

APPENDIX C

Transportation Data for General Plan 2040

Road Segment Data Collection

To provide a baseline for the transportation analysis, traffic counts were collected at 41 roadway segments within the City of San Rafael during a weekday in May 2019. The roadway counts were collected over a 24-hour period. During the counts, weather conditions were generally dry, no unusual traffic patterns were observed, and the San Rafael City Schools were in full session.

Existing Roadway Volumes and Capacity Utilization

Daily roadway operations were evaluated under existing conditions at the 41 roadway segments. To evaluate traffic conditions on these roadway segments, a grading system called Level of Service (LOS) was used to measure and describe the operation of the local roadway network. The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of traffic based on a ratio of daily traffic volumes to roadway capacity. LOS varies from LOS A, indicating free flow traffic conditions with little or no delay, to LOS F, representing over-saturated conditions where traffic flows exceed design capacity of the facility, resulting in long queues and delay for drivers who may need to wait through multiple signal cycles at intersections.

Most roadways in San Rafael were operating at LOS D or better in 2019. Only four of the 41 study roadway segments were operating at worse than LOS D. These four roadway segments are all located within Downtown San Rafael and serve a variety of users, including people traveling by foot, bike, bus, and vehicle, as well as delivery trucks serving Downtown Businesses and residences.

Projected 2040 Roadway Volumes and Capacity Utilization

Daily roadway volumes for Year 2040 were estimated using the Transportation Authority of Marin Demand Model (TAMDM). For the General Plan assessment, the 2015 base year for TAMDM was updated and validated for a new 2019 base year for the City of San Rafael. In other words, growth between 2015 and 2019 was added to the model to create a new baseline.

The TAM Model includes assumptions about growth throughout Marin County based on the General Plans and local land use policies that were in effect at the time the model was developed (2019). These assumptions are expressed as estimates of the future number of dwelling units and the number of jobs in “Micro Zones” that correspond to small subareas within each city and the unincorporated area. The model includes more than 1,400 micro-zones countywide, including more than 300 in the San Rafael Planning Area. It also includes assumptions for job and housing growth in other counties in the entire Bay Area, using the regional Metropolitan Transportation Commission (MTC) model.

The estimates of dwelling units and jobs for 2040 considers the number of dwelling units and jobs in the base year (2015, updated to 2019 for San Rafael), plus the increment of growth that is likely between 2020 and 2040 based on regional forecasts for Marin County and the land use policies (including zoning) for each jurisdiction. If a jurisdiction has vacant land zoned for residential

development, the model inputs assume that land will be developed between 2020 and 2040 in most instances. The employment estimates in the model are broken down into 16 different economic sectors. Job growth (or loss) is assigned to each micro zone based on the community's general plan and zoning, and the overall forecasts for countywide employment.

The 2040 TAM model forecasts for San Rafael were adjusted based on the map changes and growth forecasts made through General Plan 2040. For instance, additional housing units were presumed in Downtown San Rafael and on other sites where changes are proposed. Zones outside the San Rafael Planning Area were not modified.

Table C-1 shows projected 2040 volumes by road segment. The forecasts are placed on the same rows as the 2019 volumes to highlight areas where increases are most likely. Existing and projected LOS is provided for each segment. For the forecasted volumes and LOS, Table C-1 shows the results of a "no project" alternative which maintained General Plan 2020 and did not modify the TAMDM model assumptions for 2040, and the "project", which includes the General Plan Map changes. In most cases, the Map changes do not impact the 2040 outcomes.

Analysis of LOS at Intersections

An analysis of 2020 and 2040 level of service also was provided for 10 high-volume intersections in San Rafael, including six intersections in North San Rafael. The analysis was again performed using the TAM travel demand model, resulting in forecasts that differ somewhat from traffic analyses for individual projects in the vicinity of these intersections, which are typically prepared using Synchro and other traffic modeling software. The General Plan-level analysis looks at cumulative regional conditions over the next 20 years, while project-specific traffic models tend to focus on the incremental increase associated with a single project on intersections in the immediate vicinity.

