



# **CMAQ Application: Pedestrian Path Improvements**

**Columbus Street  
(La Cresta Drive to Alta Vista Drive)**



**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	\$ _____	\$ _____	\$ _____	\$ _____

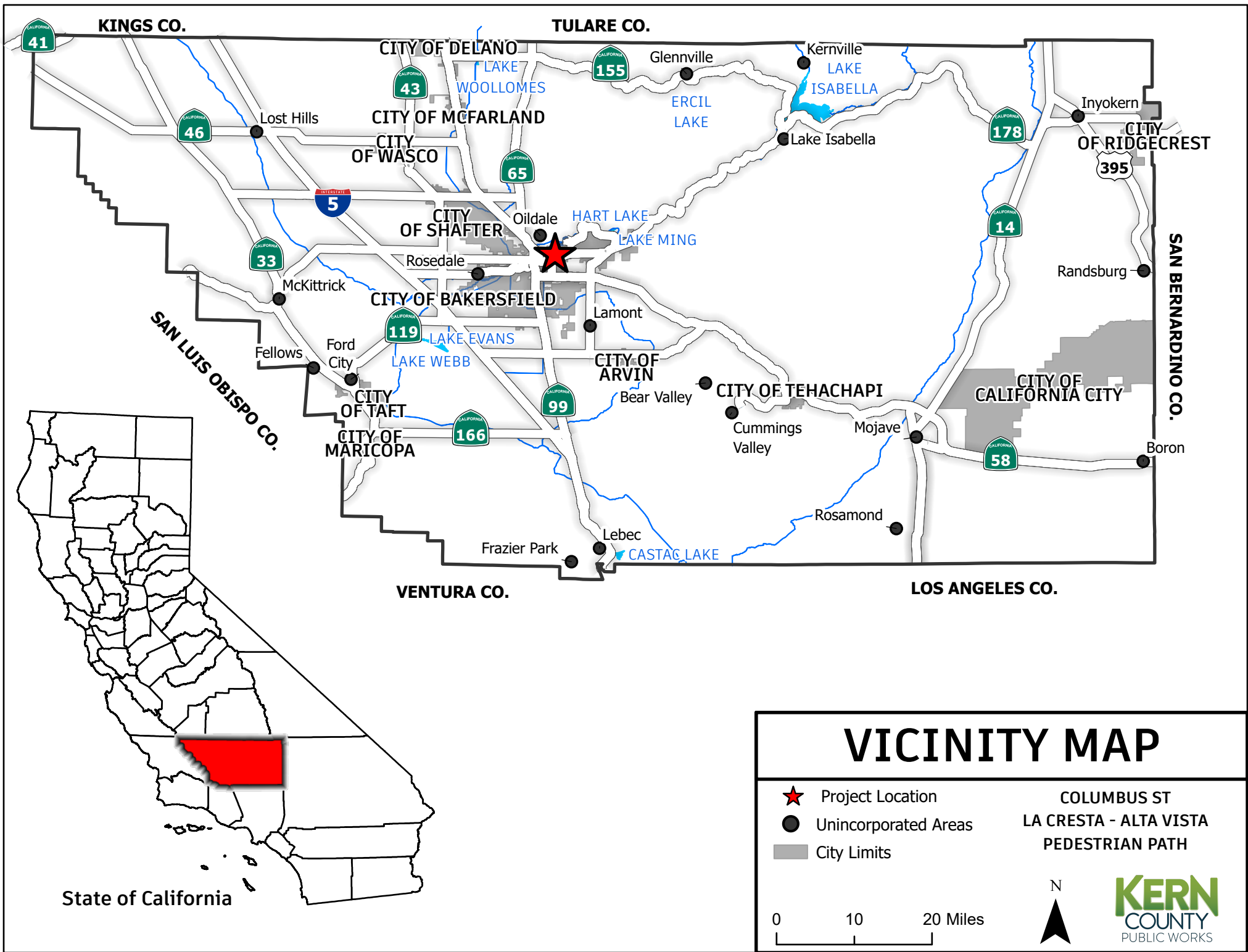
- (7) Programming Year by Phase: PE: \_\_\_\_\_ R/W: \_\_\_\_\_ Const: \_\_\_\_\_
- (8) VMT Reduction (annual miles): \_\_\_\_\_
- (9) VOC Reduction (kg/day): \_\_\_\_\_ Additional documentation required. See instructions.
- (10) NOx Reduction (kg/day): \_\_\_\_\_ Additional documentation required. See instructions.
- (11) PM<sub>10</sub> Reduction (kg/day): \_\_\_\_\_ Additional documentation required. See instructions.
- (12) PM<sub>2.5</sub> 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: _____	

