

- Restrictions removed on use of ecosystem services in BCA

2022: Ecosystem services value updates

- Value updates for current landcovers and new eligible landcovers

FEMA BRIC – Key Requirements

Projects must:

- Be eligible risk reduction activities
- Be technically feasible and effective
- **Be cost-effective**
- Align with state and local/tribal hazard mitigation plans
- Meet relevant consensus-based codes, specifications and standards
- Meet all environmental and historic preservation requirements

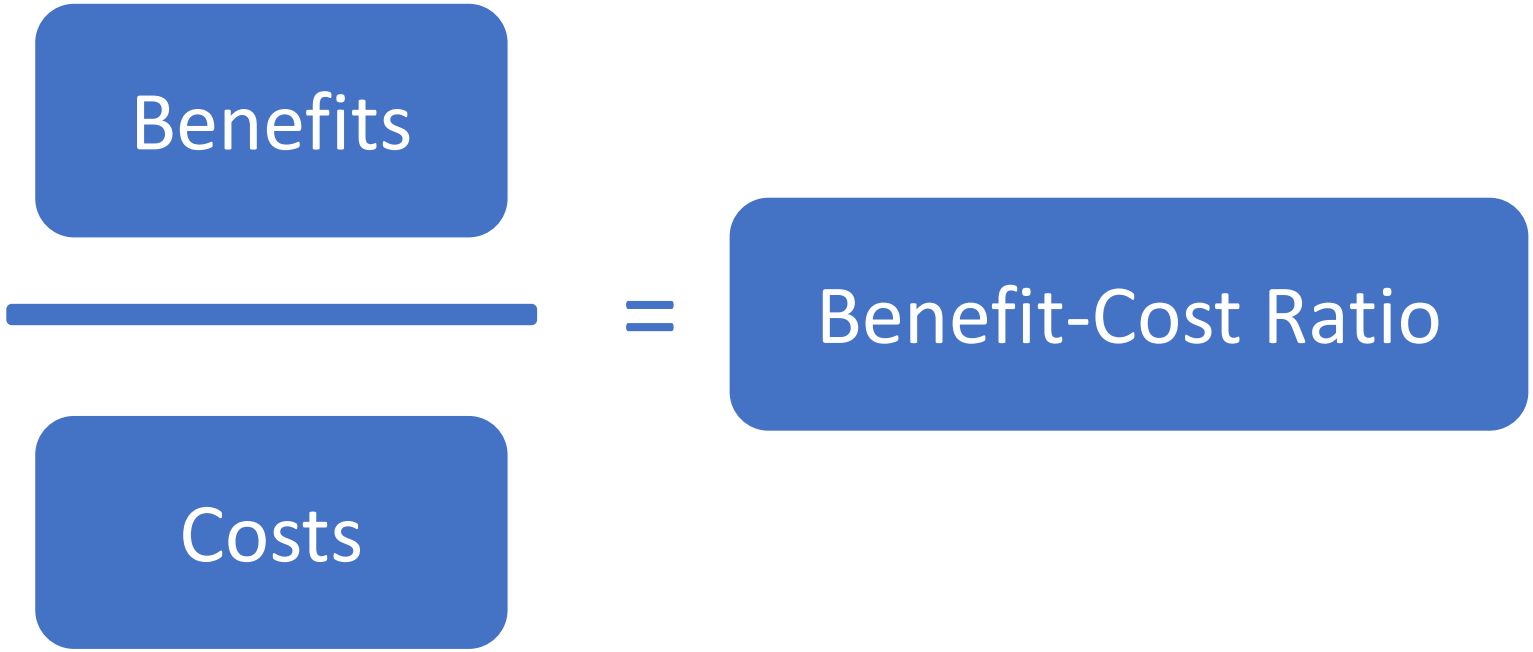
Benefit-Cost Analysis (BCA)

The method of estimating the future benefits of a project compared to its cost. The end result is a Benefit-Cost Ratio, which is derived from a project's total benefits divided by its total project cost.

