Unit 4

Starting Your BCA

Objectives

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

- Explain the elements of the BCA Toolkit and how to launch the Tool.
- Describe the data needed to start a BCA.
- Describe pre-calculated benefits and how to use them.
- Specify the technical assistance and training available for conducting BCAs.

Scope

- Unit 4 Overview & Objectives
- When should I start my BCA?
- FEMA's BCA Toolkit
- Toolkit walkthrough/basic data needed to start your BCA
- Pre-calculated benefits
- Technical assistance and training
- Unit 4 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.

Starting at Slide 7, the instructor should download/open the BCA Toolkit and have the students also download and open the Toolkit on their computers. The instructor should cover the basic operation of the Toolkit, including downloading and installation, launching, the Home screen, the Project Configuration screen, the Help content, default yes/no toggles, comment boxes, how to save and rename files, how to import/export, and how to view and print reports. The instructor may also use the slides describing basic data needed to begin the BCA to show students how to input the data.

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.

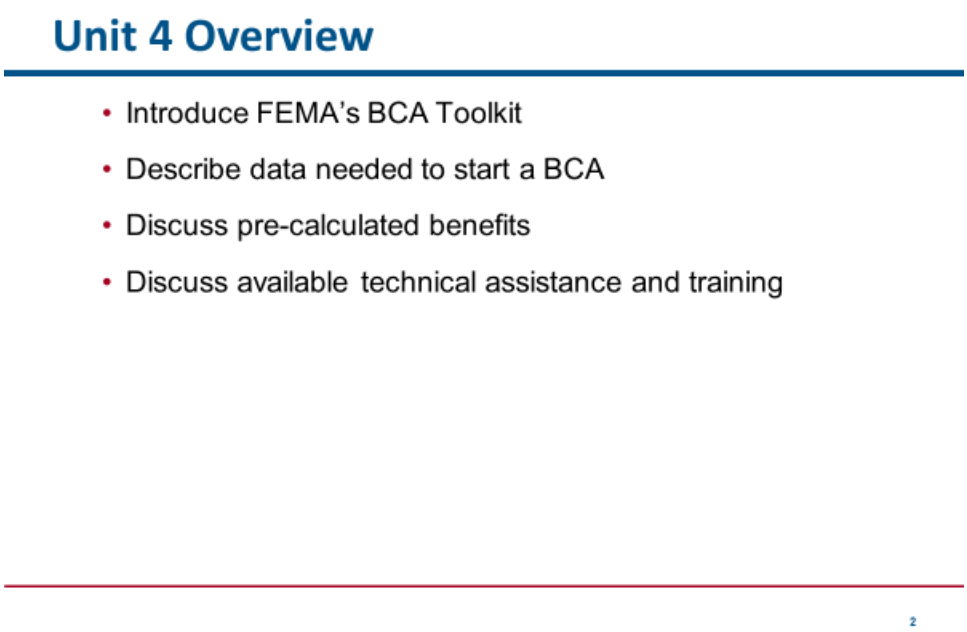
- Unit 4 Overview & Objectives (5 minutes)
- When should I start my BCA? (5 minutes)
- FEMA's BCA Toolkit (10 minutes)
- Toolkit walkthrough/basic data needed to start your BCA (20 minutes)
- Pre-calculated benefits (10 minutes)
- Technical assistance and training (5 minutes)
- Unit 4 Review (5 minutes)

Total Time (Estimated): 1 hour

Materials

- Unit 4 Visuals
- Unit 4 Instructor Guide
- Unit 4 Student Manual
- Computer/BCA Toolkit (internet connectivity needed)

Unit 4 Overview



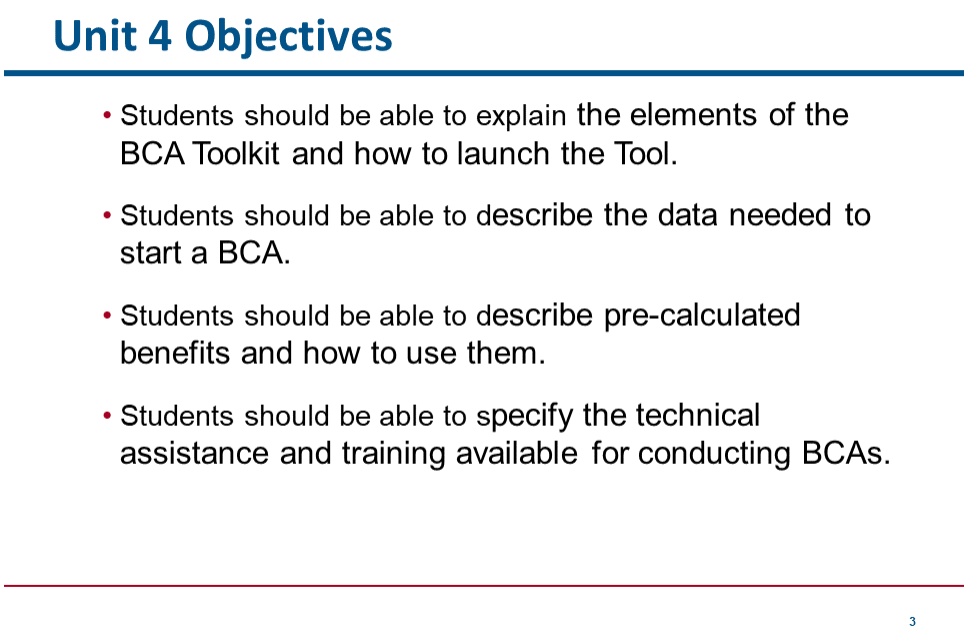
Visual 1: Unit 4 Overview

Instructor:

In Unit 4 we will cover the following:

- Introduce FEMA's BCA Toolkit
- Describe data needed to start a BCA
- Discuss pre-calculated benefits
- Discuss available technical assistance and training

Unit 4 Objectives



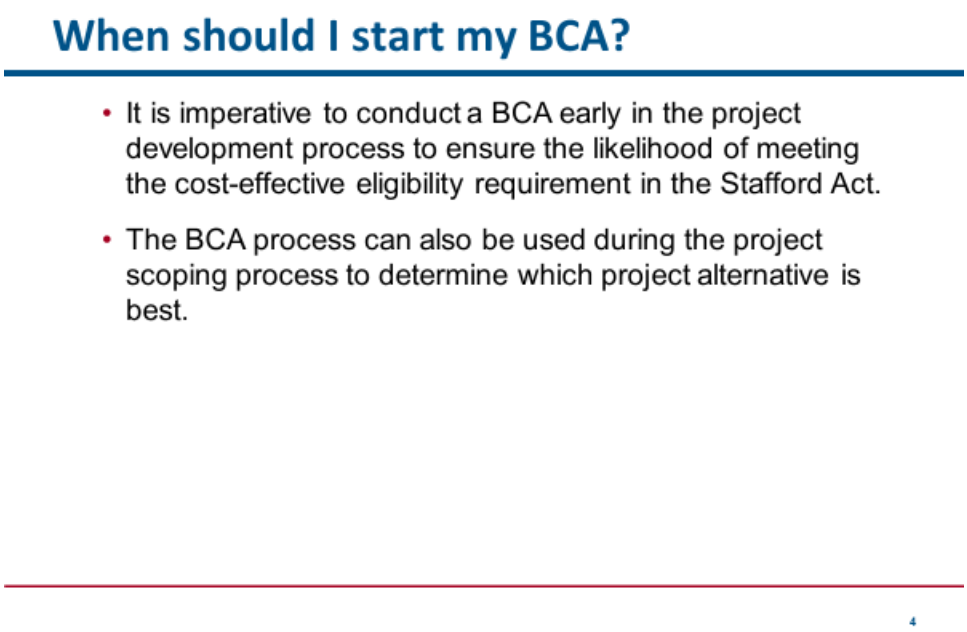
Visual 2: Unit 4 Objectives

Instructor:

Unit 4 has several objectives. At the end of this unit, students should:

- Explain the elements of the BCA Toolkit and how to launch the Tool.
- Describe the data needed to start a BCA.
- Describe pre-calculated benefits and how to use them.
- Specify the technical assistance and training available for conducting BCAs.