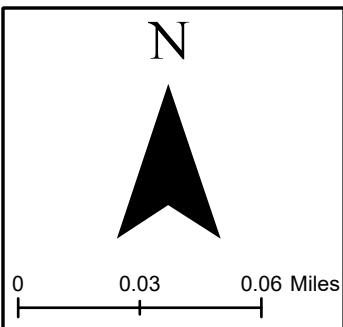
Send completed application electronically on a flash drive with transmittal letter on agency letterhead to:

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

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







Secs: 17, 20

29 S 28 E

- PROJECT LOCATION
- CITY LIMITS
- SCHOOL



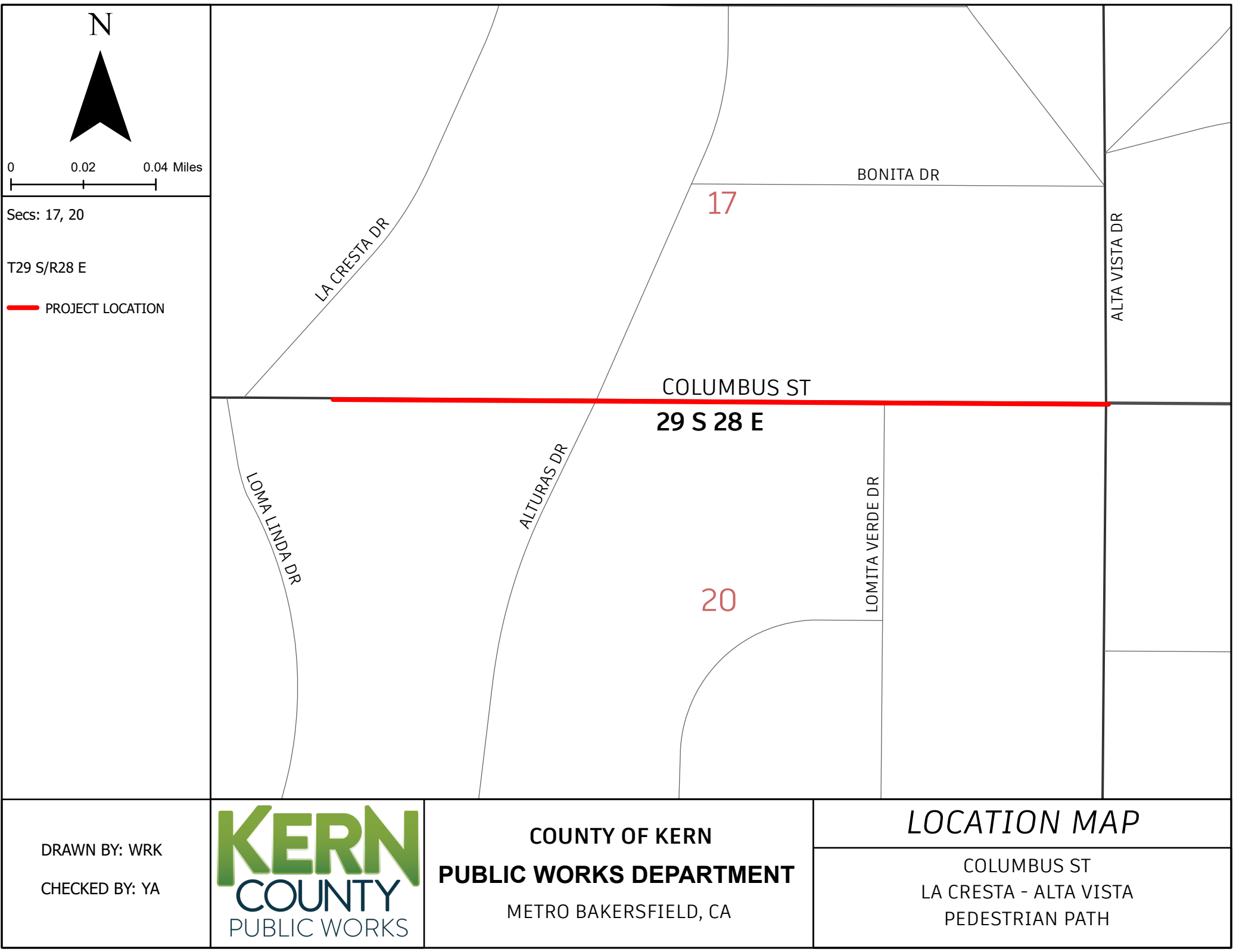
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COUNTY OF KERN  
**PUBLIC WORKS DEPARTMENT**  
METRO BAKERSFIELD, CA

