

KERN COUNTY PUBLIC WORKS

CMAQ Application: Traffic Signal Project

Niles Street at Park 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.

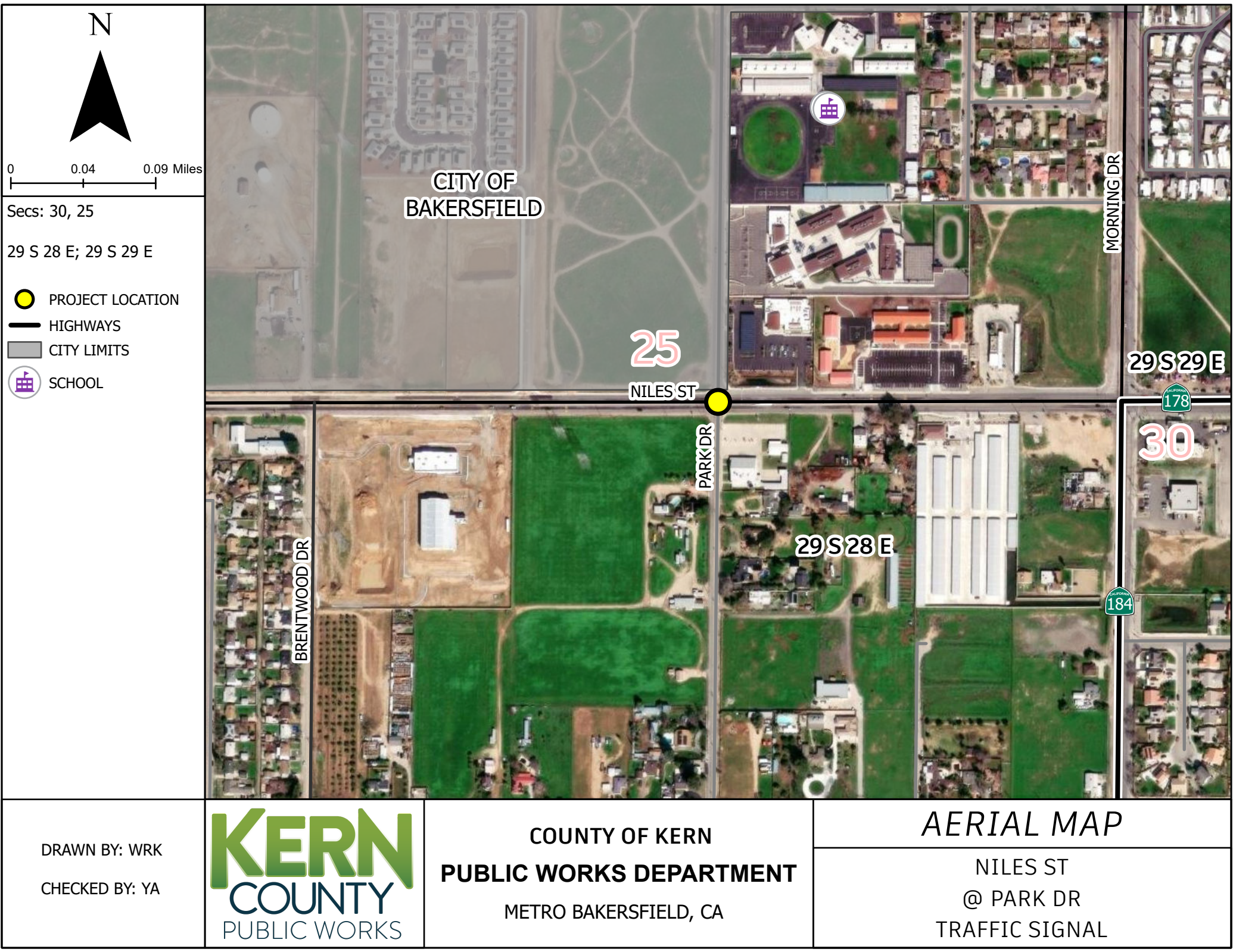
- (1) Is the project included in a local agency-adopted resolution supporting the project? YES NO
- (2) Does the proposed project meet basic eligibility requirements? YES NO
- (3) Project background and justification: Explain the project in terms of the existing infrastructure, its impact for service, 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) 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.](#)

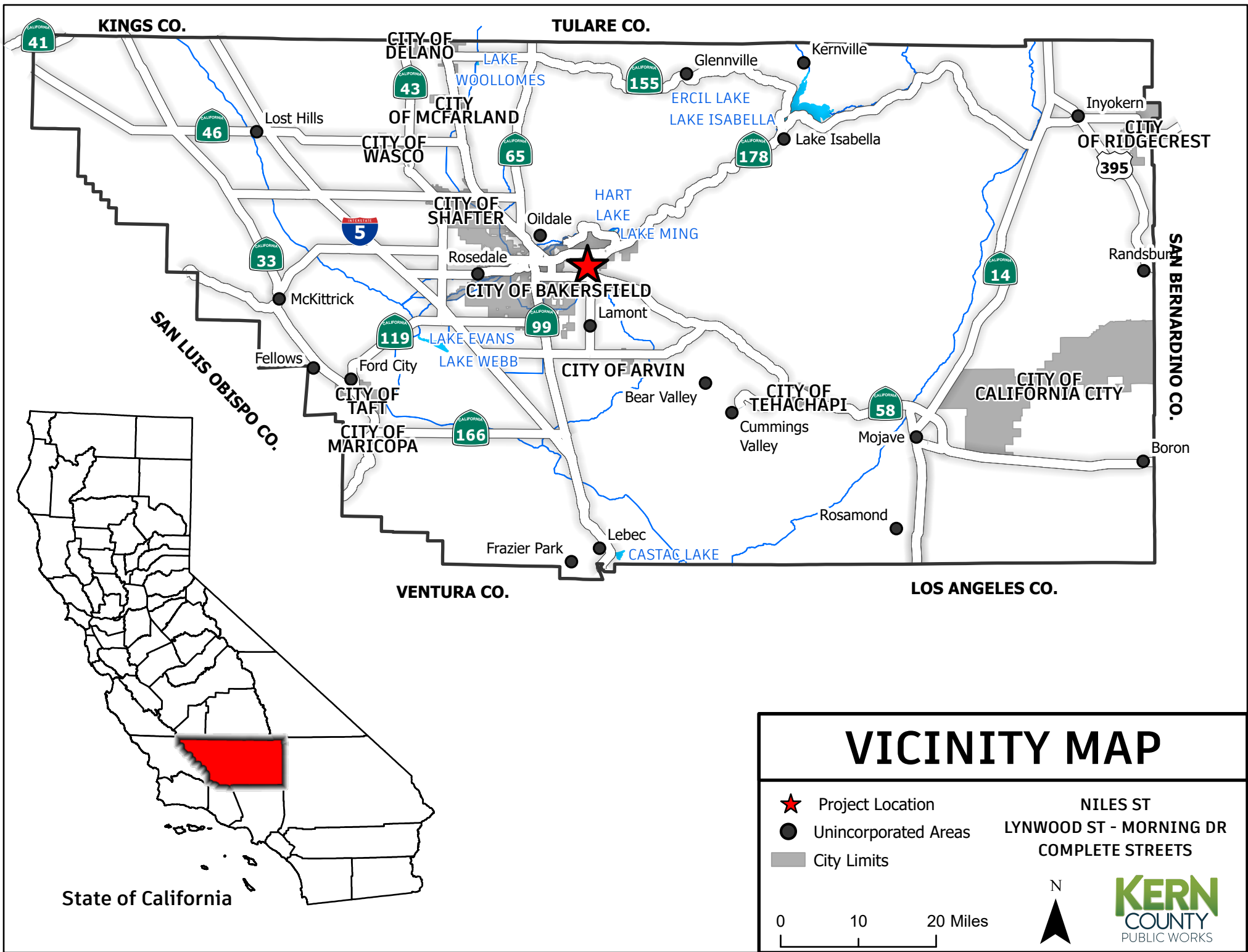


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COUNTY OF KERN
PUBLIC WORKS DEPARTMENT
METRO BAKERSFIELD, CA

AERIAL MAP
NILES ST
@ PARK DR
TRAFFIC SIGNAL





0 0.05 0.1 Miles

Secs: 30, 25

T29 S/R28 E; T29 S/R29 E



PROJECT LOCATION



HIGHWAY



CITY LIMITS



SCHOOL

**CITY OF
BAKERSFIELD**

NILES ST

29 S 28 E

25

30



29 S
29 E



POLARIS
AVE

HYDRACT

DUDLEY ST

SHERMAN LN

JOY
AVE

MORNING DR

NETTIE CT

MARIE AVE

LATHAM ST

BREWSTER DR

PARK DR

EDGAR CT

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The logo for Kern County Public Works features the word "KERN" in large, bold, green capital letters. Below it, the words "COUNTY" and "PUBLIC WORKS" are stacked in a smaller, dark blue, sans-serif font.

COUNTY OF KERN
PUBLIC WORKS DEPARTMENT
METRO BAKERSFIELD, CA

LOCATION MAP

NILES ST
@ PARK DR
TRAFFIC SIGNAL



PROJECT BACKGROUND

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

Project Description & Justification

Project Description

The proposed project is located at the intersection of Niles Street and Park Drive in the unincorporated Metropolitan Bakersfield area. The proposed project would construct a traffic signal, roadside signs, thermoplastic sidewalks and pavement markings, curb and gutter, curb ramps, and other ancillary facilities necessary for the proper construction and operation of these facilities. All work will be completed 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 vicinity area is located within various disadvantaged communities ranging from the 45th – 50th and 75th – 80th percentiles of environmentally and economically disadvantaged communities in California based on the Cal Enviroscreen 4.0 website (see Disadvantaged Communities Map). The proposed improvements will significantly improve the quality of life for residents in these communities.

