

KERN COUNTY PUBLIC WORKS

CMAQ Application: Complete Streets

**Boron Avenue
(Nudgent Street to Boron Frontage Road North)**



KERN COUNCIL OF GOVERNMENTS
Congestion Mitigation and Air Quality (CMAQ) Program
PROJECT APPLICATION – Due Thursday, July 17, 2025

*Please note this is a PDF fillable form so responses may be typed. Items 1, 2, 7, and 22 are drop downs. Totals in item 6 will automatically calculate.

- (1) Is the project included in a local agency-adopted resolution supporting the project? YES NO
- (2) Does the proposed project meet basic eligibility requirements? YES NO
- (3) Project background and justification: Explain the project in terms of the existing infrastructure, its impact for service, safety or any other issue that is relevant to the project (attach to application). If the project scope relates to fueling infrastructure please provide a 3-year fleet conversion plan.
- (4) Lead Agency: _____
- (5) Project description [(Location:) + (Limits) + (;) + (Improvement/Activity)]

(6)	Funding Type	PE	R/W	Const.	Total
	Local	\$ _____	\$ _____	\$ _____	\$ _____
	Local	\$ _____	\$ _____	\$ _____	\$ _____
	State	\$ _____	\$ _____	\$ _____	\$ _____
	Federal	\$ _____	\$ _____	\$ _____	\$ _____
	Total	\$ _____	\$ _____	\$ _____	\$ _____

- (7) Programming Year by Phase: PE: _____ R/W: _____ Const: _____
- (8) VMT Reduction (annual miles): _____
- (9) VOC Reduction (kg/day): _____ Additional documentation required. See instructions.
- (10) NOx Reduction (kg/day): _____ Additional documentation required. See instructions.
- (11) PM₁₀ Reduction (kg/day): _____ Additional documentation required. See instructions.
- (12) PM_{2.5} Reduction (Kg/day): _____ Additional documentation required. See instructions.
- (13) CO Reduction (kg/day): _____ Additional documentation required. See instructions.
- (14) Cost-Effectiveness (\$/lb): _____ Additional documentation required. See instructions.
- (15) Livability and Safety: Describe how project provides the six benefits; limit to half page per benefit.
- (16) Hwy Peak Period LOS Before Project (AM/PM average): _____
- (17) Hwy Peak period LOS After Project (AM/PM average): _____
- (18) Bikeway Peak Period LOS Before Project (AM/PM average): _____
- (19) Bikeway Peak period LOS After Project (AM/PM average): _____
- (20) Pedestrian Peak period LOS Before Project (AM/PM average): _____
- (21) Pedestrian Peak period LOS After Project (AM/PM average): _____
- (22) Is the project identified as a RACM/BACM? YES NO

Application completed by: _____	Date Completed: _____
E-mail: _____	Phone Number: _____
Agency: _____	
Address: _____	

Send completed application electronically on a flash drive with transmittal letter on agency letterhead to:

Attn: Ceasar Valle ❖ Kern Council of Governments, 1401 19th Street, Suite 300, Bakersfield, CA 93301

OR send Digitally via [Dropbox, click here.](#)