When should I start my BCA?



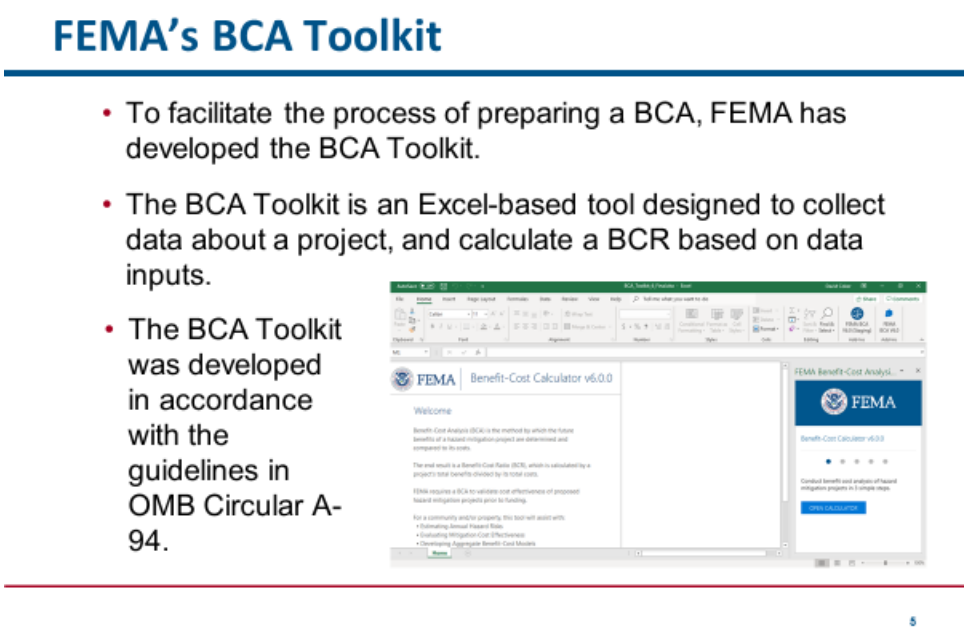
Visual 3: When should I start my BCA?

Instructor:
It is imperative to conduct a BCA early in the project development process to ensure the likelihood of meeting the cost-effective eligibility requirement in the Stafford Act.

The BCA process can also be used during the project scoping process to determine which project alternative is best.

You'll see as we go through the various project types that some require fairly minimal data to run a BCA. It's perfectly fine to enter estimates in the tool as a starting point to get an idea of whether your project will be cost effective, provided that you refine and document the data as you get better numbers.

FEMA's BCA Toolkit



Visual 4: BCA Toolkit

Instructor:

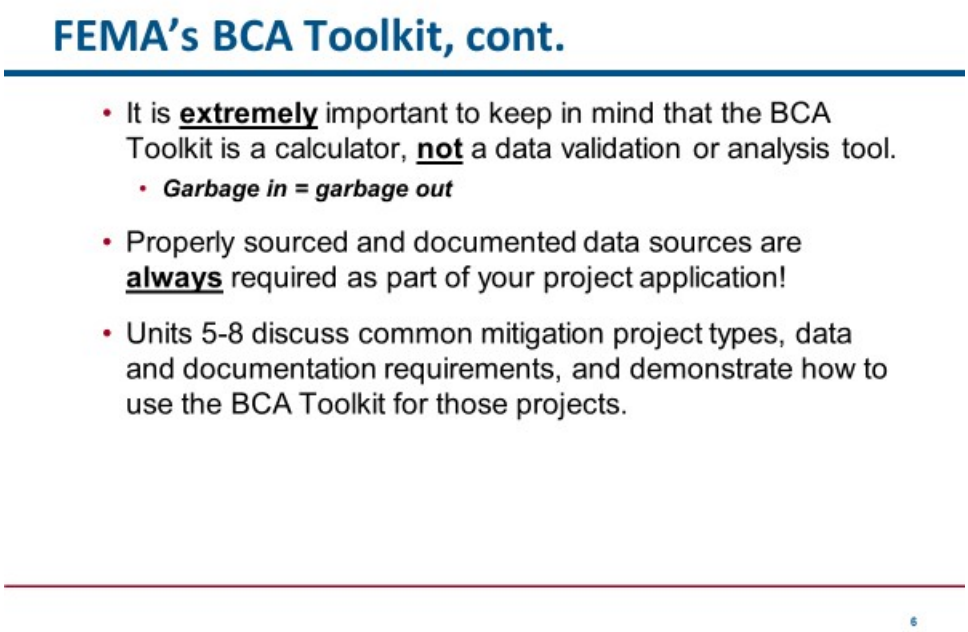
Because most people are not professional economists, FEMA has created the BCA Toolkit to assist applicants and subapplicants with the process of calculating a project's benefits and costs.

The BCA Toolkit is an Excel-based tool designed to collect data about a project, and calculate a BCR based on data inputs. It can be used on Windows, Macs, and other devices such as tablets. It is compatible with Microsoft Office 2013 and later.

The BCA Toolkit was developed in accordance with the guidelines in OMB Circular A-94.

We will show how to download and open the tool in a moment.

FEMA's BCA Toolkit



Visual 5: BCA Toolkit , cont.