The intersection of Niles Street, an arterial road, and Park Drive, a local road, has been identified by County Staff as an intersection that warrants signalization due to the high collision rates, with approximately 11-total collision occurring between January 2022 through December 2024 within a 1/8-mile buffer based on collision data provided by the California Highway Patrol. The installation of the traffic signal and other ancillary facilities will provide safety for both the motorized traveling public, as well as pedestrian traffic along this portion of the Niles Street Corridor. The intersection of Niles Street and Park Drive provides access to residential properties, as well as educational facilities and other frequently trafficked roads within the area. The intersection currently has a Level of Service (LOS) of “F/A/A/C” that once improved will have a level of serve of “C” (see LOS chart). The intersection is currently unsignalized with east and west bound traffic flowing freely along Niles Street, while traffic along Park Drive currently has stop signs. The intersection currently has a pedestrian crosswalk which allows pedestrians to cross Niles Street. Traffic headed northbound on Park Drive currently experience an average of 62.04 seconds of delay, while southbound traffic experiences an average of 19.36 seconds of delay. Conversely, east bound traffic along Niles Street experiences an average if 3.71 seconds of delay, while west bound traffic is 0.15 seconds of delay. The current delay time of this intersection is 21.31 seconds. After project completion, the intersection of Niles Street and Park Drive will have an average delay of 29.3 seconds.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is currently in **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_{2.5}) under state and federal clean air guidelines. The SJVAPCD has a maintenance plan for particulate matter smaller than 10 microns (PM₁₀). 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 in emissions will help the SJVAPCD meet its air quality goals by reducing approximately 55.94-pounds of VOC, 1623.86-pounds of CO, 430.87-pounds of NOx, 3.93-pounds of PM_{2.5}, and 4.24-pounds of PM₁₀ per year.



Niles Street at Park Drive



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, cost effective option for travelers through a signalized intersection. The intersection currently has a Level of Service (LOS) of "F/A/A/C" that once improved will have a level of serve of "C" (see LOS chart). The intersection is currently unsignalized with east and west bound traffic flowing freely along Niles Street, while traffic along Park Drive currently has stop signs. The intersection currently has a pedestrian crosswalk which allows pedestrians to cross Niles Street. Traffic headed northbound on Park Drive currently experience an average of 62.04 seconds of delay, while southbound traffic experiences an average of 19.36 seconds of delay. Conversely, east bound traffic along Niles Street experiences an average if 3.71 seconds of delay, while west bound traffic is 0.15 seconds of delay. The current delay time of this intersection is 21.31 seconds. After project completion, the intersection of Niles Street and Park Drive will have an average delay of 29.3 seconds. The signalization of this intersection will provide a safe route for pedestrians to cross Niles Street.

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 proposed project will improve existing transportation choices by improving modal connectivity for pedestrians at the existing intersection. The proposed project will encourage pedestrians to walk within their community due to high visibility thermoplastic crosswalks and pavement markings that comply with ADA standards in order to provide service to all. The proposed signal will bring the intersection to an overall level of service of "C".

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

Yes, the intersection of Niles Street and Park Drive is located within close proximity to three (3) educational facilities (Hort Elementary School, Voorhies Elementary School, and Foothill Highschool) and will improve pedestrian safety for individuals cross Niles Street and Park Drive. The proposed project will allow pedestrians to safely travel between residential areas and commercial centers along Niles Street, resulting in safer, cleaner, faster, and more accessible trips.

4. Will improve accessibility and transportation services for economically disadvantaged populations, nondrivers, senior citizens, & persons with disabilities, or make goods, commodities, and services more readily available to these groups. The two Safety Benefits are:

Yes, the proposed project will directly increase accessibility to non-drivers, senior citizens, and persons with disabilities by installing facilities that meet the most recent Americans with Disabilities Act (ADA) construction standards. The proposed project location is within Census Tracts No. 9.07 and No. 11.01, which are also located within the 45th – 50th and 75th – 80th percentiles of environmentally and economically disadvantaged communities in California based on the Cal Enviroscreen 4.0 website (see Disadvantaged Communities Map). Improved road access and pedestrian safety will allow goods, commodities, and services to be more readily available.

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 Accident Rate is higher than the statewide average.

No, the project will not reduce the Accident Rate to the statewide average, however, it does reduce the existing Accident Rate (see attached Traffic Collision Map), and therefore will be beneficial for pedestrians crossing at Niles Street and Park Drive.

Livability and Safety

- 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, the project will not increase Fatality Rate to the statewide average (see attached Traffic Collision Map).

N



0 0.05 0.1 Miles

 PROJECT LOCATION






 HIGHWAY

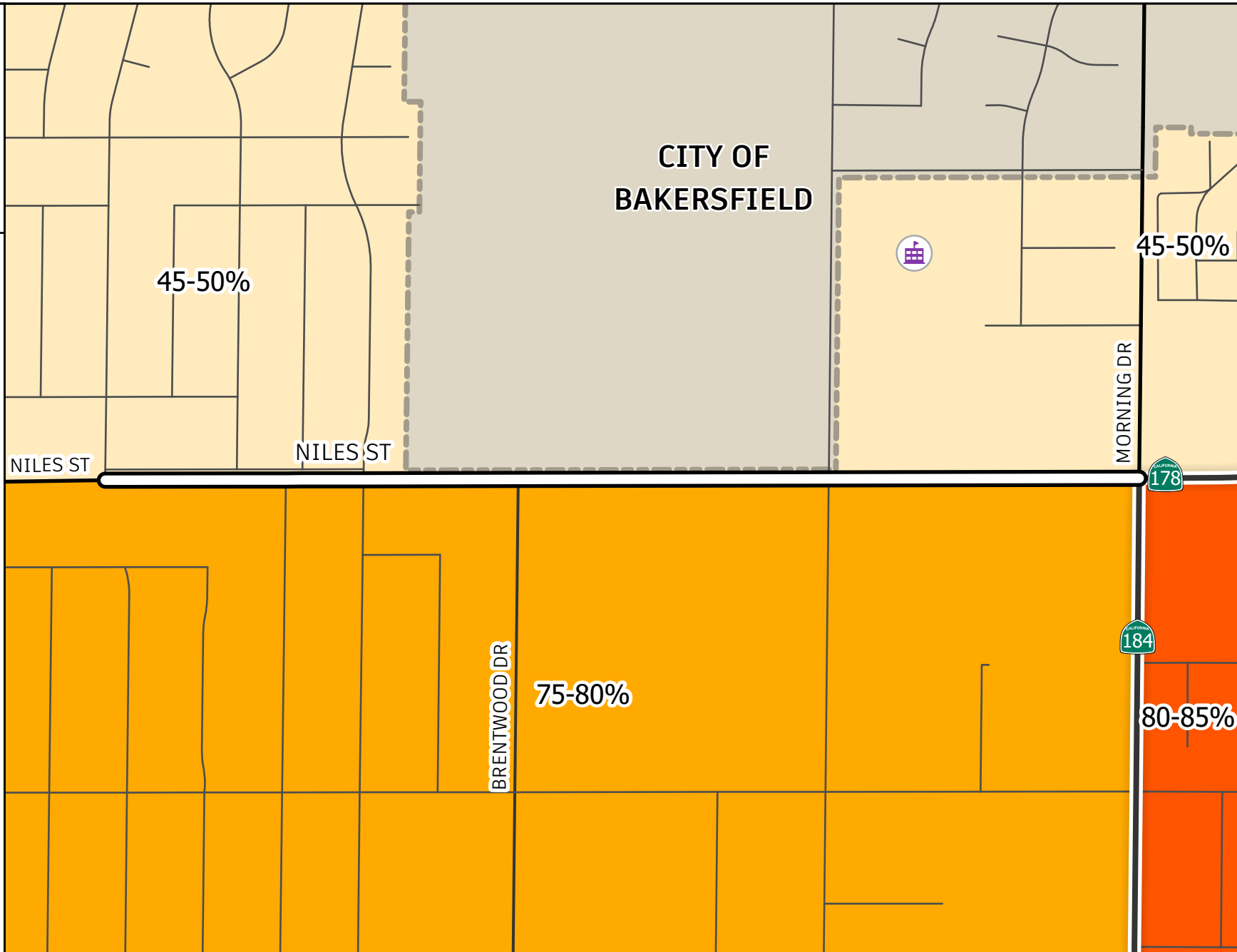
 CITY LIMITS

 SCHOOL

CalEnviroScreen4

Percentile

-  <60%
-  61-70%
-  71-80%
-  81-90%
-  91-100% (highest scores)



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PUBLIC WORKS DEPARTMENT
METRO BAKERSFIELD, CA

DISADVANTAGED COMMUNITY MAP

NILES ST
LYNWOOD ST - MORNING DR
COMPLETE STREETS

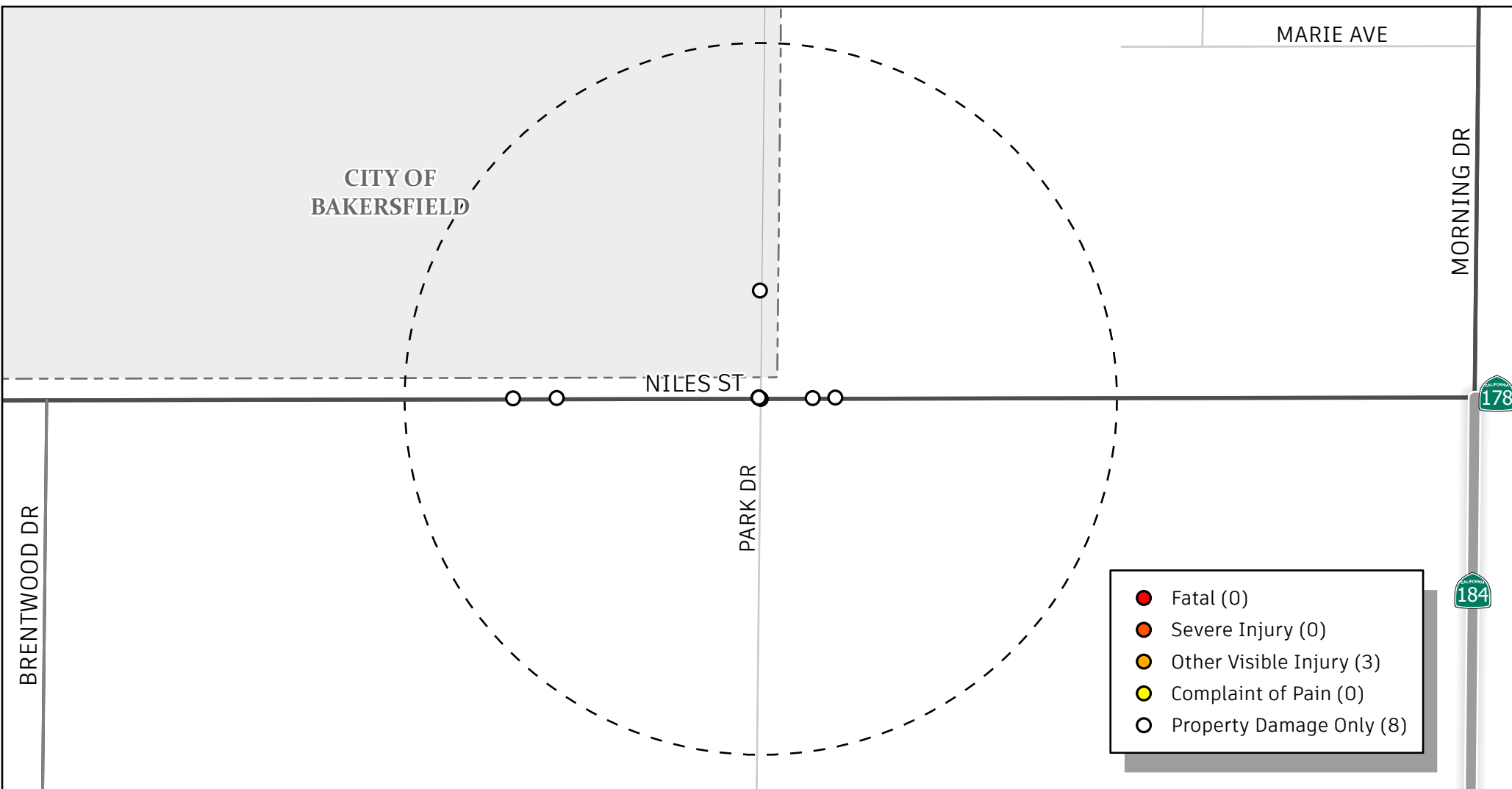
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TRAFFIC COLLISION MAP

