APPENDIX C

VEHICLE MILES TRAVELED ANALYSIS MEMORANDUM

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MEMORANDUM

DATE: October 25, 2022

TO: Christopher Macon, City Manager, City of Laguna Woods

FROM: Ambarish Mukherjee, P.E., AICP

SUBJECT: City of Laguna Woods General Plan and Zoning Code Update - Vehicle Miles Traveled Analysis

LSA has prepared this memorandum documenting the methodology and findings of the Vehicle Miles Traveled (VMT) analysis for the City of Laguna Woods' (City) General Plan and Zoning Code Update project.

BACKGROUND

On December 28, 2018, the California Office of Administrative Law cleared the revised California Environmental Quality Act (CEQA) guidelines for use. Among the changes to the guidelines was removal of vehicle delay and level of service analysis from consideration under CEQA. With the adopted guidelines, transportation impacts are now to be evaluated based on project-generated VMT.

PROJECT DESCRIPTION

The City prepared its 2021–2029 Housing Element Update in 2021. The State Housing Element law requires that the City update its General Plan and Zoning Code to be consistent with its new Housing Element within three years of its adoption. LSA is assisting the City in the preparation of a Program Environmental Impact Report (EIR) for its General Plan and Zoning Code Update. LSA has prepared a transportation analysis associated with the rezoning of the sites identified in the recently updated Housing Element as required by CEQA. The transportation analysis consists of a trip generation comparison of the existing and proposed uses, including a VMT evaluation.

ANALYSIS METRICS

The City has yet to adopt specific Senate Bill (SB) 743 guidelines and therefore, this VMT analysis was conducted using the methodologies and significance threshold criteria identified in the California Governor's Office of Planning and Research (OPR) *Technical Advisory On Evaluating Transportation Impacts in CEQA* (TA), dated December 2018. Given that the proposed project is a General Plan update, it can be considered a land use plan. For land use plans, the OPR TA recommends comparison of project VMT per capita or VMT per employee under the forecast/cumulative scenario to the corresponding base year VMT per capita/employee to determine the project impacts. If the forecast VMT per capita/employee is greater than 85 percent of the existing regional VMT per capita/employee, then the General Plan update/project would constitute a significant impact.

As per the OPR TA, a region should be defined based on where the majority of project trips are contained. As such, a majority of the project trips are estimated to start or end within the region defined for VMT analysis purposes. Typically, it is the county boundary within which the majority of those trips are contained. While the City boundary can also be considered as the region, based on the understanding of the local trip patterns, it can be determined that the county can be considered as the region. Therefore, if the forecasted citywide VMT per capita with inclusion of the Housing Element is greater than 85 percent of the existing countywide VMT per capita, the project constitutes a significant VMT impact.

METHODOLOGY

The OPR TA provides multiple screening criteria for land use projects. One of the screening criterion is a daily trip threshold. If the land use project generates less than 110 daily trips, the project can be screened from a detailed VMT analysis. The project includes demolishing existing uses on the 17 residential overlay sites and replacing them with residential land uses. A trip generation analysis was conducted that looked at the differences in daily and peak hour trips between the existing land uses and the proposed land uses. That analysis is provided in Attachment A. It was observed that while the proposed residential land uses produce lower peak hour trips than existing land uses, the project would generate 746 more daily trips than the existing uses. As this is over the threshold of 110 daily trips, it was concluded that a detailed VMT analysis would be required to evaluate the project VMT impact for the General Plan and Zoning Code Update project.

The Orange County Transportation Analysis Model (OCTAM) was used to determine the VMT impact of the updated Housing Element. The Housing Element overlay consisted of 17 different sites in the City as shown in Figure 1 (provided in Attachment A). Fifteen of the 17 sites include existing non-residential land uses on them. For the overlay sites, the project proposes to remove the existing non-residential uses and replace them with residential uses. All 17 overlay sites are contained within four Traffic Analysis Zones (TAZs) in OCTAM.

As the project consisted of modification of the existing General Plan, a cursory review of current OCTAM forecast data was conducted to verify the consistency of the model with the General Plan land uses. As OCTAM is a socioeconomic data-based model, in order to review the consistency, the General Plan land uses needed conversion to socioeconomic data (households and employment). The General Plan residential uses included density ranges whereas non-residential uses consisted of building square footage as development intensities. Average residential densities along with the residential acreage were used to convert the residential land uses into dwelling unit estimates. Similarly, general rule of thumb conversion factors were used to convert non-residential development intensities to employees.

