Unit 9
Tips & Tricks for Getting to Cost Effectiveness

Objectives

At the end of this unit, participants will be able to:

- List and apply various strategies to increase their project BCR.

Scope

- Unit 9 Overview & Objectives
- Strategies to increase project BCR (Confirm structure and project data, Change Frequency and Damage Relationship option, etc.)
- Unit 9 Review

Methodology

This unit will be delivered as an in-person classroom course, and will use a combination of lecture and discussion.

The instructor will introduce the unit and then go through each slide, pausing for questions and short discussion if needed. The instructor should also prompt students to follow along in their Student Manuals.

If time allows, you may demonstrate the various strategies for increasing the project BCR in the BCA Toolkit, using projects from previous units or your own examples.

Time Plan

A suggested time plan for each topic in this unit is shown below. More or less time may be required, based on the experience level of the group.

- Unit 9 Overview and Objectives (5 minutes)
- Strategies to increase project BCR (50 minutes)
- Unit 9 Review (5 minutes)

Total Time (Estimated): 1 hour

Materials

- Unit 9 Visuals
- Unit 9 Instructor Guide
- Unit 9 Student Manual
- Computer/BCA Toolkit 6.0

Unit 9 Overview

- This unit will list and provide examples of ways to increase a project's BCR.

Visual 1: Unit 9 Overview

Instructor:
This unit will list and provide examples of ways to increase a project's BCR.

Unit 9 Objectives

Unit 9 Objectives

- Students should be able to list and apply various strategies to increase their project BCR.

Visual 2: Unit 9 Objectives

Instructor:
At the end of this unit, students should be able to list and apply various strategies to increase their project BCR.

BCR under 1.0

BCR under 1.0

- If your project BCR is below 1.0, there some things you can try to increase it.

- These include:
  - Confirming basic project and structure data: basement type, number of residents, project cost, NFIP status, etc.
  - Running the BCA using a different Frequency and Damage Relationship option
  - Adding all protected structures to your project
  - Using a different combination of structures
  - Combining benefits from multiple hazards, if applicable
  - Adding environmental and/or social benefits, if applicable
  - Looking for better data sources

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Visual 3: BCR under 1.0

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These include:
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- Adding all protected structures to your project
- Using a different combination of structures
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- Adding environmental and/or social benefits, if applicable
- Looking for better data sources

Let's discuss each of these.

BCR under 1.0

BCR under 1.0 (cont.)

- A word of warning: some projects are just not cost-effective.

- If your initial project BCR is below 0.50, it is unlikely you'll be able to make adjustments to get the BCR over 1.0, unless there is some key project data that needs correction.

Visual 4: BCR under 1. (cont.)0

Instructor:
A word of warning: some projects are just not cost-effective.

If your initial project BCR is below 0.50, it is unlikely you'll be able to make adjustments to get the BCR over 1.0, unless there is some key project data that needs correction.

Confirm structure and project data

Confirm structure and project data

- If your BCR is not what you'd like or expect, you should confirm the key structure and project data.

- For example:
  - Is the basement type correct?
  - Is the number of residents/occupants correct?
  - Are any structures insured by the NFIP?
  - Is the Lowest Floor Elevation correct?
  - Is the project cost correct?
  - Is the hazard data (i.e. flood elevations and discharge) correct?
    - Tip: Make sure you aren't missing or haven't transposed two digits, and that any decimal points are in the right place.

- Any change in these values can affect the BCR.

Visual 5: Drought RIs

Instructor:
If your BCR is not what you'd like or expect, you should confirm the key structure and project data.

If your BCR displays as 0.0, you should first check to make sure you've entered all the required data and selections. If your BCR is not calculating, this is almost always the reason.

If your BCR is still not what you expect, you should confirm your key structure and project data. It is easy to add an extra digit or transpose digits when typing. Again, if your BCR seems really off, this is almost always the cause. The LFE in particular is very sensitive to even small changes.

