



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-7000

OFFICE OF COMMUNITY PLANNING
AND DEVELOPMENT

Special Attention of:
Region 1 and Region 2 Regional Administrators
Region 1 and Region 2 CPD Division Directors
All CDBG-DR Grantees receiving funds for
implementation of Rebuild by Design
projects pursuant to P.L. 113-2

Notice: CPD-16-06

Issued: April 20, 2016

**Expires: This Notice
remains in effect until
amended, superseded or
rescinded**

SUBJECTS: Community Development Block Grant Disaster Recovery (CDBG-DR)-Rebuild by Design: Guidance regarding content and format of materials for approval of CDBG-DR Action Plan Amendments releasing funds for construction of Rebuild by Design (RBD) projects, including guidance for Benefit-Cost Analysis.

Guidance for development of *Implementation Case Study and Lessons Learned* document related to the implementation of Rebuild by Design projects.

INTRODUCTION

On October 16, 2014, HUD's Office of Community Planning and Development (CPD) published a *Federal Register* Notice (79 FR 62182) providing an allocation of Community Development Block Grant disaster recovery (CDBG-DR) funds for Rebuild by Design (RBD) projects. These funds were made available pursuant to the Disaster Relief Appropriations Act, 2013 Public Law (P.L.) 113-2. The Notice required CDBG-DR grantees receiving an allocation of funds for RBD projects to develop and submit an Action Plan Amendment that reflects the final designed RBD project as a condition for release of funds for project construction. This CPD Notice provides clarifying guidance as to the content and format of materials to help ensure timely approval of the Action Plan Amendment.

The *Federal Register* Notice also established requirements for the expenditure of RBD funds, including the requirement that grantees develop and submit an "implementation case study and lessons learned document" prior to grant close-out. This CPD Notice provides guidance regarding an acceptable scope and methodology for the case study and lessons learned document.

The *Federal Register* Notice established additional requirements, briefly noted below. Please reference the *Federal Register* Notice for the full articulation of requirements relating to RBD projects.

- RBD projects, when completed, must achieve independent utility;
- Grantees must undertake planning at the selected RBD proposal level;
- Grantees must examine potential displacement of residents, businesses, and other entities due to potentially increasing costs of rent and property ownership in the years following the completion of the RBD Project; and
- Grantees must submit all RBD Projects to the Sandy Regional Infrastructure Resilience Coordination Team (SRIRC) to expedite environmental review and permitting.

This guidance applies only to CDBG-DR funds for implementation of Rebuild by Design projects under the Disaster Relief Appropriations Act, 2013 (P.L. 113-2, enacted January 29, 2013). Grantees are encouraged to contact their CPD Representatives with any questions. Additional questions related to this guidance should be directed to the Disaster Recovery and Special Issues Division, Office of Block Grant Assistance, U.S. Department of Housing and Urban Development, telephone number (202) 708-3587. Persons with hearing or speech impairments may access this number via TTY by calling the Federal Relay Service at (800) 877-8339 (this number is toll-free). Questions may also be submitted electronically to Disaster_Recovery@hud.gov.

TABLE OF CONTENTS

- I. Contents and format of material for substantial Action Plan Amendment
 - a. Benefit-cost analysis
 - II. Case study development guidelines
- I. CONTENTS AND FORMAT OF MATERIAL FOR SUBSTANTIAL RBD ACTION PLAN AMENDMENT

The *Federal Register* Notice required that the initial RBD Action Plans include preliminary or general descriptions of the following five elements:

1. Project Description
2. Implementation Partnership
3. RBD-Specific Citizen Participation Plan
4. Project Timeline
5. Identification of Leveraged or Reasonably-Anticipated Funds

The *Federal Register* Notice requires that each of these elements be updated in the substantial RBD Action Plan Amendment in order to release funds for construction of RBD projects. The update should include a more detailed description regarding each element.

In addition, the *Federal Register* Notice requires that Action Plan Amendment submissions include an examination of the RBD project through a benefit-cost analysis (BCA), using methodologies and approaches acceptable to HUD. Guidance for use of acceptable BCA methodologies and approaches follows.

a. BENEFIT-COST ANALYSIS

HUD is requiring that grantees examine RBD projects through the lens of a BCA because it is a valuable tool to help inform decision-making regarding public infrastructure investments. The BCA will not serve as the sole determinant as to whether an RBD project plan may or may not be approved. The standard BCA criterion for 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, therefore, qualitative descriptions of benefits and costs that cannot be monetized will be taken into account, as appropriate. The methodology employed must be consistent with the general principles outlined in OMB Circular A-94, “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs” (link below). To the degree that a methodology or approach deviates from the general principles in A-94, explanations and justifications must be provided. This document provides general guidance on conducting an analysis, but grantees should refer to OMB Circular A-94 in preparing their analysis (<http://www.whitehouse.gov/omb/circulars>). Grantees may also consult the CDBG National Disaster Resilience Competition website at <https://www.hudexchange.info/cdbg-dr/resilientrecovery> for resources on preparing a BCA.

