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SCOPING MEMORANDUM

DATE: July 3, 2024

TO: Doug Chen, David Fish | Legacy Builders
City of Benicia

FROM: Erin Vaca, Bincy Koshy | DKS Associates

SUBJECT: Rose Estates Project # 24640

INTRODUCTION

The purpose of this memorandum is to document vehicle miles traveled (VMT) screening findings, preliminary trip generation and distribution, and proposed study intersections for the Rose Estates mixed-use development (Project) transportation impact analysis.

PROJECT DESCRIPTION

The proposed Project would be located in the City of Benicia, California (APN: 0080030160) and is currently zoned as limited industrial per the City of Benicia Zoning Map[1]. Figure 1 illustrates the Project site area. Based on the Rose Estates overall map and site plan statistics dated March 11, 2024, as shown in Figure 2, the site consists of a 527.38-acre parcel.

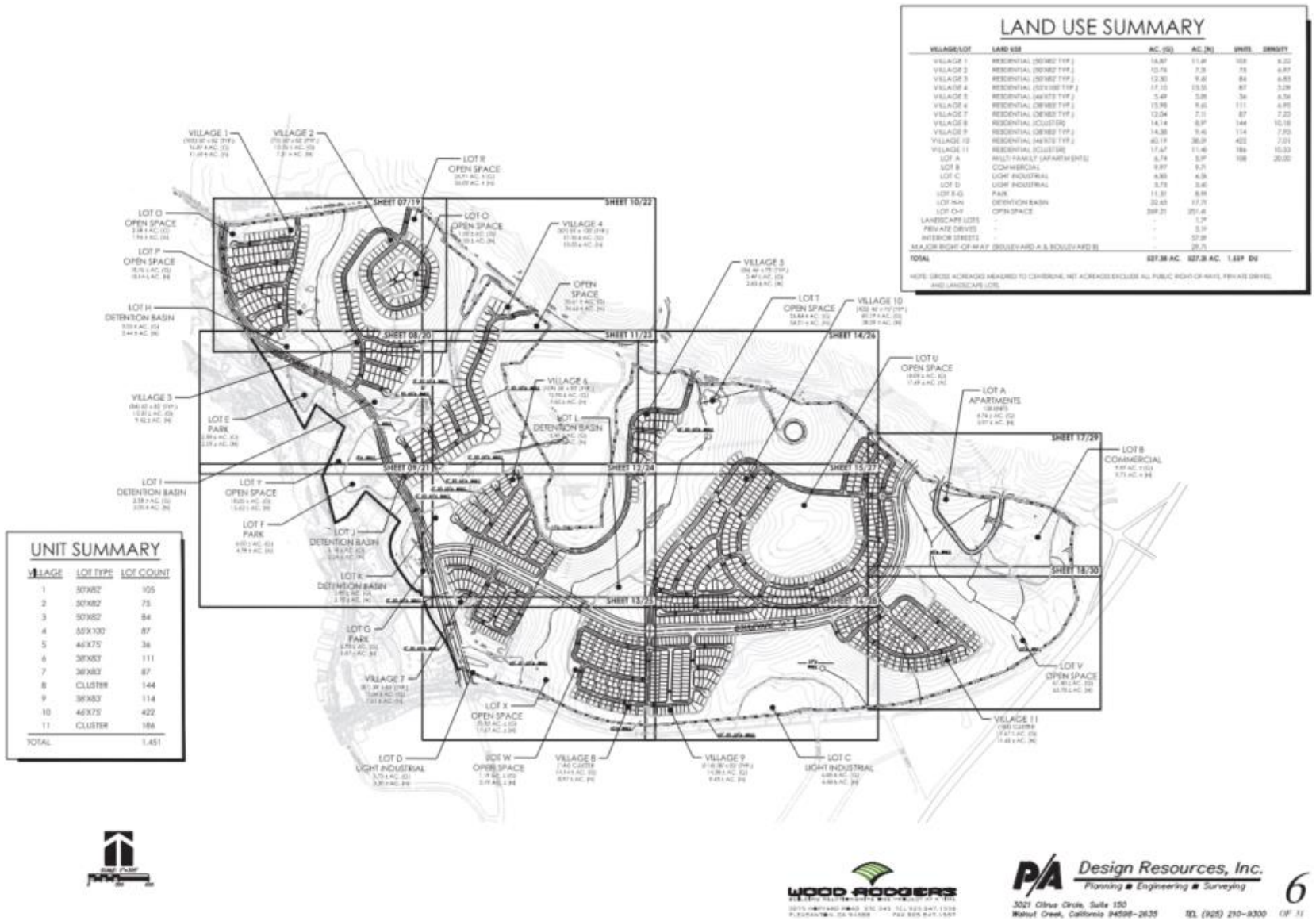
The proposed development would consist of 1,451 new residential lots in a detached townhome-style development, 108 low-rise multi-family apartments, 508,000 square feet of commercial use, 304,000 square feet of light industrial use, 8.93 acres of park use, 17.72 acres of detention basin use, and 251.41 acres of open space. The Project would be accessed via E 2nd Street, Lake Herman Road, Industrial Way and major internal access roadways within the site including Boulevard A and Boulevard B as shown in Figure 2.

