

Caltrans Training Module 7c

How to Start a Cal-B/C Active Transportation Analysis





About This Module

This module will...

- Present a Quick-Start guide to Cal-B/C tools
- Walk through a three-step process to start an analysis in a Cal-B/C tool
 - Enter project information
 - Adjust model data with detailed information, if available 2.
- Provide troubleshooting methods



Module 10

 \star This module is covered in this presentation

Previous Modules...

- Module 1 provided a basic introduction on benefit-cost analysis (BCA) and a general overview of how to conduct a BCA
- Module 2 described the Cal-B/C suite of tools, discussed the types of projects that can be evaluated, and provided guidance on which tools to use for various project types
- Module 3 presented the Cal-B/C results page, detailed what each output measure means, and explained how they are calculated
- Module 4c presented an overview of how Cal-B/C AT works including a review of all worksheets and inputs
 - It is strongly recommended to review Module 4c before starting Module 7c
- Module 5 highlighted the information in the Parameters worksheet and discussed key assumptions used by Cal-B/C
- Module 6c provided detailed information on how Cal-B/C AT calculates benefits



Step 1, Enter Project Information

Preview of Project Information Required by Project Type

Project Type	Section 1A Project and Site Characteristics	Section 1B Existing Segment Improvements and Trip Volume	Section 1C Intersection Improvements	Section 1D General User Characteristics (Default Values)	Section 1E New Facility Improvements and Trip Volume
Upgrade Existing Bike Facility	Х	Х		Х	
New Bike Route Facility	Х			Х	Х
Pedestrian Improvements	Х	Х			Х
Intersection Improvement	Х		Х		
Safety Improvement to Existing Facility	Х		Х		
Non-Infrastructure Program	Х				

Preview of Project Information Required by Project Type

Project Type	Section 1F Project Costs	Section 1G Program Costs	Section 1I Non-Infrastructure Program Characteristics
Upgrade Existing Bike Facility	Х		
New Bike Route Facility	Х		
Pedestrian Improvements	X		
Intersection Improvement	Х		
Safety Improvement to Existing Facility	Х		
Non-Infrastructure Program		X	X

Overview of Project Information Worksheet



- Two Primary Data Entry Areas:
 - Infrastructure Project Data, Project Costs

Project Information – Data Requirements

- Project Data Project description, type of project/program, location, project length, length of construction
- Infrastructure Details Existing and proposed facility features and length, intersection improvements
- Trip Data Cycling and Pedestrian volumes for Adults and Children
- Safety Data How many accidents have occurred and what countermeasures will be implemented
- Project Costs Capital and on-going operating expenses for the project

Project Information Worksheet (1a)

EA or PPNO only makes sense
for Caltrans internal budgeting and programming

	A A 1 2 3	B C D E F G H I District: HQ EA:	JK	LMN
	4 5 6 7 8 9 9 10 11 12 13 14 15 16 17 18	PROJECT: Hypothetical Project PPNO: 1A PROJECT AND SITE CHARACTERISTICS Type of Project Existing facility upgrade only = 1 New facility only, no existing facility work = 2 Existing facility upgrade and new facility extension = 3 Total Project Length Project Type Data Check Total New Facility Length (miles) OK Characteristics Project Location (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)		1D GE Cycling Trip Purpose Commuting Trip Pur Recreational Trip Pur Other Destinations T General Trip Characterist Overall Average Dist Children - SRTS - Di Pedestrian
Pro tip: Include Post Mile, Highway, or State Route Name in Project Name	19 20 21 22 23 24 25 26 27 28	Safe Route to School? (enter 1 for Yes, 0 for No) Programmatic Initiatives? (enter 1 for Yes, 0 for No) Construction Construction Length of Construction Period (years) OK		Trip Purpose Commuting Trip Pur Recreational Trip Pu Other Destination Tri General Trip Characterist Overall Average Dist Children - SRTS - Di
	29 30 31 32 33 34	IB EXISTING SEGMENT IMPROVEMENTS AND TRIP VOLUME Improvement Characteristics Existing Facility Length, if Applicable Class No Build Project Length Data Check		1E Improvement Characteristics New Facility Length No Facility

Project Information

 Optional, input unique project identifiers including: Caltrans District, Project Name (w/ route number and postmiles), Expenditure Authorization (EA) number, Planning and Programming Number (PPNO)

1A) Project and Site Characteristics

Required for all projects

Type of Project

- Existing facility upgrade, new facility, or both
 - Used to determine which benefits are calculated and how
 - Project Information in Cal-B/C AT is generally separated for existing and new facilities

Total Project Length (miles)

- Existing facility length
- New facility length

	PROJECT AND SITE CHARAC	CTERISTICS	
Type of Proj	iect		
1	Existing facility upgrade only = 1		
1	New facility only, no existing facility work = 2		
I	Existing facility upgrade and new facility extension = 3		
Total F	Project Length		Project Type Data Check
	Total Existing Facility Length (miles)		OK
-	Total New Facility Length (miles)		OK
Safe R Progra	Route to School? (enter 1 for Yes, 0 for No)		
Constr	ruction		Constr. Years Data Check
I	Length of Construction Period (years)		ок
			Project

entry is internally consistent

1A) Project and Site Characteristics

Characteristics

Project Location

 Used to estimate emission benefits t choosing parameters according to th region

Safe Route to School? (Y/N) Programmatic Initiatives? (Y/N)

- Non-infrastructure components
 Length of Construction Period
- Years needed to construct project

1A PROJECT AND SITE CHARACTERISTICS								
Type of Project Existing facility upgrade only = 1 New facility only, no existing facility work = 2 Existing facility upgrade and new facility extension = 3								
Total Project Length Total Existing Facility Length (miles) Total New Facility Length (miles)	Project Type Data Check OK OK							
<i>Characteristics</i> <i>Project Location</i> (enter 1 for So. Cal., 2 for No. Cal., or 3 for rural)								
Safe Route to School? (enter 1 for Yes, 0 for No)								
Programmatic Initiatives? (enter 1 for Yes, 0 for No)								
Construction Length of Construction Period (years)	Constr. Years Data Check OK							

1B) Existing Segment Improvements and Trip Volume – Improvement Characteristics

- <u>Required for project improving existing facility</u>
- Infrastructure projects are categorized as one of four bike facility classes
- Existing Facility Length (miles) by class
 - o Bike Paths
 - Bike Lanes
 - o Bike Routes
 - Separated bikeways and tracks
- Data check to ensure the data entry matches project length in Section 1A



1B) Existing Segment Improvements and Trip Volume – Improvement Characteristics

Pedestrian Improvements

- Yes = 1, No = 0
- Identifies pedestrian improvement project components, which contribute to Journey Quality benefits
 - Street lighting
 - \circ Curb level
 - \circ Crowding
 - Pavement evenness
 - $_{\circ}$ Information Panels
 - $_{\circ}$ Benches
 - Directional Signage