Use of Methodologies and Approaches

Given the unique nature of each RBD project, no single methodology or approach will be appropriately suited for all projects. Accordingly, a grantee may use existing local, State, or federal methodologies and approaches, or adaptations thereof, that it finds to be most fitting and appropriate to best capture and account for the full range of physical, economic, social, and environmental costs and benefits. If using a methodology or approach other than one currently accepted by a federal agency, HUD must determine it to be acceptable for this purpose. Grantee analyses should include all integrally-related project elements that are being funded by sources other than HUD CDBG-DR funds and for which funding has been identified at the time of analysis.

It is recommended that grantees share their BCA methodology or approach with HUD when grantees begin to conduct their analysis. HUD will collaborate with other federal agency subject-matter experts in providing guidance on the BCA methodologies prior to submission of the substantial Action Plan Amendment. The determination of acceptability is only a validation of the methodology or approach employed and is not an approval of the analysis itself (which will have yet to be submitted and reviewed). While a grantee maintains the discretion to use a BCA methodology or approach best suited to the project, all acceptable methodologies and approaches must include certain baseline elements or considerations to allow for an underlying degree of uniform comparison and consistency with OMB Circular A-94.

The BCA must include all pertinent data and quantifiable calculations for benefits and costs in a single spreadsheet tab (or table). Benefits and costs must be estimated for each year after the project's start date and for the analysis period. If important benefits will continue beyond the end of the analysis period, grantees 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. Grantees 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.

Baseline Elements and Considerations

Grantees should use standard benefit value assumptions adopted by federal agencies when available, such as the Federal Emergency Management Agency's (FEMA) valuation of open space retained as such in perpetuity (*FEMA Mitigation Policy FP-108-024-01*, dated June 18, 2013) or the Department of Transportation's *Guidance on Treatment of the Economic Value of a Statistical Life* (updated periodically, most recently 2015, www.dot.gov/policy/transportation-policy). In the absence of federally adopted values, a grantee should cite the source from which the value is derived or demonstrate the basis for determining the value, if making the determination itself. All assumptions should be accompanied with a clear identification or description of the basis supporting the assumptions. Project cost estimates should also cite the basis for the estimate of a particular cost. Costs should also be expressed in per unit terms when possible and appropriate. While HUD understands that many grantees will work with assistance from a professional technical writer or grant writer in a consulting or contract capacity, grantees are encouraged to actively participate in the determination of categories of benefits and costs to be included in the analysis.

Grantees must use the 7% base-case discount rate in OMB Circular A-94 when calculating net present value. However, grantees may additionally calculate benefits and costs using alternate discount rates (no lower than 3%) provided it also includes justification acceptable to HUD based on the nature of the project. 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. If a grantee modifies the discount rate when using another federal agency methodology, it must provide adequate justification as described above. If other federal funding sources are needed to support the RBD project, the grantee 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.

BCA Narrative Description

Grantees must provide a narrative description to accompany the BCA that is clearly and concisely written. In the narrative description for the BCA, grantees should describe the RBD Project 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 BCA assumptions. The following section provides additional guidance on the type of information that should be included in the BCA narrative description. If the requested information is provided elsewhere in the Substantial Action Plan amendment, reference the page number; otherwise, provide additional information needed to explain the BCA.

The narrative description should include:

1. A description of the process undertaken to prepare the BCA. If prepared by a professional technical writer or grant writer in a consulting or contract capacity, please explain how the grantee staff was involved, particularly in preparing or evaluating benefits and costs.
2. A description of the proposed, funded project including functionally- or geographically-related elements and estimated useful life. The project description should address the following questions:
 - What are the key project objectives?
 - How is the project specifically designed to address the community's recovery needs and current and future risks and vulnerabilities?
 - If applicable, what are the geographic boundaries of the project (including any related activities) and/or the area it is designed to serve?
 - What are the main components of the project 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, including economic effects.
 - What is the timeline for completion and/or term of the full proposed project and each component, if applicable?
 - What is the estimated useful life of the project?
 - 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 project as described above.
3. Full project cost, including federal, State, local, and private funding; expected operations and maintenance costs; and other functionally-related costs.