The resulting household and total employment estimates were compared to the current OCTAM forecast assumptions. While the dwelling unit/household estimates from the General Plan matched closely with current OCTAM forecast data, the employment estimates varied significantly. Given the use of average densities for residential and general conversion factors for non-residential uses, a close match between General Plan land uses and OCTAM forecast data was not expected.

In addition to the forecast dataset, a review of model base year dataset and growth (forecast – base) was performed. It was observed that the model assumptions included minimal growth of households and employment for the City. Given the amount of growth assumed in the model, consistency of household estimates between the General Plan and the model, and use of generic assumptions to convert General Plan land uses to socioeconomic data, it was concluded that the forecast OCTAM assumptions are consistent with the existing City General Plan.

PROJECT TRAFFIC ANALYSIS ZONES UPDATE

As indicated before, the proposed project includes replacement of existing non-residential uses with new residential uses. Existing land use information was available for 15 overlay sites (out of 17 total sites). The existing land use information was converted to employees using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition. The ITE *Trip Generation Manual* includes trip rates for different types of land uses by multiple unit types that were used to develop land use to employee conversion factors (employees per thousand square feet). Other data sources were also used for land use to employee conversion factors in case no data were available from ITE. No conversion factors were available for some types of land uses where a nominal number of employees were assumed for existing use (e.g., churches). The existing land uses were converted to employees and aggregated to the OCTAM model TAZs. Employment due to existing land uses was removed from the project location TAZs and the number of dwelling units from the project were added to the corresponding TAZs. Table A shows the overlay sites with existing land uses, model TAZ IDs, and estimated number of employees. Table B aggregates the number of dwelling units to be added and the existing number of employees to be removed from the OCTAM model TAZs.

OCTAM does not include the capability to split/add new TAZs and given that the VMT metrics will be evaluated for the entire City (with the General Plan Update), the socioeconomic data modifications were conducted directly to the project locations TAZs.

MODEL RUNS AND PROJECT VMT ESTIMATION

A horizon year (2045) model run was conducted using the adjusted socioeconomic data for the project location TAZs (modifications from Table B). No circulation/network modifications were identified for inclusion in the model network. The outputs from this updated model run were used to calculate the VMT per capita for the City with the proposed amendments. The detailed VMT tables are provided in Attachment B.

As indicated before, for land use plans, the OPR TA recommends use of VMT per capita to evaluate residential land uses and VMT per employee to evaluate non-residential land uses. Since the project contains only residential uses, LSA estimated VMT per capita for the City with addition of proposed residential land uses.

Table A: Overlay Sites - Existing Land Uses and Employment (Estimated)

Site ID	Model TAZ	Existing Use	Land Use	Land Use Quantity (KSF)	Total Employees (Estimated)
1	1448	Town Centre Vacant Lot		0.0	-
2	1456	Pacific Hills Calvary Chapel Parking Lot		0.0	-
3	1456	Rossmoor Electric	Retail	11.4	16
3	1456		Medical Building	11.4	16
4	1456	Saddleback Golf Cars	Retail	20.1	29
5	1448	Laguna Woods Self Storage	Storage	92.9	5
5	1448		Office	1.6	5
6	1448	Animal Hospital	Animal Hospital	5.5	9
7	1447	PS Business Park (excludes Jack-in-the-Box)	Storage	81.1	5
7	1447		Retail	14.0	20
7	1447		Restaurant	1.2	10
8	1456	Smart Parke	Retail	23.5	34
9	1451	McCormick & Son Mortuary	Mortuary	7.4	5
10	1447	Lutheran Church of the Cross	Church	15.6	5
11	1448	Geneva Presbyterian Church	Church	46.8	5
12	1451	Saint Nicholas Catholic Church	Church	43.0	5
13	1451	Temple Judea	Temple	11.0	15
14	1451	Laguna Country United Methodist Church	Church	32.1	5
15	1448	Medical Building in Town Centre	Medical Office	35.5	147
16	1451		Restaurant	7.9	40
16	1451	Willow Tree Center East	Retail	3.5	5
16	1451		Adult Daycare	10.4	34
17	1451	Helm Center	Medical Office	9.2	38

Source: LSA (2022).
KSF = thousand square feet
TAZ = Traffic Analysis Zone

Table B: OCTAM Socioeconomic Changes by TAZ

Model TAZ	Total Employment (to remove)	Total Dwelling Units (to add)
1447	40	205
1448	171	606
1451	146	370
1456	95	278

Source: LSA (2022).
OCTAM = Orange County Transportation Analysis Model
TAZ = Traffic Analysis Zones

PROJECT VMT ANALYSIS

The proposed project (General Plan Update) would constitute a significant impact if the forecast VMT metric for the project is greater than 85 percent of the regional existing VMT metric. Hence the proposed project would constitute a significant impact if the 2045 citywide VMT per capita is greater than 85 percent of the Orange County VMT per capita (threshold). As can be seen from the following Table C, citywide VMT per capita with the project is lower than the Orange County regional threshold.

