UCDAVIS BICYCLINGPlus RESEARCH COLLABORATIVE

ATRC Active Transportation Resource Center

Caltrans Active Transportation Benefit – Cost Tool

User Guide

Prepared by:

Dillon T. Fitch

Institute for Transportation Studies, University of California, Davis

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About

This guide describes the use of the Caltrans Active Transportation Benefit-Cost tool[1] hosted by UC Davis. The tool is based on a literature review[2] and is described fully by the accompanying technical documentation.[3] The tool is designed to calculate benefits at the project level. The suggested workflow for the tool is:

(1) Use the tool when designing the project to better understand the benefits of alternative designs.
(2) Use the tool to estimate the benefits of a preferred alternative final design.
(3) Each time a user exports the benefit calculations, a unique identifier is generated, and the user parameters are stored within the tool. This allows users to return to the tool, enter the unique identifier and resume their prior calculation.

Before using the tool, the user needs to acquire the following information about the project:

- County (required): The primary county for which the project is located.
- Project Name (optional): Any name to help identify the project.
- Project Cost (in dollars) (optional): Cost of the project.
- Project Time Frame (required, default is 20 years): Decide on the timeframe for calculating benefits (recommended to use the default).
- Project Type (select one of three categories, required):
  - Infrastructure
  - Non-Infrastructure
  - Infrastructure and Non-Infrastructure
- Active Travel Type (select one of three categories, required except for when Project Type = Non-Infrastructure):
  - Bicycle only
  - Pedestrian only
  - Bicycle and Pedestrian
- Transit Connections (required): If the project has the following transit connection components.
  - Connections to major transit hub(s)
  - Connections to transit stop(s)
  - No transit connections

[1] https://activetravelbenefits.ucdavis.edu/ and source code: https://github.com/bicyclingplus/caltrans-bc-tool
[2] https://activetravelbenefits.ucdavis.edu/litreview
[3] https://activetravelbenefits.ucdavis.edu/technicaldocs

- Safety Data (optional): Local data summaries from police departments, hospital records, and/or subsets of the Statewide Integrated Traffic Records System (SWITRS) data[4] that are specific to the project.

Safety Outcome	Bicyclist		Pedestrian	
	Intersections	Roadways	Intersections	Roadways
Crashes				
Injuries				
Deaths				

Starting a Project

Selecting a county

Select the county the project primarily falls within. For projects that span multiple counties, select the one county that has most of the project.

<INSERT IMAGE>

Input a project ID

If you have already run the tool and would like to recall a past calculation of a project, enter the Project ID for the past calculation (located at the top of the benefit report).

<INSERT IMAGE>

General Project Parameters

Start by entering the required and optional project information (see above) in the dialogs on the left of the tool. Some additional dialogs will expand depending on your selections. All required field are marked with an *.

<INSERT IMAGE>

Map-Based Description of Project Reach

Define the geographic scope of the project using the map interface. Zoom to the project location. If the label on the map reads "Zoom in to select links", you must zoom in farther to load the network data. When the network data is displayed on the map, you will notice the transparent grey network and intersections layers.

Using the toggle "Editable Feature", you determine if you want to select the segments or intersections.

[4] Accessed through https://tims.berkeley.edu/

Select the segments and intersections associated with your project. By default, the intersections of adjoining segments will be included in your selection.

<INSERT IMAGE>

If you want to de-select an intersection, toggle "Intersections" from "Editable Feature" and click the intersections you want to remove. You can also select additional intersections this way.

<INSERT IMAGE>

All selected segments and intersection are displayed in yellow.

<INSERT IMAGE>

If your project includes segments or intersections that are not displayed on the map, you can toggle the "Editing Mode" from "Select Existing" to "Edit User Defined".

In "Edit User Defined" mode you can digitize segments or intersections (depending on "Editable Feature" toggle).

Digitizing new intersections requires clicking on the map where you want an intersection. If you want to remove an intersection you placed, click on it to remove.

<INSERT IMAGE>

Digitizing new segments requires at least two clicks (start and end) but can include many more to properly define the geometry of the segment. When you are finished drawing the segment, use the button "Add as Two-Way Segment" or "Add as One-Way segment" to commit your segment to the map. You can cancel your segment by selecting "Cancel Adding Segment."

<INSERT IMAGE>

If you want to remove a user added segment or intersection, ensure "Edit User Defined" is toggled and click the feature you want to remove.

<INSERT IMAGE>

Once you have completed your definition of your project, look below the map at the "Project Reach" statistics for number of intersections and project length to confirm you have included everything. The project length calculation includes travel in both directions.

Defining Specific Project Parameters

Below the "Project Reach" is the "Define Project Elements" dialog. *Use the drop down multi-select dialog to select all project elements.* Hover over the tool tip for Multi Element Interventions to learn how to not double count elements.

<INSERT IMAGE>

After selecting all the project elements including any infrastructure and non-infrastructure project elements, the "Selected Infrastructure Elements" table dialog will be generated below. You can *return to the "Define Project Elements" dialog to add or remove project elements* at any time and "Selected Infrastructure Elements" will dynamically update.

Non-Infrastructure Elements do not require further definition for benefit calculations.

Selected Infrastructure Elements

For each infrastructure element, select the type of investment and enter the length or count of each element. All linear elements should be entered in units of feet. All discrete elements should be entered as a count. For discrete elements that are often installed with many units (e.g., rapid flashing beacons), consider each intervention location a discrete count. For example, a new crossing with three rectangular rapid flashing beacons installed (one on each side of a road an done on a center median) should have a count of one.

<INSERT IMAGE>

Calculate Benefits

Select "Estimate Benefits" to produce the benefit summary tables below. If you change anything above this dialog, "Update Benefits" will turn from grey to gold indicating you must select "Update Benefits" to ensure the benefit tables below consider the changes you made above.

<INSERT IMAGE>

Review the benefits tables below.

Save Benefits (Export to PDF)

Select "Save Benefits (Export to PDF)" to commit the benefit calculations to the server and to export the PDF report. This button creates a summary pdf with additional information that is not included on the webpage, and it saves the project with a unique Project ID to the server for recall later through the opening page dialog.

Start a New Project

At any point you can start a new project by clicking on the "Start New Project" button at the top right of the tool. If you do this before clicking "Save Benefits (Export to PDF)", your work will be lost.