Data Documentation Template and Checklist

Hurricane/Wind Data Analysis Methodology

This data documentation template is designed to assist Benefit-Cost (BC) analysts in recording the data and methodologies utilized in their Benefit-Cost Analysis (BCA). BC analysts should keep in mind that a well-documented BCA means that a knowledgeable BC analyst should be able to re-create the BCA from the supporting documentation provided (with a Mitigation application submitted for funding) without any additional explanation. BC analysts should provide an electronic or paper copy of the full BCA to compliment any template or summary submitted to FEMA for review. Check with your State Hazard Mitigation Officer or FEMA Regional office to find out if a completed Data Documentation Template (DDT) is required with your grant application.

Data Type	Value	Description	Documentation	Source
Discount Rate	**The OMB-mandated discount rate of 7% must be used for all BCAs.**	• The discount rate determines the time-value of money • In a FEMA benefit-cost analysis, a discount rate is used to calculate a value today (the Net Present Value) of future benefits so that they can be compared to the costs of a mitigation project.	• Electronic or paper copy of the BCA. • **The OMB-mandated discount rate of 7% must be used for all BCAs.**	• **The OMB-mandated discount rate of 7% must be used for all BCAs.**

Data Type	Value	Description	Documentation	Source
Building Type	Select the appropriate building construction type in the Wind Hazard Damage Function.mbd software. Select "Other." for the building type in the Hurricane Wind Module.	• Click "View Building Types" in the FEMA Wind Hazard Damage Function software to see the available building category descriptions. • The Building Type is no longer selected from the choices in the Hurricane Module. Select "Other" in the Hurricane Module.	• Various forms are acceptable, including tax records, signed appraisals, letters from homeowners, or photographs.	• Homeowner, local building department, local tax assessor's office, or title documents.
The Building Site (miles inland)	Distance (in miles)	• The Wind Hazard Damage Function software calculates the wind speeds for the project site using the zip code for the project site; therefore, the miles inland value is no longer critical in calculating wind hazard data.	• If the Wind Hazard Damage Function software is used, no documentation is required other than a copy of the database report. • Various forms are acceptable, including State highway map, USGS quadrangle map for areas near the coast, latitude and longitude coordinates	• If the Wind Hazard Damage Function software is used, no documentation is required. • Local building department, builder, contractor, planner, engineer, architect, or realtor.

Data Type	Value	Description	Documentation	Source
Building Floor Area	Expressed in square feet	• The total heated, enclosed area in the building. Used in conjunction with replacement value to determine potential damages in various wind events.	• Various forms are acceptable, including tax records, signed appraisals, surveys, and estimates with photographs.	• Local tax office or appraiser's office, surveyor, title and documents with building footprint. • Homeowner estimates or measured drawings accompanied by photographs.
Building Replacement Value	Expressed as dollars per square foot	• The cost for labor and materials to build a similar building at the same location. • A key determinant of the amount of wind damage.	• Letter from local building department or residential builder, or photocopied pages from standard residential cost reference manual for the specific type of building.	• Local building inspector, contractor, builder or construction company, architect or building engineer. • Standard references such as: Marshall & Swift Residential Cost Handbook, RS Means, Means Square Foot Cost Guide, www.buildingcost.com, etc.
Building Damage that would Result in Demolition	Percentage of building replacement value	• FEMA standard value is 50%. • Low cost or poorly maintained buildings may have lower thresholds; buildings of historical or cultural importance may have higher thresholds.	• No documentation required if standard value used. • Provide documentation and the basis of the estimate for values other than 50%.	• Values other than 50% should include consultation with real estate appraiser, economist, local building inspector, contractor, builder or construction company, architect, building engineer, planners, etc.