- *FEMA*

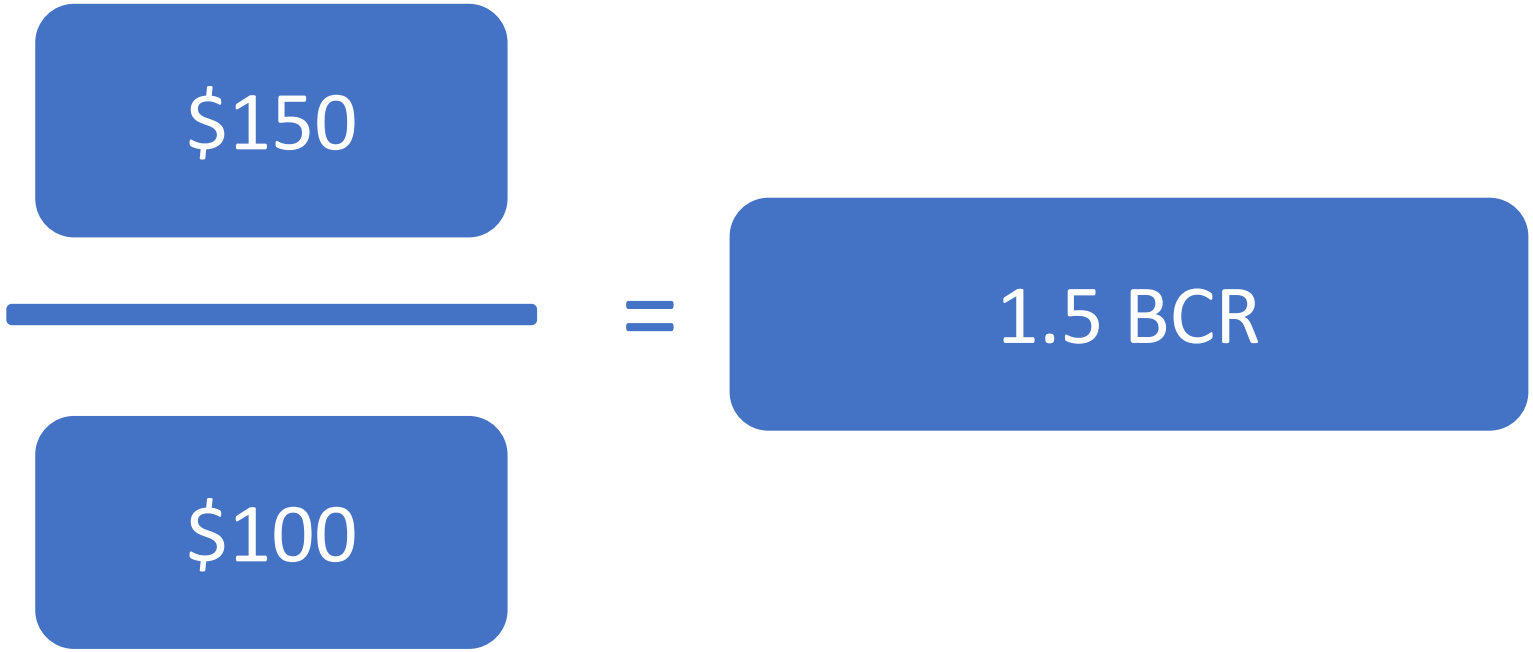
Benefit-Cost Analysis (BCA)

The benefits of a mitigation project are compared with its costs



Benefit-Cost Analysis (BCA)

The benefits of a mitigation project must equal or exceed its total cost



BCA: Key Questions

- What natural hazard(s) will your project mitigate?
- How often does that natural hazard happen?
- What is the frequency and magnitude of damages?
  - How will future conditions affect this?
- How much of this damage will your project prevent?
  - Damages WITH mitigation vs.
  - Damages WITHOUT mitigation
- What are the other social and environmental benefits of your project?
- How long will your project be effective for?

Benefit Categories

- Avoided physical damages (structures and contents, roads, bridges, utilities, residences, critical services)
- Avoided loss-of-function (roads, bridges, utilities, residences, critical services)
- Avoided emergency response costs (sandbagging, evacuation, road closure)
- Avoided injuries and casualties (both direct from a hazard and follow-on such as health issues caused by post-flood mold in residences.)
- Societal and environmental benefits (stress and anxiety, ecosystem services)

Cost Categories

A detailed cost estimate includes the following :

- Pre-award application costs
- Labor
- Materials
- Fees/Permitting
- Equipment
- Appraisal, closing, demo, site restoration, relocation, site assessment (for acquisitions)
- Survey, utility connection, elevation costs (for elevations)

Leveraging Pre-Calculated and Standard Benefits

Developed by FEMA to reduce the BCA burden on subapplicants. Examples include:

Project Type	Pre-Calculated / Standard Benefit
Acquisitions	$323,000
Elevations	$205,000
Post-wildfire mitigation	$5,250/acre
Avoided costs of stormwater conveyance and treatment infrastructure	$101 / million gallons of stormwater
Avoided cost of building infrastructure of alternative public drinking water supplies	$3,455 / million gallons of water.
Ecosystem services	Varies by land cover

FEMA Ecosystem Service Values: 2022 Update

Table 3. Summary of Changes to Land Cover Categories and Ecosystem Service Values

2016 Adopted Values		2022 Proposed Values	
Land Cover Category	Value (2014 USD/acre/year)	Land Cover Category	Value (2021 USD/acre/year)
Forest	554	Forest	12,589
Green Open Space	8,308	Urban Green Open Space	15,541
		Rural Green Open Space	10,632
Riparian	39,545	Riparian	37,199
Wetland	6,010	Coastal Wetland	8,955
		Inland Wetland	8,171
Marine and Estuary	1,799	n/a*	n/a
n/a	n/a	Coral Reefs	7,120
n/a	n/a	Shellfish Reefs	2,757
n/a	n/a	Beaches and Dunes	300,649

*The Marine and Estuary category (and most of its associated values) was merged with the Coastal Wetland category

radbridge

Ecosystem Services

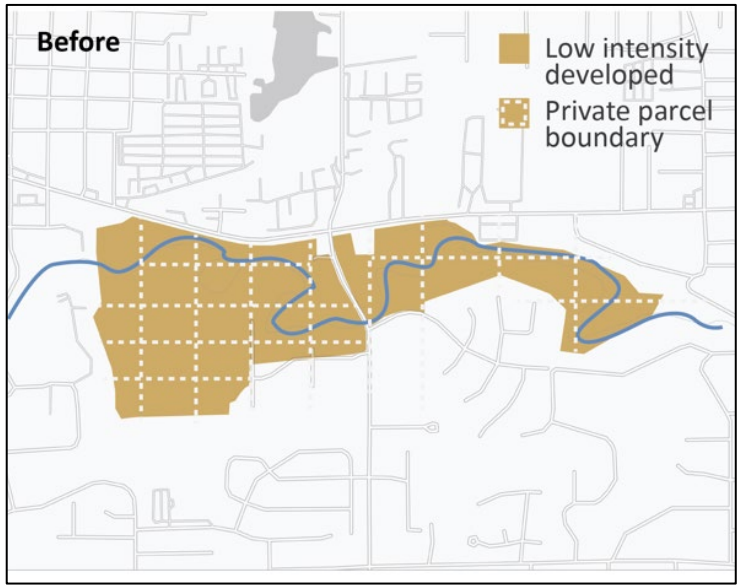
Ecosystem Service Values by Project Useful Life

Land Cover	$/Acre/Year	$/Acre/50yr	$/Acre/100yr
Urban Green Open Space	$15,541	$214,477	$221,758
Rural Green Open Space	$10,632	$146,730	$151,711
Riparian	$37,199	$513,374	$530,802
Coastal Wetlands	$8,955	$123,586	$127,781
Inland Wetlands	$8,171	$112,766	$116,594
Forests	$12,589	$173,738	$179,636
Coral Reefs	$7,120	$98,261	$101,597
Shellfish Reefs	$2,757	$38,049	$39,340
Beaches and Dunes	$300,649	$4,149,181	$4,290,036

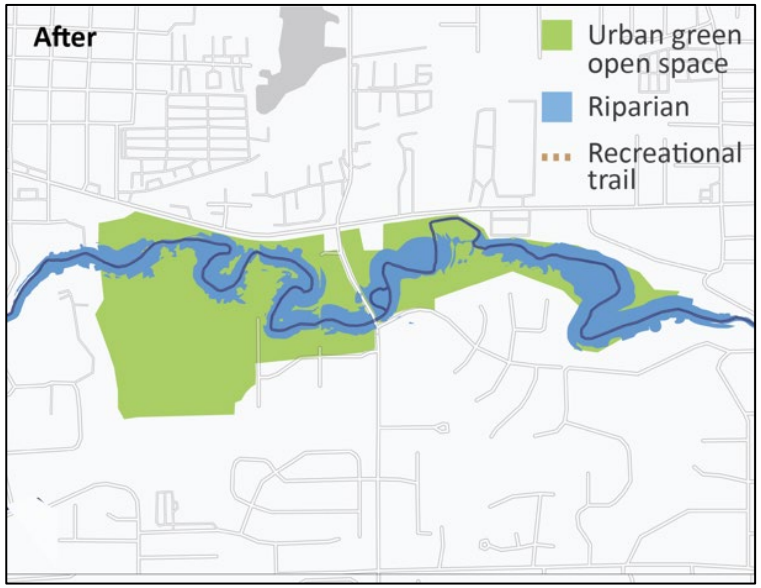
Using Ecosystem Services in the BCA Toolkit