**AERIAL MAP**  
COLUMBUS ST  
LA CRESTA - ALTA VISTA  
PEDESTRIAN PATH





Secs: 17, 20

T29 S/R28 E

— PROJECT LOCATION

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COUNTY OF KERN

**PUBLIC WORKS DEPARTMENT**

METRO BAKERSFIELD, CA

*LOCATION MAP*

COLUMBUS ST

LA CRESTA - ALTA VISTA

PEDESTRIAN PATH



## **PROJECT BACKGROUND**

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



# Project Description & Justification

## Project Description

The proposed project is located within the unincorporated Metropolitan Bakersfield area with Kern County. The proposed project will construct pedestrian improvements which include: curb, gutter, and sidewalk along Columbus Street, beginning at La Cresta Drive and ending at Alta Vista Drive (approximately 0.29-miles). 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 55th – 60th 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.

Currently, due to the lack of sidewalks, residents, students, and pedestrians are forced to walk within the roadway or along various surfaces ranging from grass, dirt, or mulch along the Columbus corridor which increases their chances of being struck by a vehicle. This is not only a safety hazard, but incentivize residents to drive rather than walk within their community. Sidewalks will increase and enhance the number of modes accommodated within the area by creating an even and accessible walkway for pedestrians, seniors, students, and persons with disabilities. The improvements will not only significantly improve the quality of life for these residents but also give them a safer means of pedestrian travel to important community resources such as bus stops, religious institutions, educational facilities, parks, and convenience markets. Pedestrian facilities can replace vehicle trips by providing or improving pedestrian access. Pedestrian facilities can reduce emissions when vehicle trips are replaced by walking.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is currently in extreme **non-attainment** for the 8-hour Ozone Standard (caused by volatile organic compounds (VOC) and nitrogen oxides (NOx)) and **non-attainment** for particulate matter smaller than 2.5 microns (PM<sub>2.5</sub>) under state and federal clean air guidelines. The SJVAPCD has a maintenance plan for particulate matter smaller than 10 microns (PM<sub>10</sub>). These pollutants have 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 anticipated reduction will help the SJVAPCD meet its air quality goal by reducing approximately 13.92 pounds per year of these pollutants.



*Columbus Street, 280-feet west of Alta Vista Drive, looking west*



# 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 creating a more convenient and cost-effective option for residents in this area to travel within and outside of their neighborhood. Constructing sidewalks will more easily connect pedestrians from numerous residences along these streets to the major streets, such as Union Avenue. Annually, the project will result in an estimated reduction of 1,816 Vehicle Miles Traveled (VMT), which also adds to the cost of savings of vehicle operations (see emission calculations attachment). The project improvements will provide an improved walking experience that will enable users to more easily and safely travel in, out, and around their neighborhood.

**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 roadways and will enhance modal connectivity by improving roadway access. The project area roadways currently have no sidewalks in most locations, deterring many travelers from walking. As such, residents and pedestrians in the area must travel within the roadway or along uneven and unpaved surfaces. Additionally, a local high school and religious place of worship is located adjacent to the project site and as stated above, pedestrians are forced to walk within the roadway to access these facilities. The project will increase pedestrian access and connectivity by ensuring the improvements are designed according to ADA accessibility standards. This will allow for increased usage and a broader scope of pedestrians to use the improved facilities.

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

Yes, the project will improve user mobility between neighborhoods and commercial centers in the surrounding community. Residents will have improved multi-modal access to major streets and roadways, making it easier to reach main commercial centers, jobs, and bus stops located along those routes.

**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 improve accessibility and transportation services for the economically disadvantaged, non-drivers, senior citizens, and persons with disabilities. The proposed project is located within and predominantly serves Census Tract 7.01, 7.02, and 14.01, which is within the 55th – 60th percentile of most environmentally burdened and economically disadvantaged communities per CalEnviroScreen 4.0 (see DAC Map). The proposed project will directly increase accessibility to non-motorized drivers, senior citizens, students, and persons with disabilities.



