

HDR



Leveling the Playing Field: Taking Social Equity into Account in Coastal Projects



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Calls for Equity Inclusion



Executive Order 12898

- *Established Interagency Working Group on Environmental Justice*

Circular A-4

- *Allows Distributional Effects Analysis*

Executive Order 13653

- *Evaluates Social Equity in Infrastructure*

Calls for Equity Inclusion

(Current Administration)



Executive Order 13985

- *Required Equity Assessments for Federal Agencies*

Executive Order 14008

- *Introduced Justice40 Initiative*

“40% of overall benefits” of federal investments flow to disadvantaged communities

Executive Order 14091

- *Created Flexibility in Federal Funding for Underserved Communities*

What is considered a Disadvantaged Community?

Community means:

- Either a group of individuals living in geographic proximity to one another, or
- A geographically dispersed set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions



What is considered a Disadvantaged Community?

Disadvantaged can include:

- Low income, high and/or persistent poverty
- High unemployment and underemployment
- Racial and ethnic residential segregation
- Linguistic isolation
- High housing cost burden and substandard housing
- Disproportionate impacts from climate change
- High energy cost burden and low energy access
- Jobs lost through the energy transition
- Access to healthcare

What is considered a Disadvantaged Community?

Disadvantaged can include:

- Distressed neighborhoods
- Tribal communities
- High transportation cost burden and/or low transportation access
- Disproportionate environmental stressor burden and high cumulative impacts
- Limited water and sanitation access and affordability