4. A description of the current situation and the problem to be solved (including anticipated changes over the analysis period), such as:

- Critical, unique information, beyond information described in OMB Circular A-94 explaining:
 - What are the existing flood, wind, fire, earthquake, climate change or other risks and vulnerabilities in your project area?
 - What risks is the project designed to reduce?
 - What are the existing social conditions/challenges in your area and what populations are vulnerable to the disaster impacts and risks identified above? Are any of these vulnerable populations disproportionately lower income or minority?
- How do trends in land-use, housing development and affordability, and/or employment affect disaster recovery or vulnerability to the risks identified above?

5. A description of the risks to your community if the project and any land use, zoning or building code changes are not implemented, including costs that might be avoided if a disaster similar to Hurricane Sandy struck again, which may include:

- What would realistically happen now, in 5 years, in 20 and 50 years if this project is not implemented?
- What would be the impact on the community as a whole and any vulnerable lower income populations identified above, in particular, if the RBD project is not implemented?
- For RBD projects with multiple components, are there additive impacts or benefits that will not be realized if this project is not done?
- Are there any areas of concentrated poverty that will remain adversely affected if the RBD project is not implemented?
- Estimate the costs that might be avoided if a disaster similar to Hurricane Sandy occurred in the same area, accounting for how development may proceed differently depending on whether the RBD project is implemented.

6. A list of the benefits and costs of the RBD project and the rationale for including each, using categories provided in the table at the end of this document (Lifecycle costs, Resiliency Value, Environmental Value, Social Value, and Economic Revitalization):

- Lifecycle costs may include:
 - Project/Investment costs
 - Include estimated costs associated with environmental remediation, if applicable; and
 - Operations and maintenance costs.

- Resiliency Value includes value of protection from the effects of future/repeat disasters, 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; and
 - Value of protection from disruptive non-disaster events, such as nuisance flooding.

- 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 (O₃), sulfur dioxide (SO₂) and particulate matter of aerodynamic diameter of the micrometers or fewer (PM-10));
 - Water quality– reduced stormwater runoff; and
 - Reduced urban heat-island effect.

- Social Value includes benefits that would further community development objectives and 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, improved recreational value, greater access to cultural, historic, archaeological sites and landscapes, equal access to resilient community assets); and
 - 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 RBD project.

7. A description of risks to ongoing benefits from the proposed project, addressing questions such as:
 - What are the key risks and uncertainties that may affect the RBD project and how do those risks affect the positive and negative effects of the project?
 - 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 RBD project be adapted in case any of these risks occur?

8. An assessment of challenges faced with implementing the RBD project, addressing questions such as:
 - Are there any political or stakeholder risks that could affect the project's implementation schedule?
 - What are the technical risks to this project?
 - What are the procedural (legal) risks to this project?
 - Can the grantee demonstrate broad community support for the project? Are there any political and/or stakeholder issues? Have environmental groups serving low-income and minority populations been included in project planning and alternative development?

Basic Assumptions and Definitions for Benefit-Cost Analysis

Analysis Period

The analysis period should reflect the period of the useful life of the RBD project. If the project 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

HUD recommends using 2016 constant prices.

Inflation

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

Discount Rate

Grantees are advised to use the 7% base-case discount rate in OMB Circular A-94 when calculating net present value. In addition to the base-case rate, grantees 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 (CBAR) guidance on the development of standard economic values issued December 2011. The applicable tables, 4 and 5, are shown below.

Table 4: AIS Injury Level Categories

AIS Code	Injury Severity Level	Selected Injuries
1	Minor	Superficial abrasion or laceration of skin; digit sprain; first-degree burn; head trauma with headache or dizziness (no other neurological signs).
2	Moderate	Major abrasion or laceration of skin; cerebral concussion (unconscious less than 15 minutes); finger or toe crush/amputation; closed pelvic fracture with or without dislocation.
3	Serious	Major nerve laceration; multiple rib fracture (but without flail chest); abdominal organ contusion; hand, foot, or arm crush/amputation.
4	Severe	Spleen rupture; leg crush; chest-wall perforation; cerebral concussion with other neurological signs (unconscious less than 24 hours).
5	Critical	Spinal cord injury (with cord transection); extensive second- or third-degree burns; cerebral concussion with severe neurological signs (unconscious more than 24 hours).
6	Fatal	Injuries, which although not fatal within the first 30 days after an accident, ultimately result in death.

Source: FAA, 2007

Federal agencies such as the Federal Aviation Administration (FAA), US Department of Transportation (USDOT), and National Highway Traffic Safety Administration (NHTSA) calculate an economic value for avoiding different AIS scale injuries by using the relative value coefficients as a fraction of the VSL. By following this methodology, FEMA is able to establish an economic value for the various injury levels that could be avoided – and therefore counted as benefits – from a hazard mitigation project. These economic values are shown in Table 5. The BCA software uses the following values for the different hazard types.

