

April 11, 2025

File No: 16.01.307

Subject: Kimley-Horn Responses for 2nd and 4th Street Signal & Intersection Modification – Concept Evaluation

The following is a list of questions and responses received by City Staff related to the *City of San Rafael 2nd & 4th Street Signal and Intersection Modification – Concept Evaluation* dated February 21, 2025. These responses were prepared by Kimley-Horn as the author of the traffic analysis.

1) In general, how was this traffic analysis/memos performed?

Traffic counts were first collected by MioVision cameras operated by the City of San Rafael during the weekday peak commute hours which typically occur during the following periods:

- a) Morning peak: 7 – 9am
- b) Midday peak: 11am – 1pm
- c) Evening peak: 4pm – 6pm

Using the peak hour traffic volumes and the intersection and roadway geometry, a traffic model was developed in a program called Synchro to determine the performance metrics of the intersection such as vehicle delays and queues.

Traffic volumes were then re-distributed in the intersection as necessary to reflect the proposed conceptual design within the traffic model.

2) What will be the total increase in traffic at West Street and Greenfield Avenue?

The proposed re-distribution of traffic volumes during the peak hours are as follows:

- 5 vehicles are added to West Street and 12 vehicles added to Greenfield Avenue during the morning peak period.
- 8 vehicles are added to West Street and 18 vehicles added to Greenfield Avenue during the midday peak period.
- 11 vehicles are added to West Street and 23 vehicles added to Greenfield Avenue during the evening peak period.

Based on the proposed re-distribution of traffic volumes, around 100 vehicles per day will be added to traffic volumes at West Street and about 200 vehicles per day will be added to traffic volumes at Greenfield Avenue.

During the development of the traffic study, it was assumed that the re-distribution of traffic would mean a higher percentage of drivers would make the left turn upstream of Marquard Avenue (West Street) as opposed to downstream (Greenfield Avenue). However, based on recent traffic counts, it was observed that most drivers turn left onto Marquard Avenue to access West End Avenue (toward Greenfield Avenue), so in re-distributing the traffic, the increase would be higher at Greenfield Avenue compared to West Street. The traffic study has been revised to reflect this re-distribution pattern.

3) The following questions are in regard the memorandum dated February 21, 2025, for the prepared traffic analysis:

a) When were traffic counts taken?

The traffic counts were collected on Tuesday, June 25, 2024 by existing MioVision traffic cameras operated by the City of San Rafael.

b) What is the definition of “peak hour”?

Peak hour is defined as the one-hour period within a typical weekday that the most people are driving. These periods are typically referred to as the weekday peak commute traffic periods and school drop-off and pick up times.

c) Why is congestion on the local streets or access past Marquard not accounted for?

The analysis was focused on the 2nd and 4th intersection and included the proposed re-distribution of traffic volumes that may impact nearby local streets.

d) What were the total vehicle counts for the intersection?

The total vehicle counts over a 24-hour period on Tuesday, June 25 as well as the AM and PM Peak Hour volumes can be found in Table 1. Table 1 also includes total vehicle, AM and PM Peak Hour volumes for additional days at the intersection.

2024 Quarterly average total vehicle counts can be found in Table 2. 2024 Quarterly average PM peak hour vehicle counts can be found in Table 3. These counts were provided by the City of San Rafael as collected from the existing MioVision cameras.

e) Why are delivery vehicles not considered in this analysis?

All vehicle types were included in the traffic counts, including any delivery vehicles.

f) What safety issues may arise from the proposed changes?

One concern from residents is the potential for delayed response of emergency vehicles. The City of San Rafael has and will continue to coordinate with Emergency Services on their acceptance of the proposed design.

g) Where are the pedestrian and bicycle counts in the analysis?

Quarterly average pedestrian and bicycle counts collected by the MioVision cameras operated by the City of San Rafael can be found in Table 4.

h) Have shifts in commute times as a result of the pandemic been accounted for?

Traffic volume data is collected over a 24-hour period of time during a weekday and based on those traffic volumes, the traffic analysis is performed for the one-hour periods over the course of that day with the highest traffic volumes. Any shifts in commute times as a result of changed behaviors would be reflected in the 24-hour counts.

i) How does this project propose to prevent vehicles from driving over the mountable curb at the intersection of Marquard Ave. and Second Street?