IB EXISTING SEGMENT IMPROVEMENTS AND TRIP VOLUME								
Improvement Characteristics Existing Facility Length, if Applicable	Class	No Build	Build	Project Length Data				
Bike Paths (miles)	1			OK				
Bike Lanes (miles) Bike Route (miles)		4	4					
Separated Bikeways, Cycle Tracks (miles)	iΫ							
lotai		•	4	ļ				
Pedestrian Improvements Street Lighting		Yes =1 or No=0	Yes=1 or No=0					
Curb Level								
Crowding								
Information Panels								
Benches								
Directional Signage		L		;				
Trip Data - Adults								
Daily Trips - Current		151						
Projected Annual Growth Rates from Year 1(%)		0.5%	2.0%					
Daily Trips - Year 1 (post-construction)		153	157					
Daily Trips - Year 20 (post-construction)		169	233					
Pedestrian								
Daily Trips - Current				.				
Projected Annual Growth Hates from Year 1(%)		L						
Daily Trips - Year 1 (post-construction)		0	0					
Daily Trips - Year 20 (post-construction)		0	0					
Trip Data - Children - SRTS								
Daily Trips - Current		18						
Projected Annual Growth Rates from Year 1(%)		0.5%	2.0%					
Daily Trips - Year 1 (post-construction)			19					
Daily Trips - Year 20 (post-construction)		20	28					
Pedestrian								
Projected Annual Growth Rates from Year 1 (%)		0.5%	2.0%					
Daily Trips - Year 1 (post-construction)		24	25					
Daily Trips - Year 20 (post-construction)		27	37					

1B) Existing Segment Improvements and Trip Volume – Trip Data

Trip Data - Adults

- For Cycling and Pedestrian traffic
- Current Daily Trips
- Projected Annual Growth Rates
 - $_{\circ}\,$ in No Build and Build scenarios
- Daily Trips, post-construction
 - $_{\odot}\,$ Year 1 and Year 20, No Build and Build scenarios
 - $_{\circ}\,$ Calculated from above inputs
 - $_{\circ}$ Can be overwritten if better data is available

Trip Data - Children - SRTS

- Same inputs as above
- Only required for SRTS projects



1E) New Facility Improvements & Trip Volume – Improvement Characteristics

- <u>Required for new facility</u>
- New Facility Length (miles) by class
 - No Facility (based on entry in Section 1A)
 - $_{\circ}\,$ Bike Paths
 - o Bike Lanes
 - o Bike Route
 - Separated Bikeways, Cycle Tracks
 - Data check to ensure the data entry matches project length in Section 1A



1E) New Facility Improvements & Trip Value – Improvement Characteristics

Pedestrian Improvements

- Yes = 1
- Identifies new pedestrian improvement components, which contribute to Journey Quality benefits:
 - Street lighting
 - $_{\circ}$ Curb level
 - $_{\circ}$ Crowding
 - Pavement evenness
 - Information Panels
 - $_{\circ}$ Benches
 - Directional Signage



Project

Information

1E) New Facility Improvements & Trip Value – Improvement Characteristics

Trip Data - Adults

- For Cycling and Pedestrian traffic
- Current Daily Trips
- Projected Annual Growth Rates
 - $_{\circ}\,$ in No Build and Build scenarios
- Daily Trips, post-construction
 - $_{\odot}\,$ Year 1 and Year 20, No Build and Build scenarios
 - $_{\circ}\,$ Calculated from above inputs
 - $_{\odot}\,$ Can be overwritten if better data is available

Trip Data - Children – SRTS

- Same inputs as above
- Only required for SRTS projects





1C) Intersection Improvements – Reduced Delay Due to Intersection Improvements

Required for intersection or safety improvement

Number of Improved Intersections

Improved intersections in the project area (if applicable to project)

Time Savings per Improved Intersection

 Expected savings in minutes per intersection due to improvements

Intersection improvements on SRTS? (Y/N)

• Yes = 1, No = 0

	NTERSECTION IMPROVEMENTS - TIME S/	VINGS AND ACCIDENT REDUCTION DATA
Reduced	Delay Due to Intersection Improvements	
Time	Savings Parameters	······
IN T	iumber or improved intersections	<u>×</u>
	ime Savings per improved intersection (min.)	
In	tersection improvements on SRTS? (enter 1 for Yes, 0	For Noj <u>1</u>
Accident .	Rate - Current Conditions	
Cyclis	sts	Count (No.) Rate per Year
N	lumber of Years of Data	5.00
E	xisting Conditions	
Т	otal Number of Accidents (Tot)	8 1.6
N	lumber of Fatal Accidents (Fat)	0.0
N	lumber of Injury Accidents (Inj)	8 1.6
N	lumber of IProperty Damage Only (PDO) Accidents	0.0
A 1	nnual Growth Rate in Accidents (%/year)	
Pedes	strians	Count (No.) Rate per Year
N	lumber of Years of Data	5.00
E	xisting Conditions	
Т	otal Number of Accidents (Tot)	0 0.0
N	lumber of Fatal Accidents (Fat)	0.0
N	lumber of Injury Accidents (Inj)	0.0
N	lumber of IProperty Damage Only (PDO) Accidents	0.0
A .	nnual Growth Rate in Accidents (%/year)	
Safety Co	ountermeasures (improvements to existing fa	ocilities only)
Signa	lized Intersection	Yes=1
P	edestrian Countdown Signal Heads	
P	edestrian Crossing	<u>1</u>
A	dvance Stop Bar before Crosswalk	
In	stall Overpass/Underpass	
Unsig	nalized Intersection	·····
R	aised Medians/Refuge Islands	
P	edestrian Crossing (new signs and markings only)	<u>1</u>
P	edestrian Crossing (safety features/ourb extensions)	
P	edestrian Signals	
Road	ways - relevant for pedestrian improvements	, such as sidewalks
S	idewalk/Pathway (to avoid walking along roadway)	
E P	edestrian Crossing (with enhanced safety features)	
P	edestrian Crossing	
Uther	reduction Factor Countermeasures	

1C) Intersection Improvements – Accident Rate – Current Conditions

For Cyclists

Number of Years of Data

- Years of accident data to be entered
- Total Accidents in Existing Conditions
- Fatal, Injury, Property Damage Only
- Enter actual number of accidents in the project area
- Annual Growth Rate in Accidents
- Applies to accidents in No Build and Build scenarios
- For Pedestrians —
- Same inputs as for bicyclists

NOTE: Current practice at Caltrans and CA agencies refers to vehicular incidents or "accidents" as "collisions" or "crashes." Current versions of Cal-B/C still refer to collisions/crashes as accidents.



Project

Information

1C) Intersection Improvements – Safety Countermeasures

• Yes = 1

- Identifies safety countermeasures at existing facilities that contribute to bicycle and pedestrian accident cost savings
- Signalized Intersection
- Unsignalized Intersection
- Roadways (pedestrian improvements only)
- Other Reduction Factor Countermeasures
- Used in accident cost savings in the Intersection Safety worksheet

10	INTERSECTION IMPROVEMENTS - TIME SAVINGS AND ACCIDENT REDUCTION DATA
Red	aced Delay Due to Intersection Improvements
	lime Savings Parameters
	Number of Improved Intersections 2
	Time Savings per Improved Intersection (min.)
	Intersection improvements on SRTS? (enter 1 for Yes, 0 for No) 1
Acci	dent Rate - Current Conditions
	Cgolists Count (No.) Rate per Year
	Number of Years of Data 5.00
	Existing Conditions
	Total Number of Accidents (Tot) 8 1.6
	Number of Fatal Accidents (Fat) 0.0
	Number of Injury Accidents (Inj) 8 1.6
	Number of IProperty Damage Only (PDO) Accidents 0.0
	Annual Growth Rate in Accidents (%/year)
	Pedestrians Count (No.) Rate per Year
	Number of Years of Data 5.00
	Existing Conditions
	Total Number of Accidents (Tot) 0 0.0
	Number of Fatal Accidents (Fat) 0.0
	Number of Injury Accidents (Inj) 0.0
	Number of IProperty Damage Only (PDO) Accidents 0.0
	Annual Growth Rate in Accidents (%/year)
Safe	ty Countermeasures (improvements to existing facilities only)
	Signalized Intersection Yes=1
	Pedestrian Countdown Signal Heads
	Pedestrian Crossing 1
	Advance Stop Bar before Crosswalk
	Install Overpass/Underpass
	Insignalized Intersection
	Haised Medians/Heruge Islands
	Pedestrian Crossing (new signs and markings Only)
	Pedestrian Crossing (saret) reaturesrourd extensions)
	Roadware - relevant for nedestrian improvements such as sidewalks
	Sidewalk (Pathwaii (to avoid walking along roadwaii)
	Pedestrian Crossing (with enhanced safetic features)
	Pedestrian Crossing
	Other Reduction Factor Countermeasures