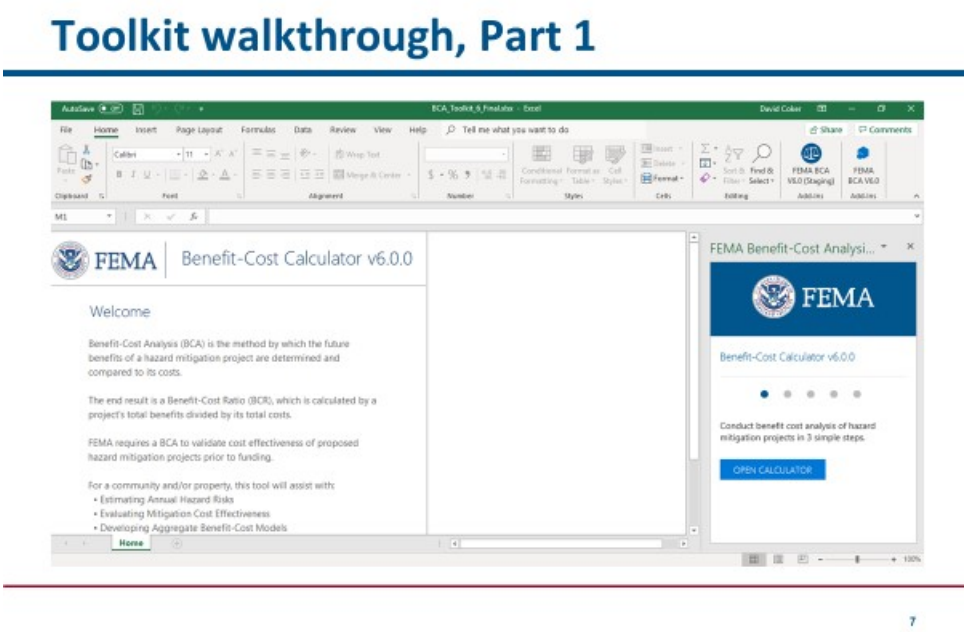
Instructor:
It is extremely important to keep in mind that the BCA Toolkit is a calculator, not a data validation or analysis tool.

Garbage in = garbage out

Properly sourced and documented data sources are always required as part of your project application! Units 5-8 discuss common mitigation project types, data and documentation requirements, and demonstrate how to use the BCA Toolkit for those projects.

It's also important to keep in mind that the BCA is only one part of your project application. It is possible to have a cost-effective project that is not eligible for HMA funding.

Toolkit walkthrough

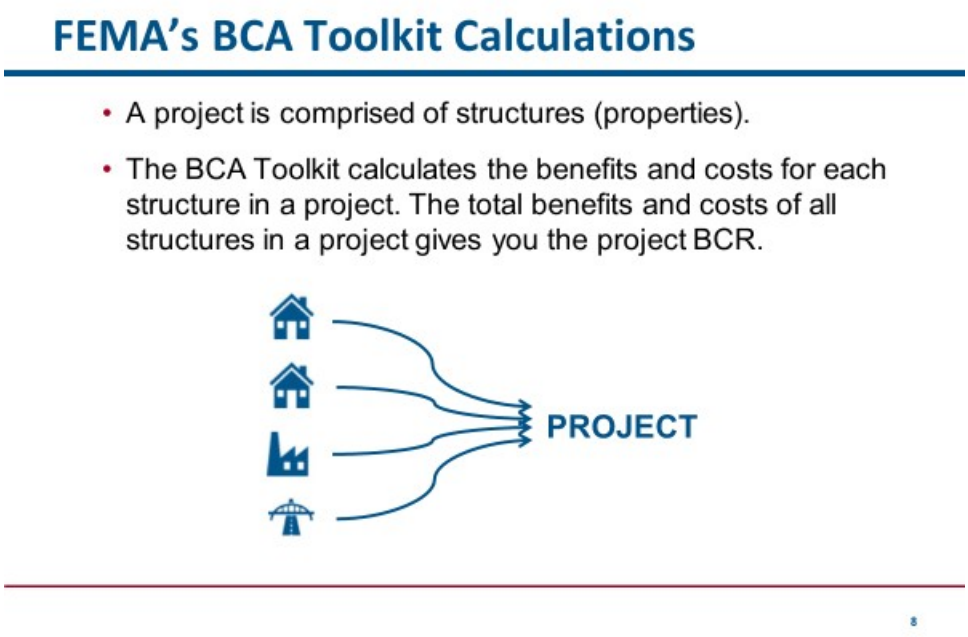


Have students follow along on their computers.

Cover:

- Downloading and installing the template/add-in
- Starting the add-in
- Home page
- Project Configuration screen
    - Note that Historical and Professional Estimated Damages options are what was called DFA in the old version
- Help content
- Default Yes/No toggles
- Comment boxes
- How to save/rename files (SAVE EARLY SAVE OFTEN!)
- How to export/import and file locking/version control
- How to view and print reports

FEMA's BCA Toolkit



Visual 6: FEMA's BCA Toolkit Calculations

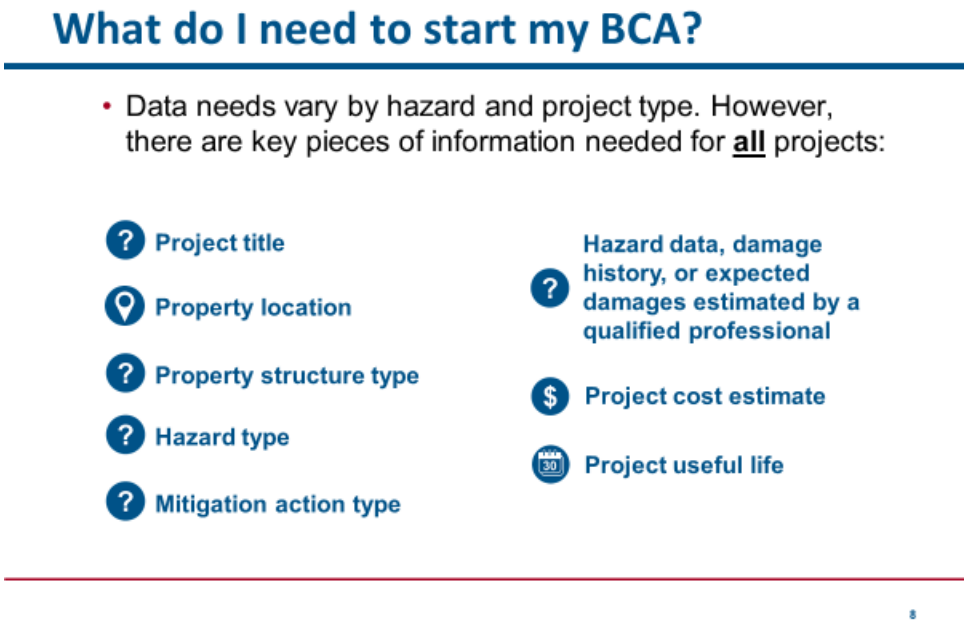
Instructor:
A project is comprised of structures (properties).

The BCA Toolkit calculates the benefits and costs for each structure in a project. The total benefits and costs of all structures in a project gives you the project BCR.

You might have only one structure in your project, or you might have hundreds.

Discuss how this feature allows you to mix and match structures in a project to get a project BCR over 1.0. If there is one structure with a really low BCR, you can take it out. Conversely, a structure with a very high BCR may carry the entire project.

What do I need to start my BCA?



Visual 7: What do I need to start my BCA?