1. Define mitigation action
2. Compare land cover categories + acreage for project alternatives
    1. WITHOUT mitigation vs. WITH mitigation
3. Ensure each land cover category meets feasibility & effectiveness criteria
    1. Meets land cover definitions
    2. Shows increase in the health or functionality of an ecosystem in the “After-Mitigation” scenario relative to the “Before-Mitigation” (No Action) scenario – through **restoration, creation, enhancement or protection**.
    3. Follows internally or externally established principles, guidelines, policies and techniques.
4. Use the standard project useful life (or higher useful life if justified)

Ecosystem Services – Riparian Example



Before Mitigation



After Mitigation

After Mitigation (satellite view)

Avoid common pitfalls!

- Project must show increased level of protection
- Project must reduce risk as a primary benefit
- BCA should align with Scope, Schedule, and Budget
- Provide detailed data and justifications (reviewers should be able recreate your BCA)
- Leverage Cal OES support

Project Example: Drought

City of Sequim Stormwater Capture and Drought Risk Reduction Project

Goals:

- Build drought resilience through shallow aquifer recharge
- Reduce street flooding in the City of Sequim
- Reduce the risk of Happy Valley Rd closure

Approach:

- Capture stormwater runoff and divert to an infiltration area

Project Example: Drought

BCA Assumptions:

- Mitigation Action:
  - Aquifer storage and recovery
- Discount rate: 7%
- Project useful life: 40 years
- Utilized FEMA Standard Values for avoided stormwater treatment ($101/million gallons) and avoided drinking water infrastructure ($3,455/million gallons)
- Environmental benefits: N/A

Data Required:

- Stormwater runoff data
- Infiltration rates
- Traffic counts
- Flood response cost data

Project Example: Drought

Present Value of Benefits: $1.3 million

- Shallow aquifer recharge: $92,671/year
- Avoided stormwater treatment: $40,244/year
- Avoided road closures: $6,676/year

Present Value of Costs: $1.25 million

- Stormwater capture facility, conveyance structure, and development of infiltration area: $1.2 million
- Ongoing maintenance: $5,000

Benefit-Cost Ratio: 1.1

Status: Approved [HMGP]

Project Example: Wildfire

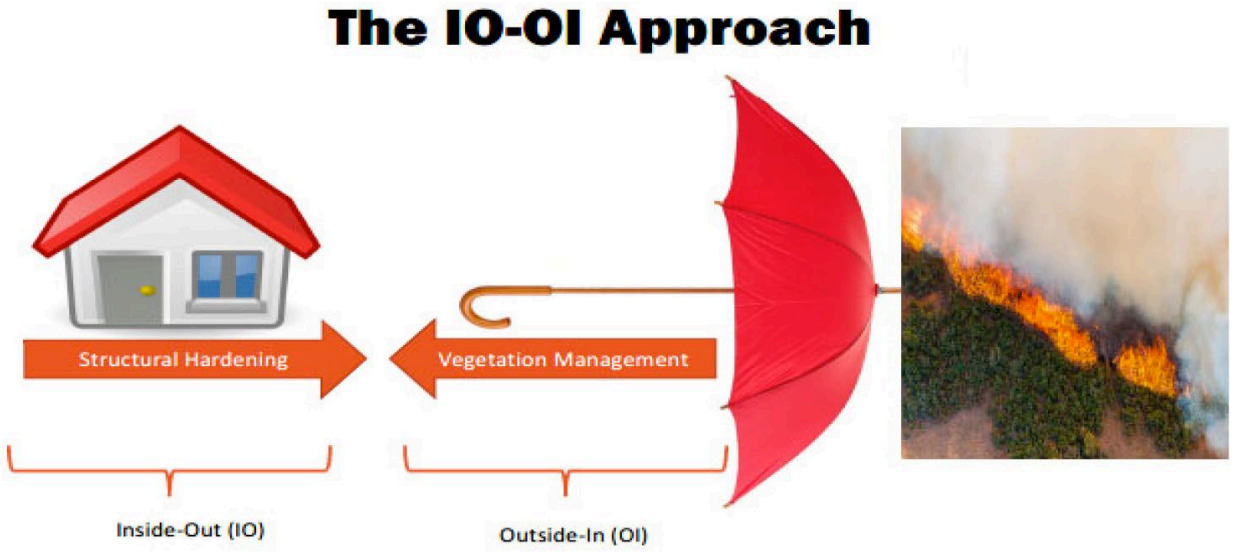
Sonoma County Wildfire Risk Reduction Project