NILES ST (@ PARK DR)

JANUARY 2022 - DECEMBER 2024

LOCATION: METRO BAKERSFIELD



CITY LIMITS

1/8 Mile Buffer

Total Collisions: 11**Fatalities: 0****Injuries: 3****Collision Rate (c/mve)**

Statewide Average: 0.2

Before Rate: 1.64

After Rate: 1.38

Fatality Rate (c/mve)

Statewide Average: 0.0022

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 0.05 0.1 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). 2022Federal Highway Administration (FHWA) U.S. Department of Transportation, (2010)
Roadway Safety Information Analysis: A Manual for Local Rural Road Owners. 2023

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EMISSIONS BENEFIT & COST EFFECTIVENESS

Calculate Cost-Effectiveness for Niles Street at Park Drive

Inputs to Calculate Cost-Effectiveness

Funding Dollars	\$1,238,138	CMAQ	\$1,096,123
Effectiveness Period (Life):	10		
Days of use/year	365		
Length of congested roadway (L):	1	miles	
Traffic Volume during congested periods (Congested Traffic):	12,208	trips per day	
Before Speed:	25	mph	
After Speed:	45	mph	
Capital Recovery Factor (CRF Table 8)	0.12		

Emissions Factor Inputs (From Table 4):

	Before Speed Factor	After Speed Factor
ROG (VOC) Factor	0.0239 grams per mile	0.0125 grams per mile
CO Factor	1.1844 grams per mile	0.8535 grams per mile
NOx Factor	0.1918 grams per mile	0.104 grams per mile
PM2.5 Factor	0.0024 grams per mile	0.0016 grams per mile

Calculations:

$$\text{Annual Project VMT (VMT)} = (D) * (L) * (\text{Congested Traffic})$$

$$= 365 * 1 * 12208 = 4,455,920 \text{ annual miles}$$

Annual Emission Reductions (ROG(VOC), NOx, and PM2.5) in lbs. per year

$$= [(0.50) * (\text{VMT}) * (\text{Before Speed Factor} - \text{After Speed Factor})] / 454 \text{ grams per lb.}$$

ROG(VOC):	$[(0.50) * 4,455,920] * (0.0239 - 0.0125) / 454 =$	55.94 lbs. per year
		Divide by 2.2 lbs./Kilogram
		25.43 Kilograms per Year
		Divide by 365 Days
		0.07 Kilograms per Day
CO:	$[(0.50) * 4,455,920] * (1.1844 - 0.8535) / 454 =$	1623.86 lbs. per year
		Divide by 2.2 lbs./Kilogram
		738.12 Kilograms per Year
		Divide by 365 Days
		2.02 Kilograms per Day
NOx:	$[(0.50) * 4,455,920] * (0.1918 - 0.104) / 454 =$	430.87 lbs. per year
		Divide by 2.2 lbs./Kilogram
		195.85 Kilograms per Year
		Divide by 365 Days
		0.54 Kilograms per Day
PM2.5:	$[(0.50) * 4,455,920] * (0.0024 - 0.0016) / 454 =$	3.93 lbs. per year
		Divide by 2.2 lbs./Kilogram
		1.78 Kilograms per Year
		Divide by 365 Days
		0.005 Kilograms per Day
PM10:	X 1.08 Conversion Factor	0.005 Kilograms per Day (PM10)
		Multiply by 365 Days
		1.93 Kilograms per Year
		Multiply by 2.2 lbs./Kilogram
		4.24 lbs. per year

$$\text{Capital Recovery Factor (CRF)} = \frac{(1+i)^n(i)}{(1+i)^n - 1} = 0.12 \text{ where } n = \text{project life (5 years)} \text{ and } i = \text{discount rate (3\%)}$$

Cost-Effectiveness

$$\text{of Funding Dollars} = (\text{CRF} * \text{Funding}) / (\text{ROG} + \text{CO}/7 + \text{NOx} + \text{PM2.5}) = [0.12 * 1,096,123] / 723$$

$$= \$182.00 \text{ per lb.}$$



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
September 2024***

Table 4A. Emission Factors (grams per mile) by Speed (mph) - Aggregated

Project Life 1-5 years (2022-2026)

Speed	ROG ¹¹	CO	NOx	PM2.5 Ex ¹²	Speed	ROG	CO	NOx	PM2.5 Ex
5	0.1236	2.1989	0.5818	0.0102	48	0.0148	0.9342	0.1233	0.0019
6	0.1134	2.1369	0.5510	0.0094	49	0.0147	0.9223	0.1225	0.0019
7	0.1041	2.0767	0.5218	0.0087	50	0.0145	0.9106	0.1218	0.0019
8	0.0955	2.0182	0.4941	0.0081	51	0.0146	0.9004	0.1225	0.0020
9	0.0876	1.9613	0.4679	0.0075	52	0.0146	0.8903	0.1232	0.0020
10	0.0804	1.9060	0.4431	0.0069	53	0.0146	0.8804	0.1239	0.0020
11	0.0742	1.8553	0.4153	0.0064	54	0.0146	0.8705	0.1246	0.0021
12	0.0686	1.8060	0.3892	0.0060	55	0.0147	0.8608	0.1253	0.0021
13	0.0633	1.7580	0.3647	0.0056	56	0.0148	0.8529	0.1275	0.0022
14	0.0585	1.7112	0.3418	0.0052	57	0.0150	0.8451	0.1296	0.0022
15	0.0540	1.6657	0.3203	0.0048	58	0.0152	0.8374	0.1318	0.0023
16	0.0504	1.6288	0.3073	0.0045	59	0.0154	0.8298	0.1340	0.0024
17	0.0471	1.5928	0.2948	0.0042	60	0.0156	0.8222	0.1363	0.0024
18	0.0440	1.5575	0.2828	0.0040	61	0.0159	0.8166	0.1397	0.0025
19	0.0411	1.5231	0.2713	0.0037	62	0.0163	0.8110	0.1433	0.0026
20	0.0384	1.4894	0.2603	0.0035	63	0.0166	0.8054	0.1469	0.0027
21	0.0363	1.4600	0.2509	0.0033	64	0.0170	0.7999	0.1506	0.0028
22	0.0343	1.4312	0.2418	0.0032	65	0.0174	0.7944	0.1544	0.0028
23	0.0324	1.4030	0.2331	0.0030	66	0.0177	0.7929	0.1550	0.0029
24	0.0307	1.3754	0.2247	0.0029	67	0.0179	0.7914	0.1555	0.0029
25	0.0290	1.3483	0.2166	0.0027	68	0.0182	0.7899	0.1561	0.0029
26	0.0277	1.3238	0.2092	0.0026	69	0.0184	0.7884	0.1567	0.0029
27	0.0265	1.2998	0.2021	0.0025	70	0.0187	0.7869	0.1572	0.0030
28	0.0253	1.2762	0.1952	0.0024	71	0.0187	0.7869	0.1572	0.0030
29	0.0241	1.2530	0.1886	0.0023	72	0.0187	0.7869	0.1572	0.0030
30	0.0230	1.2302	0.1821	0.0022	73	0.0187	0.7869	0.1572	0.0030
31	0.0222	1.2094	0.1765	0.0022	74	0.0187	0.7869	0.1572	0.0030
32	0.0214	1.1890	0.1710	0.0021	75	0.0187	0.7869	0.1572	0.0030
33	0.0206	1.1689	0.1657	0.0021	76	0.0187	0.7869	0.1572	0.0030
34	0.0199	1.1492	0.1606	0.0020	77	0.0187	0.7869	0.1572	0.0030
35	0.0191	1.1298	0.1556	0.0019	78	0.0187	0.7869	0.1572	0.0030
36	0.0186	1.1120	0.1517	0.0019	79	0.0187	0.7869	0.1572	0.0030
37	0.0181	1.0946	0.1478	0.0019	80	0.0187	0.7869	0.1572	0.0030
38	0.0176	1.0775	0.1441	0.0019	81	0.0187	0.7869	0.1572	0.0030
39	0.0171	1.0606	0.1404	0.0018	82	0.0187	0.7869	0.1572	0.0030
40	0.0166	1.0439	0.1368	0.0018	83	0.0187	0.7869	0.1572	0.0030
41	0.0163	1.0289	0.1345	0.0018	84	0.0187	0.7869	0.1572	0.0030
42	0.0160	1.0141	0.1322	0.0018	85	0.0187	0.7870	0.1572	0.0030
43	0.0157	0.9994	0.1300	0.0018	86	0.0187	0.7870	0.1572	0.0030
44	0.0155	0.9850	0.1278	0.0018	87	0.0187	0.7870	0.1572	0.0030

¹¹ ROG includes running exhaust and running evaporative emissions.