Incorporating Equity in Coastal Engineering Projects

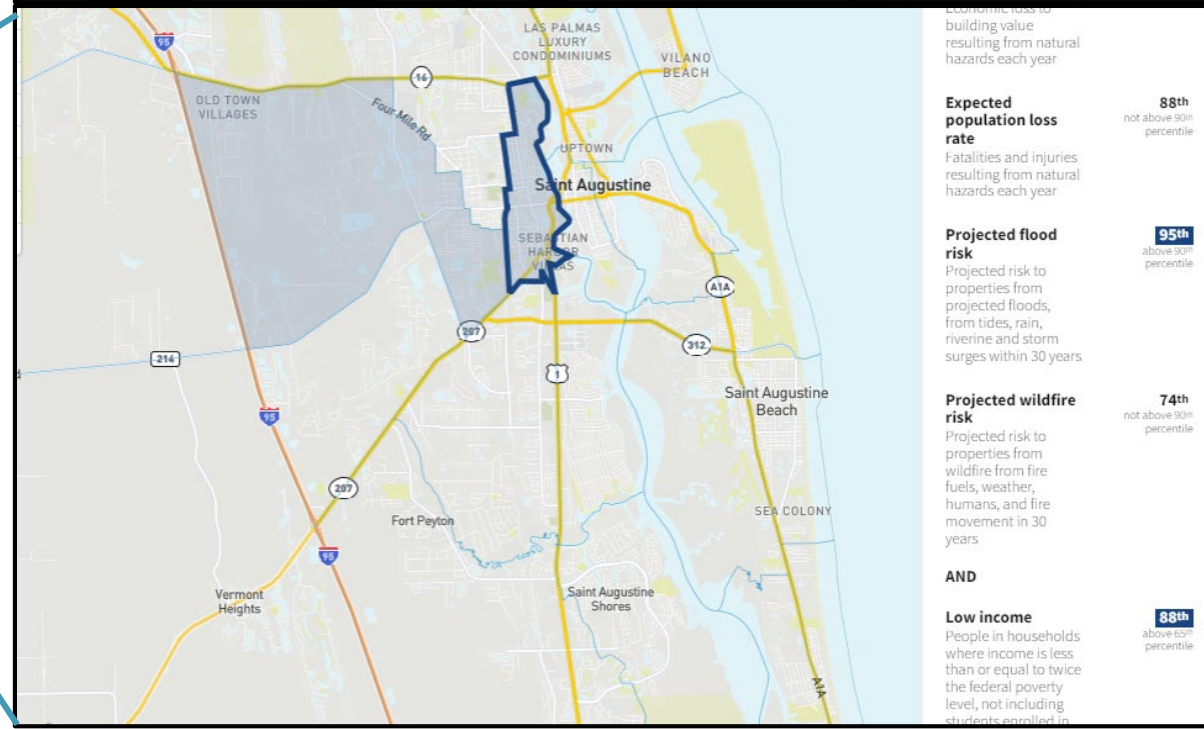
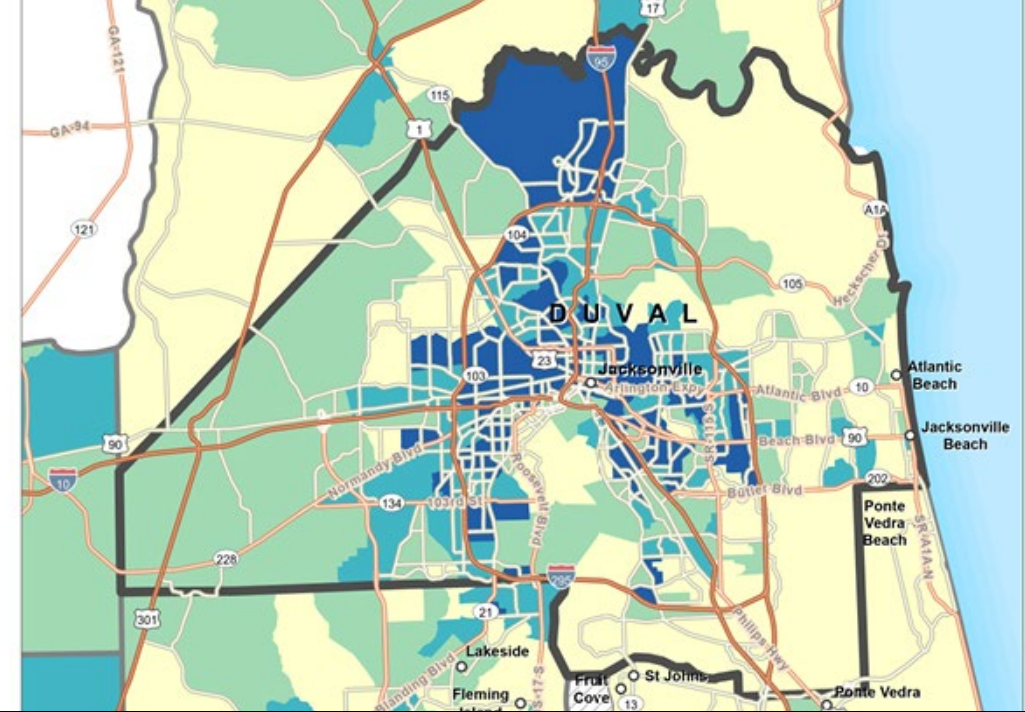
FEMA Alternative Cost-Effectiveness Methodology

- October 2022 Memo
- Applicable for FY22
- Building Resilient Infrastructure and Communities (BRIC) grants
- Flood Mitigation Assistance (FMA) grants
- Reduced discount rate for Benefit Cost Analysis (BCA) for disadvantaged communities

Incorporating Equity in Coastal Engineering Projects

Data Sources Available

- CDC/ATSDR Social Vulnerability Index (SVI)
- FEMA National Risk Index (NRI)
- EPA Environmental Justice (EJScreen) Tool
- CEQ Climate and Economic Justice Screening Tool
- UCF & UofSC SoVI®



Incorporating Equity in Coastal Engineering Projects

How to Use the Data

- Publicly accessible and straightforward
- Helps decision makers prioritize adaptation projects for funding
- Indices can be used as weightings for selected evaluation criteria
- Most data can be downloaded to GIS and overlaid with predicted flood inundation





BCA provides decision makers with a clear indication of the most efficient alternative, that is, the alternative that generates the largest net benefits to society (ignoring distributional effects)



FROM 2003 A-4

Innovative Approach

Weighted Benefit to Cost Analysis

- HDR funded a 2022 Fellowship — internal research
- Expert advisory panel guided this applied economics effort
- Investigated valuating distributional effects of projects



Context for this Innovative Approach

Equity and Distribution

- Income inequality => dramatic rise since 1980
- Infrastructure => inherent distributional outcomes
- Agencies => seek sound, defensible methods