1D) General User Characteristics (Based on Project Location)

Option to overwrite Cal-B/C model defaults for any project

- Default Parameters for:
 - $_{\odot}\,$ Distribution of Trip Purpose
 - $_{\rm \odot}\,$ Distance traveled
 - $_{\circ}\,$ For Cyclists and Pedestrians
 - $_{\circ}\,$ No Build and Build scenarios
- Based on Project Location entry in Section 1A
- Characteristics of facility users are used in estimating facility benefits
- Can be overridden if better data is available
- Refer to Module 5 for default parameter sources

genng		
Trip Purpose	No Build	Build
Commuting Trip Purpose (%)	8%	8%
Recreational Trip Purpose (%)	15%	15%
Other Destinations Trip Purpose (%)	77%	77%
General Trip Characteristics		
Overall Average Distance Traveled / Trip (mi)	1.83	1.83
Children - SRTS - Distance Traveled / Trip (mi)	0.88	0.88
Pedestrian		
Trip Purpose		
Commuting Trip Purpose (%)	5%	5%
Recreational Trip Purpose (%)	10%	10%
Other Destination Trip Purpose (%)	85%	85%
General Trip Characteristics		
Overall Average Distance Traveled / Trip (mi)	0.52	0.52
Children - SRTS - Distance Traveled / Trip (mi)	0.46	0.46

1F) Project Costs

Required for all infrastructure projects

- All project costs should be entered into five cost columns as needed
- Project costs should be entered as incremental rather than total costs
 - Incremental costs are difference between No Build and Build scenarios
- Costs must be entered in thousands of dollars (\$1,000)
- Project costs must be entered in constant dollars, in same year as economic parameters used for benefit calculations (current year in Cal-B/C is 2016)
 - $_{\odot}\,$ Modules 5 and 6c will go into more details about year for current dollars

			DIRE	CT PROJECT CO	ISTS		TOTAL COSTS	i (in dollars)
	.			T	CURCEOUE	NT COSTS		
Year	Constructing	Project			Maint./		Constant	Present
	Years	Support	B/W	Construction	Op.	Rehab.	Dollars	Value
Infrastructu	ire Program Cos	ts						
1	1		\$500.0	\$2,000.0	< Must e	nter a cost	\$2,500,000	\$2,500,00
2	1			\$2,000.0			2,000,000	1,923,07
3	0						0	
4	0						0	
5	0						0	
6	0						0	
7	0						0	
8	0						0	
Annual Infr	astructure O&M	Costs						
1					\$5		\$5,000	\$4,62
2	.			,	\$5		5,000	4,44
3					\$5		5,000	4,27
4					\$5		5,000	4,11
5				l.	\$5		5,000	3,95
6					\$5		5,000	3,80
7					\$5		5,000	3,65
8					\$5		5,000	3,51
9]			[\$5		5,000	3,37
10]			[\$5		5,000	3,24
11				[\$5		5,000	3,12
12]			[\$5		5,000	3,00
13				[\$5		5,000	2,88
14]			[\$5		5,000	2,77
15				[\$5		5,000	2,67
16	j l			[\$5		5,000	2,56
17				ľ	\$5		5,000	2,46
18]			ľ	\$5		5,000	2,37
19				ľ	\$5		5,000	2,28
20					\$5		5,000	2,19
Total		\$0	\$500	\$4,000	\$100	\$0	\$4,600,000	\$4 488 4



1F) Project Costs

- Up to eight (8) years of initial <u>infrastructure</u> project costs allowed
- Costs must be entered for each year to be consistent with "Length of Construction Period" entered in Section 1A
- Following construction, project opens and the 20-year project operating period begins
- Year 1 (Base Year) described in previous slides represented by the "1" under the "Project Open" header

			TOTAL COSTS	OTAL COSTS (in dollars)				
			INITIAL COSTS	T	SUBSEQUE	NT COSTS		
Year	Construction	Project	5114	a	Maint./		Constant	Present
	rears	Support	Brw	Lonstruction	UD.	Henap.	Dollars	value
Inrrastructu	Ire Program Los	(5	¢500.0	0.000 CA	c behavet a	alas a seal	¢2 E00.000	¢2 500.00
2			\$300.0	\$2,000.0	(Muste	riter a cost	\$2,000,000	\$2,000,00
2				\$2,000.0			2,000,000	1,323,07
5	U C						U O	
4 E	U						U	
	U							
b 7	U O						U	
(U						0	
8							U	
Annual Intr	astructure U&M	Costs			# E		45.000	
	-				\$5		\$5,000	\$4,62
2					\$5		5,000	4,44
3	.				\$5		5,000	4,27
4					\$5		5,000	4,11
5					\$5		5,000	3,95
6					\$5		5,000	3,80
7	.				\$5		5,000	3,65
8	.				\$5		5,000	3,51
9					\$5		5,000	3,37
10	.				\$5		5,000	3,24
11					\$5		5,000	3,12
12					\$5		5,000	3,00
13					\$5		5,000	2,88
14]			[\$5		5,000	2,77
15					\$5		5,000	2,67
16				ľ	\$5		5,000	2,56
17]				\$5		5,000	2,46
18				ľ	\$5		5,000	2,37
19	1				\$5		5,000	2,28
20					\$5		5,000	2,19
T		40	4500	¢4.000	#100	^ 0	A4 C00 000	#4.400.4



1F) Project Costs – Direct Project Costs

Initial Costs

- Project support
- Right-of-way acquisition costs
- Construction costs
- Project should incur no initial project costs in or after the project opening year

Subsequent Costs

- Any costs incurred after the project is constructed and open
 - $_{\odot}\,$ Operating and Maintenance (O&M) costs
 - $_{\circ}\,$ Rehabilitation costs
- Module 8 discusses project cost sources, including O&M costs

001.110.			DIRE	CT PROJECT CO	STS		TOTAL COSTS	6 (in dollars)
					CUPEFOUE	NT COSTS		
Year	Construction	Project	NITIAL CUSTS		Maint./	NILUSIS	Constant	Present
	Years	Support	B/W	Construction	Op.	Rehab.	Dollars	Value
frastructu	ure Program Co	ts						
1	1		\$500.0	\$2,000.0	< Mustie	nter a cost	\$2,500,000	\$2,500,0
2	1			\$2,000.0			2,000,000	1,923,0
3	0						 0	
4	0						0	
5	0						 0	
6	0						 0	
7	0						 0	
8	0						0	
nnual Infi	rastructure O&	Costs						
1					\$5		\$5,000	\$4,6
2					\$5		5,000	4,4
3					\$5		 5,000	4,2
4					\$5		5,000	4,
5					\$5		5,000	3,9
6					\$5		5,000	3,8
7				l l	\$5		5,000	3,6
8					\$5		5,000	3,5
9					\$5		5,000	3,3
10					\$5		5,000	3,2
11					\$5		5,000	3,1
12					\$5		5,000	3,0
13					\$5		5,000	2,8
14					\$5		5,000	2,7
15					\$5		5,000	2,6
16					\$5		 5,000	2,5
17					\$5		5,000	2,4
18					\$5		 5,000	2,3
19					\$5		 5,000	2,2
20					\$5		5,000	2,1
Total		\$0	\$500	\$4,000	\$100	\$0	\$4,600,000	\$4,488,