The project proposes additional signage, striping, and delineators to prevent vehicles from driving over the mountable curb.

j) How were pedestrian timings determined and how were pedestrians considered in the study?

Timing for Pedestrian movements were determined based on lengths of the proposed pedestrian crosswalks at the intersection and an assumed typical walking speed of pedestrians, i.e., 3.5 feet per second per State guidelines. The proposed intersection design, simplifies and straightens pedestrian movements which reduces the overall lengths of the crosswalks.

k) In the traffic study, are you considering the maximum number of students allowed at the Mariposa school?

The traffic study considers the vehicles that circulated the area the day the data was collected. It may or may not include the maximum number of trips generated by students or staff allowed at the Mariposa School.

l) What is the split between vehicles making the left turn onto West End Ave and Marquard Ave?

The City of San Rafael started counts for vehicles making the split movement between West End Ave and Marquard Ave on Friday, February 28, 2025, in response to a question from a resident. Table 5 shows the daily split count for vehicles collected by the existing MioVision cameras operated by the City of San Rafael.

Table 1 - Total Daily and Peak Hour Vehicle Counts per Movement

Movement	4th St. East Bound Thru	Second St. West Bound Thru	4th St. West Bound to Miracle Mile	Miracle Mile East Bound Left-Turn to 4th St.	Second St. West Bound Left-Turn to Marquard Ave.	Totals ⁵
Date						
Total Vehicle Count within a 24-hour Period						
Tuesday, June 25, 2024¹	19,314	12,276	6,224	4,131	292	42,237
Tuesday, September 10, 2024	20,481	12,888	6,601	4,760	333	45,063
Wednesday, December 11, 2024	20,901	13,250	7,070	4,950	373	46,544
Wednesday, February 12, 2025	19,622	12,071	6,699	4,797	352	43,541
AM Peak Hour Volume Count ^{2, 3}						
Tuesday, June 25, 2024¹	1,561	854	457	350	17	3,239
Tuesday, September 10, 2024	1,728	978	508	410	31	3,655
Wednesday, December 11, 2024	1,686	961	520	392	31	3,590
Wednesday, February 12, 2025	1,732	890	486	388	28	3,524
PM Peak Hour Volume Count ^{2, 3}						
Tuesday, June 25, 2024¹	1,499	861	554	377	34	3,325
Tuesday, September 10, 2024	1,568	1,021	641	430	37	3,697
Wednesday, December 11, 2024	1,695	1,003	640	458	30	3,826
Wednesday, February 12, 2025	1,653	1,038	582	432	33	3,738

1. Tuesday, June 25, 2024 was the date used for the traffic analysis completed by Kimley-Horn.

2. Higher peak volume between AM and PM governs traffic analysis and design.

3. AM and PM Peak Hour Volume is the number of vehicles that use a specific movement during the highest traffic time observed over a 24 hour period.

4. Counts are provided by existing MioVision cameras for the intersection operated by the City of San Rafael.

5. Totals excluding movement counts North Bound Marquard and East Bound West Ave to Marquard. Counts are <1% of total movements for the intersection.

Table 2 - 2024 Quarterly Average Daily Total Vehicle¹ Counts per Movement

Movement	2024				
	Q1 (January - March)	Q2 (April - June)	Q3 (July - September)		Q4 (October - December)
4th St. East Bound Thru	Data not available.	16,842	19,262	45%	18,406
2nd St. West Bound Thru		10,746	12,390	29%	11,762
4th St. West Bound to Miracle Mile		Data not available.	6,013	14%	6,068
Miracle Mile East Bound Left-Turn to 4th St.	3,763	4,291	4,204	10%	4,273
2nd St. West Bound Left-Turn to Marquard Ave/West End Ave	Data not available.	263	306	0.7%	304
West End Ave East Bound Right-Turn to Marquard		58	65	0.2%	68
Marquard to West End Ave		36	35	0.1%	40
Marquard to 2nd St. West Bound		186	196	0.5%	177
Totals	3,763	32,422	42,471	100%	41,098