Table C: 2045 City of Laguna Woods VMT Per Capita (With Project) Comparison with Regional Threshold

	2045 City of Laguna Woods (With Project)	Existing Entire Orange County[1]	Threshold[2]	Significant Impact
VMT per Capita	13.0	17.9	15.2	No

Source: LSA (2022).
[1] Obtained from Final Draft Guidelines For Evaluating Vehicle Miles Traveled Under CEQA for the County of Orange, September 17, 2020.
[2] 85% of the regional average (17.9*0.85=15.2).
CEQA = California Environmental Quality Act
VMT = vehicle miles traveled

Also, given that the project included demolition of existing non-residential uses, LSA reviewed the effect of non-residential use removal by evaluating the efficiency metric of origin-destination (OD) VMT per service population. Given that the OPR recommends use of different efficiency metrics to evaluate residential and non-residential uses, to evaluate a combined effect of both types of land uses such as with this project, OD VMT per service population was used. Similar to VMT per capita, 2045 citywide OD VMT per service population was compared with Orange County existing VMT per service population to assess project VMT impact. As shown in the following Table D, the 2045 citywide VMT per service population is lower than the Orange County regional threshold.

Table D: 2045 City of Laguna Woods VMT Per Service Population (With Project) Comparison with Regional Threshold

	2045 City of Laguna Woods (With Project)	Existing Entire Orange County[1]	Threshold[2]	Significant Impact
VMT per Service Population	24.9	30.3	25.7	No

Source: LSA (2022).
[1] Obtained from LSA 2016 no project OCTAM run.
[2] 85% of the regional average (30.3*0.85=25.7).
OCTAM = Orange County Transportation Analysis Model
VMT = vehicle miles traveled

Hence the General Plan and Zoning Code Update due to the 2021–2029 Housing Element Update does not constitute a significant VMT impact.

CONCLUSIONS

Based on the recommendations from the OPR TA, the proposed Laguna Woods General Plan and Zoning Code Update project was evaluated based on VMT per capita. An assessment of the trip generation comparison of existing uses and proposed uses did not screen out from a VMT analysis. A detailed VMT analysis was conducted for the project based on the OCTAM model, using the County of Orange as the region. Based on the significance threshold criteria determined within the OPR TA, the VMT per capita of the project does not exceed the threshold. A secondary analysis was performed to evaluate the VMT per service population. The results also showed that the project would not exceed the threshold based on service population. Therefore, the project would have a less than significant transportation impact.

Attachments: A – Trip Generation Analysis
B – Detailed VMT Calculation Worksheets