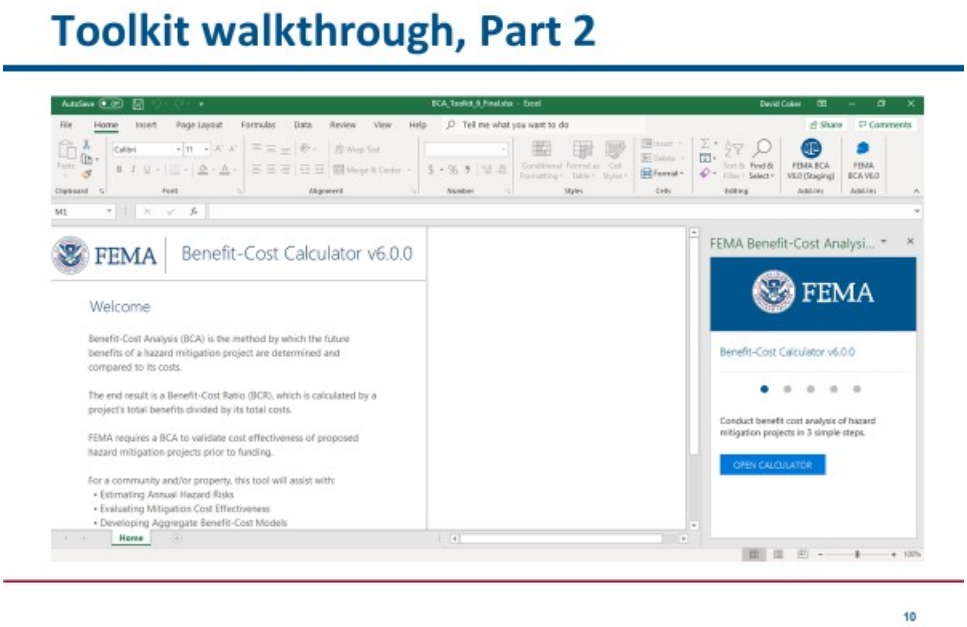
Instructor:

Data needs vary by hazard and project type. However, there are key pieces of information needed for **all** projects:

- Project title
- Property location
- Property structure type
- Hazard type
- Mitigation action type
- Hazard date, damage history, or expected damages estimated by a qualified professional
- Project cost estimate
- Project useful life

Let's discuss each of these and show how you would enter them in the Toolkit.

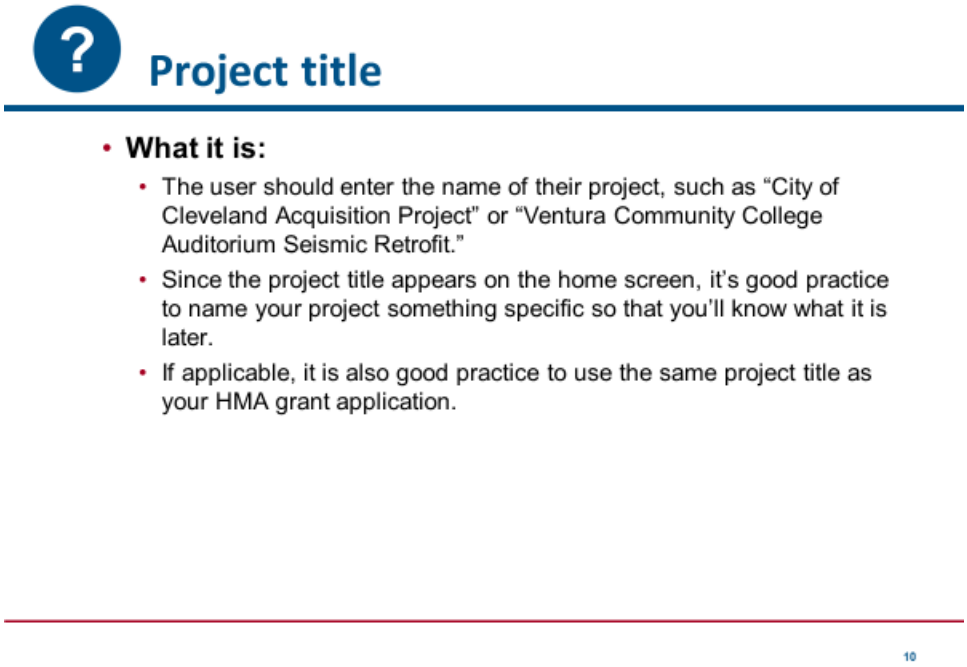
Toolkit walkthrough



Have students follow along on their computers. Use the following slides to discuss each data point as it is entered.

You can go through the following slides as you demonstrate the use of the Toolkit (going back and forth between the PowerPoint and Toolkit walkthrough), or you can just go through the Project Configuration screen in the Toolkit making sure to hit the main points on each slide as you fill out each data field.

Project title



Visual 8: Project title

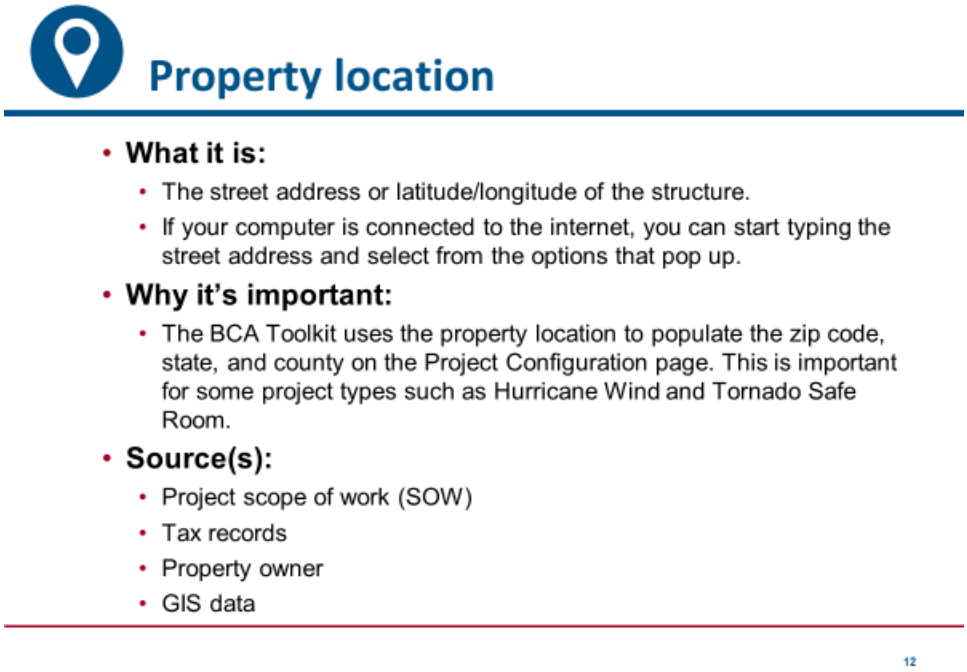
Instructor:

The user should enter the name of their project, such as "City of Cleveland Acquisition Project" or "Ventura Community College Auditorium Seismic Retrofit."

Since the project title appears on the home screen, you will want to name your project something that you'll know what it is. The projects you've created will all appear on the Home screen in a list, so naming something "Project" or "Elevation" may not be helpful to you down the line.

If applicable, it is also good practice to use the same project title as your HMA grant application.