¹² PM2.5 Ex includes running exhaust emissions only.

Speed	ROG ¹¹	CO	NOx	PM2.5 Ex ¹²		Speed	ROG	CO	NOx	PM2.5 Ex
45	0.0152	0.9708	0.1256	0.0018		88	0.0187	0.7870	0.1572	0.0030
46	0.0150	0.9585	0.1248	0.0018		89	0.0187	0.7870	0.1572	0.0030
47	0.0149	0.9463	0.1240	0.0018		90	0.0187	0.7870	0.1572	0.0030

Table 4B. Emission Factors (grams per mile) by Speed (mph) -
Aggregated

Project Life 6-10 years (2022-2031)

Speed	ROG ¹³	CO	NOx	PM2.5 Ex ¹⁴	Speed	ROG	CO	NOx	PM2.5 Ex
5	0.1025	1.9155	0.5458	0.0089	48	0.0122	0.8208	0.1016	0.0017
6	0.0939	1.8626	0.5154	0.0082	49	0.0121	0.8101	0.1008	0.0017
7	0.0861	1.8111	0.4867	0.0076	50	0.0119	0.7997	0.1000	0.0017
8	0.0790	1.7611	0.4596	0.0070	51	0.0120	0.7905	0.1007	0.0018
9	0.0724	1.7125	0.4340	0.0065	52	0.0120	0.7814	0.1013	0.0018
10	0.0664	1.6652	0.4098	0.0060	53	0.0120	0.7724	0.1019	0.0018
11	0.0613	1.6217	0.3826	0.0056	54	0.0120	0.7635	0.1025	0.0019
12	0.0565	1.5794	0.3572	0.0052	55	0.0120	0.7547	0.1031	0.0019
13	0.0522	1.5381	0.3335	0.0048	56	0.0122	0.7475	0.1051	0.0020
14	0.0482	1.4979	0.3113	0.0045	57	0.0123	0.7403	0.1071	0.0021
15	0.0444	1.4588	0.2907	0.0042	58	0.0125	0.7332	0.1091	0.0021
16	0.0415	1.4270	0.2782	0.0039	59	0.0126	0.7262	0.1111	0.0022
17	0.0388	1.3959	0.2662	0.0037	60	0.0128	0.7192	0.1132	0.0022
18	0.0362	1.3655	0.2548	0.0035	61	0.0131	0.7138	0.1165	0.0023
19	0.0338	1.3358	0.2439	0.0032	62	0.0133	0.7083	0.1198	0.0024
20	0.0316	1.3067	0.2334	0.0031	63	0.0136	0.7030	0.1232	0.0025
21	0.0299	1.2812	0.2244	0.0029	64	0.0139	0.6976	0.1267	0.0025
22	0.0282	1.2563	0.2158	0.0028	65	0.0143	0.6923	0.1303	0.0026
23	0.0267	1.2319	0.2075	0.0026	66	0.0145	0.6907	0.1307	0.0027
24	0.0252	1.2079	0.1995	0.0025	67	0.0147	0.6891	0.1312	0.0027
25	0.0239	1.1844	0.1918	0.0024	68	0.0149	0.6875	0.1316	0.0027
26	0.0228	1.1631	0.1847	0.0023	69	0.0151	0.6858	0.1321	0.0027
27	0.0218	1.1421	0.1779	0.0022	70	0.0153	0.6842	0.1325	0.0027
28	0.0208	1.1216	0.1713	0.0021	71	0.0153	0.6842	0.1325	0.0027
29	0.0199	1.1014	0.1649	0.0020	72	0.0153	0.6842	0.1325	0.0027
30	0.0190	1.0815	0.1588	0.0019	73	0.0153	0.6842	0.1325	0.0027
31	0.0183	1.0633	0.1533	0.0019	74	0.0153	0.6842	0.1325	0.0027
32	0.0176	1.0455	0.1481	0.0018	75	0.0153	0.6842	0.1325	0.0027
33	0.0170	1.0279	0.1430	0.0018	76	0.0153	0.6842	0.1325	0.0027
34	0.0164	1.0106	0.1380	0.0017	77	0.0153	0.6842	0.1325	0.0027
35	0.0158	0.9936	0.1333	0.0017	78	0.0153	0.6842	0.1325	0.0027
36	0.0153	0.9780	0.1294	0.0017	79	0.0153	0.6843	0.1325	0.0027
37	0.0149	0.9627	0.1257	0.0017	80	0.0153	0.6843	0.1325	0.0027
38	0.0145	0.9476	0.1220	0.0016	81	0.0153	0.6843	0.1325	0.0027
39	0.0141	0.9327	0.1185	0.0016	82	0.0153	0.6843	0.1325	0.0027
40	0.0137	0.9181	0.1151	0.0016	83	0.0153	0.6843	0.1325	0.0027
41	0.0134	0.9048	0.1128	0.0016	84	0.0153	0.6843	0.1325	0.0027
42	0.0132	0.8917	0.1105	0.0016	85	0.0153	0.6843	0.1325	0.0027
43	0.0130	0.8788	0.1083	0.0016	86	0.0153	0.6843	0.1325	0.0027
44	0.0127	0.8660	0.1061	0.0016	87	0.0153	0.6843	0.1325	0.0027

¹³ ROG includes running exhaust and running evaporative emissions.

¹⁴ PM2.5 Ex includes running exhaust emissions only.

Speed	ROG ¹³	CO	NOx	PM2.5 Ex ¹⁴		Speed	ROG	CO	NOx	PM2.5 Ex
45	0.0125	0.8535	0.1040	0.0016		<i>88</i>	0.0153	0.6843	0.1325	0.0027
<i>46</i>	0.0124	0.8424	0.1032	0.0016		<i>89</i>	0.0153	0.6843	0.1325	0.0027
<i>47</i>	0.0123	0.8315	0.1024	0.0017		90	0.0153	0.6843	0.1325	0.0027



LEVEL OF SERVICE



Niles Street (Lynwood Street - Morning Drive)

Vicinity Before Level of Service

BLOS and PLOS for the following road segment

Lanes per direction:	2
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	12208 (veh/day)
Posted speed limit:	45 mph
Heavy vehicle percentage:	3%
FHWA's pavement condition rating:	4
% of segment with occupied parking:	0%
% of segment with sidewalks:	40%
Sidewalk width:	5 ft
Sidewalk buffer/parkway width:	10 ft

	Score	Level-of-service	Compatibility Level
BLOS:	4.2	D (3.51-4.50)	Moderately Low
PLOS:	3.87	D (3.51-4.50)	Moderately Low

Niles Street (Lynwood Street - Morning Drive)

Vicinity After Level of Service

BLOS and PLOS for the following road segment

Lanes per direction:	2
Outside lane width:	12 ft
Paved shoulder/bike lane/marked parking width:	0 ft
Bidirectional ADT traffic volume:	12208 (veh/day)
Posted speed limit:	45 mph
Heavy vehicle percentage:	3%
FHWA's pavement condition rating:	4
% of segment with occupied parking:	0%
% of segment with sidewalks:	100%
Sidewalk width:	5 ft
Sidewalk buffer/parkway width:	10 ft

	Score	Level-of-service	Compatibility Level
BLOS:	4.2	D (3.51-4.50)	Moderately Low
PLOS:	2.91	C (2.51-3.50)	Moderately High

**Niles Street
(Niles Street and Park Drive
Intersection)**

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)

Niles Street Annual VMT Reduction:

$$(365) * (12208) * (0.0019 + 0.0015) * (1) =$$

1,515

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

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	212	287	29	7	344	15	17	11	6	7	8	131
Future Vol, veh/h	212	287	29	7	344	15	17	11	6	7	8	131
Conflicting Peds, #/hr	4	0	0	1	0	5	0	0	1	5	0	4
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	110	-	-	76	-	120	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	80	80	80	71	71	71	65	65	65
Heavy Vehicles, %	1	4	1	1	4	1	2	0	2	2	0	2
Mvmt Flow	259	350	35	9	430	19	24	15	8	11	12	202

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	454	0	0	386	0	0	1128	1357	199	1157	1356	224
Stage 1	-	-	-	-	-	-	886	886	-	453	453	-
Stage 2	-	-	-	-	-	-	243	471	-	705	903	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.54	6.5	6.94	7.54	6.5	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.5	-	6.54	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.5	-	6.54	5.5	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.52	4	3.32	3.52	4	3.32
Pot Cap-1 Maneuver	1110	-	-	1176	-	-	159	150	809	151	151	779
Stage 1	-	-	-	-	-	-	306	365	-	556	574	-
Stage 2	-	-	-	-	-	-	739	563	-	393	359	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1105	-	-	1175	-	-	81	114	804	101	114	773
Mov Cap-2 Maneuver	-	-	-	-	-	-	81	114	-	101	114	-
Stage 1	-	-	-	-	-	-	234	280	-	550	567	-
Stage 2	-	-	-	-	-	-	529	556	-	280	274	-




















Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	3.71			0.15			62.04			19.36		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	109	1105	-	-	1175	-	-	472
HCM Lane V/C Ratio	0.441	0.234	-	-	0.007	-	-	0.476
HCM Ctrl Dly (s/v)	62	9.2	-	-	8.1	-	-	19.4
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.9	0.9	-	-	0	-	-	2.5