ATTACHMENT A

TRIP GENERATION ANALYSIS

Table A: City of Laguna Woods Housing Element – Residential Overlay Sites

	Existing Use	Existing Use	Potential Density Range[1]	Parcel Size (acre)[1]	Proposed Use	Address	APN No.	Existing Land Use Designation	Proposed Land Use	Existing Zoning District	Proposed Overlay Zoning District
1	Town Centre Vacant Lot	-	30 - 50 du per acre	1.800	90 du apartments	N/A (East of 24331 El Toro Road)	616-012-29	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
2	Pacific Hills Calvary Chapel Parking Lot	-	30 - 50 du per acre	0.696	35 du apartments	24481 Moulton Parkway	621-131-38	Commercial	*No Change*	Professional & Administrative Office	Residential High Density Overlay
3	Rossmoor Electric	11,405 sf retail, 11,405 sf medical building	30 - 50 du per acre	1.232	62 du apartments	24351 Moulton Parkway	621-131-21	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
4	Saddleback Golf Cars	20,133 sf retail	30 - 50 du per acre	1.235	62 du apartments	23252 Via Campo Verde	621-131-26	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
5	Laguna Woods Self Storage	92,890 sf storage, 1,620 sf office	30 - 50 du per acre	5.249	263 du apartments	24151 Moulton Parkway	616-012-19	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
6	Animal Hospital	5,529 sf animal hospital	30 - 50 du per acre	0.760	38 du apartment	24271 El Toro Road	616-012-03	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
7	PS Business Park (excludes Jack-in-the-Box)	81,100 sf storage, 14,000 sf retail, 1,200 sf restaurant	30 - 50 du per acre	2.867	144 du apartments	23582 Moulton Parkway	616-021-30	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
8	Smart Parke	23,498 sf retail	30 - 50 du per acre	2.373	119 du apartments	24334 El Toro Road	621-211-09	Commercial	*No Change*	Community Commerical	Residential High Density Overlay
9	McCormick & Son Mortuary	7,392 sf mortuary	20 - 30 du per acre	1.411	43 du apartments	25002 Moulton Parkway	621-091-016	Commercial	*No Change*	Community Commerical	Residential Medium-Low Density Overlay
10	Lutheran Church of the Cross	15,644 sf church	15 - 20 du per acre	3.028	61 du apartments	24231 El Toro Road	616-041-01	Community Facilities	*No Change*	Community Facilities-Private	Residential Medium-Low Density Overlay
11	Geneva Presbyterian Church	46,802 sf church	15 - 20 du per acre	3.955	80 du apartments	24301 El Toro Road	616-191-05 & 616-191-06	Community Facilities	*No Change*	Community Facilities-Private	Residential Medium-Low Density Overlay
12	Saint Nicholas Catholic Church	43,034 sf church	15 - 20 du per acre	4.596	92 du apartments	24252 El Toro Road	621-121-11	Community Facilities	*No Change*	Community Facilities-Private	Residential Medium-Low Density Overlay
13	Temple Judea	10,972 sf temple	15 - 20 du per acre	1.757	36 du apartments	24512 Moulton Parkway	621-121-18	Community Facilities	*No Change*	Community Facilities-Private	Residential Low Density Overlay
14	Laguna Country United Methodist Church	32,132 sf church	20 - 30 du per acre	3.899	117 du apartments	24442 Moulton Parkway	621-121-23	Community Facilities	*No Change*	Community Facilities-Private	Residential Medium Density Overlay
15	Medical Building in Town Centre	35,508 sf medical office	30 - 50 du per acre	2.690	135 du apartments	24331 El Toro Road	616-012-24	Commercial	*No Change*	Professional & Administrative Office	Residential High Density Overlay
16	Willow Tree Center East	7,858 sf restaurant, 3,487 sf retail, 10,364 sf adult daycare	15 - 20 du per acre	3.095	62 du apartments	24260 El Toro Road	621-121-30	Commercial	*No Change*	Community Commerical	Residential Low Density Overlay
17	Helm Center	9,222 sf medical office	20 - 30 du per acre	0.650	20 du apartments	24902 Moulton Parkway	621-091-15	Commercial	*No Change*	Professional & Administrative Office	Residential Medium-Low Density Overlay