# 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.**

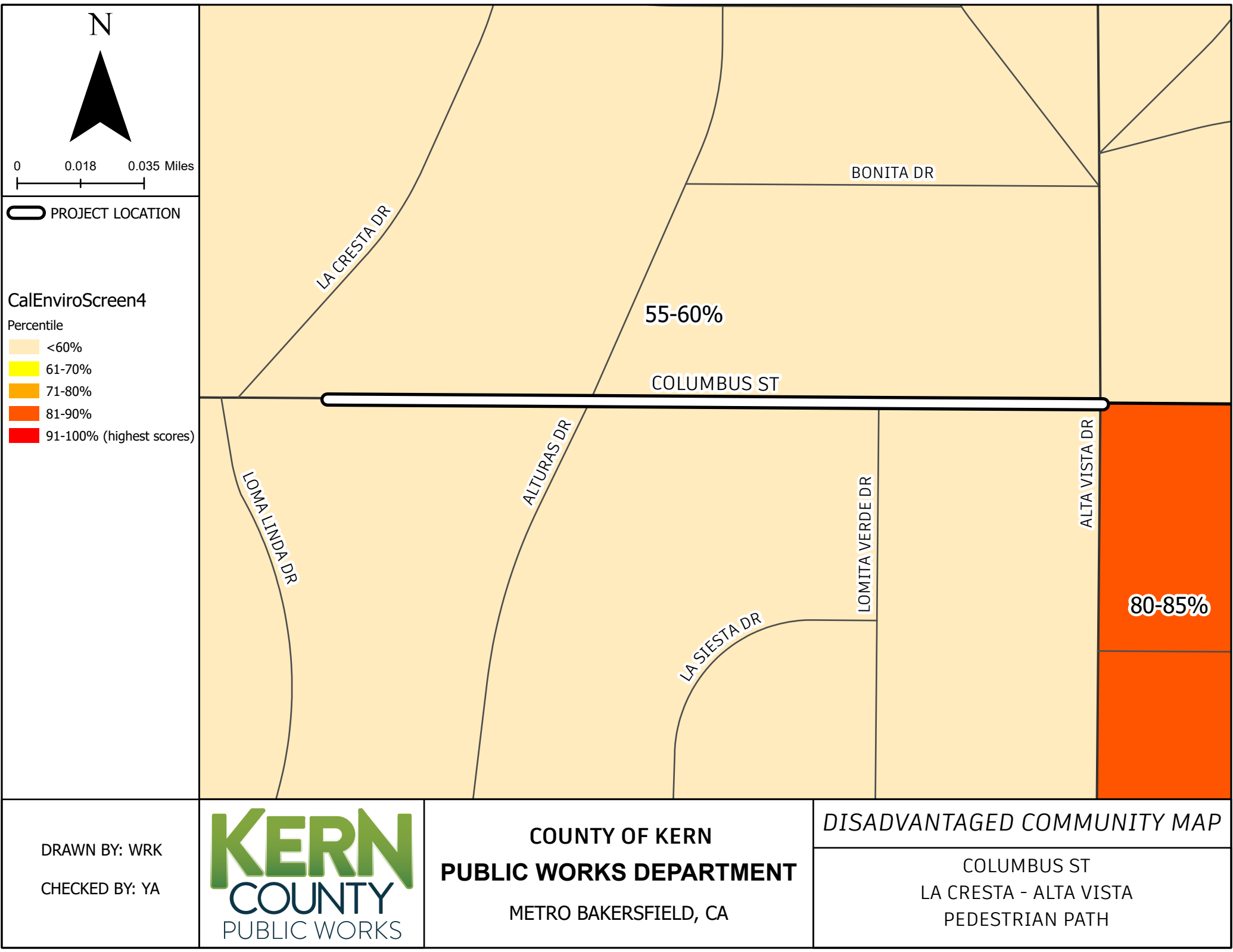
Yes, the existing collision rate is higher than the statewide average.

No, the after project rate will not reduce the collision rate to the statewide average, however, it will significantly reduce the rate to be closer to the statewide average (see attached Collision Map).

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 statewide average.

No, there have been no reported fatalities within the project limits, however, as stated above, the project will further increase pedestrian safety by allowing pedestrians to safely walk out of the roadway and prevent traffic collisions (see attached Collision Map).