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0.05

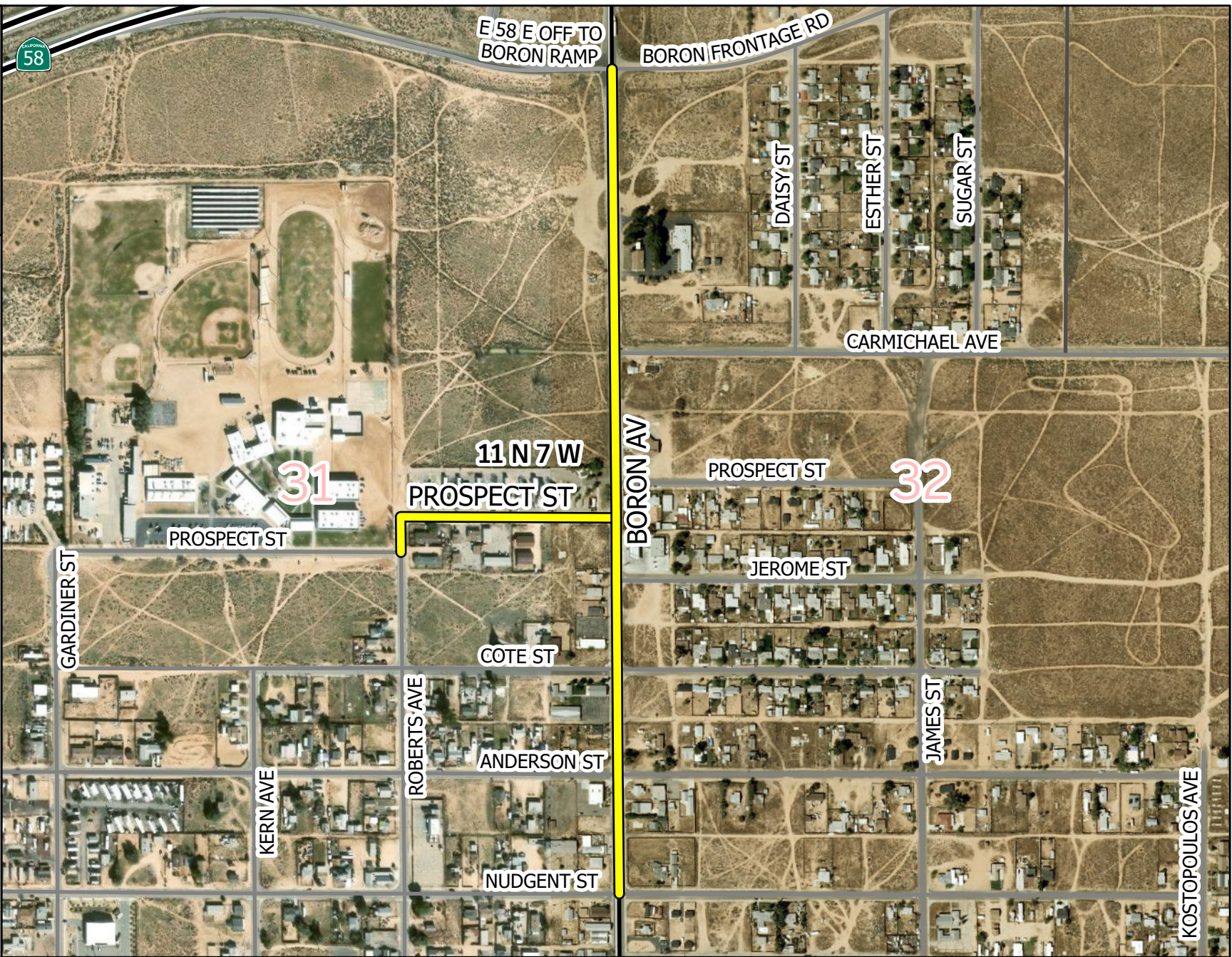
0.1 Miles

Secs: 32, 31

11 N 7 W

PROJECT LOCATION

HIGHWAYS



DRAWN BY: WRK

CHECKED BY: YA

KERN

COUNTY

PUBLIC WORKS

COUNTY OF KERN

PUBLIC WORKS DEPARTMENT

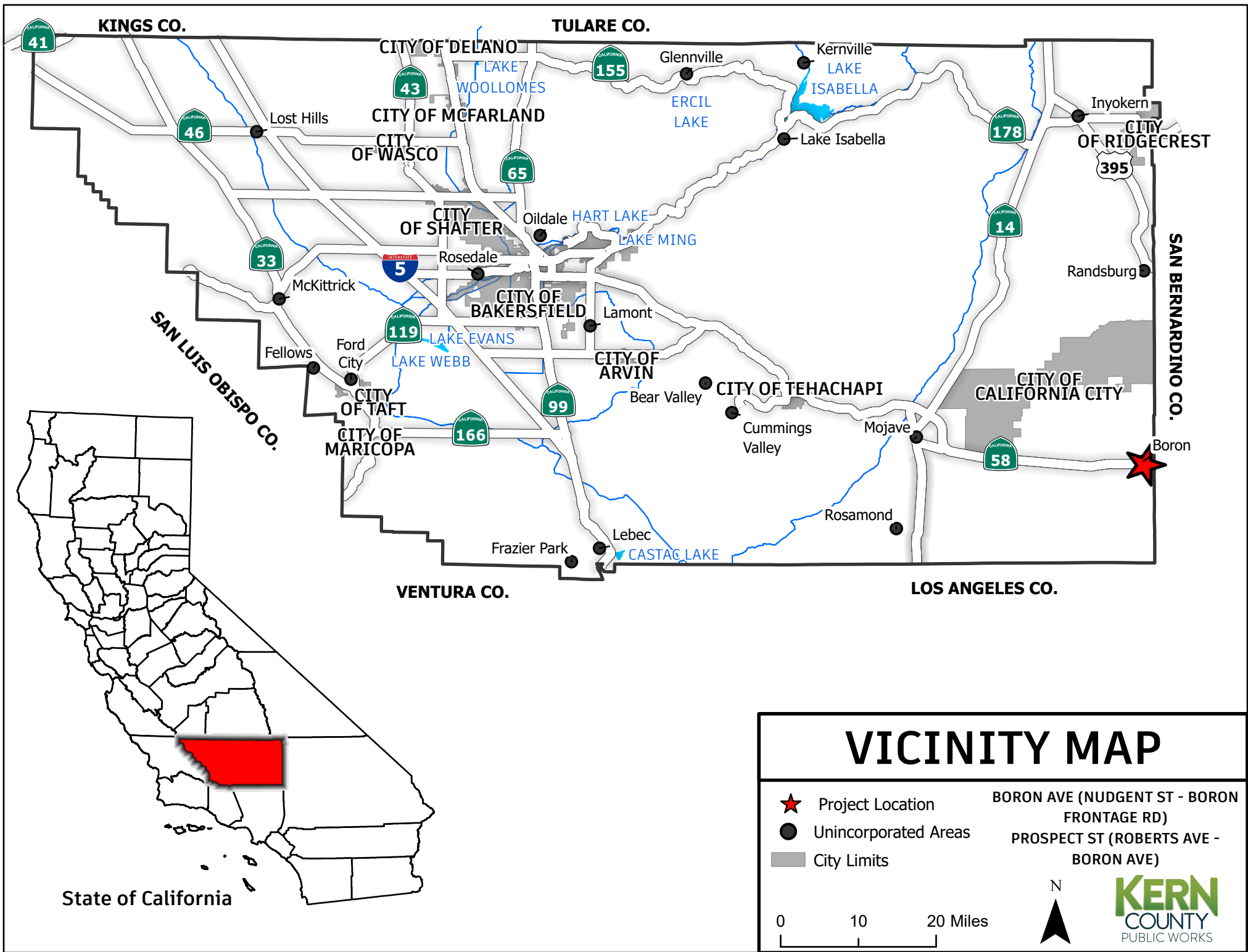
BORON, CA

AERIAL MAP

PROSPECT ST (ROBERTS AVE - BORON AVE)

BORON AVE (NUDGENT ST - BORON FRONTAGE RD)

COMPLETE STREETS







PROJECT BACKGROUND

1. Justitification
2. Livability
3. Safety
 - A. Collision Maps
 - B. Collision Rates

Project Description & Justification

Project Description

The proposed project location is located within the unincorporated community of Boron in eastern Kern County. The proposed project will construct improvements which include: surfacing unpaved shoulders, curb, gutter, and sidewalk, along Boron Avenue beginning at Nudgent Street to Boron Frontage Road (0.48-miles) Prospect Street from Roberts Avenue to Boron Avenue (0.16-miles) totaling an approximate 0.64-miles combined. In addition to these improvements, the proposed project will install other ancillary facilities necessary for the proper construction and operation of the roadway, according to Kern County, California Department of Transportation (Caltrans), and Americans with Disabilities Act (ADA) design standards.