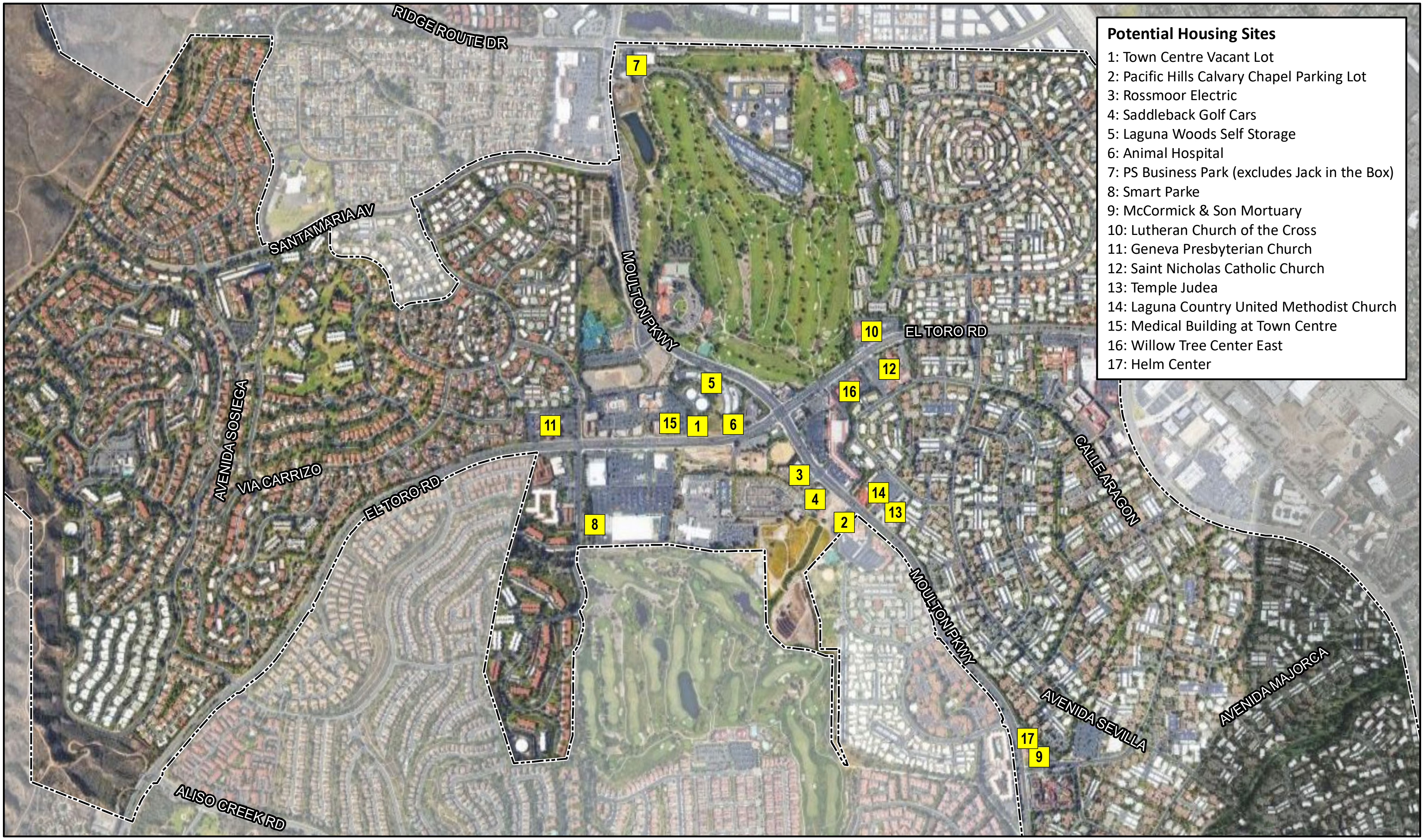
[1] Potential density range and parcel size referenced from the City of Laguna Woods 2021-2029 General Plan Housing Element Update.
For the purposes of trip generation, the highest residential density was used.

Table B: City of Laguna Woods Housing Element – Trip Generation Summary

Sites	Site Address	ADT	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Site 1, Town Centre Vacant Lot	East of 24331 El Toro Road	607	9	27	36	29	16	45
Site 2, Pacific Hills Calvary Chapel Parking Lot	24481 Moulton Parkway	236	4	10	14	11	6	17
Site 3, Rossmoor Electric	24351 Moulton Parkway	-614	-38	1	-37	-31	-58	-89
Site 4, Saddleback Golf Cars	23252 Via Campo Verde	-678	-23	0	-23	-46	-56	-102
Site 5, Laguna Woods Self Storage	24151 Moulton Parkway	1,620	19	76	95	77	41	118
Site 6, Animal Hospital	24271 El Toro Road	137	-9	4	-5	4	-5	-1
Site 7, Public Storage Business Park	23582 Moulton Parkway	-450	-40	6	-34	-26	-45	-71
Site 8, Smart Parke	24334 El Toro Road	-477	-21	14	-7	-40	-55	-95
Site 9, McCormick & Son Mortuary	25002 Moulton Parkway	234	3	12	15	12	5	17
Site 10, Lutheran Church of the Cross	24231 El Toro Road	292	3	16	19	17	6	23
Site 11, Geneva Presbyterian Church	24301 El Toro Road	183	-1	18	17	16	1	17
Site 12, Saint Nicholas Catholic Church	24252 El Toro Road	293	0	23	23	20	5	25
Site 13, Temple Judea	24512 Moulton Parkway	213	2	10	12	10	5	15
Site 14, Laguna Country United Methodist Church	24442 Moulton Parkway	545	6	31	37	30	13	43
Site 15, Medical Building at Town Centre	24331 El Toro Road	-368	-73	17	-56	1	-73	-72
Site 16, Willow Tree Center East	24260 El Toro Road	-879	-67	-32	-99	-26	-30	-56
Site 17, Helm Medical Center	24902 Moulton Parkway	-148	-17	1	-16	-3	-18	-21
Total		**746**	**-243**	**234**	**-9**	**55**	**-242**	**-187**

Note:

The table shows the net trip generation at each site.