Property location



Visual 9: Property location

Instructor:

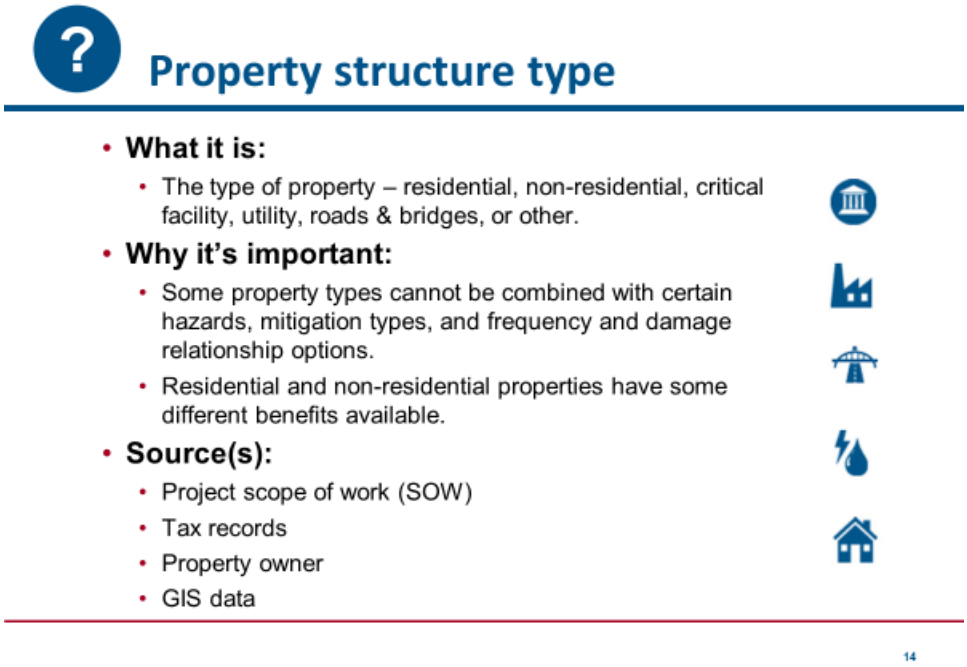
The property location is the street address or latitude/longitude of the structure. If your computer is connected to the internet, you can start typing the street address and select from the options that pop up. This is a new feature in Version 6.0.

The BCA Toolkit uses the property location to populate the zip code, state, and county on the Project Configuration page. This is important for some project types such as Hurricane Wind and Tornado Safe Room.

Source(s):

- Project scope of work (SOW)
- Tax records
- Property owner
- GIS data

Property structure type



Visual 10: Property structure type

Instructor:

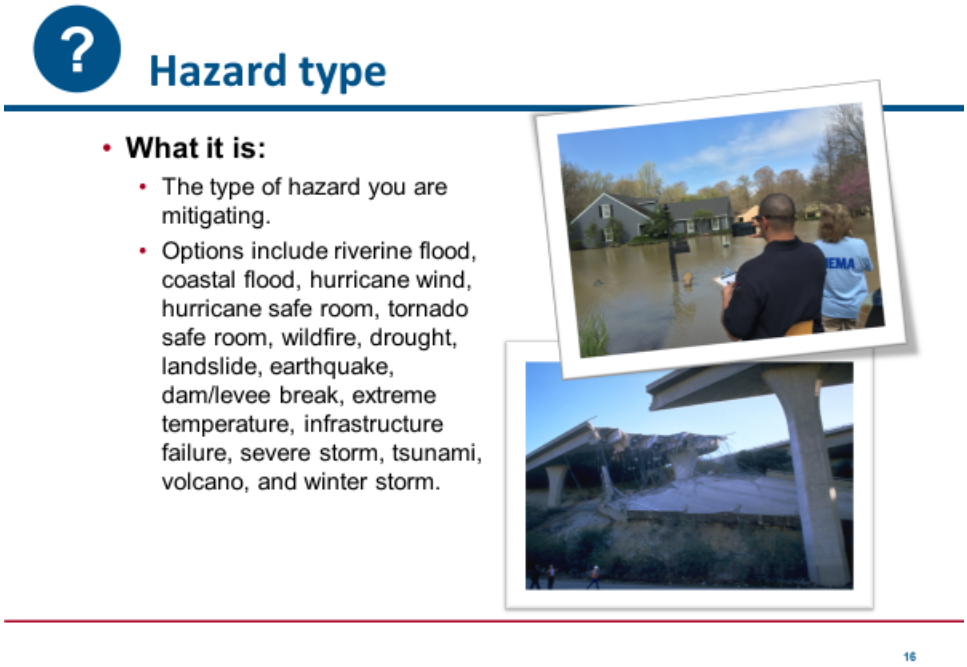
The property structure type is the type of property – residential, non-residential, critical facility, utility, roads & bridges, or other.

Explain how some property types cannot be combined with certain hazards, mitigation types, and frequency and damage relationship options. If you see options grayed out in the BCA Toolkit, it is because that combination of options is not permissible.

Source(s):

- Project scope of work (SOW)
- Tax records
- Property owner
- GIS data

Hazard type

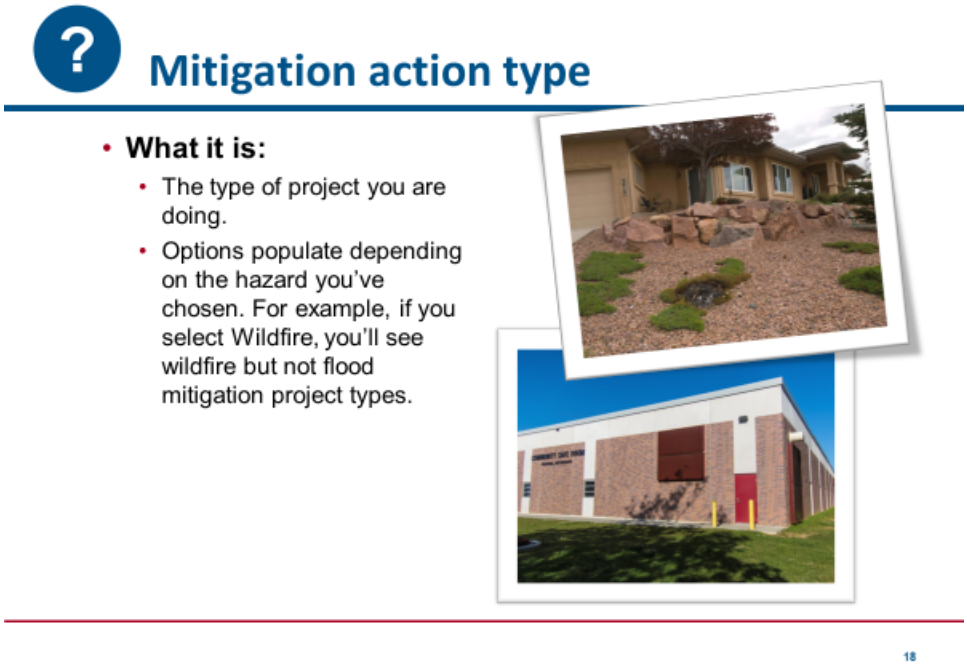


Visual 11: Hazard type

Instructor:
This is the type of hazard you are mitigating.

Options include riverine flood, coastal flood, hurricane wind, hurricane safe room, tornado safe room, wildfire, drought, landslide, earthquake, dam/levee break, extreme temperature, infrastructure failure, severe storm, tsunami, volcano, and winter storm.