Project Justification

The community immediately within the proposed project areas are within the 60th – 65th percentile of environmentally and economically disadvantaged communities in California (see Disadvantaged Communities Map). The proposed improvements will significantly improve the quality of life for residents in this community.

The purpose of this project is to decrease Particulate Matter (PM) in compliance with the Kern Council of Government's Sustainable Community Strategy. Travel on roads with dirt shoulders result in greater particulate matter (PM₁₀) emissions than complete paved neighborhood streets. PM₁₀ has been linked to premature death, respiratory and cardiovascular disease, lost workdays, school absences and reduced activity, all of which translates into increased health costs. The Eastern Kern Air Pollution Control District (EKAPCD) is currently in ***non-attainment*** for PM₁₀ under state and federal clean air guidelines. The anticipated reduction in emissions will help the Eastern Kern Air Pollution Control District (EKAPCD) meet its goals of reducing emission reduction. The anticipated reduction in emissions from this project total roughly 2,440.2 pounds of PM₁₀ per year locally in Kern County.

Surfacing an unpaved shoulder(s) will reduce the amount of dust particulate matter created when vehicles park along the dirt shoulders and installing curb, gutter, and sidewalk will increase and enhance the number of modes accommodated on this facility by creating an even and accessible road for pedestrians, seniors, students, persons with disabilities, and cyclists. In addition to the proposed sidewalks providing a safe mode of travel for pedestrians and students to walk safely, the placement of gutters will provide a place for rainwater to drain where it will not conflict with pedestrians or other motor vehicle traffic.



Boron Avenue, south of Prospect Street, looking north



Livability and Safety

1. Will enhance or reduce the average cost of user mobility through the creation of more convenient transportation options for travelers?

Yes, the project will reduce the average cost of user mobility by reducing vehicle maintenance and fuel costs and creating a new, more convenient route for residents in this area to travel within their community. Surfacing unpaved shoulders and constructing sidewalks will allow an easier connection for pedestrians and cyclists from their homes to schools, local markets, stores, and public amenities and facilities in the area. Surfacing unpaved shoulders and constructing curb and gutter will mitigate mud during the rainy/wet seasons within Kern County, which creates difficulty for residents who do not own a vehicle to traverse and travel safely. These street improvements will create improved driving, walking, biking surfaces, and conditions that will enable more users to travel easily, safely, and for lower costs. Additionally, surfacing unpaved shoulders will reduce the airborne dust caused by vehicle traffic over these roads during dry seasons.

2. Will improve existing transportation choices by enhancing points of modal connectivity, increasing the number of modes accommodated on existing assets, or reducing congestion on existing modal assets?

Yes, the project will increase the number of modes accommodated on the roadway and will enhance modal connectivity by improving roadway access. Limited portions of Boron Avenue have curb, gutter, and sidewalk, thus a majority of the roadway lacks such amenities and pedestrians are forced to travel along unpaved sections of roadway or travel in the paved roadway. Excessive gaps of curb, gutter, and sidewalk exist in majority of the community of Boron, however, these sections in particular will allow students and pedestrians within the area to access various amenities such as the local eateries and schools. The surfacing of these unpaved surfaces will be designed to be compliant with Americans with Disabilities Act (ADA) standards and will increase active forms of transportation, walkability, and bike access on existing modal assets.

3. Will improve travel between residential areas and commercial centers and jobs?

Yes, the project will allow residents to conveniently walk, bike, or roll to local amenities in the surrounding area, resulting in safer, cleaner, faster, and more accessible trips. This project will improve user mobility between the unincorporated community of Boron as a whole and will allow multi-modal transportation access.

4. Will improve accessibility and transportation services for economically disadvantaged populations, non-drivers, senior citizens, and persons with disabilities, or make goods, commodities, and services more readily available to these groups.

Yes, the project will directly improve and increase accessibility to non-drivers, students, senior citizens, and persons with disabilities by installing street improvements that meet the most recent Americans with Disabilities Act (ADA) construction standards. The proposed project site(s) is located within Census Tract No. 56 which is within the 60th – 65th percentile of environmentally and economically disadvantaged communities in California (see Disadvantaged Community Map). Improved road access will make goods and services more readily available to these groups.