Table C-2 shows the findings of the 2020 and 2040 intersection analysis for the surveyed intersections.

SAN RAFAEL GENERAL PLAN 2040

Table C-1: LEVEL OF SERVICE (LOS) AND VOLUME DATA

5.27.2020

yellow shading indicates segment is operating at LOS E or F (or is projected to operate at LOS E or F in 2040)

ROAD SEGMENT	AM VOLUMES			AM LEVEL OF SERVICE			PM VOLUMES			PM LEVEL OF SERVICE		
	Existing	2040 No Project	2040 GP	Existing	2040 No Project	2040 GP	Existing	2040 No Project	2040 GP	Existing	2040 No Project	2040 GP
2nd St from 2nd-4th-Marquard to Hayes St	2300	2680	2950	D	E	E	2390	2600	2870	D	E	E
2nd St from Hayes St to Grand Ave	1520	1720	1590	F	F	F	1480	1730	1720	F	F	F
3rd St from Shaver St to Union St	1180	1470	1700	E	F	F	1430	1570	1810	F	F	F
3rd St from Union St to Mooring St	1680	1730	1680	A-C	A-C	A-C	1380	1470	1380	A-C	A-C	A-C
4th St from Ross Valley to 2nd-4th-Marquard	2640	2740	2640	A-C	A-C	A-C	2960	3040	2960	D	D	D
4th St from 2nd-4th-Marquard to Grand Ave	580	610	580	D	D	D	700	820	850	D	E	E
5th Ave from H St to Grand Ave	270	272	299	A-C	A-C	A-C	360	368	392	A-C	A-C	A-C
A St from 2nd St to 5th St	290	300	300	A-C	A-C	A-C	420	420	420	A-C	A-C	A-C
Andersen Dr from 2nd St to Bellam Blvd	780	1060	900	A-C	A-C	A-C	800	840	820	A-C	A-C	A-C
Andersen from Bellam to Sir Francis Drake	640	640	650	A-C	A-C	A-C	450	450	460	A-C	A-C	A-C
Bellam from Andersen to Kerner	1980	2270	2360	A-C	A-C	A-C	1950	2140	2000	A-C	A-C	A-C
Civic Center Dr from Freitas to Merrydale O/C	800	1160	1280	A-C	A-C	A-C	1120	1340	1420	A-C	A-C	A-C
Civic Center from Merrydale O/C to N San Pedro	630	980	1110	A-C	D	D	550	770	850	A-C	A-C	A-C
D St from 4th to Bayview	650	670	1350	A-C	A-C	F	790	830	1430	D	D	F
Francisco Blvd East from Grand Ave to Bellam	930	1310	1280	D	D	D	1430	1670	1570	E	F	F
Francisco East from Bellam to Main	820	1120	970	A-C	D	D	900	1560	1500	D	F	E
Francisco West from 2nd St to Andersen	90	390	310	A-C	A-C	A-C	230	430	310	A-C	A-C	A-C
Freitas Parkway from Montecillo to Las Gallinas	1120	1420	1480	A-C	A-C	A-C	1050	1090	1070	A-C	A-C	A-C
Freitas Parkway from Las Gallinas to Del Presidio	1850	2510	2570	A-C	E	E	1790	2620	2640	A-C	E	E
Grand Ave from Villa to Mission Ave	380	400	420	A-C	A-C	A-C	380	620	660	A-C	A-C	A-C
Grand Ave from Mission to 2nd St	650	650	650	A-C	A-C	A-C	710	680	800	A-C	A-C	D
Hetherton from Mission to 2nd St	990	1180	1660	F	F	F	1120	1180	1350	F	F	F
Irwin from Mission to 2nd St	1070	1270	1330	F	F	F	1190	1580	1530	F	F	F
Kerner from Canal to Bellam	290	290	290	A-C	A-C	A-C	480	480	480	A-C	A-C	A-C
Las Gallinas from Lucas Valley to Freitas	890	1090	1060	D	D	D	690	780	690	A-C	D	A-C
Las Gallinas from Freitas to Northgate	550	840	890	A-C	A-C	D	630	780	760	A-C	A-C	A-C
Lincoln from 101 SB-Hammondale to Mission	1070	1080	1920	D	D	F	1240	1260	1840	E	E	F
Lincoln from Mission to Irwin	540	1280	1530	A-C	F	F	610	1150	1170	D	F	F
Lindaro from 3rd to Andersen	490	770	610	A-C	D	A-C	520	560	540	A-C	A-C	A-C
Los Ranchitos from Northgate to N San Pedro	890	1040	1040	D	D	D	930	1170	1160	D	D	D
Los Ranchitos from N San Pedro to Lincoln	790	1210	1350	A-C	D	E	860	1350	1420	A-C	E	E
Lucas Valley from Las Gallinas to 101 SB Ramps	1300	1300	1300	D	D	D	1170	1510	1390	D	E	E
Mission from H St to Lincoln	500	504	558	A-C	A-C	D	610	627	674	D	D	D
Mission from Lincoln to Grand Ave	740	1080	1660	D	F	F	810	1160	1360	E	F	F
N San Pedro from Los Ranchitos to Civic Center	590	690	780	A-C	A-C	A-C	660	670	800	A-C	A-C	A-C
Northgate from Freitas to Los Ranchitos	350	500	490	A-C	A-C	A-C	390	410	450	A-C	A-C	A-C
Point San Pedro from Mooring to end	1590	1710	1670	A-C	A-C	A-C	1320	1350	1320	A-C	A-C	A-C
Redwood Highway from Smith Ranch to Freitas	910	910	910	D	D	D	870	870	870	A-C	A-C	A-C
Smith Ranch from 101 NB Ramps to Silvera	620	620	620	A-C	A-C	A-C	780	780	780	A-C	A-C	A-C
Woodland from Lindaro to Irwin	330	410	490	A-C	A-C	A-C	300	560	470	A-C	A-C	A-C
Woodland from Irwin to Bellam	540	840	800	A-C	D	D	550	920	960	A-C	D	D

