**Appendix H – Phase 2 Benefit-Cost Analysis (BCA) Instructions for Community Development Block Grant National Disaster Resilience (CDBG-NDR) Applicants**

In Phase 2, each applicant will complete a benefit cost analysis for any Covered Projects. This CDBG-NDR BCA will provide a sense of the cost efficiency of the proposal, but the BCA score will not be used alone to determine soundness of approach. HUD will not fund any Phase 2 activities for which the benefits to the applicant’s community and to the United States as a whole are not demonstrated by the evidence submitted to justify the costs. The standard criterion for funding projects is a net present value above zero (or equivalently, a benefit-to-cost ratio greater than one). However, HUD recognizes that some benefits and costs may be difficult or impossible to quantify, and qualitative descriptions of benefits that cannot be monetized will be taken into account as evidence, as appropriate. Note that quantifying or otherwise accounting for social and ecological benefits and costs is a critical component, as is consideration of all related resources, including leverage. The methodology employed must follow OMB Circular A-94, “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs” (link below).

Benefit Cost Analysis has not been required in past HUD competitions, however, HUD would like to better understand how Applicants value the community development and economic revitalization benefits CDBG funds are provided to generate, but which are not traditionally included in BCAs for other Federal programs. This analysis should build off of the Applicant’s Phase 1 submission; however HUD understands that proposals may have changed between Phases 1 and 2. The Phase 2 BCA must, at minimum, reflect all the benefits and/or costs associated with addressing the needs described in the Factor 2: Phase 2 Need/Extent of the Problem narrative portion of the application, however, HUD encourages applicants to consider additional benefits and/or costs beyond those associated with addressing these needs. Additional information or narrative to explain how monetary costs or benefits are established for the purpose of calculating a net present value and benefit-cost ratio may be included in the BCA Attachment to the Phase 2 application without counting against the application page limit.

Applicants should consult the CDBG-NDR competition website at <https://www.hudexchange.info/cdbg-dr/resilientrecovery> for resources for preparing a BCA. While HUD understands that many Applicants will work with assistance from a professional technical or grant writer in a consulting or contract capacity, Applicants are encouraged to actively participate in determination of categories of benefits and costs to be included in the analysis.

This document provides general guidance on conducting an analysis, but applicants should refer to OMB Circular A-94 in preparing their analysis (<http://www.whitehouse.gov/omb/circulars>.) Applicants must use the base-case discount rate in OMB Circular A-94 (7%) when calculating net present value. However, Applicants may additionally calculate benefits and costs using alternate discount rates (no lower than 3%) only provided they include justification acceptable to HUD based on the nature of the proposal. The importance of showing the sensitivity of results to other discount rates depends on the nature of the private activity being displaced or altered by the project. For a project that primarily affects private investment, the 7% discount rate is appropriate. For a project that primarily and directly affects private consumption, such as through increases in prices paid by consumers for goods and services, HUD will consider lower discount rates. The more that private consumption is affected rather than private investment, and the stronger the supporting justification provided by the grantee, the greater the importance to reviewers of showing calculations using discount rates below 7%.

HUD will accept an existing BCA for a Covered Project that has been accepted by the United States Army Corps of Engineers (USACE), the Federal Emergency Management Agency (FEMA) or the United States Department of Transportation (DOT), provided that:

1. The BCA is based on the proposal as presented in the CDBG-NDR application;
2. The BCA accounts for economic revitalization and other social/community benefits (a supplemental narrative no longer than three (3) pages may be provided to describe these factors);
3. The BCA is provided such that that HUD will understand how the results of the analysis would change if HUD partially funds the application as permitted under the NOFA. Individual BCAs can be prepared for different activities and combined together for an aggregate net present value and benefit cost ratio; and
4. If an applicant modifies the discount rate when using another federal agency methodology, they must provide adequate justification as described above. If other federal funding sources are needed to support the CDBG-NDR project, applicant must comply with the relevant federal agency program guidelines concerning BCA in funding applications to those agencies, which may not allow a modification to the discount rate.