[1] https://gis-benicia1.hub.arcgis.com/apps/d4af045e04ae400b8f2314ccdec1dfbe/explore

ANALYSIS METHODOLOGIES, STANDARDS AND TOOLS

The transportation impact analysis will follow the City of Benicia guidelines for CEQA review, City of Benicia General Plan policies, and typical requirements for local transportation studies.

FIGURE 1. PROJECT SITE AND VICINITY



VILLAGE	LOT TYPE	LOT COUNT
1	50'X82'	105
2	50'X82'	75
3	50'X82'	84
4	55'X100'	87
5	46'X75'	36
6	38'X83'	111
7	38'X83'	87
8	CLUSTER	144
9	38'X83'	114
10	46'X75'	422
11	CLUSTER	186
TOTAL		1,451

FIGURE 2. PROPOSED SITE PLAN

LEVEL OF SERVICE ANALYSIS AND OPERATIONAL STANDARDS

The Project is located in the City of Benicia. Per the Benicia General Plan (1999), Policy 2.20.1, LOS D needs to be maintained on all city roads, street segments, and intersections except where improvements will be infeasible or undesirable due to considerations of right-of-way, impacts of neighboring properties, aesthetics, or community character. The I-680 and I-780 ramp intersections are considered Caltrans intersections and will follow Caltrans standards.

The LOS analysis will focus on intersection operations using the latest version of the Transportation Research Board Highway Capacity Manual (HCM) methodology. This methodology assigns an LOS grade to intersection operations based on the average vehicle control delay, ranging from LOS A to LOS F. Table 1 documents the LOS criteria for signalized intersections and Table 2 documents the LOS criteria for unsignalized intersections.

TABLE 1. LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DESCRIPTION	DELAY IN SECONDS
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤10.0
B	Operations with very low delay occurring with good progression and/or short cycle lengths.	>10.0 to 20.0
C	Operations with very average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	>20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	>35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and V/C ratios. Individual cycle failures are frequent occurrences.	>55.0 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	>80.0

Source: Highway Capacity Manual, 7th Edition

TABLE 2. LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DESCRIPTINO	DELAY IN SECONDS
A	Little or no delay	≤10.0
B	Short traffic delays	>10.0 to 15.0
C	Average traffic delays	>15.1 to 25.0

LEVEL OF SERVICE	DESCRIPTINO	DELAY IN SECONDS
D	Long traffic delays	>25.1 to 35.0
E	Very long traffic delays	>35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	>50.0

Source: Highway Capacity Manual, 7th Edition

Traffic analysis will include evaluation of LOS and control delay at signalized and unsignalized intersections. The latest versions of the Synchro analysis software will be used to report the 95th percentile queue lengths for approach lanes to study intersections.

VMT SCREENING AND THRESHOLDS OF SIGNIFICANCE

Senate Bill 743 (Steinberg, 2013), which enacted Public Resources Code section 21099, required changes to the California Environmental Quality Act (CEQA) Guidelines establishing criteria for determining the significance of transportation impacts. A CEQA assessment for transportation is conducted to evaluate and disclose the potential environmental impacts associated with transportation and development projects in California.