Data Type	Value	Description	Documentation	Source
Contents Value	Expressed as dollars	• The cost to replace the contents of a building. • Contents damage includes furniture, office equipment, personal belongings, and non-permanent room dividers. • Contents do not include permanent parts of the building such as electrical and plumbing systems. • FEMA standard value for residential buildings is 30% of the replacement value of the building or $20,000, whichever is greater.	• 30% value for residential buildings: no documentation required. • For other values of residential buildings and non-residential buildings, provide detailed descriptions of contents, value and the means by which value was determined.	• No source required if it is a residential building and the FEMA standard is used. • Otherwise, review insurance records, signed appraisals, purchase receipts, estimates based on current market price for similar contents.
Displacement Costs	Expressed as dollars per square foot per month, and one time and monthly costs.	1. The costs borne by occupants during the time when a building is damaged and they are unable to occupy it. 2. Costs may include rent for alternative living spaces, rent for storage space, additional commuting time, additional day care, unpaid time off work, rental trucks, etc. 3. All these may be estimated when supported by credible documentation and sources.	• Alternative living space documented by copies of rental costs from realtors, leasing agents or newspapers, among others. • Rental for storage spaces may be supported by copies of advertising, records of contacts with rental companies. • Extra commuting costs and day care may be estimated as long as the estimation methodology is explained.	• Photocopies of ads for rental spaces in the community, records of phone contacts with rental agencies, receipts from similar rentals. For residential properties, standard displacement costs are $1.00 per square foot per month. Standard other monthly costs and one-time costs are $500 each. • Use standard figures where possible [i.e. dollar amount per mile for additional commute].

Data Type	Value	Description	Documentation	Source
Value of Loss of Service	Dollar value of loss of public services	• For public services, daily value of service is estimated by the daily cost of providing service.	• Documentation of annual operating budget for public facility. • For critical facilities, see "What is a Benefit?" Guidance.	• Agency providing service.
Continuity Premium	Multiplier on ordinary value of service	• Applies only to services critical to immediate disaster response and recovery (police, fire, and emergency responders).	• No documentation required if FEMA standard values are used. • Exception to standard values requires detailed explanation of source used and method applied.	• See "What is a Benefit?" guidance for standard values. • Developing non-standard values may involve working with organization or agency providing service.
Loss of Business Income	Net (not gross) business income	• For commercial facilities, loss of net business income is the measure of loss of function when damage results in closure of the facility.	• No documentation required if FEMA standard values are used. • If estimated, include a description of how derived.	• Business income statements of finances. • The FEMA HAZUS-MH software loss estimation software has standard values for many classes of business, applicable to all hazards. http://fema.gov/hazus/ •

Data Type	Value	Description	Documentation	Source
Mitigation Project Useful Lifetime	Years	• Estimated amount of time that mitigation action will be effective. • Includes any maintenance activities that will be done to prolong effectiveness).	• Reference FEMA standard value if utilized. • If FEMA standard value is not utilized then include a justification of the value entered. • May also attach a letter, e-mail, etc. from credible agency documenting this estimate (if resource other than FEMA standard value).	• FEMA BCA Guidance, Page 27. • BCA Checklist, Page 14. • Government representative or private professional with expertise relevant to the proposed project.
Mitigation Project Cost (includes data inputs for net mitigation project cost and additional annual maintenance cost ($/yr) for a project)	Total dollar value	• Estimated total cost of the proposed mitigation action **(not just the Federal share)** and any maintenance activities that will be done to prolong effectiveness.	• Narrative summary in the BCA module should state that this value comes from a potential or submitted project application. • Sub-applicant should provide a detailed cost breakdown, rather than a lump sum value, from an engineering cost estimate. • Must document source and reasoning in estimate of maintenance activity cost. • Should support the value submitted with project application.	• Government representative or private professional with expertise relevant to proposed project. • For maintenance values, consult Government representative or private professional with expertise relevant to proposed project.

Data Type	Value	Description	Documentation	Source
Wind Recurrence Data	Wind speeds (in mph) for 10-, 25-, 50-, 100- and 2,000-year intervals.	• Maximum sustained wind speed by return period (one-minute sustained wind speeds in open terrain) at the project site.	• Provide copy of the Wind-Hazard Data generated from the Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder.	• Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder. • ASCE wind maps with recurrence intervals, • Wind or structural engineers.
Expected Annual Number of Wind Storms	Frequency	• Specific values for wind storm frequencies for wind storms from Class 0 to Class 5. • Calculated automatically in Wind Module from Wind Recurrence Data entries	• If default values in FEMA software are used then provide print out of software. • If user-entered values are used provide full documentation of reasons for differences from FEMA default values.	• If default values in FEMA software are used then provide print out of software. • Estimates based on measured wind speeds for historical losses and engineering judgment.

Data Type	Value	Description	Documentation	Source
Mitigation Option	Selection in software	• Match the projects mitigation activities to the Mitigation Option that is most similar to the project. • Select the appropriate Mitigation Option from the list of available options for the Building Type selected.	• Provide copy of the Wind-Hazard Data generated from the Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder. • If default values in FEMA software are used then provide print out of software • If user-entered values are used provide full documentation of reasons for differences from FEMA default values.	• Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder.
Building Wind Damage Function	Percent damage of building replacement value for each storm class.	• Estimate of building damage before- and after-mitigation for each storm class.	• Provide a report print out of the default values from the Wind Hazard and Damage Function software Building Information Tables. • Based on the Building Type and Mitigation Option selected. • If user-entered values are used provide full documentation of reasons for differences from FEMA default values.	• Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder. • Estimates based on historical losses and engineering judgment.