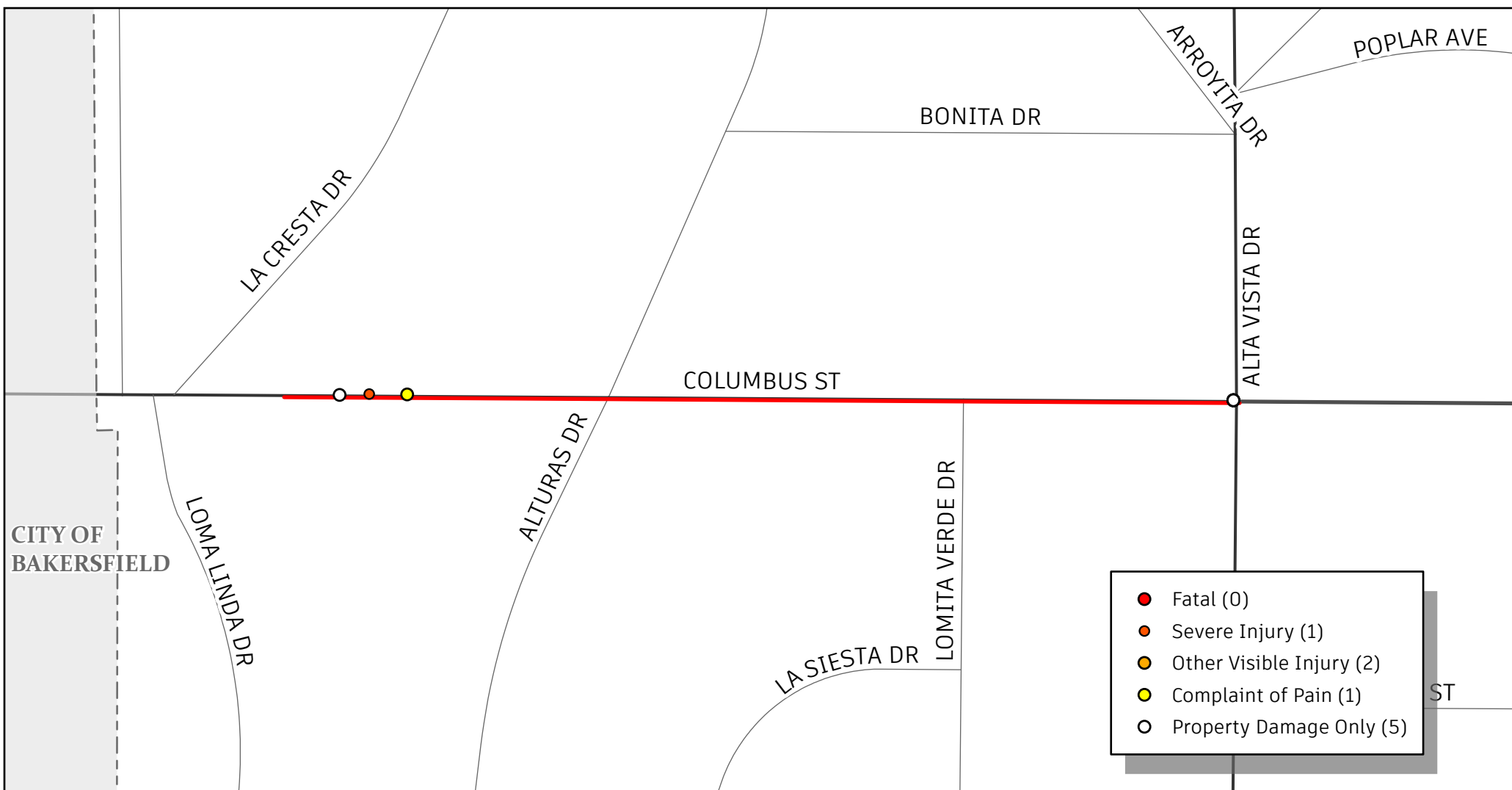
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# TRAFFIC COLLISION MAP

## COLUMBUS ST (LA CRESTA - ALTA VISTA)

JANUARY 2022 - DECEMBER 2024

LOCATION: METRO BAKERSFIELD



**PROJECT LOCATION**

**CITY LIMITS**

**Total Collisions: 9**  
**Fatalities: 0**  
**Injuries: 4**

### Collision Rate (c/mve)

Statewide Average: 1.68  
 Before Rate: 4.25  
 After Rate: 2.54

### Fatality Rate (c/mve)

Statewide Average: 0.15  
 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 0.04 0.07 Miles

**KERN**  
 COUNTY  
 PUBLIC WORKS

#### 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



**EMISSIONS BENEFIT &  
COST EFFECTIVENESS**



**Project Description**

The proposed project is located within the unincorporated Metropolitan Bakersfield area with Kern County. The proposed project will construct pedestrian improvements which include: curb, gutter, and sidewalk along Columbus Street, beginning at La Cresta Drive and ending at Alta Vista Drive (approximately 0.29-miles). 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	1,417,198
CMAQ Dollars	1,254,646
Effectiveness Period (Life):	20 yrs
Weeks of Use/year (W):	50 weeks
Length (L) of Auto Trips Eliminated:	0.29 mile <i>Centerline miles</i>
Adjustment (A):	1 adjustment factor
Baseline AVR (default):	1 average vehicle ridership
New AVR (default):	1.2 average vehicle ridership
Households - Trips Per Day:	9.57 trips
Days/Week	7 days
# of Residents/Households	31 single-family units