1. Vehicles includes passenger cars, trucks, and buses

2. Counts are provided by existing MioVision cameras for the intersection operated by the City of San Rafael.

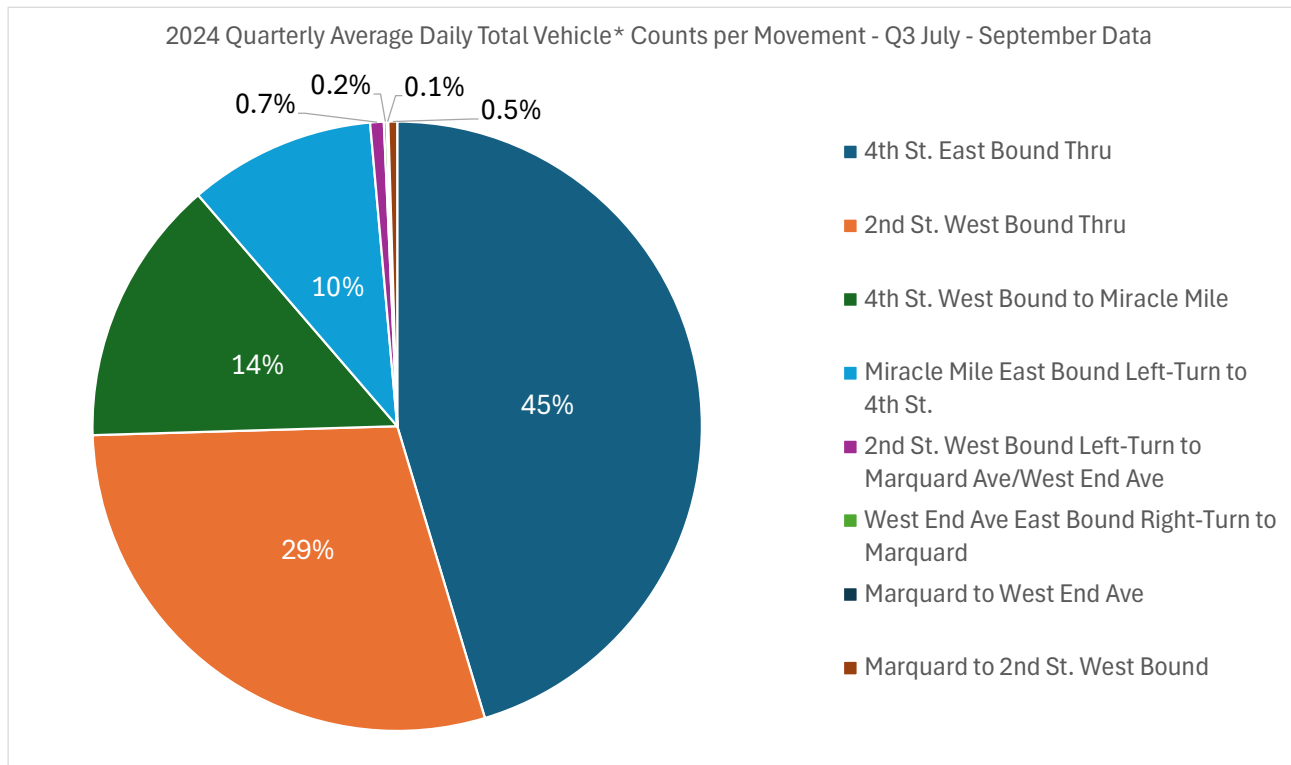


Table 3 - 2024 Quarterly Average Peak Hour Total Vehicle² Counts per Movement (PM Peak³)

Movement	2024				
	Q1 (January - March)	Q2 (April - June)	Q3 (July - September)		Q4 (October - December)
4th St. East Bound Thru	Data not available.	1,298	1,492	45%	1,461
Second St. West Bound Thru		786	924	28%	919
4th St. West Bound to Miracle Mile	378	Data not available.	501	15%	539
Miracle Mile East Bound Left-Turn to 4th St.		382	363	11%	382
Second St. West Bound Left-Turn to Marquard Ave.	Data not available.	26	27	1%	36
Totals ¹	378	2,492	3,307	100%	3,337

1. Totals excluding movement counts North Bound Marquard and East Bound West Ave to Marquard. Counts are <1% of total movements for the intersection.