1F) Project Costs – Total Costs

Total Costs

- Calculated automatically
- Include project cost in constant dollars and present value for each year
- Values are in total dollars and not in thousands of dollars like other columns

COL HO.									
			DIRE		TOTAL COSTS	in dollars)			
			INITIAL COSTS	1					
Year	Construction	Project			Maint./		_ 1	Constant	Present
<u> </u>	Years	Support	R/₩	Construction	Op.	Rehab.	_	Dollars	Value
ntrastructu	re Program Cos	ts	4E00.0	#2.000.0	d blocks	atom a const	_	#3 E00 000	#2 E00.00
	1		\$500.0	\$2,000.0	< Must e	nter a cost		\$2,500,000	\$2,500,00
2	I			\$2,000.0				2,000,000	1,323,07
Д	0							0	
5	0							0	
6	0							0	
7	0							0	
8	0								
nnual Infra	astructure N&M	Costs							
1					\$5			\$5,000	\$4,62
2					\$5			5,000	4,44
3					\$5			5,000	4,27
4				ľ	\$5			5,000	4,1
5					\$5			5,000	3,95
6					\$5			5,000	3,80
7					\$5			5,000	3,65
8					\$5			5,000	3,5
9					\$5			5,000	3,37
10					\$5			5,000	3,24
11					\$5			5,000	3,12
12					\$5			5,000	3,00
13					\$5			5,000	2,88
14					\$5			5,000	2,77
15					\$5			5,000	2,67
16					\$5			5,000	2,56
17					\$5			5,000	2,48
10					\$5			5,000	2,37
20					\$5			5,000	2,28
ZU		04	¢E00	000.14	\$5			000,000	2,1:
lotal		\$0	\$500	\$4,000	\$100	\$U		\$4,600,000	\$4,488,4



1G) Program Costs and Requested Funds

Required for non-infrastructure projects

- Cal-B/C AT has an additional section for programmatic or non-infrastructure costs
- Same five cost columns are available to use to enter costs for projects with non-infrastructure improvements
 - $_{\odot}\,$ Must be entered in thousands of dollars (\$1,000)
 - Must be entered in constant dollars, in same year as economic parameters
- Total costs in constant and present value dollars are still calculated
- ATP Requested Funds
 - Enter costs requested for the Active Transportation Program
 - Only used if the tool is being used for an ATP application

		DIRECT PROJECT COSTS							
		INITIAL COST		INITIAL COSTS SUBSEQUENT COSTS		TCOSTS	TOTAL COSTS	TOTAL COSTS (in dollars	
Year	Construction	Project	D / W	Construction	Maint./	Pehab	Constant	Present	
on-Infras	structure Program	Costs	K/W	Construction	ор.	Renab.	Donars	value	
1		1			< Must ente	er a cost	\$1,000	\$1.0	
2		·					01,000	01,0	
2							0		
3							0		
4									
5							0		
5							0		
0							0		
nnual No	on-Infrastructure O	&M Costs					0		
1					\$5		\$5,000	\$5 (
2					\$5		5 000	4 8	
3				8			0		
4							0		
5							0		
6							0		
7							0		
8							0		
9							0		
10							0		
11							0		
12							0		
13							0		
14							0		
15				8			0		
16				0			0		
17				2			0		
10							0		
10							0		
19							0		
20							0	A	
Total		\$1	\$0	\$0	\$10	\$0	\$11,000	\$10,	



1H) Data Checks – Project Length, Daily Trips

- Checks for data consistency in all sections in 1a) Project Info
 - Facility length: existing and new, in No Build and Build scenarios
 - Facility users (trips per mile): existing and new, bicycles and pedestrians
 - $_{\circ}\,$ Safety measures on existing facilities
- Confirms that data is entered for the improvements identified

	HECKS - PROJECT LENGTH	I, DAILY TRIPS
	No Build Project Length	Build Project Length
Existing Facility Length Check	ОК	OK
New Facility Length Check	ОК	OK
	Cycling Daily Trips per Mile	Pedestrian Daily Trips per Mile
Existing Facility Users	NA	NA
New Facility Users	NA	NA
:	Safety Measures - Existing onl	y
Existing Eacility Characteristics	OK	

Title

Instructions

Definitions

Non-Infrastructure Program Information Worksheet (1b)

Required for non-infrastructure programs

1a) Project Info

 Data entry and scoring system for noninfrastructure initiatives and programs



Non-Infrastructure Program Information Worksheet (1b)

- Scoring framework is used to determine the initiative overall cost per score
- Four equally weighted criteria assess the effectiveness of the initiative
- Score is based on how non-active transportation users are impacted

Instructions

Title

Definitions



Non-Infrastructure Program Information – Data Requirements

- Scale of Initiative Number of people reached
- Program Details target audience, promotional characteristics, type of messaging, and duration

 Optional, input unique project identifiers including: Caltrans District, Project Name (w/ route number and post miles), Expenditure Authorization (EA) number, Planning and Programming Number (PPNO)

> Pro tip: Include Post Mile, Highway, or State Route – Name in Project Name

District: HQ PROJECT: Hypothetical Bike Lane Project	EA: 0 PPNO: 0	
11 NON-INFRASTRUCTURE PROGRAM CHARACTE	RISTICS	
Programmatic Initiatives?	Yes	
Scale of Initiative		
Participants / Beneficiaries	Data Check on Initiative	
Numbers of People Reached per Year	2500 OK	
Average Percentage of Current Active Bicyclists Reached per Year	5%	
Average Percentage of Current Active Pedestrians Reached per Year	1%	
Scoring Criteria		
Total Number of Criteria	4	
Total Criteria Weight Sum	100%	
	Criteria Weight	
1) larget Audience	25%	
Indicators	(mark as %; sum must equal 100%) Indicator Weight	
Younger than 10	5% 10%	
10-12	45% 20%	
13-24	44% 25%	
25-55	<u> </u>	
Indicator-Weighted Score	0.21	
	Criteria Weight	
2) Characteristics Promotional Effort	25%	
Indicators	(enter 1 for Yes on all that apply) Indicator Weight	
Effort Targets 5 E's or 5 P's		Proje
Knowledgeable Staff/Educator	1 5%	II Informa
Partnership/Volunteers	5%	
Creates Community Ownership/Relationship	1 5%	
Part of Bigger Effort (e.g., political support)	5%	
indicator-weighted Score	0.15	

EA or PPNO only makes sense

for Caltrans internal budgeting

and programming

Programmatic Initiatives (based on selection in Section 1A)

Participants/Beneficiaries

- Number of People reached per year
- Percentage of Current Active Bicyclists that benefit (are reached by the program)
- Percentage of Current Active Pedestrians that benefit (are reached by the program)

