

**DATE:** April 11, 2023  
**TO:** Connie Anderson, T&B Planning, Inc  
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**JOB NO:** 14668-01 Supplemental VMT StreetLight Data

## **PALMDALE LOGISTICS PARK SUPPLEMENTAL VEHICLE MILES TRAVELED (VMT) ANALYSIS**

Urban Crossroads, Inc. is pleased to provide the following Supplemental Vehicle Miles Traveled (VMT) Analysis for the Palmdale Logistics Park (**Project**), which is located on the southwest corner of Division Street and W. Avenue M in the City of Palmdale.

### **SUPPLEMENTAL VMT EVALUATION**

In an effort to fully disclose potential VMT impacts, this memorandum includes a supplemental VMT evaluation measuring the Project's estimated Total VMT. The Total VMT calculation differs from the County's adopted VMT metric for industrial land uses projects in that it includes all vehicle trips (i.e., passenger cars and trucks) and all trip purposes (i.e., not just home-based work trips). Table 1 presents the Project's Total VMT estimate, which utilizes vehicle trip generation rates (see Attachment A) consistent with the Project's greenhouse gas analysis, multiplied by the average trip length for each vehicle type. For passenger cars, average trip length information has been obtained from the SCAG regional travel demand model. For medium heavy-duty trucks (MDT) and heavy heavy-duty trucks (HDT) trip length data has been obtained from StreetLight Data's Truck Volume Metrics.

### **ABOUT STREETLIGHT DATA**

As described in the StreetLight Insight Truck Volume Methodology and Validation Report (September 2022), StreetLight Data's Truck Volume Metrics are based on five linked machine-learning models that estimate vehicle volume and trip length by vehicle class and total vehicles. StreetLight Data provides truck volume information from 2019 through 2021. To support volume estimates over the range of time periods, StreetLight Data applies the Monthly Average Daily Trip (MADT) to the days or parts of the day required for a particular analysis. In the scaling process, StreetLight factors the ratio between sample trip counts for particular hours, days and trip counts for the entire month with the volume for corresponding hours, day type and MADT for that zone.

The estimated truck volume is compared to the actual volume reported by permanent traffic counters to validate model results. The permanent counter data comes from the Federal Highway Administration (FHWA) Travel Monitoring Analysis System (TMAS) CLS (vehicle classification) dataset, which includes traffic counts from more than 3,000 unique sites from January 2019 through December 2021. The StreetLight Model produces Pearson correlation coefficients of 0.99, 0.92 and 0.97 for light- medium- and heavy-duty vehicles, respectively, between estimated and actual MADT, indicating that the StreetLight’s model is highly explanatory.

**COMPARISON AREA**

The actual average trip length will depend largely upon the operational model and the type of goods transacted by the tenant that eventually occupies the facility. However, it is assumed that the warehouse distribution model will model traffic patterns in comparable Antelope Valley Planning Area (AVPA) facilities. Trip Length data was obtained from the following comparison sites:

1. Michael’s Distribution Center  
3501 W Avenue H, Lancaster, CA 93536
2. Rite-Aid Distribution Center SWCSC  
2801 W Avenue H, Lancaster, CA 93536

**EXHIBIT 1: SURVEYED LOCATIONS**



For the purpose of this analysis, the 2 sites monitored medium-duty and heavy-duty trucks that originated, ended or passed through the area between January 1, 2021, through December 31, 2021. The entry/exit access point for each facility with its respective connection to W Avenue H was used as the pertinent road to analyze truck traffic data.

**AVERAGE WEIGHTED TRIP LENGTH**

Utilizing the above parameters, average daily zone traffic<sup>1</sup> of medium duty trucks vs. heavy duty trucks, average trip length by vehicle class, and distance bins<sup>2</sup> of per-trip length in miles was obtained from StreetLight Data. Total average trip length of medium-duty trucks (MDT) and heavy-duty trucks (HDT) was calculated by multiplying the disaggregated data's average trip length with its' respective percentage of total aggregated trucks (effectively calculating a weighted mean using percentages as weights) and then summing the amounts.

**TABLE 1: AVERAGE TRIP LENGTH BY VEHICLE TYPE (01/01/21-12/31/21)**

	MDT Avg Trip Length	MDT % of Total	HDT Avg Trip Length	HDT % of Total	Weighted Average Trip Length
Michael's	23.7	19.62%	90.9	80.38%	77.72
Rite-Aid	34.4	10.23%	91.0	89.77%	85.21
Average	29.1	14.93%	91.0	85.07%	81.46

Based on traffic monitoring data of these facilities between January 1, 2021, through December 31, 2021 (the most current 12-month period available as of the date of this memorandum) obtained from StreetLight Data, the average trip length of medium-duty and heavy-duty trucks for Michael's and Rite-Aid is 77.7 miles and 85.2 miles respectively. The average trip lengths of the 2 surveyed locations will be applied to the Project to derive the Project's VMT estimates.

**VMT CALCULATIONS**

Table 2 presents an estimation of Total VMT for the Project, which utilizes vehicle trip generation rates consistent with the Project's greenhouse gas analysis, multiplied by the average trip length for each vehicle type.