**Emissions Factors for Auto Travel (From Table 3):**

	<i>Auto Trip End Factor</i>	<i>Auto VMT Factor</i>
ROG Factor	0.216 <i>grams per trip</i>	0.084 <i>grams per mile</i>
NOx Factor	0.088	0.067
PM2.5 Factor	0.002	0.053

**Calculations:**

Auto Trips Eliminated/Week (T)	=	346.12 Trips/day * Days/week * Residents * [1/Baseline AVR - 1/New AVR]
Annual Auto Trips Reduced	=	17,305.75 (W)*(T)*(A)
Annual Auto VMT Reduced	=	5,018.67 (W)*(T)*(L)

**Annual Emission Reductions (ROG, NOx, and PM2.5)**

= [Annual Auto Trips Reduced) \* (Auto Trip End Factor) + (Annual Auto VMT Reduced) \* (Auto VMT Factor)] / 454

ROG (VOC):	=	9.16 lbs/year
		<span style="border: 1px solid black;">0.011</span> kg/day
NOx:	=	4.10 lbs/year
		<span style="border: 1px solid black;">0.005</span> kg/day
PM2.5:	=	0.66 lbs/year
		<span style="border: 1px solid black;">0.001</span> kg/day
PM10:	=	4.41 lbs/year
		<span style="border: 1px solid black;">0.005</span> kg/day

**Capital Recovery Factor (CRF) (From Table 8)**

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

So, the capital recovery factor = 0.07

**Cost - Effectiveness of Funding Dollars**

$$= \frac{(\text{CRF} \times \text{Funding})}{(\text{ROG} + \text{NOx} + \text{PM2.5})} = \frac{[0.07 * 1,254,646]}{6309.6} = 13.92$$

Thus,

$$\text{Calculated Cost - Effectiveness} = \boxed{6309.59}$$

**Pedestrian Facilities****Emission Factor Units for Auto Travel (Table 3)**

	Auto Trip End Factor	Units	Auto VMT Factor	Units
ROG Factor	0.325	grams/trip	0.063	grams/mile
NOx Factor	0.178	grams/trip	0.048	grams/mile
PM2.5 Factor	0.002	grams/trip	0.046	grams/mile

**Formulas**

Annual Auto Trips Reduced =  $W * T * A$

Annual Auto VMT Reduced =  $W * T * L$

Annual Emission Reductions (ROG, NOx, PM2.5) = [Annual Auto Trips Reduced) \* (Auto Trip End Factor) + (Annual Auto VMT Reduced) \* (Auto VMT Factor)] / 454

AVR: (default) baseline = 1 ; new = 1.2

PM10 = PM2.5 / 0.15

Source: *Methods to Find the Cost-Effectiveness of Funding Air Quality Projects*, May 2005

**Table 8 Capital Recovery Factors**

Project Life (Years)	Capital Recovery Factor for discount rate of 3%
1	1.03
3	0.35
5	0.22
7	0.16
10	0.12
12	0.10
15	0.08
20	0.07

# **Methods to Find the Cost-Effectiveness of Funding Air Quality Projects**

*For Evaluating  
Motor Vehicle Registration Fee Projects  
and  
Congestion Mitigation and  
Air Quality Improvement (CMAQ) Projects*

**May 2005**

California Environmental Protection Agency



**Air Resources Board**





## **Ridesharing and Pedestrian Facilities**

**Project definition:** Ridesharing programs replace drive-alone auto trips by encouraging carpooling and other less polluting modes of travel. Pedestrian facilities replace auto trips by providing or improving pedestrian access. An example is a pedestrian passageway over several lanes of heavy traffic providing safe walking access to adjacent activity centers.

**How emissions are reduced:** Ridesharing reduces emissions when drive-alone auto trips are replaced with less polluting modes of travel. **Pedestrian facilities reduce emissions when auto trips are replaced by walking.**