The city of Benicia has adopted VMT screening criteria and VMT thresholds of significance.

VMT SCREENING CRITERIA

The VMT screening criteria were applied to determine the need for a more detailed VMT analysis. Per the City of Benicia's Local Guidelines for CEQA Review (2022), the following would cause less-than significant impact under CEQA and would not require further VMT analysis:

- **CEQA Exemption:** Any project that is exempt from CEQA is not required to conduct a CEQA VMT analysis.
- **Small Projects:** Small projects defined as having 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day can be presumed to cause a less-than-significant VMT impact.
- **Local-Serving Uses:** Projects that consists of local-serving uses can generally be presumed to have a less-than-significant impact absent substantial evidence to the contrary, since these types of projects will primarily draw users and customers from a relatively small geographical area that will lead to short-distance trips and trips that are linked to other destinations.
- **Projects Located in Transit Priority Areas (TPAs):** Projects located within a TPA can be presumed to have less-than-significant impact absent substantial evidence to the contrary. This exemption would not apply if the project met any of the following criteria:
    - Has a Floor Area Ratio (FAR) of less than 0.75;
    - Includes more parking for use by residents, customers, or employees than required by the lead agency (if the agency allows but does not require the project to supply a certain amount of parking);

- Is inconsistent with the applicable Sustainable Communities Strategy (SCS) (as determined by the lead agency, with input from the Metropolitan Transportation Commission); or
- Results in net reduction in multi-family housing units.

The City of Benicia does not currently have any TPAs.

- **Projects located in Low VMT Areas:** Residential and employment-generating projects located within a low VMT-generating area can be presumed to have a less-than-significant impact absent substantial evidence to the contrary.

  A low-VMT area is defined as follows:
  - For housing projects: a TAZ that has existing home-based VMT per resident that is at or below the existing citywide average.
  - For employment-generating projects: a TAZ that has existing work tour VMT per worker that is at or below the existing citywide average.

Per the guidelines, mixed-use projects may qualify for the use of this screening criterion if they include only housing, employment-generating uses, and local-serving uses, and can reasonably be expected to generate VMT per resident and per worker that is similar to the existing land uses in the low VMT area, using relevant data and evidence.

VMT METRICS AND SIGNIFICANCE THRESHOLDS

Per the City of Benicia's Local Guidelines for CEQA Review (2022), the following describes the specific VMT metrics and significance thresholds that should be used in evaluating mixed-use projects for Project baseline (Year 2015) evaluation:

- **Residential Projects:** The project generated home-based VMT per resident constitutes a significant impact if it is higher than the city-wide average home-based VMT per resident.
- **Employment-Generating Projects:** The project generated work tour VMT per employee constitutes a significant impact if it is higher than the city-wide average work tour VMT per employee.
- **Regional-Serving Projects:** The project would have a significant impact if the project increases total VMT within the study area (should be determined) relative to the 'No project' case.
- **Mixed-Use Projects:** Projects can either be analyzed by evaluating housing, employment-generating and regional-serving uses separately using the metrics and significance thresholds described above; or the analysis could be based on a combined VMT per service population metric; or mixed-use projects that include a local-serving component may ignore that component and analyze the remaining uses. However, it may be more beneficial to conduct a full analysis so credit can be taken for trip reductions resulting from on-site mix.

VMT SCREENING RESULTS AND ANALYSIS SCOPE

The Project was reviewed against the VMT screening criteria listed above to determine the need for a more detailed VMT analysis.

RESIDENTIAL USES

The Project includes 1,451 single-family detached housing units and 108 low-rise multi-family units. The proposed Project is located in Transportation Analysis Zone (TAZ) ID: 488. Per Appendix A of the City of Benicia's Local Guidelines for CEQA Review (2022) which shows the existing (2015) VMT by TAZ maps, the TAZ has a population and employment below the citywide threshold. Therefore, per the guidelines, the characteristics of adjacent TAZs can be considered representative of the proposed project. Based on the low VMT characteristics of the adjacent TAZ, the residential uses of the Project could be presumed to have a less than significant VMT impact. Figure 3 shows the 2040 residential VMT per resident compared to the citywide average.