HCM 7th Signalized Intersection Summary

3: Park Drive & Niles Street

06/12/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	287	29	7	344	15	17	11	6	7	8	131
Future Volume (veh/h)	212	287	29	7	344	15	17	11	6	7	8	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.00	1.04	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1961	1841	1885	1961	1841	1961	1870	1900	1870	1870	1900	1870
Adj Flow Rate, veh/h	259	350	35	9	430	19	24	15	8	11	12	202
Peak Hour Factor	0.82	0.82	0.82	0.80	0.80	0.80	0.71	0.71	0.71	0.65	0.65	0.65
Percent Heavy Veh, %	1	4	1	1	4	1	2	0	2	2	0	2
Cap, veh/h	296	1102	109	34	712	327	66	41	22	15	16	270
Arrive On Green	0.16	0.34	0.34	0.02	0.20	0.20	0.07	0.07	0.07	0.19	0.19	0.19
Sat Flow, veh/h	1867	3203	318	1867	3497	1605	915	572	305	79	86	1455
Grp Volume(v), veh/h	259	190	195	9	430	19	47	0	0	225	0	0
Grp Sat Flow(s),veh/h/ln	1867	1749	1772	1867	1749	1605	1792	0	0	1620	0	0
Q Serve(g_s), s	9.3	5.5	5.6	0.3	7.7	0.7	1.7	0.0	0.0	9.0	0.0	0.0
Cycle Q Clear(g_c), s	9.3	5.5	5.6	0.3	7.7	0.7	1.7	0.0	0.0	9.0	0.0	0.0
Prop In Lane	1.00		0.18	1.00		1.00	0.51		0.17	0.05		0.90
Lane Grp Cap(c), veh/h	296	602	610	34	712	327	130	0	0	300	0	0
V/C Ratio(X)	0.87	0.32	0.32	0.26	0.60	0.06	0.36	0.00	0.00	0.75	0.00	0.00
Avail Cap(c_a), veh/h	296	602	610	217	967	444	756	0	0	590	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.2	16.6	16.6	33.3	24.8	22.0	30.4	0.0	0.0	26.5	0.0	0.0
Incr Delay (d2), s/veh	23.4	0.5	0.5	2.4	1.3	0.1	1.7	0.0	0.0	3.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	2.0	2.0	0.2	3.0	0.2	0.8	0.0	0.0	3.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.6	17.1	17.1	35.7	26.1	22.2	32.0	0.0	0.0	30.2	0.0	0.0
LnGrp LOS	D	B	B	D	C	C	C			C		
Approach Vol, veh/h	644			458			47			225		
Approach Delay, s/veh	31.0			26.2			32.0			30.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	30.4		19.3	17.0	20.8		11.6				
Change Period (Y+Rc), s	6.1	6.8		6.6	6.1	6.8		6.6				
Max Green Setting (Gmax), s	8.0	21.9		25.0	10.9	19.0		29.0				
Max Q Clear Time (g_c+I1), s	2.3	7.6		11.0	11.3	9.7		3.7				
Green Ext Time (p_c), s	0.0	4.9		1.3	0.0	4.1		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh	29.3											
HCM 7th LOS	C											

NEXLEVEL DATA SERVICES

PREPARED BY: ATLANTIC & PACIFIC DATA CORPORATION

DATE:
4/28/22
THURSDAY

LOCATION:
NORTH & SOUTH:
EAST & WEST:

BAKERSFIELD
PARK STREET
NILES DRIVE

PROJECT #:
LOCATION #:
CONTROL:

County of Kern - Damon
1
2-WAY STOP: NB & SB

NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

	NORTHBOUND PARK STREET			SOUTHBOUND PARK STREET			EASTBOUND NILES DRIVE			WESTBOUND NILES DRIVE				U-TURNS				
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB X	SB X	EB X	WB X	TTL
12:00 AM	2	0	1	0	0	1	0	19	1	0	12	0	36					0
12:15 AM	0	0	0	0	0	0	0	15	0	0	7	0	22					0
12:30 AM	0	0	0	0	0	1	0	8	1	0	12	0	22					0
12:45 AM	0	0	0	0	0	0	0	11	1	0	3	0	15					0
1:00 AM	0	0	0	0	1	0	0	9	0	0	3	0	13					0
1:15 AM	0	0	0	0	0	0	0	4	0	0	2	0	6					0
1:30 AM	0	0	0	0	0	0	0	9	0	0	5	0	14					0
1:45 AM	0	0	1	0	0	1	0	4	1	0	4	0	11					0
2:00 AM	0	0	0	0	0	0	0	3	0	0	3	0	6					0
2:15 AM	0	0	0	0	0	0	0	5	0	0	3	1	9					0
2:30 AM	0	0	0	0	0	0	1	2	0	0	3	0	6					0
2:45 AM	0	0	0	0	0	0	0	10	0	0	5	0	15					0
3:00 AM	0	0	0	0	0	0	0	12	0	0	5	0	17					0
3:15 AM	0	0	0	0	0	0	0	3	1	0	4	0	8					0
3:30 AM	0	0	0	0	0	0	0	3	0	0	2	0	5					0
3:45 AM	0	0	0	0	0	0	0	4	0	0	4	0	8					0
4:00 AM	1	0	0	0	0	1	0	1	0	0	1	0	4					0
4:15 AM	1	0	0	0	0	1	0	5	0	1	3	0	11					0
4:30 AM	0	0	0	1	0	0	1	2	0	1	7	0	12					0
4:45 AM	1	0	1	0	0	1	0	4	1	0	5	0	13					0
5:00 AM	0	0	1	1	0	1	0	11	0	1	12	1	28					0
5:15 AM	1	0	1	0	0	2	1	7	0	0	10	0	22					0
5:30 AM	0	0	5	1	1	1	1	12	1	1	17	0	40					0
5:45 AM	4	0	3	3	0	4	0	14	2	1	14	0	45					0
6:00 AM	2	0	5	1	0	1	1	17	1	0	15	0	43					0
6:15 AM	1	1	3	1	1	1	2	15	2	1	18	0	46					0
6:30 AM	1	1	1	1	1	3	4	27	3	2	27	2	73					0
6:45 AM	1	0	4	0	2	7	1	29	5	1	35	0	85					0
7:00 AM	5	1	1	1	1	2	1	37	14	2	32	1	98					0
7:15 AM	2	1	4	0	2	9	8	57	21	3	56	1	164					0
7:30 AM	10	3	10	1	4	7	11	41	25	3	60	1	176					0
7:45 AM	4	1	4	0	2	7	14	51	9	7	82	2	183					0
8:00 AM	2	2	0	1	0	9	25	59	8	4	57	6	173					0
8:15 AM	3	0	2	1	0	12	17	47	8	3	58	7	158					0
8:30 AM	0	2	4	1	1	16	21	34	3	1	46	0	129					0
8:45 AM	1	1	2	0	1	6	11	90	1	0	60	2	175					0
9:00 AM	3	0	7	0	0	30	24	110	4	3	103	4	288					0
9:15 AM	1	3	3	1	3	33	20	138	1	5	123	5	336					0
9:30 AM	0	1	5	0	3	19	9	78	2	2	120	0	239					0
9:45 AM	4	3	2	1	1	9	18	71	2	0	85	3	199					0
10:00 AM	1	1	0	1	1	32	67	65	5	3	106	6	288					0
10:15 AM	6	4	1	1	6	49	71	76	14	2	80	5	315					0
10:30 AM	6	3	3	4	0	41	56	75	8	2	73	1	272					0
10:45 AM	5	3	1	3	3	7	13	57	2	1	43	1	139					0
11:00 AM	4	2	1	1	1	35	29	59	2	3	68	2	207					0
11:15 AM	4	0	3	2	1	8	6	60	3	2	72	0	161					0
11:30 AM	1	2	0	1	1	23	12	59	3	1	42	2	147					0
11:45 AM	2	1	2	0	1	13	8	71	6	2	81	1	188					0
VOLUMES	79	36	81	29	38	393	453	1,600	161	58	1,688	54	4,670	0	0	0	0	0
APPROACH %	40%	18%	41%	6%	8%	85%	20%	72%	7%	3%	94%	3%						
APP/DEPART	196	/	543	460	/	257	2,214	/	1,710	1,800	/	2,160	0					
BEGIN PEAK HR	9:45 AM																	
VOLUMES	17	11	6	7	8	131	212	287	29	7	344	15	1,074					
APPROACH %	50%	32%	18%	5%	5%	90%	40%	54%	5%	2%	94%	4%						
PEAK HR FACTOR	0.708			0.652			0.820			0.796			0.852					
APP/DEPART	34	/	238	146	/	44	528	/	300	366	/	492	0					

PREPARED BY: ATLANTIC & PACIFIC DATA CORPORATION

PROJECT #: County of Kern - Damon
LOCATION #: 1
CONTROL: 2-WAY STOP: NB & SB

[illegible]