For example:
- Is the basement type correct?
- Is the number of residents/occupants correct?
- Are any structures insured by the NFIP?
- Is the Lowest Floor Elevation correct?
- Is the project cost correct?
- Is the hazard data (i.e. flood elevations and discharge) correct?
  - Tip: Make sure you aren't missing or haven't transposed two digits, and that any decimal points are in the right place.

Any change in these values can affect the BCR.

Frequency and Damage Relationship options

Frequency and Damage Relationship options, 1 of 3

- One thing that may give you a different project BCR is running the BCA using a different Frequency and Damage Relationship option, provided you have the needed data.

- For example, if you are doing an elevation project for 10 homes, instead of using Modeled Damages and inputting the structure and flood hazard information, you could select Historic Damages and put in the dollar amounts and years for any past damage on those 10 homes.
  - Tip: Flood insurance claims can be a great source of data for this!

- Depending on the project specifics, this may or may not increase the BCR.

Visual 6: Frequency and Damage Relationship options, 1 of 3

Instructor:
One thing that may give you a different project BCR is running the BCA using a different Frequency and Damage Relationship option, provided you have the needed data.

For example, if you are doing an elevation project for 10 homes, instead of using Modeled Damages and inputting the structure and flood hazard information, you could select Historic Damages and put in the dollar amounts and years for any past damage on those 10 homes.
- Tip: Flood insurance claims can be a great source of data for this!

Depending on the project specifics, this may or may not increase the BCR.

Another common example is a facility that has sustained minimal damage in the past, but you expect there to be sizeable damages in the future. You would need an engineering report or analysis to document any future expected damages.

Frequency and Damage Relationship options

Frequency and Damage Relationship options, 2 of 3

- Similarly, if your original BCA was done using Historic Damages or Professional Expected Damages, you could try running it using Modeled Damages if it is one of the following project types:
  - Acquisition, elevation, or floodproofing
  - Wind retrofit
  - Wildfire mitigation
  - Seismic building retrofit
  - Drought mitigation
- Note that BCAs for non-buildings (such as utility infrastructure or roads/bridges) must always use Historic Damages or Professional Expected Damages.

Visual 7: Frequency and Damage Relationship options, 2 of 3

Instructor:
Similarly, if your original BCA was done using Historic Damages or Professional Expected Damages, you could try running it using Modeled Damages if it is one of the following project types:
- Acquisition, elevation, or floodproofing
- Wind retrofit
- Wildfire mitigation
- Seismic building retrofit
- Drought mitigation

Note that BCAs for non-buildings (such as utility infrastructure or roads/bridges) must always use Historic Damages or Professional Expected Damages.

Frequency and Damage Relationship options

Frequency and Damage Relationship options, 3 of 3

- Why does this work?
  - Sometimes, a structure's damage history (or future expected damages) is much more significant than the localized hazard data would indicate.
  - You may also have a situation in which there has been minimal past damage to the facility, but you expect considerable future damage.
  - On the flip side, sometimes the localized hazard data indicates a much higher risk than a structure's past damage history would suggest.

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Visual 8: Frequency and Damage Relationship options, 3 of 3

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Sometimes, a structure's damage history (or future expected damages) is much more significant than the localized hazard data would indicate.

You may also have a situation in which there has been minimal past damage to the facility, but you expect considerable future damage.

On the flip side, sometimes the localized hazard data indicates a much higher risk than a structure's past damage history would suggest.

Add all protected structures

Add all protected structures

- Don't leave potential benefits on the table! Think about whether there are structures in your project you haven't included yet.

- Remember: A structure can be a piece of infrastructure, such as a road.

- For example, a flood control project might protect some streets in addition to homes. If you have traffic counts for those streets, you can add them as separate structures to your project BCA.

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Visual 9: Add all protected structures

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Remember: A structure can be a piece of infrastructure, such as a road.

For example, a flood control project might protect some streets in addition to homes. If you have traffic counts for those streets, you can add them as separate structures to your project BCA.