Mitigation action type

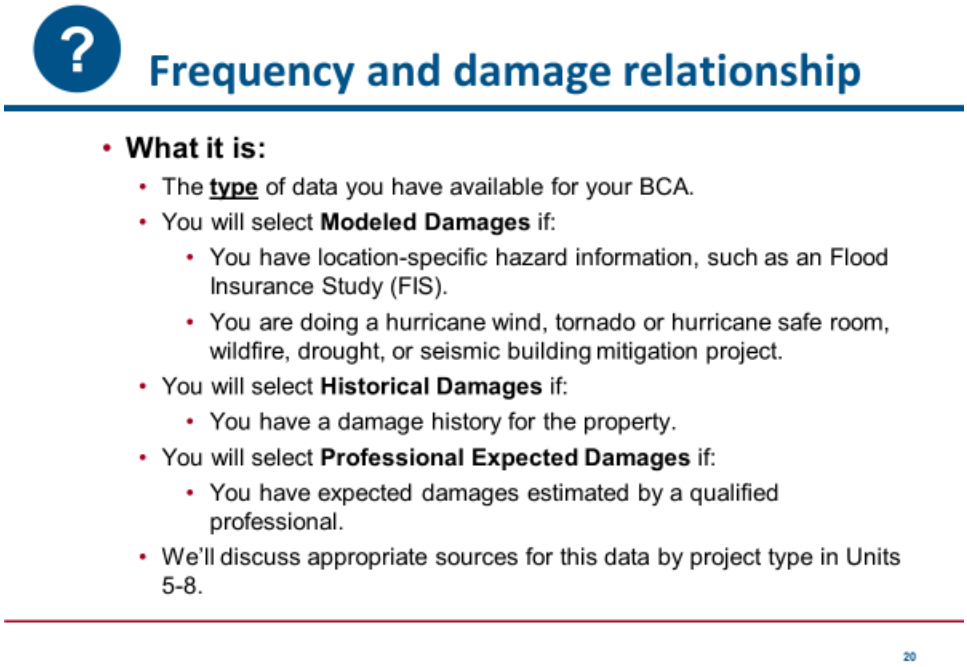


Visual 12: Mitigation action type

Instructor:

This is the type of project you are doing. Options populate depending on the hazard you've chosen. For example, if you select Wildfire, you'll see wildfire but not flood mitigation project types.

Frequency and damage relationship



Visual 13: Frequency and damage relationship

Instructor:
This is the type of data you have available for your BCA.

You will select Modeled Damages if:
- You have location-specific hazard information, such as an Flood Insurance Study (FIS).
- You are doing a hurricane wind, tornado or hurricane safe room, wildfire, drought, or seismic building mitigation project.

You will select Historical Damages if:
- You have a damage history for the property.
- If you have a project with both historical and professional expected damages, select Historical Damages.

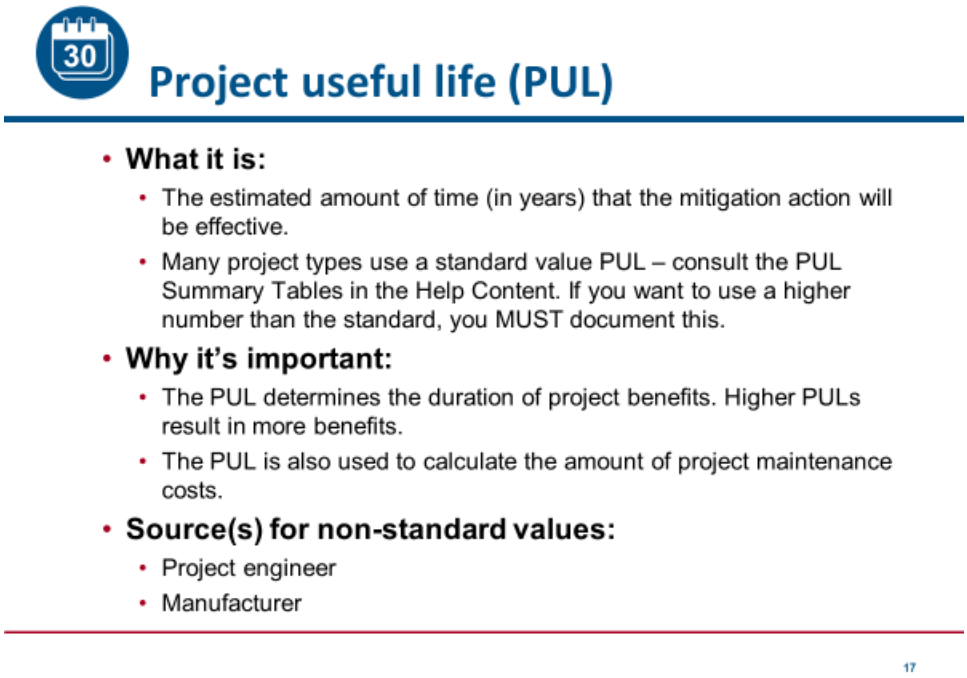
You will select Professional Expected Damages if:
- You have expected damages estimated by a qualified professional.

You will not actually input that data here, but you need to know what TYPE of data you have.

Projects that mitigate non-buildings, such as utility infrastructure or roads/bridges, will always use Historical or Professional Expected Damages. Historical and Professional Expected Damages are what was called Damage Frequency Assessment (DFA) in older versions of the Toolkit.

We'll discuss appropriate sources for this data by project type in Units 5-8.

Project useful life (PUL)



Visual 14: PUL

Instructor:
The PUL is the estimated amount of time (in years) that the mitigation action will be effective. Many project types use a standard value PUL – consult the PUL Summary Tables in the Help Content. If you want to use a higher number than the standard, you MUST document this.

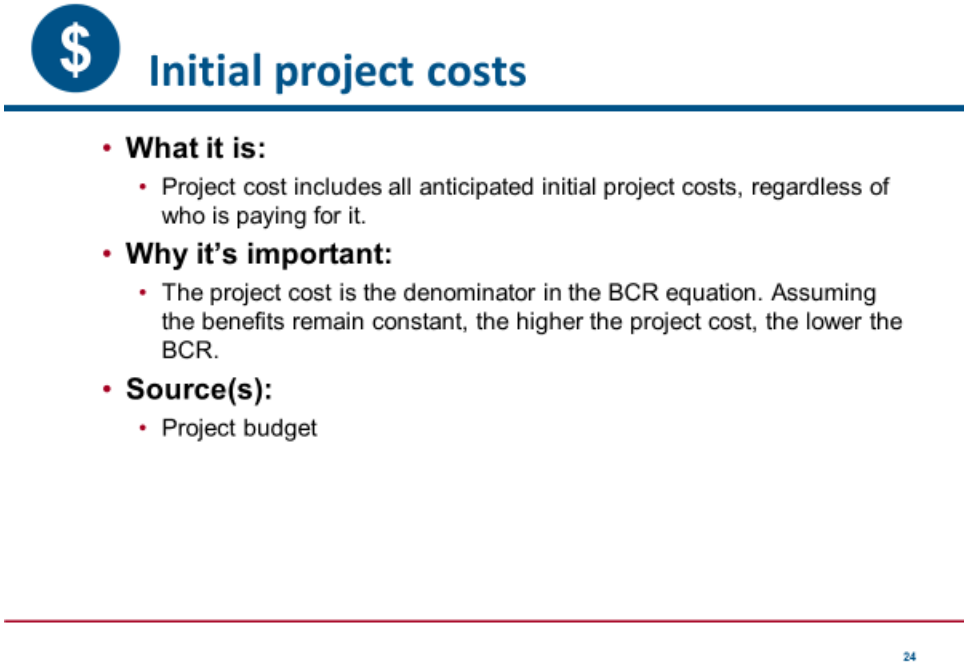
The PUL determines the duration of project benefits. Higher PULs result in more benefits. The PUL is also used to calculate the amount of project maintenance costs.