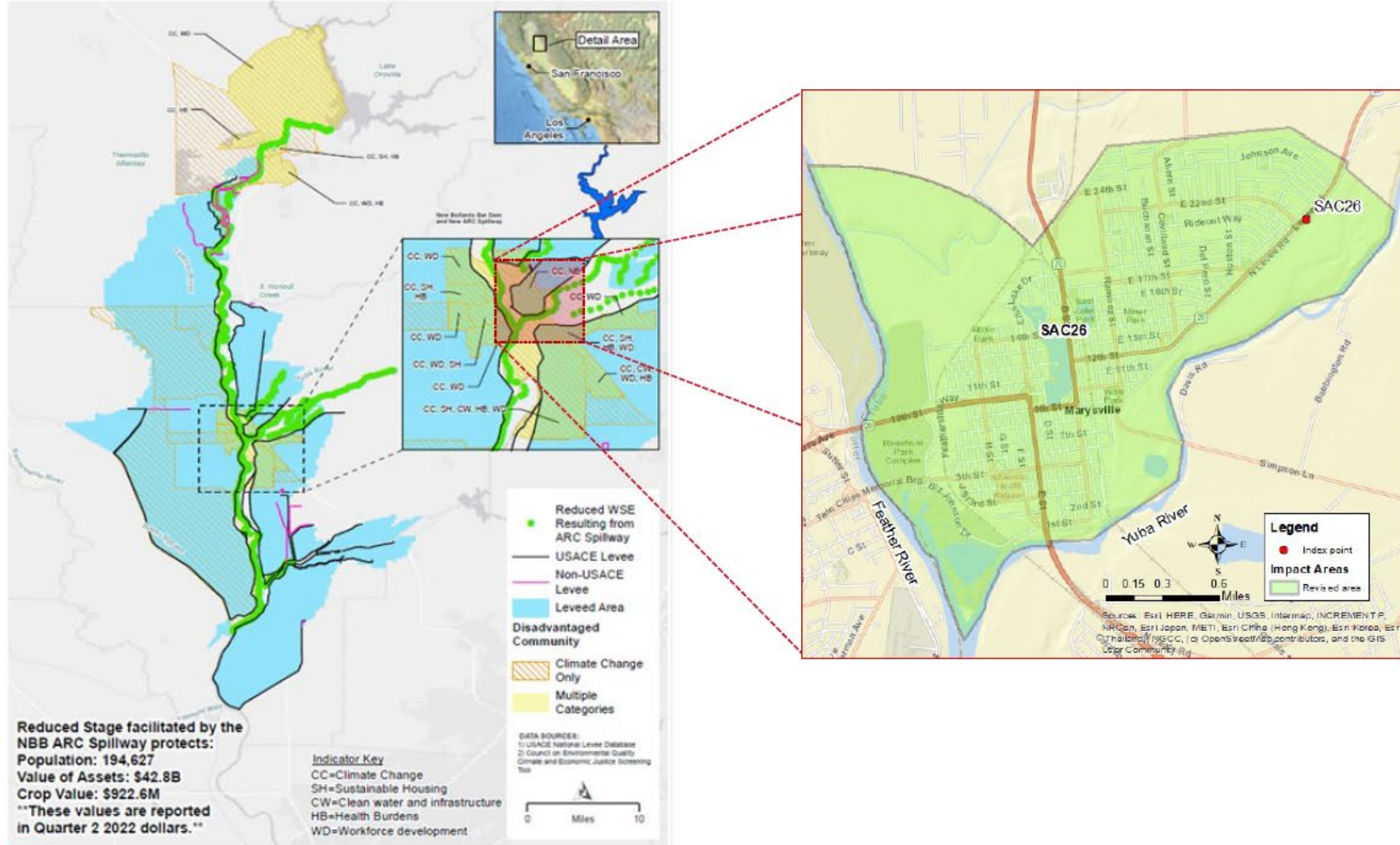
Standard Benefit-Cost Analysis

- **Applied on major projects** for decades
- Now, increasingly **required in Federal grants**
- Analytical focus: “**market**” **value** of improvements
- **Ignores differences** in people, such as income
- *BCA provides no input on equity evaluation*
- *Distributional analyses => alongside BCA*