11 NON-INFRASTRUCTURE PROGRAM CHARACTE	RISTICS	
rogrammatic Initiatives?	Yes]
cale of Initiative		
Participants / Beneficiaries	2500	Data Check on Initiative
Numbers of People Reached per Year Average Percentage of Current Active Biovalists Reached per Vear	2000	
Average Percentage of Current Active Dicyclists Reached per real Average Percentage of Current Active Pedestrians Reached per Year	1%	
coring Criteria		
Total Number of Criteria		4
Total Criteria Weight Sum		100%
		Ostaria Waisht
1) Tayaat Audio aa		Criteria Weight
1) Target Audience		2370
Indicators	(mark as %; sum must equal 100%)	Indic ator Weight
Younger than 10	5%	10%
10-12	45%	20%
13-24	44%	25%
25-55	5%	15%
00+ Indicator-Weighted Score	0.21	5%
Indicator-Weighted Score	0.21	1
		Criteria Weight
2) Characteristics Promotional Effort		20%
Indicators	(enter 1 for Yes on all that apply)	Indic ator Weight
Effort Targets 5 E's or 5 P's	1	5%
Knowledgeable Staff/Educator	1	5%
Partnership/Volunteers		5%
Creates Community Ownership/Relationship	1	5%
Part of Bigger Effort (e.g., political support)		5%
Indicator-Weighted Score	0.15	

Scoring Criteria

• 1) Target Audience

- $_{\odot}\,$ Distribution in percentages by age group
- Gray cells are used in the calculation of the Indicator-Weighted Score, they are not intended to be overridden

11 NON-INFRASTRUCTURE PROGRAM CHARACTER	ISTICS
Programmatic Initiatives?	Yes
Scale of Initiative Participants / Beneficiaries Numbers of People Reached per Year Average Percentage of Current Active Bicyclists Reached per Year Average Percentage of Current Active Pedestrians Reached per Year	Data Check on Initiative 2500 0K 1%
Sc <i>oring Criteria</i> Total Number of Criteria Total Criteria Weight Sum	<u>4</u> 100%
1) Target Audience	Criteria Weight
Indicators Younger than 10 10-12 13-24 25-55 55+ Indicator-Weighted Score	(mark as %; sum must equal 100%) Indic ator Weight 5% 10% 45% 20% 44% 25% 5% 15% 1% 5% 0.21 5%
2) Characteristics Promotional Effort	Criteria Weight 25%
Indicators Effort Targets 5 E's or 5 P's Knowledgeable Staff/Educator Partnership/Volunteers Creates Community Ownership/Relationship Part of Bigger Effort (e.g., political support) Indicator-Weighted Score	(enter 1 for Yes on all that apply) Indic ator Weight 1 5% 1 5% 1 5% 1 5% 5% 5% 0.15 0.15

Scoring Criteria

- 2) Characteristics Promotional Effort
 - $_{\odot}\,$ Effort Targets 5 e's or 5 p's
 - Education, enforcement, encouragement, engineering, evaluation
 - Preparation, promotion, programs, policy, physical projects
 - $_{\odot}\,$ Knowledgeable Staff/Educator
 - $_{\circ}$ Partnership/Volunteers
 - Creates Community Ownership
 - $_{\circ}\,$ Part of Bigger Effort
- Mark '1' for all that apply

11 NON-INFRASTRUCTURE PROGRAM CHARACTE	RISTICS
Programmatic Initiatives?	Yes
Scale of Initiative	Data Check on Initiative
Numbers of People Reached per Year	2500 OK
Average Percentage of Current Active Bicyclists Reached per Year Average Percentage of Current Active Pedestrians Reached per Year	5% 1%
Scoring Criteria	
Total Number of Criteria Total Criteria Weight Sum	4 100%
	Criteria Weight
1) Target Audience	25%
Indicators	(mark as %; sum must equal 100%) Indicator Weight
Younger than 10 ` 10-12	<u> </u>
13-24	<u>44%</u> 25%
25-55 55+	<u> </u>
Indicator-Weighted Score	0.21
2) Characteristics Promotional Effort	Criteria Weight
Indiactors	(anter 4 for Vice on all that apply) Indicator Weight
Effort Targets 5 E's or 5 P's	1 5%
Knowledgeable Staff/Educator	1 5%
Partnersnip/Volunteers Creates Community Ownership/Relationship	1 5%
Part of Bigger Effort (e.g., political support)	5%
Indicator-Weighted Score	0.15

Scoring Criteria

- 3) Type of Impact and Messaging
 - $_{\circ}\,$ Hands-on Outreach
 - $_{\circ}~$ Overcome Barriers
 - $_{\circ}\,$ Eliminates Hazards/Threats
 - Connected or Addresses Connectivity Challenges
 - Creating Value in Using Active Transportation
- Mark '1' for all that apply



Scoring Criteria

- 4) Frequency of Outreach Effort
 - $_{\circ}\,$ One Day
 - $_{\circ}\,$ One Month
 - $_{\circ}$ One Year
 - $_{\circ}\,$ Multiple Years
 - $_{\circ}\,$ Continuous Effort
- Mark '1' for the option that applies (mutually exclusive options)



Scoring Criteria - Calculated fields

Projected New Active Transportation Cyclists

- $_{\circ}~$ Number of potential new facility users
- $_{\circ}$ Years of outreach
- $_{\circ}~$ Impact Scores
- Cost Effectiveness (for Cyclists)
 - $_{\circ}~$ Total Discounted Cost
 - $_{\circ}$ Cost per Program Impact Score
- Projected New Active Transportation Pedestrians
 - $_{\circ}~$ Number of potential new facility users
 - $_{\circ}$ Years of outreach
 - $_{\circ}~$ Impact Scores

- Cost Effectiveness (for Pedestrians)

- $_{\circ}~$ Total Discounted Cost
- $_{\circ}~$ Cost per Program Impact Score

Projected New Active Transportation Cyclists Number of Potential New Facility Users Weighted Impact Score of Outreach Program Impact Score Years of Outreach Multi-year Program Impact Score	2,375 0.61 1,456 2.0 2,912
Cost Effectiveness	
Total Discounted Cost	\$10,808
Cost per Program Impact Score	\$4
Projected New Active Transportation Pedestrians	
Number of Potential New Facility Users	2,475
Weighted Impact Score of Outreach	61%
Program Impact Score	1,517
Years of Outreach	2.0
Multi-year Program Impact Score	3,034
Cost Effe <i>c</i> tiveness	
Total Discounted Cost	\$10,808
Cost per Program Impact Score	\$4



Step 2, Adjust Model Data

Model Inputs – Data Requirements

• Travel Demand Data – Number of trips, users, and miles traveled by trip purpose by mode



2) Model Inputs, Sections

Optional inputs to overwrite Cal-B/C model calculations

Cycling Volume Inputs

- 2A) Existing Facility Segment
- 2B) New Facility Segment
- 2C) New Safe Routes To School
- 2D) Existing Safe Routes To School
- **Pedestrian Volume Inputs**
- 2E) Existing Facility Segment
- 2F) New Facility Segment
- 2G) New Safe Routes To School
- 2H) Existing Safe Routes To School