**TABLE 2: PROJECT TOTAL VMT**

Vehicle Type	Vehicle Trips	Vehicle Trip Length	VMT
Automobile	3,346	15.7	52,532
MDT	128	29.1	3,725
HDT	210	91.0	19,110
Total Truck	338	-	22,835
<b>Total</b>	<b>3,684</b>	<b>-</b>	<b>75,367</b>

Table 3 presents the calculation of the efficiency metric Project generated Total VMT per service population, which is the product of the Project's Total VMT divided by its service population (i.e., estimated number of Project employees). This efficiency metric is a common VMT metric used by many agencies throughout Southern California to evaluate the efficiency of travel for a given project based on total VMT.

<sup>1</sup> Average daily zone traffic was then used to calculate % of total aggregated trucks for each disaggregate.

<sup>2</sup> Distance bins were defaulted to: 0-1, 1-2, 2-5, 5-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80, 80-90, 90-100, and 100+ in miles.

**TABLE 3: PROJECT TOTAL VMT PER SERVICE POPULATION**

	Project
Service Population	1,430
Total VMT	75,367
Total VMT per Service Population	52.7

Table 4 identifies a comparison between Project’s total VMT per service population to an applicable impact threshold. Although not specified by City Guidelines, it is reasonable to assume that a project with a total VMT per service population that exceeds the baseline 16.8% below North Los Angeles County average total VMT per service population would result in a potentially significant impact, consistent with North County regional averages identified in the Los Angeles County Senate Bill (SB) 743 Implementation and CEQA Updates Report (June 2020) (2). For the purposes of this evaluation, the North County regional average total VMT per service population for baseline conditions is 43.1<sup>3</sup>, which a 16.8% below North County threshold would result in 35.9 VMT per service population.

**TABLE 4: PROJECT VMT PER SERVICE POPULATION COMPARISON**

	Baseline
Regional Threshold	35.9
Project	52.7
Percent Above Threshold	+46.8%
Potentially Significant?	Yes

**CONCLUSION**

Based on the results of this supplemental VMT evaluation the following findings are made:

- The Project’s VMT analysis found the Project’s VMT per service population to exceed the Regional VMT per service population threshold and is determined to have a potentially significant transportation impact.

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<sup>3</sup> LA County SB 743 Implementation and CEQA Update; Page 16, Table 4

## REFERENCES

1. **Los Angeles County.** *Los Angeles County Senate Bill (SB) 743 Implementation and CEQA Updates Report.* June 2020.

**ATTACHMENT A**  
**PROJECT'S TRIP GENERATION SUMMARY**

**TABLE A-1: PROJECT TRIP GENERATION RATES**

Land Use <sup>1</sup>	Units <sup>2</sup>	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
<b>Actual Vehicle Trip Generation Rates</b>									
General Light Industrial <sup>3</sup>	TSF	110	0.651	0.089	0.740	0.091	0.559	0.650	4.870
Passenger Cars			0.645	0.085	0.730	0.086	0.554	0.640	4.620
2-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.042
3-Axle Trucks			0.001	0.001	0.002	0.001	0.001	0.002	0.052
4+-Axle Trucks			0.004	0.002	0.006	0.003	0.003	0.006	0.157
High-Cube Fulfillment Center (Non-Sort) <sup>3,5</sup>	TSF	155	0.122	0.028	0.150	0.062	0.098	0.160	1.810
Passenger Cars			0.112	0.018	0.130	0.057	0.093	0.150	1.580
2-Axle Trucks			0.002	0.001	0.003	0.001	0.001	0.002	0.038
3-Axle Trucks			0.002	0.002	0.004	0.001	0.001	0.002	0.048
4+-Axle Trucks			0.006	0.007	0.013	0.003	0.003	0.006	0.144

<sup>1</sup> Trip Generation & Vehicle Mix Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eleventh Edition (2021).

<sup>2</sup> TSF = thousand square feet

<sup>3</sup> Truck Mix: South Coast Air Quality Management District's (SCAQMD) recommended truck mix, by axle type.

Normalized % - Without Cold Storage: 16.7% 2-Axle trucks, 20.7% 3-Axle trucks, 62.6% 4-Axle trucks.

**TABLE A-2: PROJECT TRIP GENERATION SUMMARY**

Land Use	Quantity Units <sup>1</sup>	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
<b>Actual Vehicles:</b>								
General Light Industrial (25%)	357.425 TSF							
Passenger Cars:		231	30	261	31	198	229	1,652
2-axle Trucks:		0	0	0	0	0	0	16
3-axle Trucks:		0	0	0	0	0	0	18
4+-axle Trucks:		1	1	2	1	1	2	56
Total Truck Trips (Actual Vehicles):		1	1	2	1	1	2	90
Light Industrial Subtotal Trips (Actual Vehicles) <sup>2</sup>		232	31	263	32	199	231	1,742
High-Cube Fulfillment (Non-Sort) (75%)	1,072.275 TSF							
Passenger Cars:		120	19	139	61	100	161	1,694
2-axle Trucks:		2	1	4	1	1	2	42
3-axle Trucks:		2	2	4	1	1	2	52
4+-axle Trucks:		6	7	13	3	3	7	154
Total Truck Trips (Actual Vehicles):		10	10	20	5	5	10	248
Fulfillment Subtotal Trips (Actual Vehicles) <sup>2</sup>		130	29	159	66	105	171	1,942
<b>Total Project Trips (Actual Vehicles)<sup>2</sup></b>		<b>362</b>	<b>60</b>	<b>422</b>	<b>98</b>	<b>304</b>	<b>402</b>	<b>3,684</b>

<sup>1</sup> TSF = thousand square feet

<sup>2</sup> Total Trips = Passenger Cars + Truck Trips.