Livability and Safety



5. **Is the existing Accident Rate higher than the average rate for a similar facility, and does the project reduce the Accident Rate to the average rate or lower? Yes or No and if yes, provide rates and supporting documentation.**

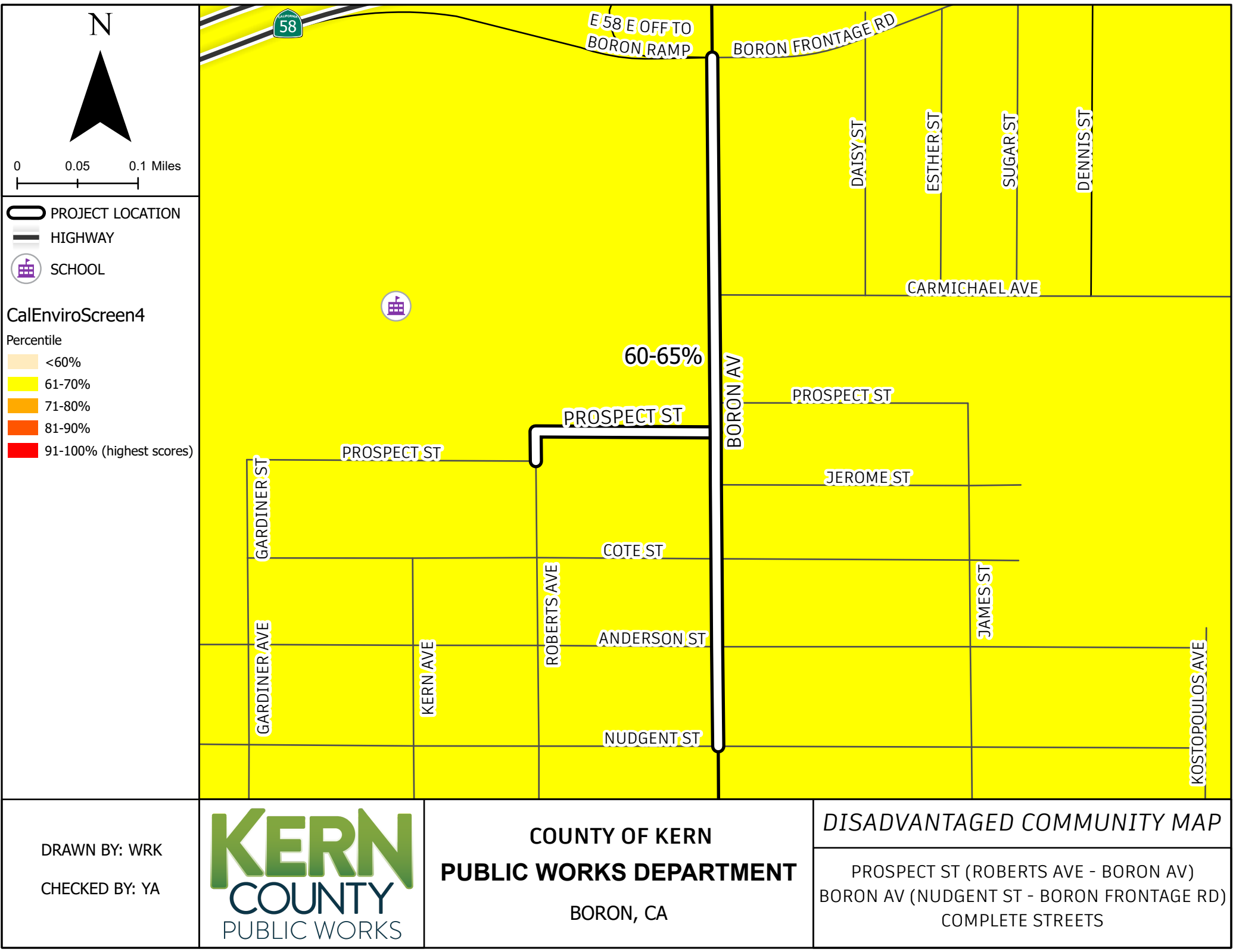
No, the existing accident/collision rate is not higher than the statewide average.