	Calculated	Changed	Used for Proj. Eval	Reason for Change
ld - Cycling	by model	by osci	rig. Etal.	Reason for change
r 1				
Annual Trips - Commuting	4,453		4,453	
Annual Trips - Other Destinations	42,864		42,864	
Annual Trips - Recreational	8,350		8,350	
Jsers - Commuting	6		6	
Jsers - Other Destinations	61		61	
Jsers - Recreational	12		12	
otal Miles - Commuting	15,729		15,729	
otal Miles - Other Destinations	151,391		151,391	
otal Miles - Recreational	29,492		29,492	
r 20				
rips - Commuting	4,921		4,921	
rips - Other Destinations	47,360		47,360	
rips - Recreational	9,226		9,226	
Isers - Commuting	7		7	
Isers - Other Destinations	67		67	
Isers - Recreational	13		13	
otal Miles - Commuting	17,379		17,379	
	107 070		107 070	
Iotal Miles - Other Destinations	167,272		167,272	
Total Miles - Other Destinations Fotal Miles - Recreational	<u>167,272</u> 32,585		167,272 32,585	
otal Miles - Other Destinations otal Miles - Recreational Cycling r 1 Annual Trips - Commuting	4 587		4 587	
oral Miles - Other Destinations oral Miles - Recreational Cycling r 1 Annual Trips - Commuting Annual Trips - Other Destinations	4,587 44 153		4,587 44 153	
oral Miles - Other Destinations oral Miles - Recreational Cycling r 1 Annual Trips - Commuting Annual Trips - Other Destinations Annual Trips - Recreational	4,587 44,153 8,601		4,587 4,153	
oral Miles - Other Destinations oral Miles - Recreational Cycling r1 Annual Trips - Commuting Annual Trips - Recreational Jaren - Commuting Sers - Commuting	4,587 44,153 8,601 7		4,587 4,587 4,153 8,601 7	
otal Milles - Uther Destinations otal Milles - Recreational Cycling r 1 vnnual Trips - Commuting vnnual Trips - Other Destinations vnnual Trips - Recreational Jsers - Other Destinations	4,587 44,153 8,601 7 63		4,587 44,153 8,601 7 63	
oral Miles - Other Destinations oral Miles - Recreational Cycling r r r mual Trips - Commuting unnual Trips - Recreational Jasers - Commuting Jasers - Other Destinations Jasers - Other Destinations	4,587 4,4153 8,601 7 63 12		4,587 4,587 44,153 8,601 7 63 12	
otal Miles - Other Destinations otal Miles - Recreational Cycling r 1 vnnual Trips - Commuting vnnual Trips - Recreational Jsers - Commuting Sers - Other Destinations Jsers - Recreational otal Miles - Commuting	4,587 44,153 8,601 7 63 12 16,202		4,587 4,587 44,153 8,601 7 63 12 16,202	
otal Miles - Other Destinations otal Miles - Recreational Cycling r1 vinual Trips - Commuting vinual Trips - Recreational sears - Commuting Sears - Other Destinations Sears - Other Destinations Jears - Recreational otal Miles - Commuting otal Miles - Other Destinations	4.587 44.153 44.153 8.601 7 63 12 16,202 155,944		167,272 32,585 44,153 8,601 7 63 12 16,202 115,5,944	
otal Miles - Other Destinations otal Miles - Recreational Cycling r1 wnnual Trips - Commuting wnnual Trips - Other Destinations wnual Trips - Recreational Jears - Commuting Jears - Other Destinations otal Miles - Other Destinations otal Miles - Other Destinations otal Miles - Other Destinations otal Miles - Recreational	4,587 44,587 44,153 8,601 7 63 12 16,202 155,944 30,379		167,272 32,585 44,153 8,601 7 6 3 12 16,202 155,944 30,379	
oral Miles - Other Destinations oral Miles - Recreational Cycling 1 Annual Trips - Commuting Annual Trips - Recreational Jsers - Commuting Jsers - Other Destinations Jsers - Recreational oral Miles - Other Destinations oral Miles - Recreational oral Miles - Recreational	4,587 44,153 44,153 8,601 7 63 12 16,202 155,944 30,379		167,272 32,585 44,153 8,601 7 63 12 16,202 155,944 30,379	
otal Miles - Other Destinations otal Miles - Recreational Cycling +1 sumual Trips - Commuting wmual Trips - Other Destinations Jaers - Commuting Jaers - Commuting Saers - Recreational otal Miles - Commuting otal Miles - Other Destinations otal Miles - Cherr Destinations otal Miles - Cherr Destinations otal Miles - Cherr Destinations otal Miles - Commuting +20 wmual Trips - Commuting	4.587 44.587 44.153 8.601 7 63 12 165.202 155.944 30.379		107,272 32,585 4,587 44,153 8,601 7 16,202 165,944 30,379 6,817	
otal Miles - Other Destinations otal Miles - Recreational Cycling r1 wnnual Trips - Commuting wnnual Trips - Other Destinations wnual Trips - Recreational Jears - Commuting Jears - Other Destinations otal Miles - Commuting otal Miles - Recreational r20 wnnual Trips - Commuting wnual Trips - Commuting wnual Trips - Commuting wnual Trips - Commuting wnual Trips - Commuting	4,587 44,163 44,163 8,601 7 63 12 16,202 155,944 30,379		167,212 32,585 44,587 44,153 8,601 7 6,302 155,944 30,379 6,817 65,609	
oral Miles - Other Destinations of Miles - Recreational Cycling +1 synual Trips - Commuting ymmal Trips - Other Destinations ymmal Trips - Recreational Jears - Commuting Jears - Commuting otal Miles - Commuting otal Miles - Commuting otal Miles - Cher Destinations otal Miles - Cher Destinations wmual Trips - Commuting wmual Trips - Commuting wmual Trips - Cher Destinations	4.587 44.153 8.601 7 63 12 16,202 15,544 30,379 6,817 65,609 12,781		16/2/2 32,585 44,537 7 7 3 16,202 115,544 30,379 6,817 65,609 12,781	
oral Miles - Other Destinations oral Miles - Recreational Cycling r1 vinnual Trips - Commuting vinnual Trips - Other Destinations sers - Commuting Sers - Other Destinations Sers - Recreational Sers - Recreational oral Miles - Commuting vial Miles - Commuting vinnual Trips - Commuting vinnual Trips - Other Destinations vinnual Trips - Other Destinations vinnual Trips - Other Destinations vinnual Trips - Recreational Sers - Commuting	16/212 32.585 4.597 44.153 8.601 7 6.30 12 165.944 30.379 6.817 6.5609 12.781 10		167,212 32,585 44,587 44,153 8,601 7 16,202 155,944 30,379 6,817 65,609 12,781 12,781	
otal Miles - Other Destinations otal Miles - Recreational Cycling rf 1 Annual Trips - Commuting Annual Trips - Other Destinations Annual Trips - Recreational Jesrs - Other Destinations Jesrs - Recreational otal Miles - Other Destinations otal Miles - Other Destinations otal Miles - Recreational r20 Annual Trips - Commuting Annual Trips - Commuting Sers - Other Destinations Manual Trips - Commuting Sers - Other Destinations Sers - Other Destinations	4.587 4.587 44.153 8.601 7 63 122 162,022 165,944 30,379 6,817 65,609 12,781 0 93		4,587 32,585 32,585 32,585 32,585 44,153 8,601 7 6 3 16,202 115,944 30,379 6,817 65,609 112,781 10 93	
oral Miles - Other Destinations oral Miles - Recreational Cycling r 1 Vinual Trips - Commuting Vinual Trips - Other Destinations Minual Trips - Recreational Sears - Commuting Sears - Other Destinations Sears - Recreational otal Miles - Other Destinations otal Miles - Other Destinations otal Miles - Other Destinations otal Miles - Other Destinations Minual Trips - Recreational Sears - Other Destinations Sears - Other Destinations	16/212 32.585 4.587 44.153 8.601 7 63 12 16,202 155,944 30,379 6,817 65,609 12,781 10 9 3 18		167,212 32,585 44,153 44,153 8,601 7 6,5,944 30,379 6,817 65,609 12,781 12,781 12,781 12,781 12,781 12,781 12,781 12,781 12,781 12,781 12,781 12,782 14,782 12,782 12,782 14,782 12,782 12,782 12,782	
oral Miles - Other Destinations oral Miles - Recreational Cycling r1 Annual Trips - Commuting nnual Trips - Other Destinations Isers - Commuting Isers - Other Destinations Isers - Recreational oral Miles - Other Destinations oral Miles - Commuting oral Miles - Commuting Nnual Trips - Commuting Nnual Trips - Commuting Isers - Commuting Iser	107,272 32,585 4,587 44,153 8,601 7 6,817 65,594 30,379 6,817 65,609 12,781 10 9 33 18,82 4,075		167,272 32,585 4,587 44,153 8,601 7 6,817 155,944 30,379 155,944 30,379 12,781 10 9 3 18,240,75	
oral Miles - Other Destinations oral Miles - Recreational Cycling r1 vinual Trips - Commuting vinual Trips - Other Destinations sers - Commuting Sers - Other Destinations Sers - Recreational Sers - Commuting otal Miles - Commuting vinual Trips - Commuting Sers - Other Destinations Sers - Other Destinations Sers - Other Destinations Sers - Commuting Sers - Commuting Sers - Commuting Sers - Commuting Sers - Commuting Sers - Commuting otal Miles - Commuting otal Miles - Commuting otal Miles - Commuting otal Miles - Commuting	4.587 44.153 44.153 12 16,202 155,944 30,379 6,817 65,609 12,781 10 93 18 24,075 231,725		167,212 312,585 312,585 312,585 314,153 44,153 36,167 7 7 6 3 12,761 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,379 6,544 30,545 5,544 30,545 5,544 30,545 5,544 30,545 5,544 30,545 5,544 30,545 5,544 30,379 5,545 30,545 5,544 30,379 5,545 30,545 5,544 30,379 5,545 30	