LSA

LEGEND

Potential Housing Sites

City of Laguna Woods

0 750 1500

FEET

SOURCE: Google Maps (2021)

FIGURE 1

City of Laguna Woods
General Plan and Zoning Update

Housing Sites Key Map

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Site 1, Town Centre Vacant Lot
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Existing Trip Generation									
Vacant Lot			**0**	**0**	**0**	**0**	**0**	**0**	**0**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	90	DU	**607**	**9**	**27**	**36**	**29**	**16**	**45**
Net Trip Generation (Project - Existing)			**607**	**9**	**27**	**36**	**29**	**16**	**45**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

[2] Site 1 is 1.800 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

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Site 2, Pacific Hills Calvary Chapel Parking Lot
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Existing Trip Generation									
Parking Lot			**0**	**0**	**0**	**0**	**0**	**0**	**0**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	35	DU	**236**	**4**	**10**	**14**	**11**	**6**	**17**
Net Trip Generation (Project - Existing)			**236**	**4**	**10**	**14**	**11**	**6**	**17**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

[2] Site 2 is 0.696 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

LSA

Site 3, Rossmoor Electric
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Strip Retail Plaza (<40k)		TSF	54.45	1.42	0.94	2.36	3.30	3.29	6.59
Medical-Dental Office Building		TSF	36.00	2.45	0.65	3.10	1.18	2.75	3.93
Existing Trip Generation									
Rossmoor Electric	11.405	TSF	621	16	11	27	38	37	75
Medical Office Building	11.405	TSF	411	28	7	35	13	32	45
Total Trip Generation	**22.810**	**TSF**	**1,032**	**44**	**18**	**62**	**51**	**69**	**120**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	62	DU	**418**	**6**	**19**	**25**	**20**	**11**	**31**
Net Trip Generation (Project - Existing)			**(614)**	**(38)**	**1**	**(37)**	**(31)**	**(58)**	**(89)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 822 - Strip Retail Plaza (<40k)

[2] Site 3 is 1.232 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

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Site 4, Saddleback Golf Cars
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Strip Retail Plaza (<40k)		TSF	54.45	1.42	0.94	2.36	3.30	3.29	6.59
Existing Trip Generation									
Saddleback Golf Cars	20.133	TSF	**1,096**	**29**	**19**	**48**	**66**	**67**	**133**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	62	DU	**418**	**6**	**19**	**25**	**20**	**11**	**31**
Net Trip Generation (Project - Existing)			**(678)**	**(23)**	**0**	**(23)**	**(46)**	**(56)**	**(102)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 822 - Strip Retail Plaza (<40k)

[2] Site 4 is 1.235 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

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Site 5, Laguna Woods Self Storage
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Mini-Warehouse		TSF	1.45	0.05	0.04	0.09	0.07	0.08	0.15
General Office Building		TSF	10.84	1.34	0.18	1.52	0.24	1.20	1.44
Existing Trip Generation									
Self Storage	92.890	TSF	135	5	3	8	7	7	14
Office	1.620	TSF	18	2	0	2	0	2	2
Total Trip Generation	**94.510**	**TSF**	**153**	**7**	**3**	**10**	**7**	**9**	**16**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	263	DU	**1,773**	**26**	**79**	**105**	**84**	**50**	**134**
Net Trip Generation (Project - Existing)			**1,620**	**19**	**76**	**95**	**77**	**41**	**118**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 221 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 151 - Mini-Warehouse

Land Use Code 710 - General Office Building

[2] Site 5 is 5.249 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 6, Animal Hospital
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Animal Hospital		TSF	21.50	2.44	1.20	3.64	1.41	2.12	3.53
Existing Trip Generation									
Animal Hospital	5.529	TSF	**119**	**13**	**7**	**20**	**8**	**12**	**20**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	38	DU	**256**	**4**	**11**	**15**	**12**	**7**	**19**
Net Trip Generation (Project - Existing)			**137**	**(9)**	**4**	**(5)**	**4**	**(5)**	**(1)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 640 - Animal Hospital/Veterinary Clinic