Source(s) for non-standard values:
- Project engineer
- Manufacturer

Many project types use a standard value PUL. For acquisitions, the software automatically shows 100 years and it cannot be changed.

For other project types, consult the PUL Summary Tables in the Help Content. If you want to use a higher number than the standard, you MUST document this by putting a note in the comment box referring the reviewer to the applicable document in your project application (i.e. "See Elevation_PUL.pdf in application.") Acceptable sources for higher PULs are signed/stamped letters from engineers or other qualified professionals, or copies of manufacturer guidance. Even with documentation, a PUL value cannot be higher than the highest Acceptable Limits value in the PUL Summary Tables.

Initial project costs



Visual 15: Initial project costs

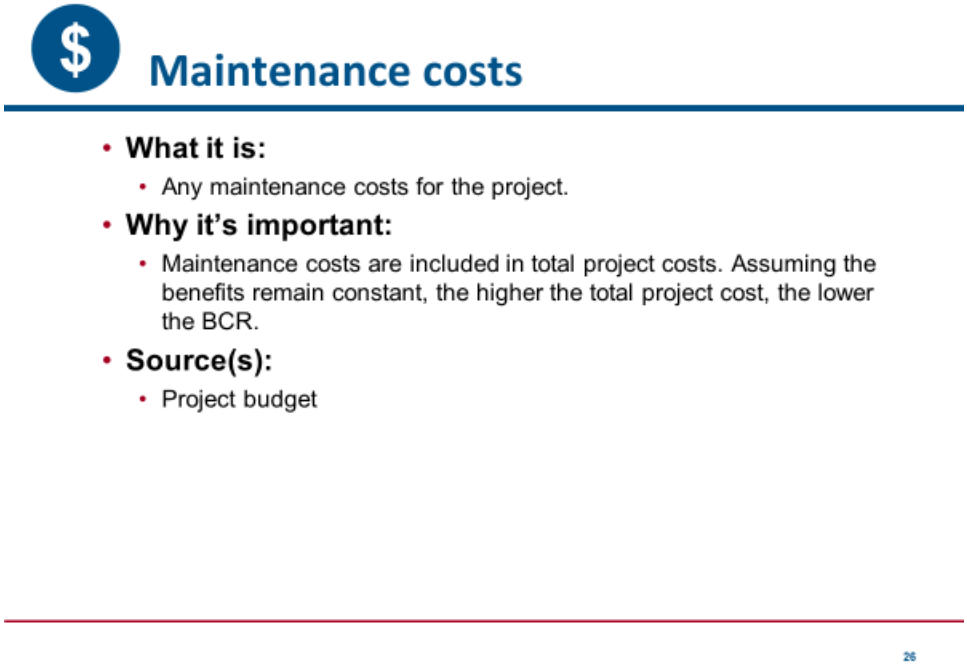
Instructor:
The project cost includes all anticipated initial project costs, regardless of who is paying for it.

The project cost is the denominator in the BCR equation. Assuming the benefits remain constant, the higher the project cost, the lower the BCR.

Source(s):
- Project budget

It's fine to use a ballpark if you are just trying to get an idea of whether your project is cost-effective, but if you are submitting a BCA as part of your project application, this MUST match the cost estimate in your application. Note that this is the full project cost, not just the federal share.

Maintenance costs



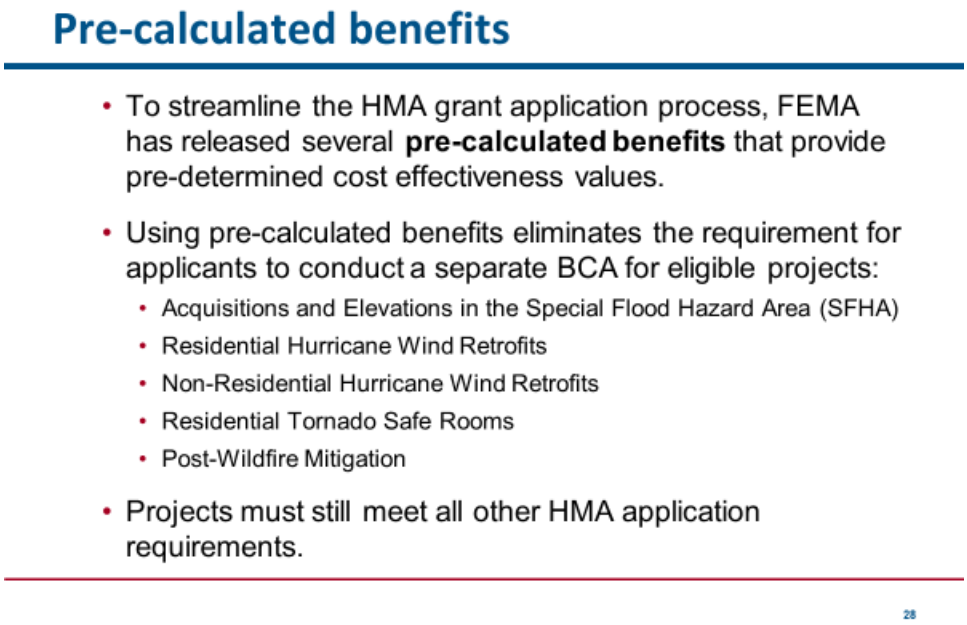
Visual 16: Maintenance costs

Instructor:
These are any maintenance costs for the project.

Maintenance costs are included in total project costs. Assuming the benefits remain constant, the higher the total project cost, the lower the BCR.

Source(s):
- Project budget

Pre-calculated benefits



Visual 17: Pre-calculated benefits

Instructor:

To streamline the HMA grant application process, FEMA has released several **pre-calculated benefits** that provide pre-determined cost effectiveness values.