Table 5: AIS Injury Severity Levels, Fraction of VSL, and Economic Values (2012 Dollars)

AIS Code	Description of Injury	Fraction of VSL	Economic Value
AIS 1	Minor	.0020	\$13,000
AIS 2	Moderate	.0155	\$102,000
AIS 3	Serious	.0575	\$379,000
AIS 4	Severe	.1875	\$1,237,000
AIS 5	Critical	.7625	\$5,032,000
AIS 6	Fatal	1.0000	\$6,600,000

Source for Fraction of VSL: FAA, 2008.

Instructions for completing the Table describing BCA Costs and Benefits

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

Score the effect of the RBD project 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 the BCA Narrative Description.

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 project 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 Narrative Description	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					
<i>One row for each effect</i>				\$	
Resiliency Value					
<i>One row for each effect</i>				\$	
Environmental Value					
<i>One row for each effect</i>				\$	
Community Development Value					
<i>One row for each effect</i>				\$	
Economic Revitalization					
<i>One row for each effect</i>				\$	

II. GUIDELINES FOR IMPLEMENTATION CASE STUDY AND LESSONS LEARNED DOCUMENT

Case studies can be a useful resource for a variety of community development professionals and stakeholders. Members of both the public and private sectors look to case studies and lesson learned documents for both innovative ideas and practical guidance when they consider and undertake new development projects. Planners, developers, architects, consultants, public officials, investors, and community advocates often use case studies to improve upon innovative development concepts and approaches that have worked elsewhere. In addition, case studies can be excellent tools to assist other HUD grantees in improving the efficiency and effectiveness of CDBG-DR projects and in avoiding obstacles and challenges experienced by other grantees. By providing a grantee's perspective on the RBD project implementation process, including considerations of costs trade-offs, and accomplishments – the case study and lessons learned document can be a key element in advancing broader community recovery and resilience efforts.

The case study for each RBD project should record the implementation process for each project. The documents should be detailed, but also readable to a broad audience. Grantees are encouraged to include appropriate illustrations, photographs, and other graphic enhancements to enhance readers' understanding of the project implementation.

The case study and lessons learned document for each RBD project should consist of the following primary components:

1. Project Description
2. Implementation

In this section, grantees should describe the overall implementation process, beginning with the project conception and ending with construction completion. The implementation should be broken down into phases, such as feasibility, environmental review, design, etc. For each phase, grantees should discuss the following, if applicable:

- The goals and deliverables of the stage;
- Structure of the project team, including the decision chain;
- Roles of external stakeholders outside of implementation team;
- Implementation services required and the procurement approach to fulfill these needs.
- Community outreach efforts, including challenges and/or specific tactics that were successful;
- Successes achieved;
- Challenges encountered and how they were resolved.
- How were various key aspects of the project funded? Was there anything unique or innovative about the sources of funding that were used?

- How was the project related to an overall recovery and resilience plan and to other recovery and resilience projects?

3. Project Analysis

This section is an opportunity for the grantees to explore RBD project elements that presented particularly complex challenges and describe how these challenges were resolved. Topics might include, but are not limited to, long-term ownership, maintenance and operations plans; navigating multiple municipal jurisdictions within a project area; budget and timeline challenges; compliance with applicable codes and other regulations. In particular, grantees should analyze the following topic in each project's case study:

- Risk. Each RBD project seeks to reduce risk to communities. Grantees should describe the level of risk reduction achieved by the project and articulate how they balanced the level of risk reduction with other project considerations, such as urban design, budget limitations, and environmental impacts. How were these decisions made? How did the grantee prioritize some risks over others?

4. Lessons Learned

The Lessons Learned component of the document is an opportunity for the grantees to reflect on processes and decisions made over the course of the project's life. Grantees are encouraged to approach this topic broadly and share challenges and/or accomplishments stemming from a variety of issues (e.g., navigating federal, State, and local procurement laws; developing strategies for implementing projects on short timeframes; constructing projects in dense urban settings). This component will serve as a learning tool for both federal agencies funding future infrastructure projects and future grantees implementing projects.

This outline is a baseline menu and does not address every issue that may need to be addressed in relation to each respective RBD project. The contents of the study should be adapted to the RBD specific project, as appropriate. These guidelines are not intended to be a limiting or constraining resource, but instead serve to provide a consistent primary structure upon which all RBD case study and lessons learned documents are to be structured. The *Federal Register* Notice requires the submission of a case study for each RBD project prior to grant closeout.