NON-RESIDENTIAL USES

The Project also includes a commercial shopping center component and that would be considered a local-serving use. Inclusion of retail and service opportunities within the Project will support shorter trip lengths for the new residential units. Moreover, the Project is located adjacent to TAZs with low VMT per employee and will likely show similar characteristics. Figure 4 shows the 2040 work tour VMT per employee compared to the citywide average respectively.

Table 3 describes the VMT metrics of the Project TAZ (TAZ ID: 488) and citywide thresholds of significance for Year 2040. As shown, the adjacent TAZ (TAZ ID: 493) has a residential VMT per resident of 27.7 which is lower than the citywide average residential VMT per resident, 30.9. Moreover, adjacent TAZs (TAZ ID: 493, 478 and 477) have work tour VMTs per employee of 22.1, 25.3, and 27.4 respectively, which are lower than the citywide average work tour VMT per employee, 27.8. Based on this screening step, the Project can be presumed to have less than significant VMT impacts and would not require a detailed VMT analysis.

TABLE 3. PROJECT VMT METRICS

LAND USE	VMT METRIC	CITYWIDE THRESHOLD OF SIGNIFICANCE	TAZ ID: 488 (PROJECT TAZ)	TAZ ID: 493 (ADJ.)	TAZ ID: 478 (ADJ.)	TAZ ID: 477 (ADJ.)
RESIDENTIAL	Home-Based VMT per resident	30.9	N/A[1]	27.7	N/A[1]	N/A[1]
COMMERCIAL /INDUSTRIAL	Work Tour VMT per employee	27.8	N/A[1]	22.1	25.3	27.4

[1]The TAZ has a population/employment below the Citywide threshold and hence the adjacent TAZ metrics were considered
Source: City of Benicia Local Guidelines for CEQA Review (2022), Appendix A