Demonstration Project – Marysville, CA

- Potential flood risk to properties (green shaded zone)
- Residential and commercial properties at risk
- Flood damages have been evaluated for several return periods
- Analysis supported a FEMA grant application

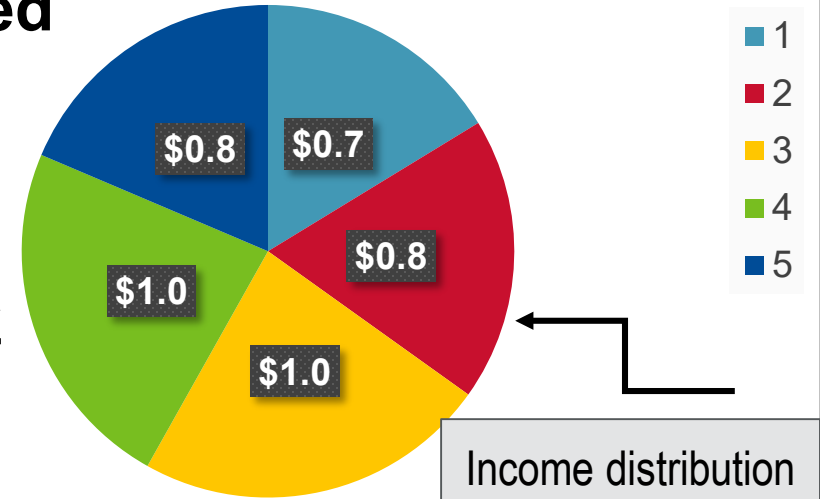


Innovative Approach *Illustration*

Standard BCA

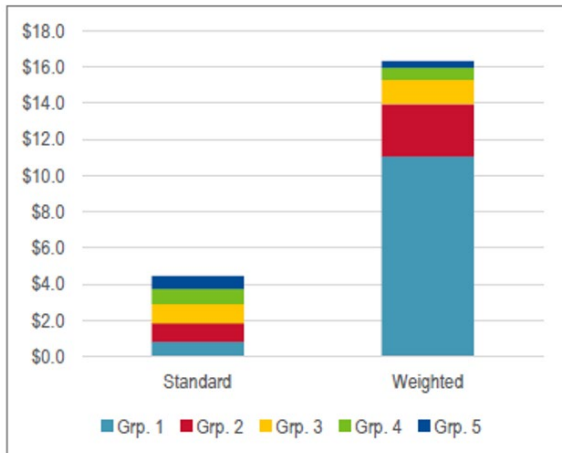
Benefit Category	Present Value (\$M)
Residential Structures	\$\$\$
Residential Contents & Displacements	\$\$\$
Commercial Structures	\$\$\$
Commercial Contents & Displacements	\$\$\$

Distributed Benefits

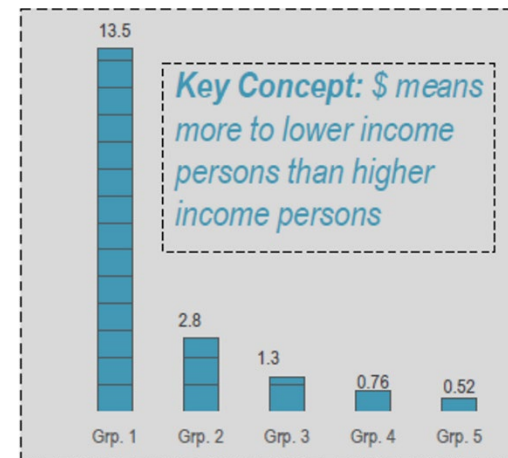


Income distribution of beneficiaries

Weighted BCA



Income-Based Weights



Key Concept: \$ means more to lower income persons than higher income persons

Income distribution of region



Innovative Approach

Next Steps

- OMB has drafted revisions to Circular A-94, related to BCA of projects
 - Draft revisions include weighted BCA
- Apply WBCA to coastal engineering projects
 - Include economic effects, such as
 - Job gains/losses
 - Tourism increase/decrease
 - Tax revenue generated

“

*A rising tide raises all boats,
but you need a boat to rise with the tide.
What does he who does not have a boat do?*

”

RAHUL GANDHI

HDR