Data Type	Value	Description	Documentation	Source
Contents Wind Damage Function	Percent damage of the building contents value for each storm class.	• Estimate of contents damage before- and after-mitigation for each storm class.	• Provide a report print out of the default values from the Wind Hazard and Damage Function software Building Information Tables. • Based on the Building Type and Mitigation Option selected. • If user-entered values are used provide full documentation of reasons for differences from FEMA default values.	• Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder. • Estimates based on historical losses and engineering judgment.
Displacement Time	Days, increases with wind damage (building percent damage)	• The before- and after-mitigation number of days that occupants are expected to be displaced to temporary quarters due to wind damage.	• Provide a report print out of the default values from the Wind Hazard and Damage Function software Building Information Tables. • Based on the Building Type and Mitigation Option selected. • If user-entered values are used provide full documentation of reasons for differences from FEMA default values.	• Wind Hazard and Damage Function software located in the Hurricane Wind Software folder under the main BCA Software and Technical Manuals folder. • See "What is a Benefit" guidance for residential and critical facilities.
Functional Downtime	Days, increases with wind damage (building percent damage)	• The time period for which public or commercial services are lost from a building.	• For ordinary buildings, default values in FEMA software. • For critical buildings, use "What is a Benefit?" guidance.	• Local source not required if FEMA default values are used. • Developing non-standard values will involve working with organization or agency providing service.

Appendix II
FEMA BCA Checklist

Last Updated June 28, 2006

For the entire BCA Checklist, refer to the BCA_Checklist.doc located on the BCA Mitigation Toolkit (BCA Mitigation Toolkit\4 – BCA TOOLS\CHECKLIST AND DATA DOCUMENTATION TEMPLATES).

3.5 Hurricane Wind Projects

3.5.1 The **Building Type** is one of the most critical data elements for determining an accurate Benefit-Cost Ratio (BCR). This should be based on design drawings and determined by a building official, a registered professional engineer, or a licensed architect. In the Hurricane Wind module, select "Other" for the Building Type in the Level One Data section. Follow the instructions in the Wind Hazard and Damage Function software (located in the Hurricane Software folder in the main BCA Software and Technical Manual folder on the *FEMA Mitigation BCA Toolkit* CD*)* and select the building type that is most similar to the project building.

3.5.2 The **Building Site** (and zip code) should be identified on a map, showing the coast, submitted with the application. The value for Building Site (miles inland) in the Level One Data section of the Hurricane Wind module may be any value from 1 to 125 miles inland. This value is no longer critical when the new Wind Hazard Damage Function table is used because the analyst should enter the same wind speed data in both the "Coast" and "125 miles inland" columns for the specific building site. Obtain the wind hazard data for the project site (by zip code) from the Wind Hazard and Damage Function software and enter that into the Wind Hazard Data section of the Hurricane Wind module.

3.5.3 The **Wind Hazard Data** requires the wind speed at the project site be entered in both the "Coast" and "125 miles inland" columns for the 10-, 25-, 50-, 100-, and 2000-year events. This wind speed data can be obtained by zip code by using the Wind Hazard and Damage Function software located in the Hurricane Software folder in the main BCA Software and Technical Manual folder on the *FEMA Mitigation BCA Toolkit* CD. These data have been developed using the FEMA HAZUS-MH software for the 48 contiguous states. The values provide updated (2005) wind speed data that should be used in the Hurricane Wind module.

3.5.4 The Wind Hazard Data for U.S. islands or territories outside the 48 contiguous states (Hawaii, Puerto Rico, the U.S. Virgin Islands, etc.) are provided in Figure 7-3 of the BCA Hurricane Technical Manual. The wind speeds are identical at the coast and 125-miles inland due to the relatively small landmass of islands.

3.5.5 A detailed project description should be provided to demonstrate **Project Effectiveness**. In addition to the design wind speeds, this information should also identify which building components will be replaced or retrofitted as part of the project. The Wind Hazard and Damage Function software is used to determine the appropriate *percent damage* (Wind Damage Functions) for both before- and after-mitigation using the available options. The Wind Damage Function data is then entered into the appropriate Level Two Data tables in the BCA module.