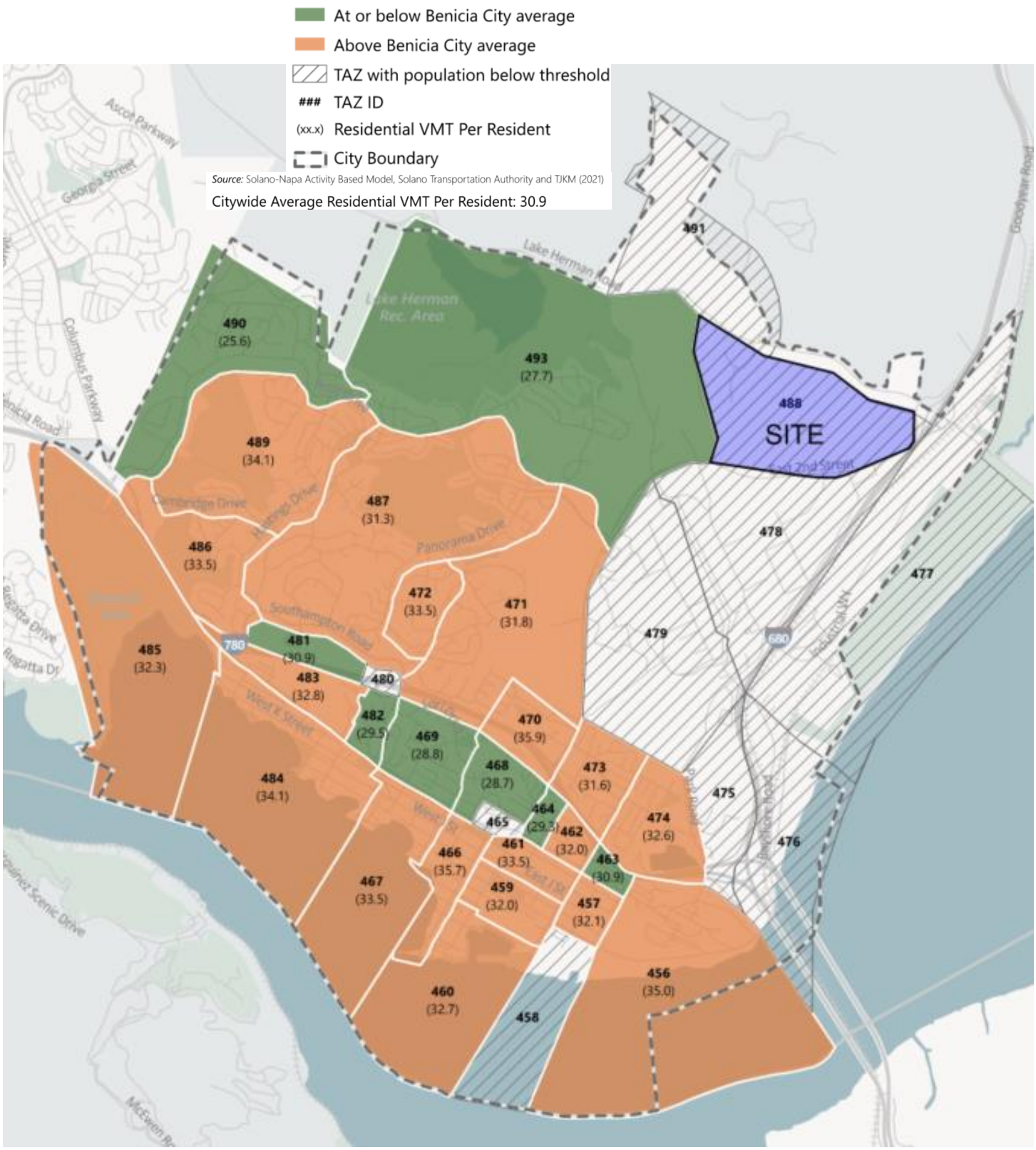


FIGURE 3. 2040 RESIDENTIAL VMT PER RESIDENT

Source: City of Benicia Local Guidelines for CEQA Review (2022), Appendix A-3

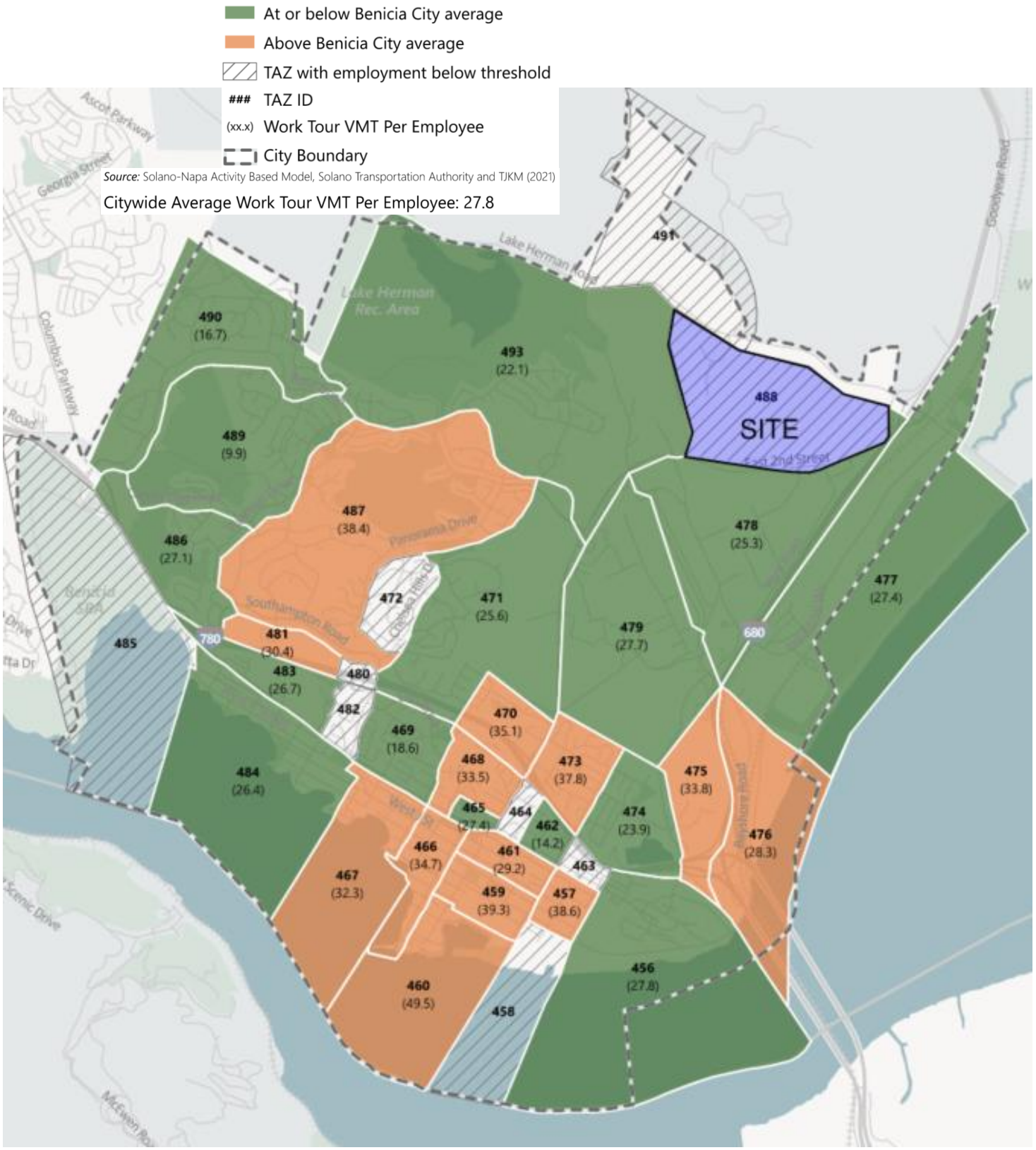


FIGURE 4. 2040 WORK TOUR VMT PER EMPLOYEE

Source: City of Benicia Local Guidelines for CEQA Review (2022), Appendix A-4

STUDY INTERSECTIONS

The following study intersections are selected based on anticipated distribution of project vehicle trips:

1. I-680 northbound ramp and Lake Herman Road
2. I-680 southbound ramp and Lake Herman Road
3. E 2nd Street and I-780 westbound ramps
4. E 2nd Street and I-780 eastbound ramps
5. E 2nd Street and Rose Drive
6. E 2nd Street and Hillcrest Avenue/Rankin Way
7. Gateway Plaza Drive and Lake Herman Road
8. Lopes Road/E 2nd Street and Lake Herman Road
9. Park Road and E 2nd Street
10. Stone Road and E 2nd Street
11. Reservoir Road and E 2nd Street
12. W Industrial Way and E 2nd Street

Figure 5 shows the study intersections.

FIGURE 5. STUDY INTERSECTIONS

TRIP GENERATION AND DISTRIBUTION

This section provides the trip generation and distribution estimates for the proposed Project.

For the purpose of developing trip generation estimates, a conservative approach was taken and the commercial use was considered as a Shopping Center. The net building area was calculated for the commercial use (Shopping Center) and industrial use (General Light Industrial) by reviewing the Benicia General Plan (1999). Per the document a maximum Floor Area Ratio (FAR) of 1.2 is permitted

for general commercial uses (Section A.2) and a FAR of 0.7 is permitted for industrial uses per Table 2-4. Based on the FAR estimates and gross acreages estimates provided in the site plan, the net building area was calculated.