NEXLEVEL DATA SERVICES
TURNING MOVEMENT COUNTS

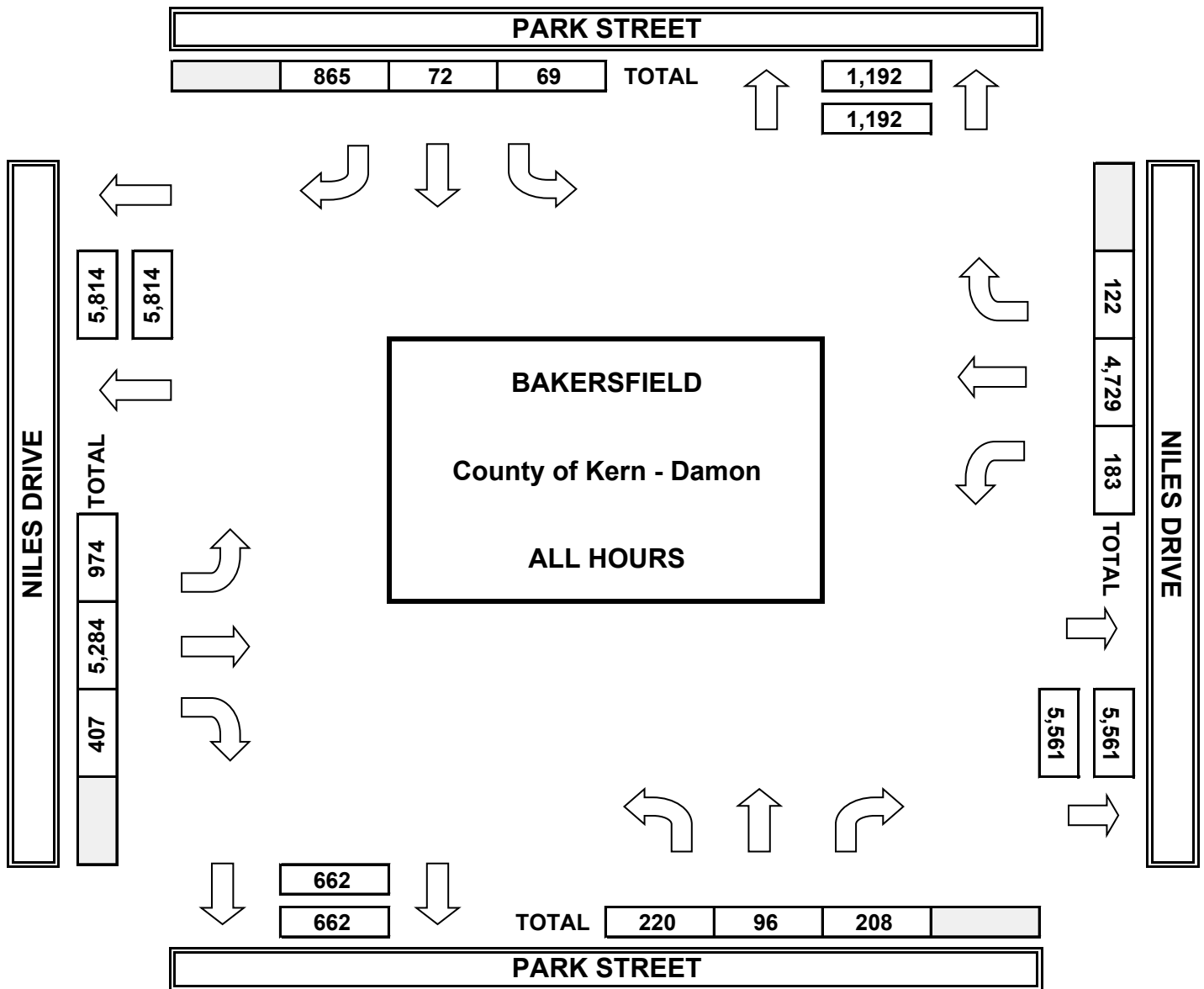


Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 04-28-2012
 CALC _____ DATE 05-05-2012
 CHK _____ DATE _____

DIST _____ CO _____ RTE _____ PM _____

Major St: NILE STREET EAST / WEST Critical Approach Speed 45 mph
 Minor St: PARK DRIVE NORTH / SOUTH Critical Approach Speed 25 mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
 or
 In built up area of isolated community of < 10,000 population..... ☐ } **RURAL (R)**
☒ **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume SATISFIED YES ☐ NO ☒
 (Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED YES ☐ NO ☒
 80% SATISFIED YES ☐ NO ☒

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)					80% SATISFIED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>								
	U	R	U	R									
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1036	969	930	848	832	804	696	751	
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	99	137	100	54	148	87	27	45	

Condition B - Interruption of Continuous Traffic

100% SATISFIED YES ☐ NO ☒
 80% SATISFIED YES ☐ NO ☒

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)					80% SATISFIED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>								
	U	R	U	R									
APPROACH LANES	1		2 or More										
					2-3 PM	3-4 PM	4-10 AM	5-11 PM	10-11 AM	1-2 PM	6-7 PM	4-5 PM	Hour
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1036	969	930	848	832	804	696	751	
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	99	137	100	54	148	87	27	45	

Combination of Conditions A & B

SATISFIED YES ☐ NO ☒

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES ☐ NO ☒

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	1-3 PM	3-4 PM	4-10 AM	5-11 PM	Hour
Both Approaches - Major Street			1036	969	930	848	
Higher Approach - Minor Street			99	137	100	54	

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<u>OR</u> , All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)**

SATISFIED YES ☐ NO ☒

PART A

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

SATISFIED YES ☐ NO ☒

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; <u>AND</u>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

PART B

SATISFIED YES ☐ NO ☐

APPROACH LANES	One	2 or More	1-3 PM	Hour
Both Approaches - Major Street			1036	
Higher Approach - Minor Street			99	

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<u>OR</u> , The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 5)

WARRANT 4 - Pedestrian Volume
(Parts 1 and 2 Must Be Satisfied)

SATISFIED YES ☐ NO ☒

Part 1 (Parts A or B must be satisfied)

Hours -->		7-9 AM	9-11 AM	1-4 PM	4-6 PM
A.	Vehicles per hour for any 4 hours	539	969	568	930
	Pedestrians per hour for any 4 hours	7	4	2	1

Figure 4C-5 or Figure 4C-6
SATISFIED YES ☐ NO ☒

Hours -->		7-9 AM	9-11 AM	1-4 PM	4-6 PM
B.	Vehicles per hour for any 1 hour	539	969	568	930
	Pedestrians per hour for any 1 hour	7	4	2	1

Figure 4C-7 or Figure 4C-8
SATISFIED YES ☐ NO ☒

Part 2

SATISFIED YES ☒ NO ☐

<u>AND</u> , The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<u>OR</u> , The proposed traffic signal will not restrict progressive traffic flow along the major street.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

WARRANT 5 - School Crossing
(Parts A and B Must Be Satisfied)

SATISFIED YES ☐ NO ☐

Part A

Gap/Minutes and # of Children

SATISFIED YES ☐ NO ☐

Gaps vs Minutes	Minutes Children Using Crossing	Hour
	Number of Adequate Gaps	
School Age Pedestrians Crossing Street / hr		

Gaps < Minutes YES ☐ NO ☐

AND Children > 20/hr YES ☐ NO ☐

<u>AND</u> , Consideration has been given to less restrictive remedial measures.	Yes <input type="checkbox"/> No <input type="checkbox"/>
--	--

Part B

SATISFIED YES ☐ NO ☐

The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes <input type="checkbox"/> No <input type="checkbox"/>
<u>OR</u> , The proposed signal will not restrict the progressive movement of traffic.	Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

**WARRANT 6 - Coordinated Signal System
(All Parts Must Be Satisfied)**

SATISFIED YES ☒ NO ☐

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N <u>N/A</u> ft, S <u>N/A</u> ft, E <u>1340</u> ft, W <u>1975</u> ft	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

**WARRANT 7 - Crash Experience Warrant
(All Parts Must Be Satisfied)**

SATISFIED YES ☐ NO ☐

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.		Yes <input type="checkbox"/> No <input type="checkbox"/>	
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
5 OR MORE			
REQUIREMENTS	CONDITIONS	Yes <input type="checkbox"/> No <input type="checkbox"/>	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		✓
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

**WARRANT 8 - Roadway Network
(All Parts Must Be Satisfied)**

SATISFIED YES ☐ NO ☐

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes <input type="checkbox"/> No <input type="checkbox"/>
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr		
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 5 of 5)

**WARRANT 9 - Intersection Near a Grade Crossing
(Both Parts A and B Must Be Satisfied)**

SATISFIED YES ☐ NO ☐


<p>PART A</p> <p>A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach. Track Center Line to Limit Line _____ ft</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>
<p>PART B</p> <p>There is one minor street approach lane at the track crossing - During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-9.</p> <p>Major Street - Total of both approaches: _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, & 4 below to calculate AF) = _____ VPH</p> <hr/> <p>OR, There are two or more minor street approach lanes at the track crossing - During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-10.</p> <p>Major Street - Total of both approaches : _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, & 4 below to calculate AF) = _____ VPH</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>

The minor street approach volume may be multiplied by up to three following adjustment factors (AF) as described in Section 4C.10.

- 1- Number of Rail Traffic per Day _____ Adjustment factor from table 4C-2 _____
- 2- Percentage of High-Occupancy Buses on Minor Street Approach _____ Adjustment factor from table 4C-3 _____
- 3- Percentage of Tractor-Trailer Trucks on Minor Street Approach _____ Adjustment factor from table 4C-4 _____

NOTE: If no data is available or known, then use AF = 1 (no adjustment)

Figure 4C-102 (CA). Traffic Count Worksheet



Insert North Point

Not to Scale

Number of Lanes _____	
Pedestrians	
Total*	Peak

AM Peak PM Peak Total*

() () ()

Number of Lanes _____	
Pedestrians	
Total*	Peak

AM Peak PM Peak Total*

() () ()

*Entire Count Period

Number of Lanes _____	
Pedestrians	
Total*	Peak

DIRECTIONAL TRAFFIC COUNT

Dist _____ Co _____ Rte _____ PM _____

Intersection Give Name _____

City _____

Day _____ Date _____

Hour _____ to Hour _____

Total Volume _____

AM Peak _____

Hour Volume

PM Peak _____

Hour Volume

**Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)**

COUNT DATE _____

DIST _____ CO _____ RTE _____ PM _____

Major St: _____ Critical Approach Speed _____ mph

Minor St: _____ Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐ or ☐ } **RURAL (R)**

In built up area of isolated community of < 10,000 population..... ☐ } **URBAN (U)**

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... RURAL.....		Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied _____					
Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street	Minor Street				
1.....	1.....	8,000	5,600	2,400	1,680
2 or More.....	1.....	9,600	6,720	2,400	1,680
2 or More.....	2 or More.....	9,600	6,720	3,200	2,240
1.....	2 or More.....	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied _____					
Number of lanes for moving traffic on each approach		Urban	Rural	Urban	Rural
Major Street	Minor Street				
1.....	1.....	12,000	8,400	1,200	850
2 or More.....	1.....	14,400	10,080	1,200	850
2 or More.....	2 or More.....	14,400	10,080	1,600	1,120
1.....	2 or More.....	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B		2 CONDITIONS 80%		2 CONDITIONS 80%	
Satisfied _____ Not Satisfied _____					
No one condition satisfied, but following conditions fulfilled 80% or more..... A _____ B _____					

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100% ^a	80% ^b	70% ^c	56% ^d	100% ^a	80% ^b	70% ^c	56% ^d
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Table 4C-2. Warrant 9, Adjustment Factor for Daily Frequency of Rail Traffic

Rail Traffic per Day	Adjustment Factor
1	0.67
2	0.91
3 to 5	1.00
6 to 8	1.18
9 to 11	1.25
12 or more	1.33

Table 4C-3. Warrant 9, Adjustment Factor for Percentage of High-Occupancy Buses

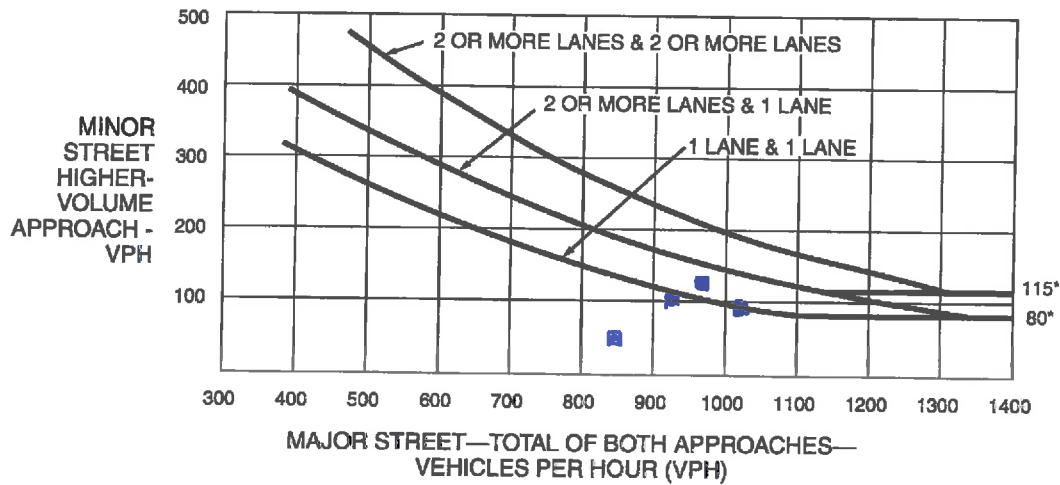
% of High-Occupancy Buses* on Minor-Street Approach	Adjustment Factor
0%	1.00
2%	1.09
4%	1.19
6% or more	1.32

* A high-occupancy bus is defined as a bus occupied by at least 20 people.