[2] Site 6 is 0.760 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 7, Public Storage Business Park
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Mini-Warehouse		TSF	1.45	0.05	0.04	0.09	0.07	0.08	0.15
Strip Retail Plaza (<40k)		TSF	54.45	1.42	0.94	2.36	3.30	3.29	6.59
Fast-Food Restaurant Without Drive-Through Window		TSF	450.49	25.04	18.14	43.18	16.61	16.60	33.21
Existing Trip Generation									
Self-Storage	81.100	TSF	118	4	3	7	6	6	12
Strip Retail Plaza (<40k)	14.000	TSF	762	20	13	33	46	46	92
Fast-Food Restaurant Without Drive-Through Window	1.200	TSF	541	30	22	52	20	20	40
Total Trip Generation			**1,421**	**54**	**38**	**92**	**72**	**72**	**144**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	144	DU	**971**	**14**	**44**	**58**	**46**	**27**	**73**
Net Trip Generation (Project - Existing)			**(450)**	**(40)**	**6**	**(34)**	**(26)**	**(45)**	**(71)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 151 - Mini-Warehouse

Land Use Code 822 - Strip Retail Plaza (<40k)

Land Use Code 933 - Fast-Food Restaurant Without Drive-Through Window

[2] Site 7 is 2.867 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 8, Smart Parke
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Strip Retail Plaza (<40k)		TSF	54.45	1.42	0.94	2.36	3.30	3.29	6.59
Existing Trip Generation									
Smart Parke	23.498	TSF	**1,279**	**33**	**22**	**55**	**78**	**77**	**155**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	119	DU	**802**	**12**	**36**	**48**	**38**	**22**	**60**
Net Trip Generation (Project - Existing)			**(477)**	**(21)**	**14**	**(7)**	**(40)**	**(55)**	**(95)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 822 - Strip Retail Plaza (<40k)

[2] Site 8 is 2.373 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 9, McCormick & Son Mortuary
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Church		TSF	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Existing Trip Generation									
McCormick & Son Mortuary	7.392	TSF	**56**	**1**	**1**	**2**	**2**	**2**	**4**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	43	DU	**290**	**4**	**13**	**17**	**14**	**7**	**21**
Net Trip Generation (Project - Existing)			**234**	**3**	**12**	**15**	**12**	**5**	**17**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* , 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 560 - Church

[2] Site 9 is 1.411 acre. The proposed land use is based on 30 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 10, Lutheran Church of the Cross
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Church		TSF	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Existing Trip Generation									
Lutheran Church of the Cross	15.644	TSF	**119**	**3**	**2**	**5**	**3**	**5**	**8**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	61	DU	**411**	**6**	**18**	**24**	**20**	**11**	**31**
Net Trip Generation (Project - Existing)			**292**	**3**	**16**	**19**	**17**	**6**	**23**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* , 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 560 - Church

[2] Site 10 is 3.028 acre. The proposed land use is based on 20 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 11, Geneva Presbyterian Church
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Church		TSF	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Existing Trip Generation									
Geneva Presbyterian Church	46.802	TSF	**356**	**9**	**6**	**15**	**10**	**13**	**23**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	80	DU	**539**	**8**	**24**	**32**	**26**	**14**	**40**
Net Trip Generation (Project - Existing)			**183**	**(1)**	**18**	**17**	**16**	**1**	**17**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 560 - Church

[2] Site 11 is 3.955 acre. The proposed land use is based on 20 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 12, Saint Nicholas Catholic Church
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Church		TSF	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Existing Trip Generation									
Saint Nicholas Catholic Church	43.034	TSF	**327**	**9**	**5**	**14**	**9**	**12**	**21**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	92	DU	**620**	**9**	**28**	**37**	**29**	**17**	**46**
Net Trip Generation (Project - Existing)			**293**	**0**	**23**	**23**	**20**	**5**	**25**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 560 - Church

[2] Site 12 is 4.596 acre. The proposed land use is based on 20 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 13, Temple Judea
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Synagogue		TSF	2.70	0.14	0.08	0.22	0.15	0.12	0.27
Existing Trip Generation									
Temple Judea	10.972	TSF	**30**	**2**	**0**	**2**	**2**	**1**	**3**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	36	DU	**243**	**4**	**10**	**14**	**12**	**6**	**18**
Net Trip Generation (Project - Existing)			**213**	**2**	**10**	**12**	**10**	**5**	**15**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 561 - Synagogue

[2] Site 13 is 1.757 acre. The proposed land use is based on 20 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 14, Laguna Country United Methodist Church
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Church		TSF	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Existing Trip Generation									
Laguna Country United Methodist Church	32.132	TSF	**244**	**6**	**4**	**10**	**7**	**9**	**16**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	117	DU	**789**	**12**	**35**	**47**	**37**	**22**	**59**
Net Trip Generation (Project - Existing)			**545**	**6**	**31**	**37**	**30**	**13**	**43**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 560 - Church