TRIP GENERATION

Vehicular trip generation estimates of the Project are based upon information published by the Institute of Transportation Engineers (ITE). Specifically, the following source has been utilized:

- Trip Generation Manual 11th Edition (2021)

Trip generation for the Project was estimated for the weekday AM peak hour, weekday PM peak hour and weekday daily by using the ITE trip generation rates from the Trip Generation Manual 11th Edition (2021) for the specific land uses contained in the Project.

PROJECT TRIP REDUCTIONS

The following trip reductions were considered for the Project.

Pass-By Trips

A pass-by trip is made as an intermediate stop on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are not new to the overall roadway network and do not involve a route diversion to enter the site driveway. Pass-by rates for the weekday PM peak hour were used for Shopping Center land use (LU Code: 820) to estimate weekday daily pass-by rates. A pass-by trip rate of 22% was included based on rates[2] for a shopping center.

Internal Trips

An internal trip capture refers to the percentage of total person trips generated by a site that are made entirely within the site. The trip origin, destination, and travel path are all within the site. Internal capture rates for the weekday AM peak hour, weekday PM peak hour, and weekday daily were calculated Shopping Center land use (LU Code: 820) and Public Park land use (LU Code: 411) using the National Cooperative Highway Research Program (NCHRP) 684: Internal Trip Capture Estimation Tool[3].