No, the project will not increase the accident/collision rate and will be less than the state average. (See attached Traffic Collision Maps)

6. **Is the existing fatality Rate higher than the average rate for a similar facility, and does the project reduce the fatality rate to the average rate or lower? Yes or No and if yes, provide rates and supporting documentation.**

No, the existing Fatality Rate is not higher than the state average.

No, the After-Project Fatality Rate will not increase equal to the statewide fatality rate average. (See Traffic Collision map)



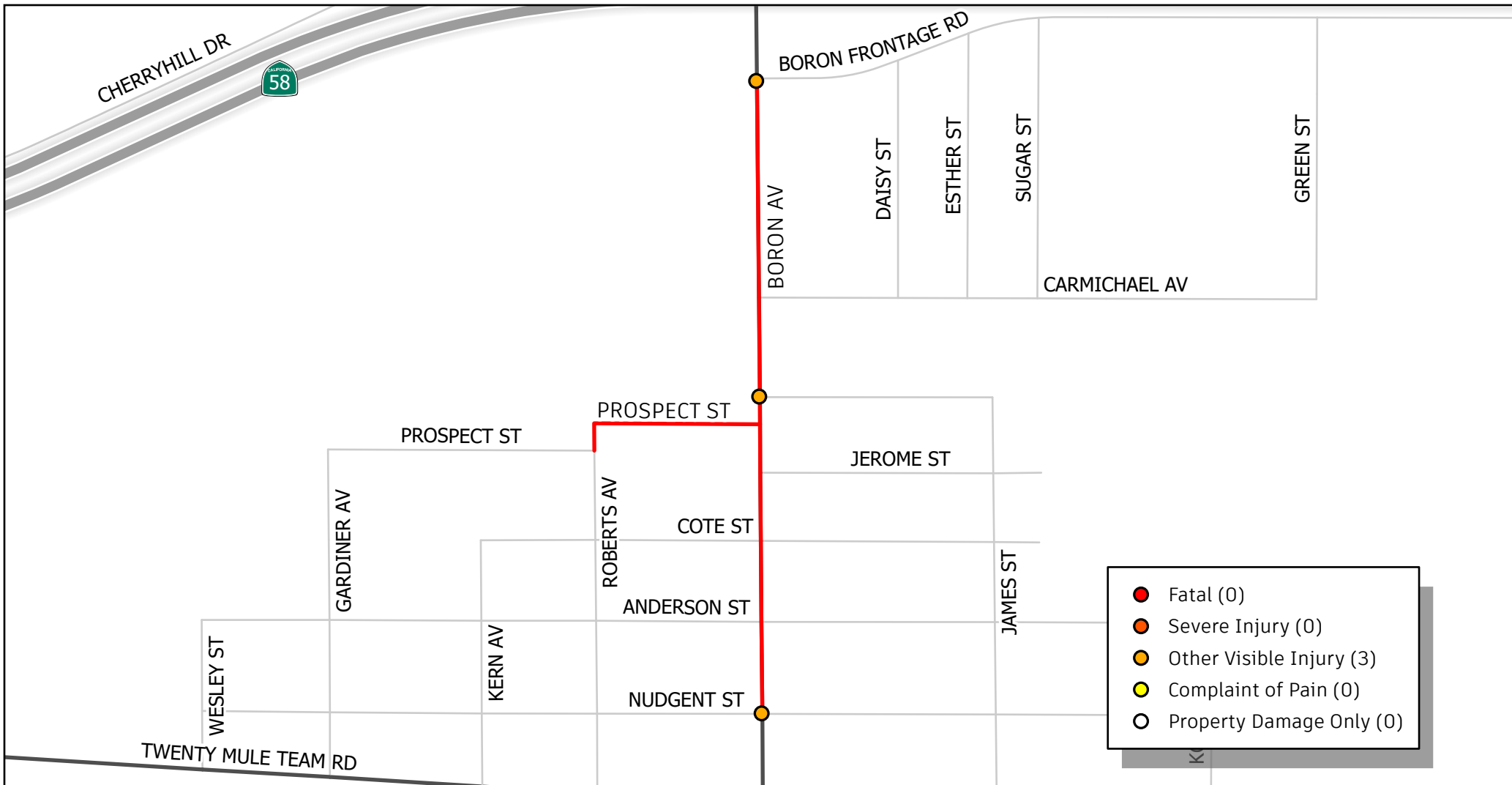
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TRAFFIC COLLISION MAP