2A



2) Model Inputs, Volumes

Same input form:

Cycling Volume Inputs

- 2A) Existing Facility Segment
- 2B) New Facility Segment

Pedestrian Volume Inputs

- 2E) Existing Facility Segment
- 2F) New Facility Segment

CA ACTIVE TRANSPORTATION DAILY VOLUME INPUTS - CYCLING - Existing Facility Segment

	Calculated	Changed	Used for	
	by Model	by User	Proj. Eval.	Reason for Change
No Build - Cycling				
Year 1				
Annual Trips - Commuting	4,453		4,453	
Annual Trips - Other Destinations	42,864		42,864	
Annual Trips - Recreational	8,350		8,350	
Users - Commuting	6		6	
Users - Other Destinations	61		61	
Users - Recreational	12		12	
Total Miles - Commuting	15,729		15,729	
Total Miles - Other Destinations	151,391		151,391	
Total Miles - Recreational	29,492		29,492	
Veer 20				
Tear 20	4.001		4.004	
Trips - Commung	4,921		4,921	
Trips - Other Destinations	47,360		47,360	
I rips - Recreational	9,226		9,226	
Users - Commuting	/		/	
Users - Other Destinations	67		67	
Users - Recreational	13		13	
Total Miles - Commuting	17,379		17,379	
Total Miles - Other Destinations	167,272		167,272	
Total Miles - Recreational	32,585		32,585	
Build - Cycling				
Year 1				
Annual Trips - Commuting	4.587		4.587	
Annual Trips - Other Destinations	44,153		44,153	
Annual Trips - Recreational	8,601		8.601	
Users - Commuting	7		7	
Users - Other Destinations	63		63	
Users - Recreational	12		12	
Total Miles - Commuting	16.202		16.202	
Total Miles - Other Destinations	155,944		155,944	
Total Miles - Recreational	30.379		30,379	
				·
Year 20				
Annual Trips - Commuting	6,817		6,817	
Annual Trips - Other Destinations	65,609		65,609	
Annual Trips - Recreational	12,781		12,781	
Users - Commuting	10		10	
Users - Other Destinations	93		93	
Users - Recreational	18		18	
Total Miles - Commuting	24,075		24,075	
Total Miles - Other Destinations	231,725		231,725	
Total Miles - Recreational	45,141		45,141	
	· · · · · ·		,	·

Model Inputs

2

Module 7c: Step 2, Adjust Model Data

2) Model Inputs, Volumes

- Adjust calculated values if more in-depth data are available
- Number of trips, users, and miles traveled by trip purpose
- Estimated based on data entered in Project Information worksheet
- Both Year 1 and Year 20 estimates
- No Build and Build scenarios
- Considers commuting, recreation and other destinations for purpose of travel

2A ACTIVE TRANSPORTATION DAILY VOLUME INPUTS - CYCLING - Existing Facility Segment

	Calculated	Changed	Used for	
No Build - Cycling	by Model	by User	Proj. Eval.	Reason for Change
Year 1				
Annual Trips - Commuting	4,453		4,453	
Annual Trips - Other Destinations	42,864		42,864	
Annual Trips - Recreational	8,350		8,350	
Users - Commuting	6		6	
Users - Other Destinations	61		61	
Users - Recreational	12		12	
Total Miles - Commuting	15,729		15,729	
Total Miles - Other Destinations	151,391		151,391	
Total Miles - Recreational	29,492		29,492	
Year 20				
Trips - Commuting	4,921		4,921	
Trips - Other Destinations	47,360		47,360	
Trips - Recreational	9,226		9,226	
Users - Commuting	7		7	
Users - Other Destinations	67		67	
Users - Recreational	13		13	
Total Miles - Commuting	17,379		17,379	
Total Miles - Other Destinations	167,272		167,272	
Total Miles - Recreational	32,585		32,585	
Build - Cycling Year 1				
Annual Trips - Commuting	4 587		4 587	
Annual Trips - Other Destinations	44,153		44.153	
Annual Trips - Recreational	8,601		8,601	
Users - Commuting	7		7	
Users - Other Destinations	63		63	
Users - Recreational	12		12	
Total Miles - Commuting	16,202		16,202	
Total Miles - Other Destinations	155,944		155,944	
Total Miles - Recreational	30,379		30,379	
Year 20				
Annual Trips - Commuting	6.817		6.817	
Annual Trips - Other Destinations	65,609		65,609	
Annual Trips - Recreational	12,781		12,781	
Users - Commuting	10		10	
Users - Other Destinations	93		93	
Users - Recreational	18		18	
Total Miles - Commuting	24,075		24,075	
Total Miles - Other Destinations	231,725		231,725	
Total Miles - Recreational	45,141		45,141	

Safe Routes To School, Sections

Same input form:

Pedestrian Daily Volume Inputs

- 2C) <u>New</u> Safe Routes To School
- 2D) <u>Existing</u> Safe Routes To School
 Cycling Volume Inputs
- 2G) New Safe Routes To School
- 2H) Existing Safe Routes To School





Safe Routes To School, Volumes

- Allows you to change data for the new and existing facility in the green columns
 - $_{\circ}$ Trips
 - $_{\circ}$ Users
 - $_{\rm \circ}$ Total miles
- Both Year 1 and Year 20 estimates
- No Build and Build scenarios







Step 3, Review Summary Results

Review Model Results

Review BCA metrics

Life-Cycle Costs: present values of all net project costs

3

- Life-Cycle Benefits: sum of the monetized benefits for the project in present value
- Net Present Value = Life-Cycle Benefits Life-Cycle Costs
- Benefit/Cost Ratio = Life-Cycle Benefits/Life-Cycle Costs
- Rate of Return on Investment: Discount rate at which benefits and costs are equal
- Payback Period: number of years it takes for the net benefits to equal the initial construction costs