Table 4C-4. Warrant 9, Adjustment Factor for Percentage of Tractor-Trailer Trucks

% of Tractor-Trailer Trucks on Minor-Street Approach	Adjustment Factor	
	D less than 70 feet	D of 70 feet or more
0% to 2.5%	0.50	0.50
2.6% to 7.5%	0.75	0.75
7.6% to 12.5%	1.00	1.00
12.6% to 17.5%	2.30	1.15
17.6% to 22.5%	2.70	1.35
22.6% to 27.5%	3.28	1.64
More than 27.5%	4.18	2.09

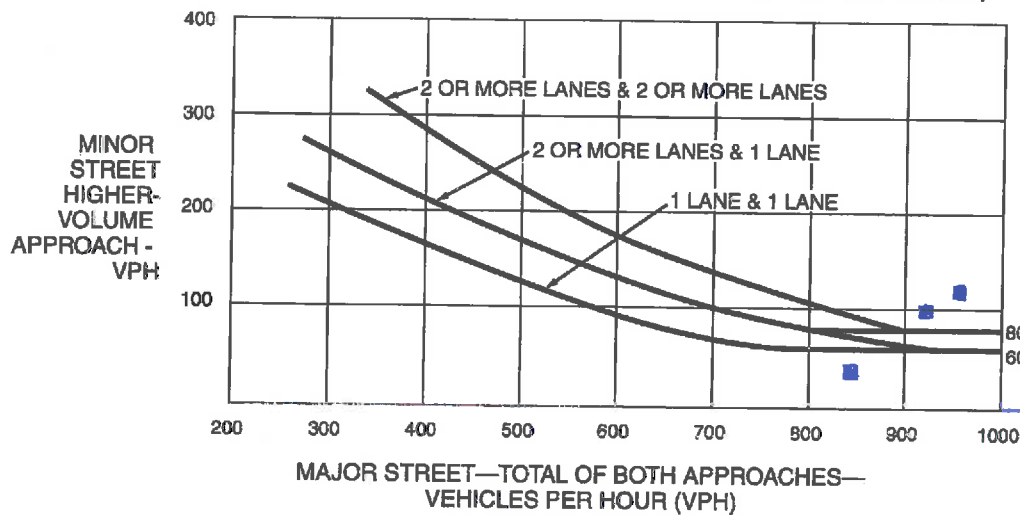
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



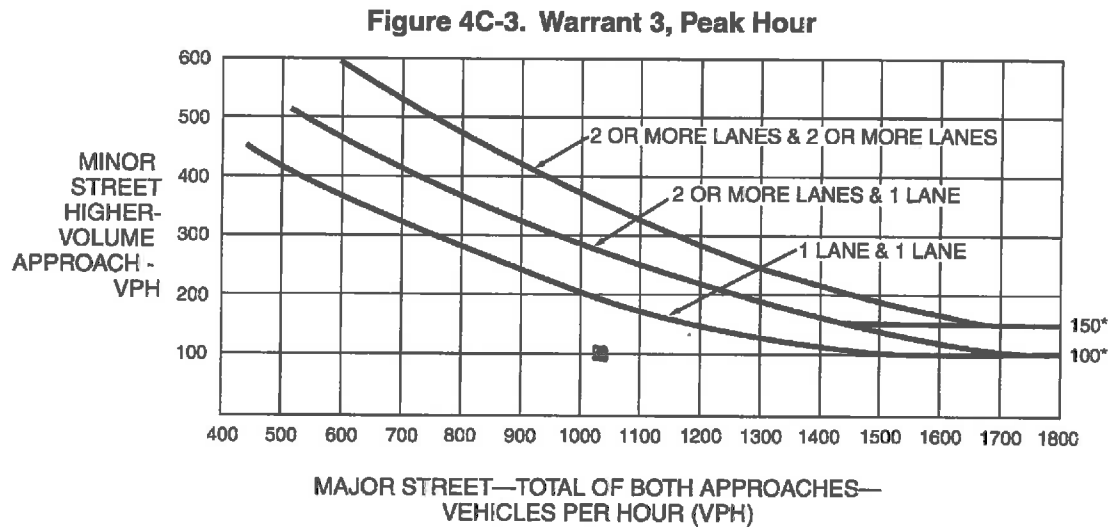
*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

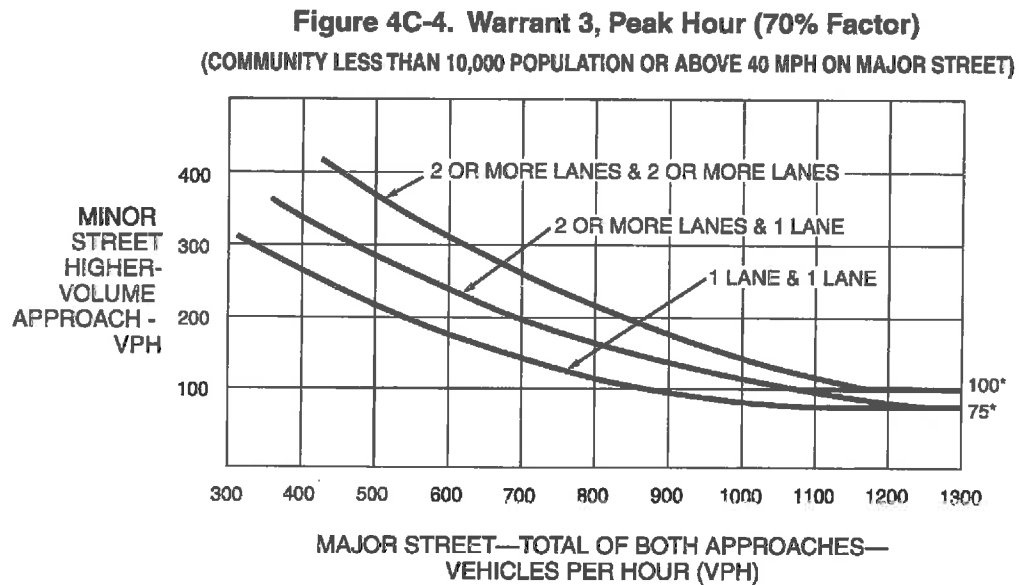
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

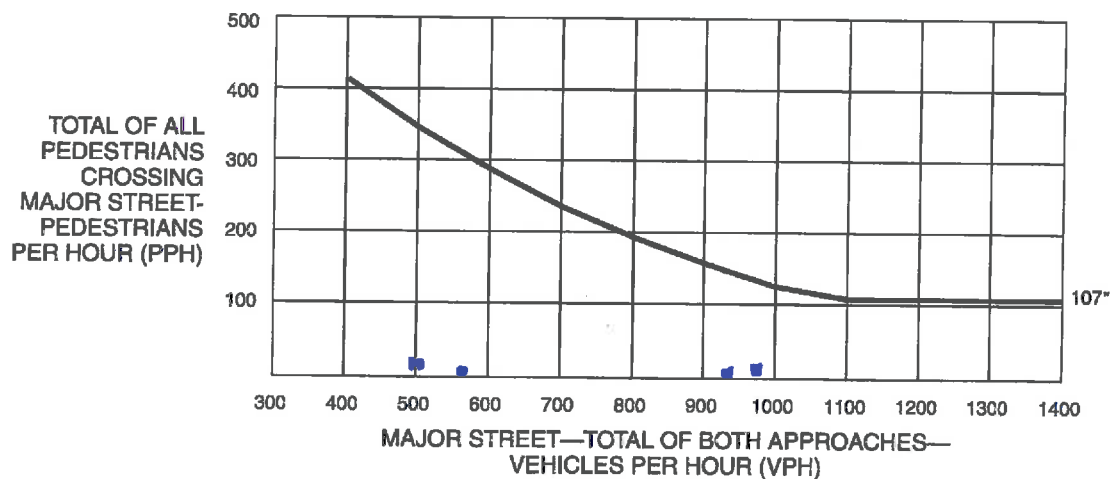


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.