**Need to know:**

Funding dollars

Work weeks or operating weeks per year

Weekly one-way auto trips eliminated

Average length of auto trips eliminated

<b>Inputs</b>	<b>Default</b>	<b>Units</b>	<b>Text Comments</b>
Funding Dollars ( <b>Funding</b> )		dollars	
Effectiveness Period ( <b>Life</b> )	1	year	Ridesharing: Enter 1 year. <b>Pedestrian: Enter 20 years.</b>
<b><i>Inputs for Trips Eliminated</i></b>			
Auto Trips ( <b>T</b> ) eliminated		trips one-way/week	The number of auto trips eliminated per week to and from workplace (for ridesharing) or <b>to and from activity center (for pedestrian projects).</b>
Length ( <b>L</b> ) of Auto Trips eliminated	16	miles one direction/trip	Default (16 mi.) is for ridesharing projects and equals the average distance from home to work. <b>Pedestrian projects should use the average distance of auto trip to adjacent activity center -- one mile is suggested. This is the average distance of pedestrian trips.</b>
Weeks ( <b>W</b> )	52	weeks (of operation)/year	If trips eliminated (T) is based on employee numbers that exclude workers on sick leave, vacations, etc. then (W) equals 52. <b>Otherwise (W) typically equals 50.</b>

Inputs	Default	Units	Text Comments
<b>Inputs for Trips Added</b>			
Adjustment (A) for Auto Access Trips to transit, vanpools, and carpools  Note: No adjustment is made on Length (L) of Auto Trips eliminated because access trip length is an insignificant portion of annual VMT reduced.	0.7		Adjustment (A) equals the portion of employees who do NOT drive to transit, vanpools, or carpools. Default 0.7 equals the adjustment (A) for areas with average transit use. Use 0.6 for high transit use (i.e., commute transit mode split >10%). Use 1.0 if Method 2 was used to determine Auto Trips (T) eliminated. <b>Use 1.0 for pedestrian projects.</b>

### Emission Factor Inputs for Auto Travel

		Units		Units
	Auto Trip End Factor		Auto VMT Factor	
ROG Factor	1.719	grams/trip	0.470	grams/mile
NOx Factor	0.721	"	0.602	"
PM10 Factor	0.014	"	0.218	"

For auto emission factors, see Emission Factors Menu, Tables 3 and 3A. For projects with a 1-year life, use Table 3A. For projects with a life of 2-20 years, use Table 3. Defaults are for 1-year project life (2002) from Table 3A.

### Formulas

Annual Auto Trips Reduced =  $W * T * A$

**Units**  
trips/year

Annual Auto VMT Reduced =  $W * T * L$

miles/year

Annual Emission Reductions (ROG, NOx, and PM10) =  

$$[(\text{Annual Auto Trips Reduced}) * (\text{Auto Trip End Factor}) + (\text{Annual Auto VMT Reduced}) * (\text{Auto VMT Factor})] / 454$$

lbs/year

Capital Recovery Factor (CRF) = 
$$\frac{(1 + i)^n (i)}{(1 + i)^n - 1}$$

where:  $i$  = discount rate (Assume 3 percent)  
 $n$  = project life

Cost-Effectiveness of

Funding Dollars =  $(\text{CRF} * \text{Funding}) / (\text{ROG} + \text{NOx} + \text{PM10})$

dollars/lb

*Note: The Federal Highway Administration requests that emission reductions from CMAQ projects be reported as kilograms/day. The conversion is*  

$$(\text{lbs per year}) / [(2.2) * (365)] = \text{kilograms/day}$$

## Table 8 Capital Recovery Factors

The following table gives capital recovery factors that may be used to annualize funding dollars according to project life. Below are the capital recovery factors calculated to two decimal places for a discount rate of 3 percent.

Project Life	Capital Recovery Factor for discount rate of 3%
1 year	1.03
3 years	0.35
5 years	0.22
7 years	0.16
10 years	0.12
12 years	0.10
15 years	0.08
20 years	0.07

The formula for the capital recovery factor is:

$$\text{Capital Recovery Factor (CRF)} = \frac{(1+i)^n (i)}{(1+i)^n - 1} \quad \text{where: } i = \text{discount rate} \\ n = \text{project life}$$

For example, if the project life is 1 year and the discount rate is 3%, then the capital recovery factor equals 1.03.

$$= \frac{(1+i)^n (i)}{(1+i)^n - 1} = \frac{(1+0.03)^1 (0.03)}{(1+0.03)^1 - 1} = \frac{0.0309}{0.0300} = 1.03$$

To determine cost-effectiveness, funding dollars are amortized over the expected project life using a discount rate. The amortization formula yields a capital recovery factor, which, when multiplied by the funding, gives the annualized funding for the project over its expected lifetime. The discount rate reflects the opportunity cost of public funds for the clean air programs. This is the level of earnings that could be reasonably expected by investing public funds in various financial instruments, such as U.S. Treasury securities. Cost-effectiveness is determined by dividing annualized funds by annual emission reductions (ROG + NO<sub>x</sub> + PM<sub>10</sub>).