[2] Site 14 is 3.899 acre. The proposed land use is based on 30 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 15, Medical Building at Town Centre
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Medical-Dental Office Building		TSF	36.00	2.45	0.65	3.10	1.18	2.75	3.93
Existing Trip Generation									
Medical Building at Town Centre	35.508	TSF	**1,278**	**87**	**23**	**110**	**42**	**98**	**140**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	135	DU	**910**	**14**	**40**	**54**	**43**	**25**	**68**
Net Trip Generation (Project - Existing)			**(368)**	**(73)**	**17**	**(56)**	**1**	**(73)**	**(72)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 720 -Medical-Dental Office Building - Stand-Alone

[2] Site 15 is 2.690 acre. The proposed land use is based on 50 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

LSA

Site 16, Willow Tree Center East
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
High-Turnover (Sit-Down) Restaurant		TSF	107.20	5.26	4.31	9.57	5.52	3.53	9.05
Strip Retail Plaza (<40k)		TSF	54.45	1.42	0.94	2.36	3.30	3.29	6.59
General Office Building		TSF	10.84	1.34	0.18	1.52	0.24	1.20	1.44
Existing Trip Generation									
High-Turnover (Sit-Down) Restaurant	7.858	TSF	842	41	34	75	43	28	71
Pass-by Reduction (43% PM)			(31)	0	0	0	(18)	(13)	(31)
Strip Retail Plaza (<40k)	3.487	TSF	374	18	15	33	19	13	32
Adult Day Care	10.364	TSF	112	14	2	16	2	13	15
Total Trip Generation	**21.709**	**TSF**	**1,297**	**73**	**51**	**124**	**46**	**41**	**87**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	62	DU	**418**	**6**	**19**	**25**	**20**	**11**	**31**
Net Trip Generation (Project - Existing)			**(879)**	**(67)**	**(32)**	**(99)**	**(26)**	**(30)**	**(56)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 932 - High-Turnover (Sit-down) Restaurant

Land Use Code 822 - Strip Retail Plaza (<40k)

Land Use Code 710 - General Office Building

[2] Site 16 is 3.095 acre. The proposed land use is based on 20 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

Site 17, Helm Medical Center
Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Multifamily Housing (Low-Rise)		DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Medical-Dental Office Building		TSF	36.00	2.45	0.65	3.10	1.18	2.75	3.93
Existing Trip Generation									
Helm Medical Center	7.858	TSF	**283**	**19**	**5**	**24**	**9**	**22**	**31**
Project Trip Generation									
Multifamily Housing (Low-Rise)[2]	20	DU	**135**	**2**	**6**	**8**	**6**	**4**	**10**
Net Trip Generation (Project - Existing)			**(148)**	**(17)**	**1**	**(16)**	**(3)**	**(18)**	**(21)**

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021).

Land Use Code 220 - Multifamily Housing (Low-Rise) - Not Close to Rail Transit

Land Use Code 720 -Medical-Dental Office Building - Stand-Alone

[2] Site 17 is 0.650 acre. The proposed land use is based on 30 du per acre.

ADT = average daily trips

DU = dwelling unit

TSF = thousand square feet

ATTACHMENT B

DETAILED VMT CALCULATION WORKSHEETS

LSA

Attachment B - VMT Calculation Worksheet

Housing Element Overlay, City of Laguna Woods - VMT Analysis

	2045 City of Laguna Woods (With Project)	Exsiting entire Orange County *	Threshold **
Households	13,928		
Population	23,028	3,179,626	
Homebased (HB) VMT	298,685	56,757,571	
HB VMT per capita	**13.0**	**17.9**	**15.2**

**: Obtained from Final Draft Guidelines For Evaluating Vehicle Miles Traveled Under CEQA for the County of Orange, September 17, 2020*

***: 85% of the regional average (17.9*0.85=15.2)*

LSA

Attachment B - VMT Calculation Worksheet

Housing Element Overlay, City of Laguna Woods - VMT Analysis

	2045 City of Laguna Woods (With Project)	Exsiting entire Orange County *	Threshold **
Population	23,028	3,179,626	
Employment	7,005	1,710,147	
Service Population	30,033	4,889,773	
Origin-Destination (OD) VMT	748,776	148,018,452	
OD VMT per service population	**24.9**	**30.3**	**25.7**

**: Obtained from LSA 2016 no project OCTAM run*

***: 85% of the regional average (30.3*0.85=25.7)*