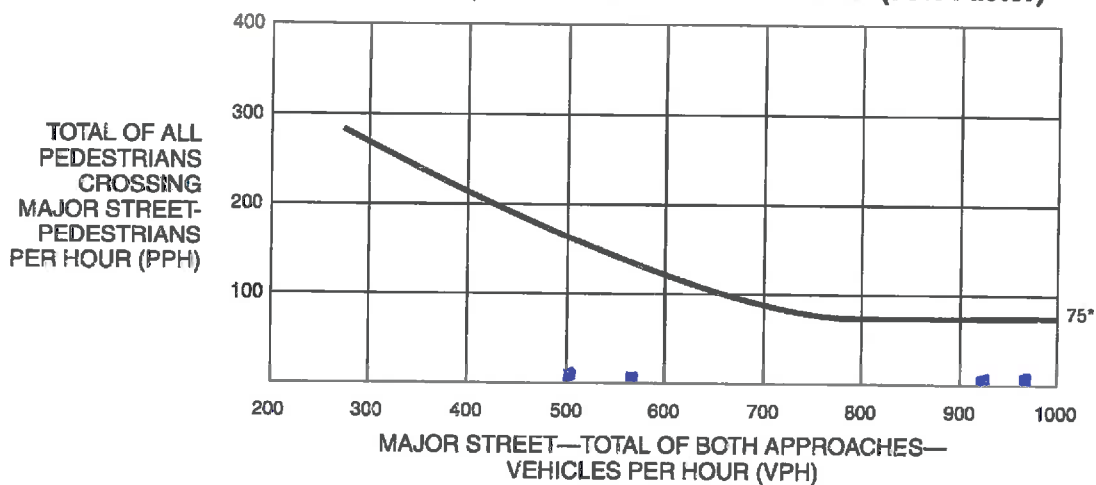
*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



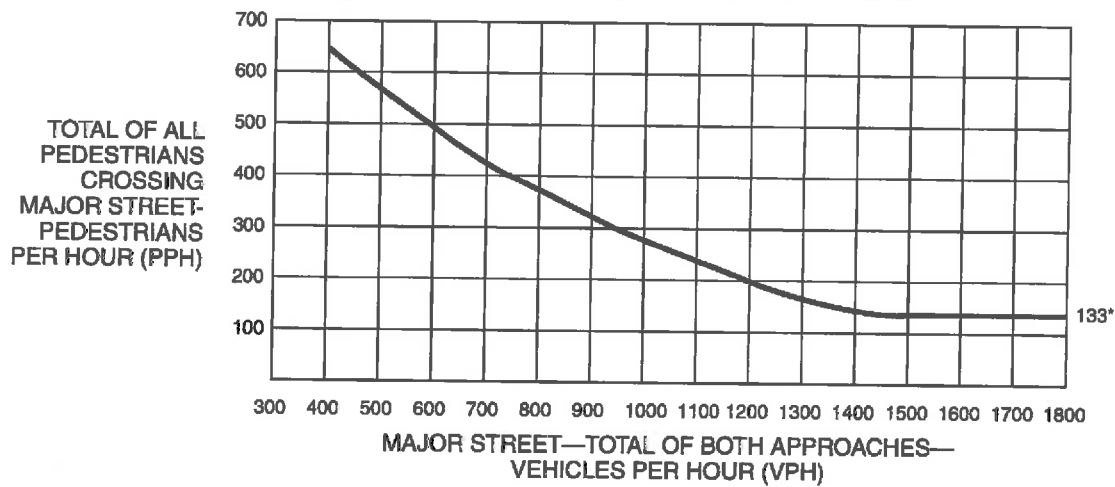
*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



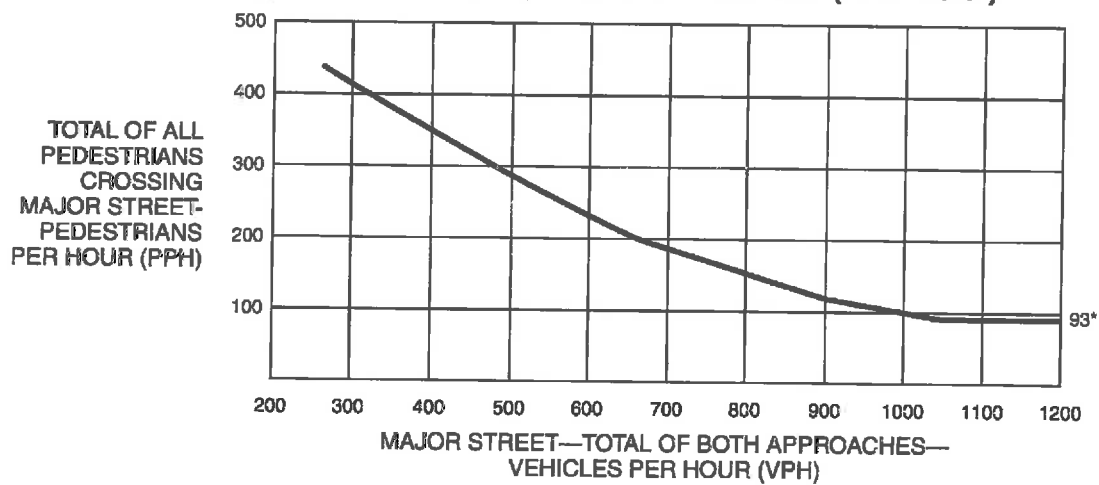
*Note: 75 pph applies as the lower threshold volume.

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



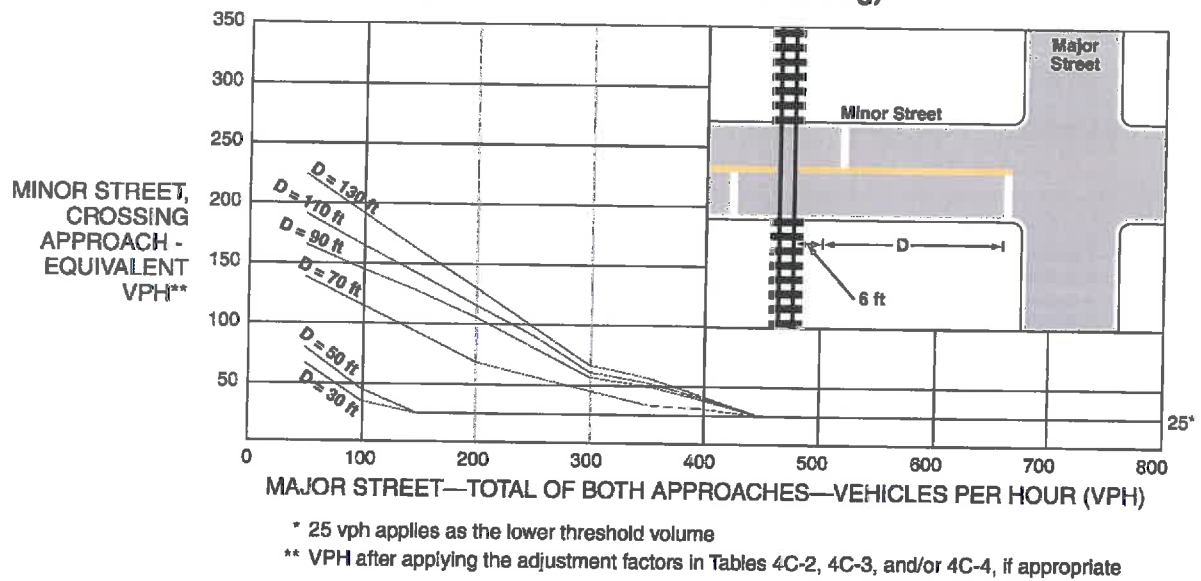
*Note: 133 pph applies as the lower threshold volume.

Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)

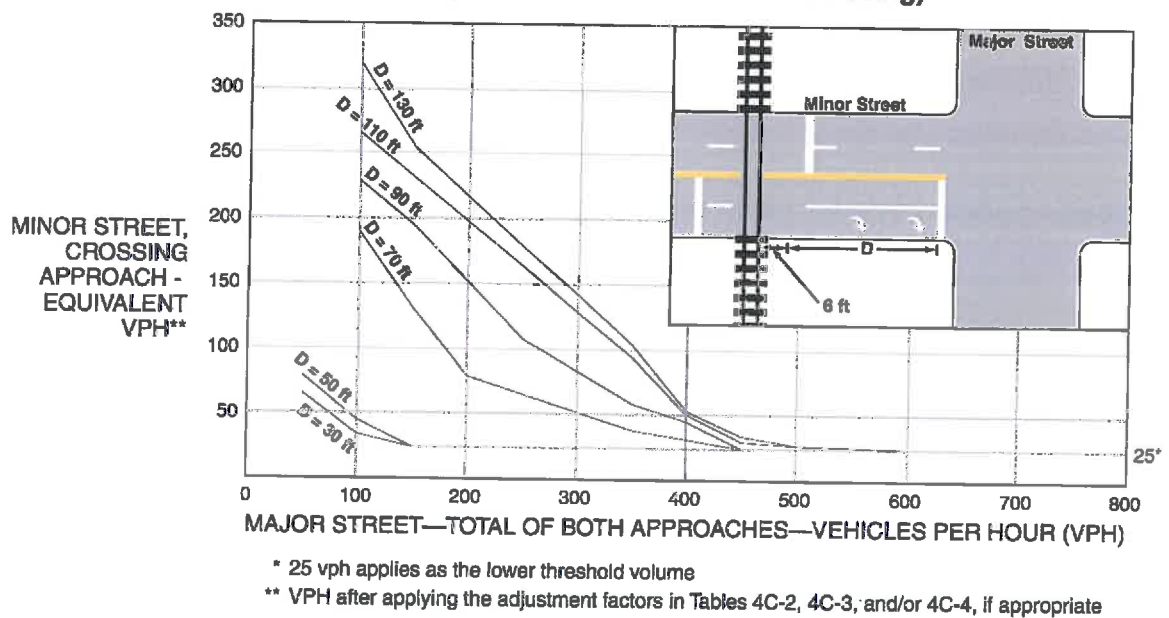


*Note: 93 pph applies as the lower threshold volume.

**Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing
(One Approach Lane at the Track Crossing)**



**Figure 4C-10. Warrant 9, Intersection Near a Grade Crossing
(Two or More Approach Lanes at the Track Crossing)**





COUNTY OF KERN
PUBLIC WORKS DEPARTMENT
TRAFFIC SECTION
Office Memorandum

Date: June 14, 2022

Ref: 4-0.0 Niles Street, S 214 F
4-0.0 Park Drive, 12E351
3-9.0 Traffic Signals

To: Yolanda Alcantar
Public Works Manager
Advance Planning

From: Salvador Gomez
Engineering Manager,
Traffic Operations



Subject: Traffic Signal Warrants for Niles Street at Park Drive in Bakersfield

This department has concluded the traffic signal warrant investigation for the intersection of Niles Street at Park Drive in Bakersfield. Based on our investigation, the intersection meets Warrant 6 (Coordinated Signal System) of the California Manual on Uniform Traffic Control Devices (MUTCD). The intersection of Niles Street at Park Drive is adjacent to two signalized intersections, Niles Street at Valencia Drive and Niles Street at Morning Drive (State Route 184). Adjacent traffic signals do not provide the necessary degree of platooning and installing a new traffic signal at Niles Street at Park Drive will provide a progressive operation for the Niles Street corridor.

Please see attached Traffic Signal Warrants Worksheets. Should you have any questions or need additional information, please do not hesitate to contact me.