Goals:

- Reduce wildfire risk to life, property, and the environment
- Develop a solution that matches the scale of the hazard
- Demonstrate the “Inside-out, outside-in” approach (IO-OI)’

Approach:

- Reduce vegetation in large-parcel infill sites and/or wildland areas
- Encourage property owners to create and maintain defensible space and to harden their homes



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Project Example: Wildfire

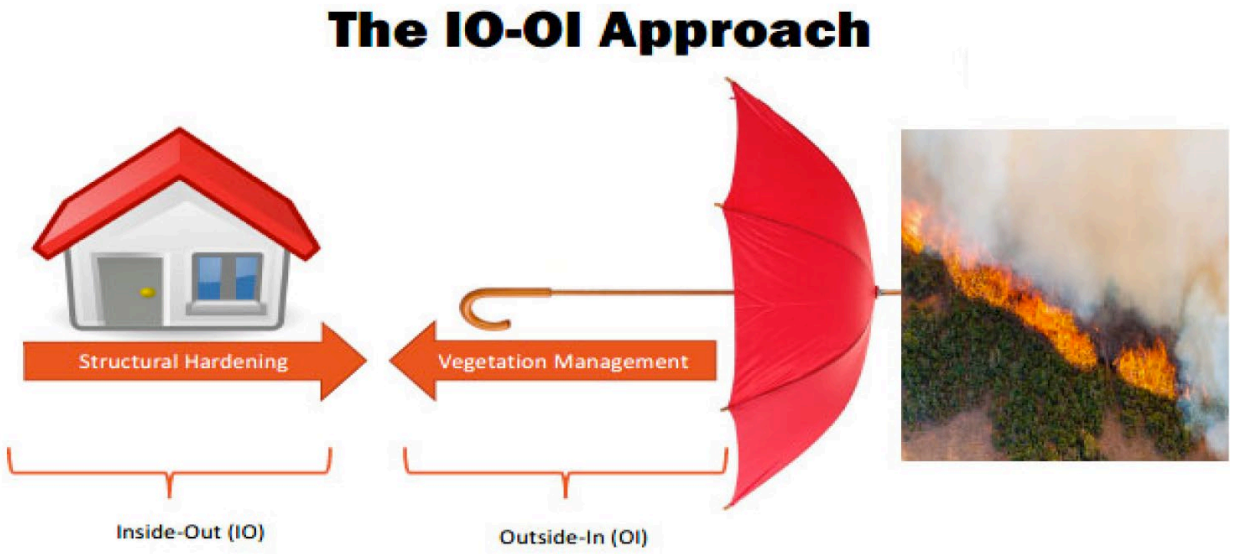
BCA Assumptions:

- Mitigation Actions:
  - Hazardous Fuels Reduction
  - Defensible Space
  - Ignition Resistant Construction
- Discount rate: 7%*
- Project useful life: 20 years*
- Burn Recurrence Interval: 16 years

**FEMA default value*

Data Required:

- Building Replacement Value
  - Building footprint data
  - Assessor data
  - Default use codes from Hazus
  - Replacement cost estimates ($/sq. ft.)
- Burn recurrence interval
- Estimates of resident opt-in for defensible space



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Project Example: Wildfire

Present Value of Benefits: $696 million
- Hazardous fuels reduction: $536 million
- Defensible space: $22 million
- Defensible space & ignition resistant construction: $137 million

Present Value of Costs: $156 million
- Hazardous fuels reduction: $17 million
- Defensible space: $7.5 million
- Defensible space & ignition resistant construction: $24 million
- Annual maintenance: $11.7 million

Benefit-Cost Ratio: 4.45

Status: Approved [BRIC – Phased Project]