For Applicants proposing a Program[[1]](#footnote-1) rather than specific Covered Project, HUD will accept a BCA at the program level provided that:

1. The program level BCA methodology is consistent with the guidance in this Appendix to the greatest extent feasible;
2. The Applicant includes a description of the BCA methodology the Applicant will use to inform its project or activity funding decisions;
3. The Applicant’s schedule submitted in response to Factor 3 takes the time necessary for such reviews into account and still complies with the statutory timeframes for availability of CDBG-NDR funds; and
4. The BCA methodology or approach used for the Program is consistent with the general principles outlined in OMB Circular A-94 (A-94).

HUD’s acceptance of such a program-level BCA is not an approval of the project- or activity-level analysis itself, which HUD will reserve the right to review after award through the Grant Terms and Conditions. While an Applicant maintains the discretion to use a BCA methodology or approach best suited to the project, all acceptable methodologies and approaches must include the baseline elements or considerations outlined below to allow for an underlying degree of uniform comparison and consistency with A-94.

BCA Narrative Description

Applicants must provide a narrative description to accompany the BCA that is clearly and concisely written so that it is easy for reviewers with limited economic expertise to understand. In the narrative description for the BCA, Applicants should describe the proposal and expected costs and benefits, according to the categories described below. To the greatest extent possible, the BCA narrative description should identify evidence-based practices as the basis for the proposal. Applicants should ensure consistency between the BCA statement and the rest of the application. Where information is found elsewhere in the CDBG-NDR application, provide the page number rather than re-stating here.

1. Describe the process for preparing the BCA. If prepared by a professional technical or grant writer in a consulting or contract capacity, how was the Applicant staff involved, particularly in preparing or evaluating benefits and costs?
2. Full proposal cost, including Federal, State, local, and private funding, as well as expected operations and maintenance costs and functionally related to geographically related work;
3. A description of the current situation and the problem to be solved (including anticipated changes over the analysis period);
4. A description of the proposed project or program including functionally or geographically related elements and estimated useful life;
5. A description of the risks to your community if the proposal and any land use, zoning or building code changes are not implemented, including costs that might be avoided if a disaster similar to the qualifying disaster struck again, including costs avoided if as a result of the project remaining effective in a future disaster;
6. A list of the benefits and costs of the proposal and the rationale for including each effect using the table provided according to the following categories:
	1. Lifecycle costs;
	2. Resiliency value;
	3. Environmental Value;
	4. Social Value; and
	5. Economic Revitalization.
7. A description of risks to ongoing benefits from the proposed project or program; and
8. An assessment of challenges faced with implementing the proposal.

Benefit Cost Analysis

If an application contains multiple components, or phases that could be implemented separately, the applicant should provide a separate description (and analysis) for each component or phase. In determining such divisions, each component or phase should independently provide meaningful benefit or utility.

The BCA must include all pertinent data and quantifiable calculations for benefits and costs listed in the narrative description in a single spreadsheet tab (or table in *Word.*) Applicants may also include up to three pages summarizing other benefits or costs that are difficult to quantify. Benefits and costs must be estimated for each year after the proposal’s start date and for the analysis period (see “Basic Assumptions and Definitions for CDBG-NDR Benefit-Cost Analysis” below.) If important benefits will continue beyond the end of the analysis period, applicants can include a residual value at the end of the analysis period, and treat that as an additional benefit, discounted to the end of the analysis period. Including an asset’s residual value is justified to the extent that there is reasonable certainty of continued benefits over the economic life of the asset. Sensitivity analysis including high and low residual values is recommended. Applicants may also discount the benefits and costs separately and calculate a net present value of each. The BCA must clearly define which of these methods is being used and describe the costs and benefits used in the analysis, the rationale for including each, and a description of how they were monetized, if applicable. Results must be presented in the form of a net present value and benefit-to-cost ratio and be reproducible based only on information provided.

The following sections are provided to help guide Applicants through the information requested in the BCA narrative description. If the requested information is provided elsewhere in the application, reference the page number; otherwise provide additional information needed to explain the BCA.