# **Methods to Find the Cost-Effectiveness of Funding Air Quality Projects**

***For Evaluating  
Motor Vehicle Registration Fee Projects  
and  
Congestion Mitigation and  
Air Quality Improvement (CMAQ) Projects***

***Emission Factor Tables  
November 2020***



**Table 3 Average Auto Emission Factors**  
(Fleet of Light-Duty Passenger Vehicles, Light-Duty Trucks and Motor Cycles)

Analysis Period or Project Life	1-5 Years (2018-2022)	6-10 Years (2018-2027)	11-15 Years (2018-2032)	16-20 Years (2018-2037)
<b>ROG</b>				
VMt (g/mile)	0.085	0.075	0.068	0.063
commute trip ends (g/trip end)	0.325	0.267	0.227	0.196
average trip ends (g/trip end)	0.513	0.429	0.370	0.325
<b>NOx</b>				
VMt (g/mile)	0.086	0.067	0.055	0.048
commute trip ends (g/trip end)	0.095	0.074	0.060	0.049
average trip ends (g/trip end)	0.266	0.224	0.197	0.178
<b>PM<sub>2.5</sub></b>				
VMt (g/mile)	0.047	0.047	0.047	0.046
running exhaust only (g/mile)	0.0017	0.0015	0.0013	0.0012
tire and brake wear (g/mile)	0.0177	0.0177	0.0177	0.0177
road dust (g/mile)	0.028	0.028	0.028	0.028
commute trip ends (g/trip end)	0.005	0.005	0.004	0.004
average trip ends (g/trip end)	0.002	0.002	0.002	0.001
<b>CO</b>				
VMt (g/mile)	1.106	0.927	0.818	0.747
commute trip ends (g/trip end)	2.378	1.955	1.661	1.440
average trip ends (g/trip end)	2.624	2.417	2.241	2.105

Source: EMFAC2017 V1.0.2, statewide average annual emissions output runs use 50% relative humidity and 75 degrees Fahrenheit temperature.

PM<sub>2.5</sub>, road dust: statewide average annual PM<sub>2.5</sub> emission factor is based on US EPA's Compilation of Air Pollutant Emission Factors, Vol. 5 (AP-42, Chapter 13.2.1, Jan. 2011), and CARB's Miscellaneous Process Methodology 7.9, Entrained Paved Road Travel, Paved Road Dust (updated Nov. 2016).

[PM<sub>2.5</sub> = 0.15\*PM<sub>10</sub>]



## **LEVEL OF SERVICE**





# Columbus Street

## (La Cresta Drive - Alta Vista Drive)

### Before BLOS/PLOS

7/15/25, 2:55 PM

#### BLOS and PLOS for the following road segment

BLOS and PLOS

Lanes per direction:	1
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	9209 (veh/day)
Posted speed limit:	35 mph
Heavy vehicle percentage:	2%
FHWA's pavement condition rating:	4
% of segment with occupied parking:	50%
% of segment with sidewalks:	0%

	Score	Level-of-service	Compatibility Level
BLOS:	4.49	D (3.51-4.50)	Moderately Low
PLOS:	4.55	E (4.51-5.50)	Very Low

# Columbus Street

## (La Cresta Drive - Alta Vista Drive)

### Before BLOS/PLOS

7/15/25, 2:59 PM

#### BLOS and PLOS for the following road segment

BLOS and PLOS

Lanes per direction:	1
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	9209 (veh/day)
Posted speed limit:	35 mph
Heavy vehicle percentage:	2%
FHWA's pavement condition rating:	4
% of segment with occupied parking:	50%
% of segment with sidewalks:	100%
Sidewalk width:	5 ft
Sidewalk buffer/parkway width:	8 ft

	Score	Level-of-service	Compatibility Level
BLOS:	4.49	D (3.51-4.50)	Moderately Low
PLOS:	2.74	C (2.51-3.50)	Moderately High

**Columbus Street  
(La Cresta Drive to Alta Vista  
Drive) 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)

***Columbus Street Annual VMT Reduction:***

**$(200) * (9,209) * (0.0019 + 0.0015) * (.29) =$**

**1,816.01**

## 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
<i>D</i>	= days of use per year (default is 200 days)	Days
<i>ADT</i>	= annual average two-way daily vehicular traffic on parallel road (project-specific data, with a maximum of 30,000)	Trips/day
<i>A</i>	= adjustment factor (table lookup value)	-
<i>C</i>	= activity center credit (table lookup value)	-
<i>L</i>	= 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 data<sup>1</sup> 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,"<sup>2</sup> then multiplied by 0.7<sup>3</sup> 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"<sup>4</sup> (same