PROSPECT ST (ROBERTS AVE - BORON AVE)
BORON AVE (NUDGENT ST - BORON FRONTAGE RD)
JANUARY 2022 - DECEMBER 2024

LOCATION: BORON



PROJECT LOCATION

Total Collisions: 3
Fatalities: 0
Injuries: 3

Collision Rate (c/mve)

Statewide Average: 1.09
Before Rate: 1.75
After Rate: 1.05

Fatality Rate (c/mve)

Statewide Average: 0.033
Before Rate: 0.0
After Rate: 0.0

$$\text{Collision Rate} = \frac{(\text{Number of Collisions} \times 1 \text{ Million})}{(\text{ADT} \times 365 \text{ Days Per Year} \times \text{Segment Length} \times \text{Number of Years})}$$

C/MVE: Collisions per mile vehicles
entering intersection

ADT: Average Daily Traffic Volume

0 0.15 0.3
Miles

Collision Data Source:

California Highway Patrol (CHP), 2024

California State Transportation Agency (CalSTA) Department of Transportation, 2020
Collision Data on California State Highways (road miles, travel, collisions, collision rates). 2022

Federal Highway Administration (FHWA) U.S. Department of Transportation, (2010)
Roadway Safety Information Analysis: A Manual for Local Rural Road Owners. 2023

KERN
COUNTY
PUBLIC WORKS



EMISSIONS BENEFIT & COST EFFECTIVENESS

Project Description

The proposed project location is located within the unincorporated community of Boron in eastern Kern County. The proposed project will construct improvements which include: paved shoulders, curb, gutter, and sidewalk, along Boron Avenue beginning at Nudgent Street to Boron Frontage Road (0.48-miles) and Prospect Street from Roberts Avenue to Boron Avenue (0.16-miles) totaling an approximate 0.64-miles combined. In addition to these improvements, the proposed project will install other ancillary facilities necessary for the proper construction and operation of the roadway, according to Kern County, California Department of Transportation (Caltrans), and Americans with Disabilities Act (ADA) design standards.

Inputs to Calculate Cost-Effectiveness:

Total Project Cost	3,819,125	
CMAQ Dollars	3,293,935	
Effectiveness Period (Life):	20 yrs	
Days of Use/year (D):	365 days	
Length (L) of Curb and Gutter:	0.64 mile	Centerline miles
Annual Average Daily Traffic (ADT):	2110.23 vpd	

Emissions Factors (g/vehicle mile from the SJV Amended 2003 PM-10 Plan & SJV Air District):

	Before Emission Factor	After Emission Factor	
PM10 Factor	907.18	4.54	← 1.58 for paved local roads 4.54 for rural local roads

Annual Emission Reductions (PM10 in pounds/year)

Daily PM10 Reductions (kg/day)	=	2.79
Annual Emission Reductions (lbs/yr)	=	2240.2

Capital Recovery Factor (CRF)

$$= \frac{(1+i)^n \times i}{(1+i)^n - 1} \quad \text{where } i = \text{Discount Rate (3\%)} \text{ and } n = \text{Project Life (20 years)}$$

So, the capital recovery factor = 0.07

Cost - Effectiveness of Funding Dollars

$$= (\text{CRF} \times \text{Funding}) / (\text{Annual PM10 Reductions})$$

$$= 102.92$$

Thus,

$$\text{Calculated Cost - Effectiveness} = 102.92$$



LEVEL OF SERVICE



Gardiner Avenue, Prospect Street, and Boron Avenue Before Bicycle and Pedestrian LOS