INVESTMENT ANALYSIS SUMMARY RESULTS Total Over Average Life-Cycle Costs (mil. \$) \$4.5 **ITEMIZED BENEFITS (mil. \$)** 20 Years Annual Life-Cycle Benefits (mil. \$) \$5.3 **Journey Quality** \$1.4 \$0.1 Net Present Value (mil. \$) \$0.8 Additional Delay Savings \$0.0 \$0.0 **Additional Safety Benefits** \$1.8 \$0.1 \$2.1 \$0.1 Benefit / Cost Ratio: 1.2 Health Benefits \$0.0 **Emission Cost Savings** \$0.0 Rate of Return on Investment: 5.6% TOTAL BENEFITS \$5.3 \$0.3 **Payback Period:** 13 years SRTS-SPECIFIC BENEFITS (mil. \$) \$0.0 \$0.0 **Journey Quality** NON-INFRASTRUCTURE IMPLEMENTATION COST **Additional Delay Savings** \$0.0 \$0.0 \$0.0 Per Bike Program Impact Score \$4 Additional Safety Benefits \$0.0 Per Ped Program Impact Score \$4 TOTAL SRTS BENEFITS \$0.1 \$0.0 Tons Value (mil. \$) Factors that Differentiate Benefits Total Over Average Total Over Average and Performance Measures **EMISSIONS REDUCTION** Annual Annual 20 Years 20 Years **CO Emissions Saved** 0 0 \$0.0 \$0.0 CO₂ Emissions Saved 112 6 \$0.0 \$0.0 Safe Route to School Yes NO_x Emissions Saved 0 \$0.0 \$0.0 Intersection Improvements on SRT Yes **Programmatic Initiatives** PM₁₀ Emissions Saved 0 0 \$0.0 \$0.0 Yes 0 **Recreational Benefits** PM_{2.5} Emissions Saved 0 1 SO_x Emissions Saved 0 0 \$0.0 \$0.0 (enter 1 for Yes, 0 for No) **VOC Emissions Saved** 0 0 \$0.0 \$0.0

Adjust which benefits are included in the analysis based on the purpose

Results



Review Model Results (cont.)

Non-Infrastructure Program

- Cost per Bike Program Impact Score
- Cost per Ped Program Impact Score

Itemized Benefits

SRTS-Specific Benefits

Included in Itemized Benefits

3	3 INVESTMENT ANALYSIS SUMMARY RESULTS							
Life-Cycle Costs (mil \$)	\$4.5				Total Over	Average		
Life-Cycle Benefits (mil \$)	\$5.3	Journey Quality			\$1.4	\$0.1		
Net Present Value (mil. \$)	\$0.8	Additional Delay Savings			\$0.0	\$0.0		
		Additional Safety Benefits			\$1.8	\$0.1		
Benefit / Cost Ratio:	1.2	Health Benefits			\$2.1	\$0.1		
		Emission Cost Savings			\$0.0	\$0.0		
Rate of Return on Investment:	5.6%	TOTAL BENEFITS			\$5.3	\$0.3		
Payback Period: 13 y	ears	SRTS-SPECIFIC BENEFITS (mil. \$)		\$0.0	\$0.0		
NON-INFRASTRUCTURE IMPLEMENTATION	COST	Additional Delay Savings			\$0.0	\$0.0		
Per Bike Program Impact Score	\$4	Additional Safety Benefits			\$0.0	\$0.0		
Per Ped Program Impact Score	\$4	TOTAL SRTS BENEFITS			\$0.0	\$0.0		
					\$0.1	V 0.0		
			To	ns	<u>Value (</u>	<u>mil. \$)</u>		
Factors that Differentiate Benefits			Total Over	Average	Total Over	Average		
and Performance Measures		EMISSIONS REDUCTION	20 Years	Annual	20 Years	Annual		
		CO Emissions Saved	0	0	\$0.0	\$0.0		
Safe Route to School Yes		CO ₂ Emissions Saved	112	6	\$0.0	\$0.0		
Intersection Improvements on SRT Yes		NO _X Emissions Saved	0	0	\$0.0	\$0.0		
Programmatic Initiatives Yes		PM ₁₀ Emissions Saved	0	0	\$0.0	\$0.0		
Recreational Benefits 1		PM _{2.5} Emissions Saved	0	0				
(enter 1 for Yes, 0 for No)		SO _X Emissions Saved	0	0	\$0.0	\$0.0		
		VOC Emissions Saved	0	0	\$0.0	\$0.0		



Review Model Results (cont.)

Review Emissions Reduction

- A positive value implies a reduction in emissions

3

Do the results correspond with your expectation?

• The B/C ratio is 1.2, which is >1. Is this reasonable?

Do the monetized benefits correspond with the project components and expected impacts?

Module 3 provides more details on how to interpret Cal-B/C results

\supset	INVE	ES	TMENT ANALYSIS				
	s	SUI	MMARY RESULTS				
						THE	
Life-Cycle Costs (mil \$)	\$15		ITEMIZED RENEELTS (mil \$)			1 otal Over	Average
Life-Cycle Benefits (mil. \$)	94.5 ¢5.3		lourney Quality				¢0 1
Net Precent Value (mil. \$)	\$0.0		Additional Delay Savings			φ1. 4 \$0.0	\$0.1
Net Fresent value (IIII. \$)	φ 0.0		Additional Safety Benefits			φ0.0 \$1.9	\$0.0
Repetit / Cost Patio:	12		Health Renefits			\$2.1	\$0.1
Benefit / Gost Ratio.	1.2		Emission Cost Savings			\$0.0	\$0.0
Rate of Return on Investment:	5.6%		TOTAL BENEFITS			\$5.3	\$0.3
	0.070					.	V0.0
Payback Period:	13 years		SRTS-SPECIFIC BENEFITS (mil. \$)			
			Journey Quality	.,		\$0.0	\$0.0
NON-INFRASTRUCTURE IMPLEMENTATION COST			Additional Delay Savings			\$0.0	\$0.0
Per Bike Program Impact Score	\$4		Additional Safety Benefits			\$0.0	\$0.0
Per Ped Program Impact Score	\$4		TOTAL SRTS BENEFITS			\$0.1	\$0.0
			-				
			Tons		Value (mil. \$)		
Factors that Differentiate Benefits		1		Total Over	Average	Total Over	Average
and Performance Measu	res		EMISSIONS REDUCTION	20 Years	Annual	20 Years	Annual
			CO Emissions Saved	0	0	\$0.0	\$0.0
Safe Route to School	Yes		CO ₂ Emissions Saved	112	6	\$0.0	\$0.0
Intersection Improvements on SRT	Yes		NO _X Emissions Saved	0	0	\$0.0	\$0.0
Programmatic Initiatives	Yes		PM ₁₀ Emissions Saved	0	0	\$0.0	\$0.0
Recreational Benefits	1		PM _{2.5} Emissions Saved	0	0		
(enter 1 for Yes, 0 for No)			SO _x Emissions Saved	0	0	\$0.0	\$0.0
			VOC Emissions Saved	0	0	\$0.0	\$0.0

Results

3

Troubleshooting Issues with Cal-B/C Results

Issue	Potential Reason
My B/C ratio is way too low/high?	Project Costs not entered in thousands of dollars. If actual project costs entered, then B/C ratios will be close to 0.001; If costs entered in millions of dollars, then B/C ratios will be on the order of 1000/1 Bicycle/pedestrian forecast demand and/or safety benefits could be too low to offset project cost



Conclusion

In this module, you learned...

- A three-step process to start an analysis in the Cal-B/C AT tool
- How to interpret results
- How to troubleshoot problems
- Identified other modules to review

What's Next?

- Module 8c

 $_{\odot}$ Where to find data for your project

Module 9c

 $_{\odot}$ Example of an analysis in the Cal-B/C AT tool

- Module 10

 $_{\odot}$ Additional information and data sources for BCA in Cal-B/C tools