2. Vehicles includes passenger cars, trucks, and buses.

3. PM Peak is between 4-5pm. PM Peak governs intersection as the higher volume peak.

4. Counts are provided by existing MioVision cameras for the intersection operated by the City of San Rafael.

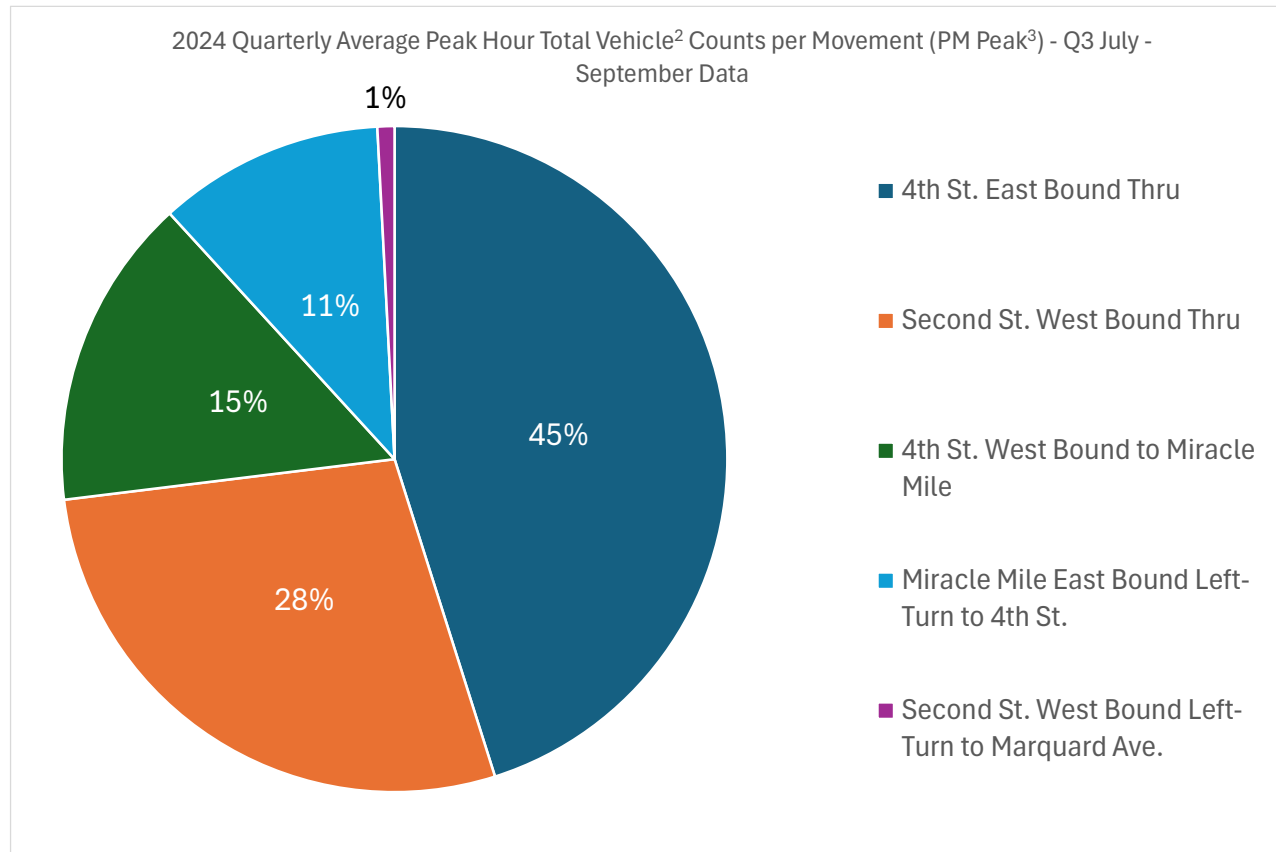


Table 4 - 2024 Quarterly Average Daily Pedestrian and Bicycle Count

Movement	2024			
	Q1 (January - March)	Q2 (April - June)	Q3 (July - September)	Q4 (October - December)
Pedestrians (All Movements)	Data not available	120	135	122
Bicycles (All Movements)		14	24	103
Totals	--	134	159	225