It is anticipated that there will be internal trips using internal roadways (primarily Boulevard A and Boulevard B) within the site between the shopping center in the south and residential units – therefore, for Shopping Center land use, an internal trip rate of 5% was used for the weekday AM peak hour and a rate of 2% was used for the weekday PM peak hour and weekday daily time period. It is anticipated that majority of the trips to the park located along Boulevard B as shown in the site plan in Figure 2 will be from residential units within the site using internal roadways (primarily

[2] ITE Pass-By Rates for Land Uses: https://www.ite.org/ITEORG/assets/File/Trip%20Generation%20Appendices%20PUBLISHED/Appendices/2021%20Pass-By-Tables%20for%20ITETripGen%20Appendices.xlsx

[3] https://www.ite.org/technical-resources/topics/trip-and-parking-generation/other-resources/

Boulevard B). Therefore, a 90% internal capture trip rate was assumed for the weekday AM peak hour, weekday PM peak hour and weekday daily time periods.

Table 4 documents the trip generation for the Project. As shown, the Project is expected to generate 30,553 weekday daily vehicle trips, 1,617 weekday AM peak hour vehicle trips, and 3,021 weekday PM peak hour vehicle trips.

TABLE 4. TRIP GENERATION ESTIMATES

LAND USE	ITE CODE	DWELLING UNITS/KSF /ACRES	VEHICLE TRIPS GENERATED								
			WEEKDAY			AM PEAK HOUR			PM PEAK HOUR		
			ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Single-Family Detached Housing	**210**	1,451	6,842	6,841	**13,683**	254	762	**1,016**	859	505	**1,364**
Multifamily Housing (Low-Rise)	**220**	108	384	384	**768**	14	42	**56**	42	25	**67**
Shopping Center	**820**	261	9,564	9,564	19,128	269	164	433	873	946	1,819
Internal Trips (5% AM, 2% PM, 2% Daily)			*-191*	*-192*	*-383*	*-13*	*-9*	*-22*	*-17*	*-19*	*-36*
Trips After Internalization			9,373	9,372	18,745	256	155	411	856	927	1,783
Pass-By Trips (0% AM, 22% PM, 22% Daily)			*-2,066*	*-2,066*	*-4,132*	*-56*	*-34*	*-91*	*-189*	*-204*	*-393*
Net Trips			7,307	7,306	**14,613**	200	121	**320**	667	723	**1,390**
General Light Industrial	**110**	323	740	740	**1,480**	198	27	**225**	28	170	**198**
Public Park	**411**	8.93	47	47	94	0	0	0	13	10	23
Internal Trips (90% AM, 90% PM, 90% Daily)			*-42*	*-43*	*-85*	*0*	*0*	*0*	*-12*	*-9*	*-21*
Net Trips			5	4	**9**	0	0	**0**	1	1	**2**
TOTAL PROJECT TRIPS			**15,278**	**15,275**	**30,553**	**666**	**952**	**1,617**	**1,597**	**1,424**	**3,021**

Source: DKS Associates, 2024; ITE Trip generation Manual 11th Edition, 2021

TRIP DISTRIBUTION

Project trip distribution was developed by reviewing travel patterns of adjacent residential neighborhoods from a Big Data-based travel demand model (Replica Places)[4]. The assumed trip distribution for the Project is as follows:

- 50% to/from the north via I-680
- 43% to/from the west via I-780
- 3% to/from the south via E 2nd Street
- 2% to/from the west via Rose Drive
- 1% to/from the west via W Industrial Way
- 1% to/from the west via Park Road

Figure 6 shows the trip distribution percentages on the roadway network.

OTHER LOCAL TRANSPORTATION TOPICS

DKS will include a review of internal site circulation, overall site plan review, and a review of pedestrian, bicycle, and transit facilities in the vicinity in Phase C: Transportation impact Analysis.

[4] Replica is a data model platform that provides comprehensive information from different input data sources - https://www.replicahq.com/platform

FIGURE 6. TRIP DISTRIBUTION PERCENTAGES