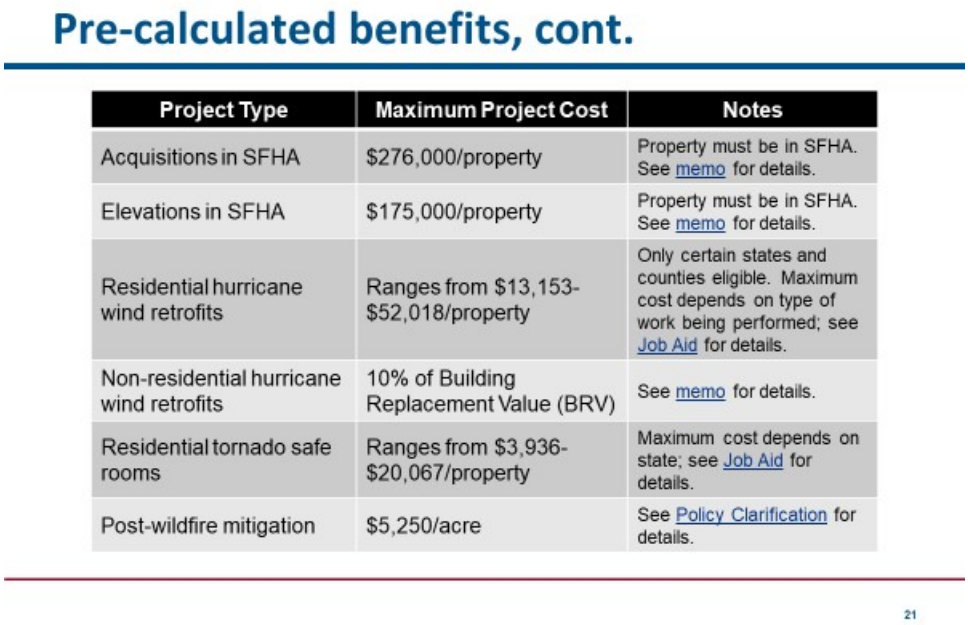
Using pre-calculated benefits eliminates the requirement for applicants to conduct a separate BCA for eligible projects:

- Acquisitions and Elevations in the Special Flood Hazard Area (SFHA)
- Residential Hurricane Wind Retrofits
- Non-Residential Hurricane Wind Retrofits
- Residential Tornado Safe Rooms
- Post-Wildfire Mitigation

Projects must still meet all other HMA application requirements.

Any time you start a BCA, check FEMA's BCA webpage (https://www.fema.gov/benefit-cost-analysis) for pre-calculated benefits.

Pre-calculated benefits



Visual 18: Pre-calculated benefits, cont.

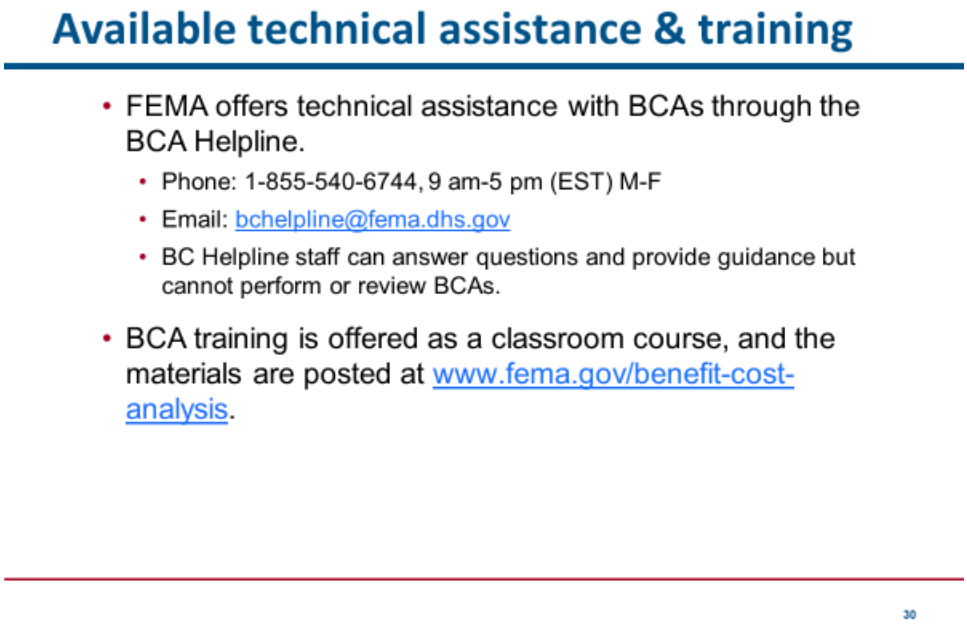
Instructor:

See the table for a summary of currently available pre-calculated benefits.

Project Type	Maximum Project Cost	Notes
Acquisitions in SFHA	$276,000/property	Property must be in SFHA. See memo for details.
Elevations in SFHA	$175,000/property	Property must be in SFHA. See memo for details.
Residential hurricane wind retrofits	Ranges from $13,153-$52,018/property	Only certain states and counties eligible. Maximum cost depends on type of work being performed; see Job Aid for details.
Non-residential hurricane wind retrofits	10% of Building Replacement Value (BRV)	See memo for details.
Residential tornado safe rooms	Ranges from $3,936-$20,067/property	Maximum cost depends on state; see Job Aid for details.
Post-wildfire mitigation	$5,250/acre	See Policy Clarification for details.

Table 1: Pre-calculated benefits

Technical assistance and training



Visual 19: Technical assistance and training

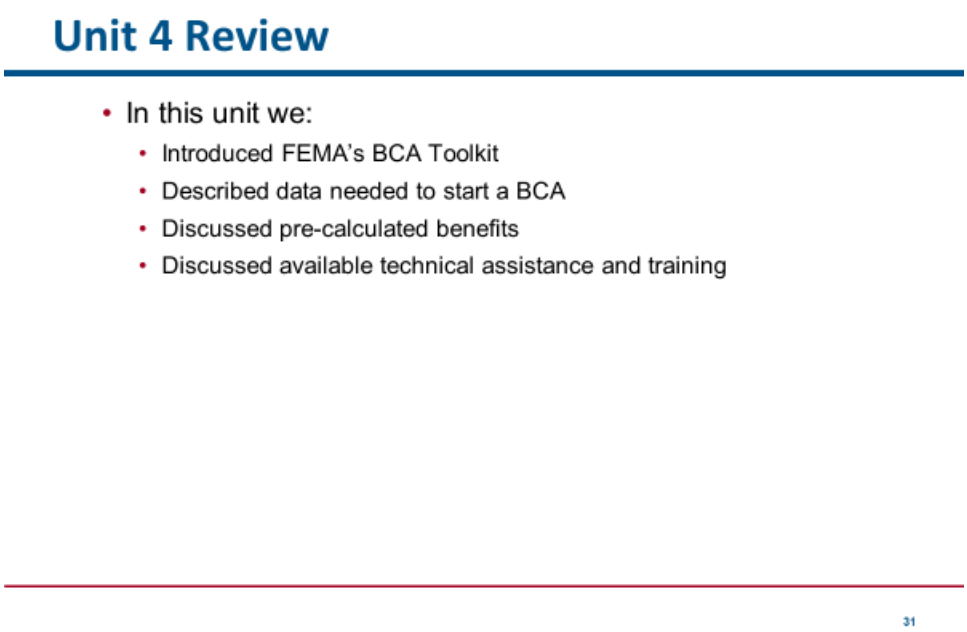
Instructor:

FEMA offers technical assistance with BCAs through the BCA Helpline.

- Phone: 1-855-540-6744, 9 am-5 pm (EST) M-F
- Email: bchelpline@fema.dhs.gov
- BC Helpline staff can answer questions and provide guidance but cannot perform or review BCAs.

BCA training is offered as a classroom course – which is where you are now – and the materials are posted at www.fema.gov/benefit-cost-analysis.

Unit 4 Review



Visual 20: Unit 4 Review

Instructor:

In this unit we:

- Introduced FEMA's BCA Toolkit
- Described data needed to start a BCA
- Discussed pre-calculated benefits
- Discussed available technical assistance and training