1. Counts are provided by existing MioVision cameras for the intersection operated by the City of San Rafael.

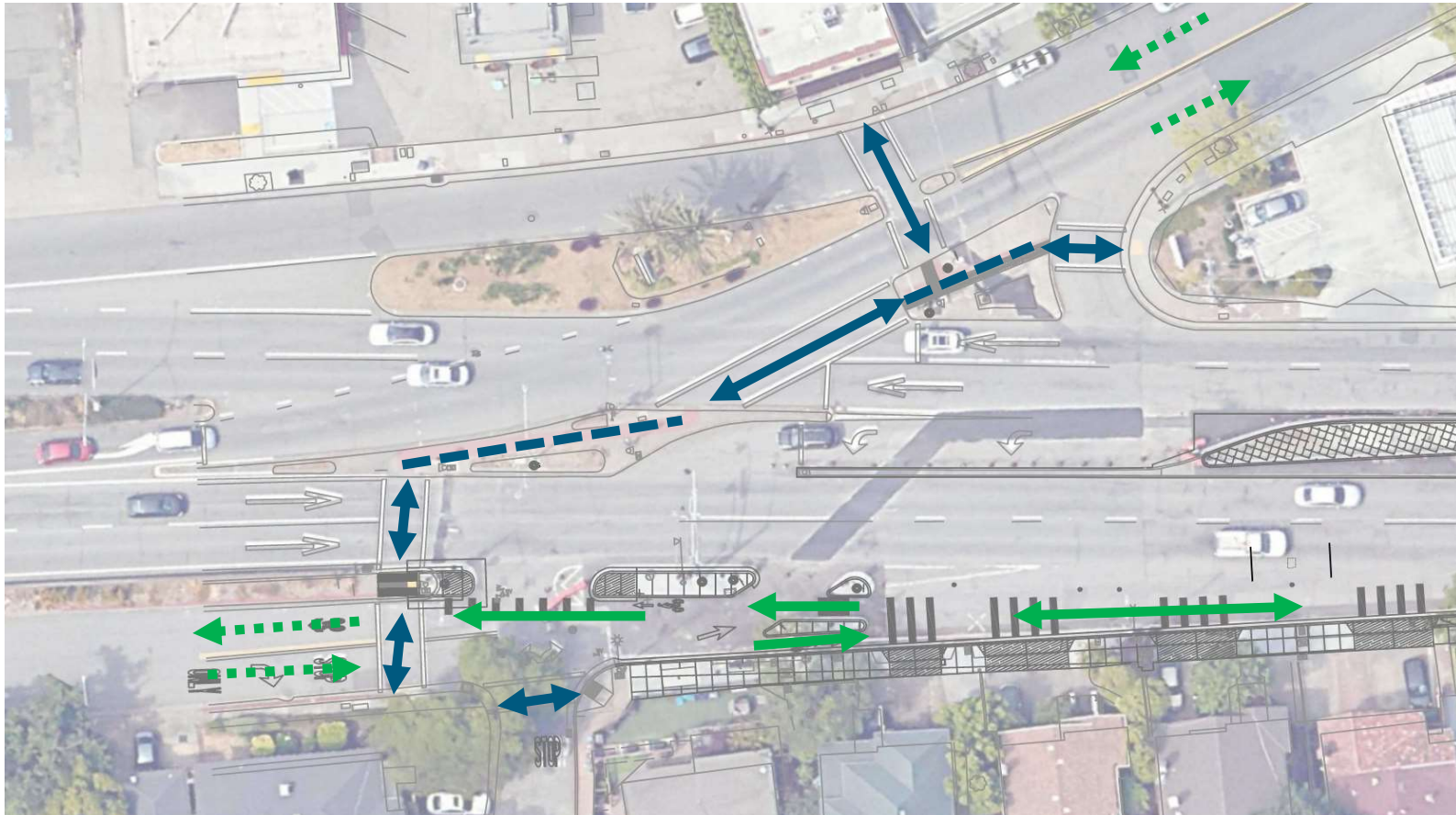


Table 5 - Left-turn from Second Street Split Movements

Date	Move to Marquard	Move to West End Ave	Totals	% to Marquard
Friday, February 28, 2025	87	256	343	25%
Monday, March 3, 2025	70	256	326	21%
Tuesday, March 4, 2025	73	270	343	21%
Wednesday, March 5, 2025	93	260	353	26%
Thursday, March 6, 2025	103	251	354	29%
Friday, March 7, 2025	97	242	339	29%
Monday, March 10, 2025	82	248	330	25%
Tuesday, March 11, 2025	82	276	358	23%
Wednesday, March 12, 2025	71	226	297	24%
Thursday, March 13, 2025	75	271	346	22%
Friday, March 14, 2025	69	269	338	20%

1. Counts are provided by existing MioVision cameras for the intersection operated by the City of San Rafael.