**Current situation and the problem to be solved**

* Critical, unique information, beyond information described in OMB Circular A-94 explaining:
	+ The impacts of the qualifying disaster that the proposal is designed to address?
	+ The existing flood, wind, fire, earthquake, climate change or other risks and vulnerabilities in your area?
	+ What are the existing social conditions/challenges in your area and what populations are made more vulnerable to the disaster impacts and risks identified above? Are any of these vulnerable populations disproportionately lower income or minority?
* What are the environmental conditions in your area?
	+ Describe air and water quality, paying particular attention to potential sources of contamination, including, but not limited to
		- wastewater treatment facilities;
		- Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) sites;
		- Stormwater management networks; and
		- Underground and above-ground chemical storage facilities.
	+ Describe land-use patterns and habitats
	+ Describe any environmentally sensitive areas, such as drinking water sources.
* How do trends in land-use, housing development and affordability and employment affect disaster recovery or vulnerability to the risks identified above?

**Proposal Description**

* What are the key proposal objectives? In describing the proposal, an Applicant must group together and evaluate as a single proposal all individual activities which are related to one another. Those activities might be near the major activity (a geographic relationship like a rehabilitation center near a hospital) or be necessary for the core project or program described in the proposal to work (a functional relationship such as a shuttle bus to link a satellite parking lot to a new building) or are logical parts of an action (for example off-site storage to ensure access to records).
* What is the design philosophy? How is the proposal specifically designed to address the community’s recovery needs and current and future risks and vulnerabilities.
* If applicable, what are the geographical boundaries of the project or program described in the proposal (including any related activities) and/or the area it is designed to serve?
* What are the main components of the proposal plan and how do they interact? What links or supports them?
* Describe how any anticipated changes to local policies, including, but not limited to local zoning/land use or building codes, will address the community’s recovery need and/or risks and vulnerabilities.
* What is the timeline for completion and/or term of the full proposed project or program and each component or phase, if applicable?
* What is the estimated useful life of the proposal?
* Are alternative discount rates used in addition to the 7% base-case discount rate? If so, provide a justification based on the nature of the proposal as described above.

**Risks if the proposal is not implemented**

* What would realistically happen now, in 5 years, in 20 and 50 years if this proposal is not implemented? (provide for the full proposal, and for each component or phase, if applicable)
* What would be the impact on the community as a whole and any vulnerable lower income populations identified above, in particular, if this proposal is not implemented?
* For proposals with multiple components, are there additive impacts or benefits that will not be realized if this proposal is not done?
* Are there any areas of concentrated poverty that will remain adversely affected by the impact qualifying disaster if the proposal is not implemented?
* Estimate the costs that might be avoided if a disaster similar to the qualifying disaster struck again, accounting for how development may proceed differently depending on whether the proposal is implemented.

**Categories of Costs and Benefits**

* Lifecycle costs may include:
	+ Project/Investment costs from Executive Summary
		- Include estimated costs associated of environmental remediation, if applicable
	+ Operations and maintenance costs
	+ Any costs associated with actions taken by the Applicant or any governmental partner(s) have taken action(s) after the date of the Qualified Disaster, to enhance resilience as described in Attachment K.
* Resiliency value includes value of protection from the effects of future/repeat disasters, including, but not limited to, flood, wind, fire, earthquakes, such as:
	+ Reduction of expected property damages due to future/repeat disasters
	+ Reduction of expected casualties from future/repeat disasters
	+ Value of reduced displacement caused by future/repeat disasters
	+ Reduced vulnerability of energy and water infrastructure to large-scale outages
* Environmental Value factors may fall into the following categories:
	+ Ecosystem and bio diversity effects (e.g. from wetlands restoration or reforestation)
	+ Reduced energy use
	+ Noise levels
	+ Climate change – Reduced Greenhouse Gas emissions
	+ Air Quality – Reduced criteria pollutants (nitrogen dioxide (NO2), ozone (03), sulfur dioxide (SO2) and particulate matter of aerodynamic diameter of the micrometers or fewer (PM-10)
	+ Water quality – reduced stormwater runoff
	+ Reduced urban heat-island effect
* Social value includes benefits that would further Community Development objectives may fall into the following categories:
	+ Reductions in human suffering (lives lost, illness from exposure to environmental contamination, asthma and cancer rates in low income and minority populations living in areas with greater environmental risk)
	+ Benefit to low- and moderate-income persons and/or households
	+ Improved living environment (such as elimination of slum and blight conditions, improved community identity and social cohesion, improve recreational value, greater access to Cultural, historic, archaeological sites and landscapes, equal access to resilient community assets)
	+ Greater housing affordability
* Economic Revitalization benefits may fall into the following categories:
	+ Direct effects on local or regional economy (e.g. tourism revenue) net of opportunity costs.
	+ Value of property other than through enhanced flood protection, independent of increases in property value captured by other benefits in the BCA or that might otherwise have occurred without the proposed project.