Different structure combination

Different structure combination

- For projects that include multiple structures, you might also try adding and/or removing certain structures to increase the BCR.

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Visual 10: Different structure combination

Instructor:
For projects that include multiple structures, you might also try adding and/or removing certain structures to increase the BCR.

Different structure combination

Different structure combination (cont.)

- Why does this work?
  - Sometimes, one or two structures have very low BCRs, which drag down the entire project BCR. Removing these from a project will increase the project BCR.
  - On the flip side, sometimes there are structures that have very high BCRs and can "carry" an entire project.

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Visual 11: Different structure combination (cont.)

Instructor:
Why does this work?

Sometimes, one or two structures have very low BCRs, which drag down the entire project BCR. Removing these from a project will increase the project BCR.

On the flip side, sometimes there are structures that have very high BCRs and can "carry" an entire project.

Benefits from multiple hazards

Benefits from multiple hazards

- For some projects, you may be able to combine benefits from multiple hazards.

- For example, if you are doing a mitigation reconstruction project to protect homes from flooding, but the reconstructed homes are also located in a seismic or wind hazard area, you could also capture benefits from those hazards (provided the new structures are built to the appropriate standards for those hazards).

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Visual 12: Benefits from multiple hazards

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Environmental benefits

Environmental benefits

- For eligible project types with a base BCR of over 0.75, the BCA Toolkit displays the environmental benefits card.

- However, you have to actually enter the project size and land use data to get the environmental benefits to calculate and be added to your BCR.

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Visual 13: Environmental benefits

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For eligible project types with a base BCR of over 0.75, the BCA Toolkit displays the environmental benefits card.

However, you have to actually enter the project size and land use data to get the environmental benefits to calculate and be added to your BCR.

Social benefits

Social benefits

- For residential mitigation project types with a base BCR of over 0.75, the BCA Toolkit displays the social benefits card.

- The Toolkit automatically calculates the mental stress & anxiety portion of the social benefits based on the number of building residents entered in the Standard Benefits – Displacement card.

- You will have to enter the number of workers to get the Toolkit to calculate the loss of productivity portion of the social benefits.

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Visual 14: Social benefits

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For residential mitigation project types with a base BCR of over 0.75, the BCA Toolkit displays the social benefits card.

The Toolkit automatically calculates the mental stress & anxiety portion of the social benefits based on the number of building residents entered in the Standard Benefits – Displacement card.

You will have to enter the number of workers to get the Toolkit to calculate the loss of productivity portion of the social benefits.

Look for better data sources

Look for better data sources

- The BCA Toolkit includes default values for many data fields. These are often based on nationwide values. If you can find better data for the local project area (and document it!), you should use those values instead.

- For example, for wildfire mitigation projects, the Toolkit automatically populates the Burn Recurrence Interval based on the property location. However, you may be able to find a more favorable Burn Recurrence Interval from a local source such as the local fire management authority.

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Visual 15: Look for better data sources

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The BCA Toolkit includes default values for many data fields. These are often based on nationwide values. If you can find better data for the local project area (and document it!), you should use those values instead.

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Resources

Visual 16: Resources

Instructor:
Some resources for completing your BCA include:
- FEMA HMA job aids
- FEMA BCA guidance
- BC Helpline

Unit 9 Review

Unit 9 Review

- In this unit, you learned some tips and tricks for increasing your project BCR, including:
    - Confirming basic project and structure data
    - Using a different Frequency and Damage Relationship option
    - Adding all protected structures
    - Using a different combination of structures by adding or removing
    - Combining benefits from multiple hazards
    - Adding environmental and/or social benefits
    - Looking for more favorable data sources

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Visual 17: Unit 9 Review

Instructor:
In this unit, you learned some tips and tricks for increasing your project BCR, including:
- Confirming basic project and structure data
- Using a different Frequency and Damage Relationship option
- Adding all protected structures
- Using a different combination of structures by adding or removing
- Combining benefits from multiple hazards
- Adding environmental and/or social benefits
- Looking for more favorable data sources