Lanes per direction:	1
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	2466 (veh/day)
Posted speed limit:	25 mph
Heavy vehicle percentage:	2%
FHWA's pavement condition rating:	5
% of segment with occupied parking:	0%
% of segment with sidewalks:	25%
Sidewalk width:	5 ft
Sidewalk buffer/parkway width:	2 ft

	Score	Level-of-service	Compatibility Level
BLOS:	2.83	C (2.51-3.50)	Moderately High
PLOS:	3.19	C (2.51-3.50)	Moderately High

Gardiner Avenue, Prospect Street, and Boron Avenue After Bicycle and Pedestrian LOS

Lanes per direction:	1
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	2466 (veh/day)
Posted speed limit:	25 mph
Heavy vehicle percentage:	2%
FHWA's pavement condition rating:	5
% of segment with occupied parking:	0%
% of segment with sidewalks:	75%
Sidewalk width:	5 ft
Sidewalk buffer/parkway width:	2 ft

	Score	Level-of-service	Compatibility Level
BLOS:	2.83	C (2.51-3.50)	Moderately High
PLOS:	2.51	B (1.51-2.50)	Very High

**Boron Avenue
(Nudgent Street to Boron
Frontage Road)**

Annual Automobile VMT Reduced =

Where, **$(D) * (ADT) * (A+C) * (L)$**

D = days of use per year (default is 200 days)

ADT = annual average two-way daily vehicular traffic on parallel road (project-specific data, with a maximum of 30,000)

A = adjustment factor (table lookup value)

C = activity center credit (table lookup value)

L = walking trip length (1.0 miles/trip in one direction)

Boron Avenue Annual VMT Reduction:

$(365) * (2110.23) * (0.0019 + 0.0015) * (.64) =$

1,676.02

Automobile VMT Reduction Calculations

CARB's current method estimates the annual VMT reductions from new pedestrian facilities using Equation 1 (CARB, 2016 [B-1], 2018 [26], 2019 [16]):

Equation 1: Auto VMT Reductions (current method)

$$\text{Auto VMT Reduced} = (D) * (ADT) * (A + C) * (L)$$

Where,

		Units
D	= days of use per year (default is 200 days)	Days
ADT	= annual average two-way daily vehicular traffic on parallel road (project-specific data, with a maximum of 30,000)	Trips/day
A	= adjustment factor (table lookup value)	-
C	= activity center credit (table lookup value)	-
L	= walking trip length (1.0 miles/trip in one direction)	Miles/trip

The adjustment factor and activity center credit tables from CARB's 2016 report are replicated below in Tables 1 and 2. The multi-component adjustment factor uses mode share and facility-level bicycle ridership change data¹ and assumptions to estimate how much of the measured ADT would be converted to walking trips after pedestrian facility

Table 1. Adjustment Factor (A) Lookup Table

Average Daily Traffic (ADT)	Pedestrian Project Length (one-direction)	A (for cities with population >250,000 and non-university towns <250,000)	A (for university towns with population <250,000)
ADT ≤12,000 vehicles per day	≤1 mile	.0019	.0104
	>1 mile & ≤2 miles	.0029	.0155
	>2 miles	.0038	.0207
12,000<ADT ≤24,000 vehicles per day	≤1 mile	.0014	.0073
	>1 mile & ≤2 miles	.0020	.0109
	>2 miles	.0027	.0145
24,000<ADT≤30,000 vehicles per day (max is 30,000)	≤1 mile	.0010	.0052
	>1 mile & ≤2 miles	.0014	.0078
	>2 miles	.0019	.0104

Table 2. Activity Center Credit (C) Lookup Table

Count Your Activity Centers if There Are...	Within ½ Mile of the Project Area	Within ¼ Mile of the project Area
3	.0005	.001
>3 & <7	.0010	.002
≥7	.0015	.003

The adjustment factors in Table 1 "were derived from a limited set of bicycle commute mode split data for cities and university towns in the southern and western United States,"² then multiplied by 0.7³ to "estimate potential auto travel diverted to bikes" (same factor assumed for auto-walking substitution) and again by a 0.65 "growth factor" to "estimate the growth in bicycle trips from construction of the bike facility"⁴ (same