**Risks to ongoing benefits**

* What are the key risks and uncertainties that may affect your proposal and how to those risks affect the positive and negative effects of the proposal?
	+ Especially risks resulting from climate change and the cost of loss of function or service provided by the project, if applicable.
* How well can the proposal be adapted in case any of these risks occur?

**Challenges with implementation**

* Are there any political or stakeholder risks that could affect the proposal’s implementation schedule?
* What are the technical risks to this proposal?
* What are the procedural (legal) risks to this proposal?
* Can the Applicant demonstrate broad community support for the proposal? Are there any political and/or stakeholder issues? Have environmental groups serving low-income and minority (especially Native American) populations been included in project planning and alternative development?

**Basic Assumptions and Definitions for CDBG-NDR Benefit-Cost Analysis**

**Analysis Period**

The analysis period should reflect the period of the useful life of the proposal. If the proposal anticipates providing a direct benefit to recipients or other, non-asset-based delivery model, provide a brief explanation of the analysis period used for the BCA.

**Price level**

We recommend using 2015 constant prices.

**Inflation**

No general price inflation should be used in projecting benefits and costs.

**Discount Rate**

Applicants are advised to use the base-case discount rate in OMB Circular A-94 (7%) when calculating net present value. In addition to the base-case rate, Applicants may also show calculations using alternative discount rates (no less than 3%) provided they are accompanied by adequate justification. The importance of any alternative discount rate calculations depends on the nature of the project, as discussed above.

**Value of statistical life and other immaterial damage valuation**

Please use FEMA’s estimated values in the Life Safety section of the FEMA Cost-Benefit Analysis Re-Engineering (BCAR) guidance on the development of standard economic values issued December 2011. The applicable tables, 4 and 5, are shown below.



**Instructions for completing Table describing BCA Costs and Benefits**

Using the following instructions, score each of the positive and negative effects of the proposal using the chart below:

**Score the effect** of your proposal on the basis of the criteria list:

Column 1:

Create one row for each cost or benefit considered in the BCA. Name the cost or benefit to be described in each row in each category.

Column 2:

Provide the page number where the description of each effect can be found in factor narratives or BCA Attachment..

Column 3:

Provide a brief description of the rationale for including each effect in the BCA.

Column 4:

Provide the basis and/or methodology for monetizing each effect, including data sources, if applicable.

In case no quantitative information is available, use the following qualitative scale to score each cost or benefit:

-- Expected strong negative impact

- Expected negative impact

0 Neutral

+ Expected positive impact

++ Expected strong positive impact

? Impact unknown / cannot be assessed

Notes on qualitative scale:

• Use expert judgments to score.

• Scoring of the proposal is relative to the reference situation

• Provide a qualitative clarification for each score.

• Identify required extra information needed for (improving) the judgment.

Column 5:

Monetize life-cycle costs/benefits of the effect, to the extent possible.

Column 6:

Assess the certainty of the effect on a scale from 1 (very certain) to 5 (very uncertain)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** | **6** |
| **Costs and Benefits by category** | **Page # in Factor Narratives or BCA Attachment** | **Qualitative Description of Effect and Rationale for Including in BCA** | **Quantitative assessment****(Explain basis and/or methodology for calculating Monetized Effect, including data sources, if applicable)** | **Monetized effect (if applicable)** | **Uncertainty** |
| **Life cycle costs** |  |  |  |  |
| *One row for each effect Name* |  |  |  | *$* |  |
| **Resiliency Value** |  |  |  |  |
| *One row for each effect* |  |  |  | *$* |  |
| **Environmental Value** |  |  |  |  |
| *One row for each effect* |  |  |  | *$* |  |
| **Community Development Value** |  |  |  |  |
| *One row for each effect* |  |  |  | *$* |  |
| **Economic Revitalization** |  |  |  |  |
| *One row for each effect* |  |  |  | *$* |  |

1. A “Program” refers to a set of related measures or activities with a particular long-term goal or objective. A Program is implemented by a specified agency that uses defined policies and procedures to select projects or activities to assist. [↑](#footnote-ref-1)