Table C-2: LOS and Delay Results

	Study Intersection	Control	Peak Hour	Existing			2040 with General Plan		
				LOS	Delay	% Served	LOS	Delay	% Served
1	Freitas Pkwy/Civic Center Dr/Redwood Hwy	TWSC	AM	A	6.6	100.0%	A	6.2	100%
			PM	A	10.6	100.0%	C	17.8	100%
2	Freitas Pkwy/US 101 SB Off-ramp - Del Presidio Blvd	Signal	AM	B	14.9	97.7%	B	16.9	100%
			PM	B	15.8	99.4%	C	20.6	100%
3	Freitas Pkwy/Northgate Dr	Signal	AM	D	47.1	97.8%	D	43.1	100%
			PM	D	40.1	99.0%	E	58.7	100%
4	North San Pedro/Civic Center Dr	Signal	AM	D	39.4	93.8%	D	42.4	91%
			PM	C	23.4	73.4%	D	38.4	92%
5	Merrydale Rd/Civic Center Dr	Signal	AM	E	62.9		F	107.6	
			PM	C	30.2		D	51.3	
6	Merrydale Rd/Las Gallinas Ave	Signal	AM	B	12.7		B	16.9	
			PM	C	20.2		E	74.6	
7	Bellam Blvd/Francisco Blvd East	Signal	AM	E	76.0	99.0%	E	76	94%
			PM	E	65.1	96.8%	F	96	92%
8	Medway Rd/Francisco Blvd East	Signal	AM	A	9.1		A	9	
			PM	B	11.4		B	15	
9	Bellam Blvd/Anderson Dr	Signal	AM	C	24.9		E	62	
			PM	D	52.2		E	64.6	
10	Andersen Dr/Francisco Blvd West	Signal	AM	D	42.6		F	172.2	
			PM	B	16		C	20.4	