

DATE: October 5, 2023
TO: Connie Anderson, T&B Planning, Inc.
FROM: Alex So, Urban Crossroads
JOB NO: 14267-01 VMT

ANTELOPE VALLEY COMMERCE CENTER VEHICLE MILES TRAVELED (VMT) ANALYSIS

Urban Crossroads, Inc. is pleased to provide the following Vehicle Miles Traveled (VMT) Analysis for the Antelope Valley Commerce Center development (**Project**), which is located south of Avenue M and east of Sierra Highway in the City of Palmdale.

PROJECT OVERVIEW

The Project is proposed to consist of the following uses:

Land Use	Quantity Units ¹
Phase 1	
General Light Industrial	103.418 TSF
Manufacturing	68.715 TSF
Warehousing	516.396 TSF
High-Cube Fulfillment (Non-Sort)	753.171 TSF
High-Cube Fulfillment (Sort)	680.469 TSF
High-Cube Cold Storage	251.057 TSF
Project Buildout (Phase 2-4)	
Manufacturing	137.448 TSF
Warehousing	412.342 TSF
High-Cube Parcel Hub	1,630.362 TSF
High-Cube Fulfillment (Non-Sort)	867.432 TSF
High-Cube Cold Storage	289.144 TSF
High-Cube Cold Storage	638.889 TSF
High-Cube Fulfillment (Non-Sort)	1,916.667 TSF
Fast-Food Restaurant Without Drive-Thru	2.500 TSF
Fast-Food Restaurant With Drive-Thru	2.500 TSF
Coffee Shop With Drive-Thru	2.000 TSF
Commercial Retail	53.984 TSF
Total Industrial	8,265.510 TSF
Total Retail	60.984 TSF

¹ TSF = Thousand Square Feet

For the purposes of this analysis, the Project is analyzed in two phases of development, an initial Phase 1 (2,373,226 sf of industrial land use) and Project Buildout (Phases 2-4) which includes the balance of the Project. A land use plan can be found in attachment A.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020, consistent with Senate Bill 743 (SB 743). At the time of this analysis, the City of Palmdale has not formally adopted its own guidelines and impact thresholds, and instead currently utilizes the County of Los Angeles Transportation Impact Analysis Guidelines (July 23, 2020) (**County Guidelines**) (1) until such time that the City is able to develop their own guidelines and thresholds.

VMT SCREENING

County Guidelines provides details on appropriate screening criteria that can be used to identify when a proposed land use project is anticipated to result in a less than significant transportation impact and are broken down into the four categories below. Consistent with the screening criteria identified within County Guidelines, the criteria in bold will be evaluated further based on applicability:

- **Non-Retail Project Trip Generation Screening**
- **Retail Project Site Plan Screening**
- **Proximity to Transit Based Screening**
- Residential Land Use Based Screening

A land use project need only to meet one of the above screening criteria to be excused from further VMT analysis.

NON-RETAIL PROJECT TRIP GENERATION SCREENING

The County Guidelines state that development projects generating a net increase of fewer than 110 daily vehicle trips are presumed to have a less than significant impact absent substantial evidence to the contrary.

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition, 2021) (2) were used to estimate the trip generation for actual vehicles. The proposed Project is anticipated to generate a total of 26,214 daily vehicle trips, exceeding the 110 daily vehicle trip threshold (see Attachment B)

Non-Retail Project Trip Generation Screening criteria is not met.

RETAIL PROJECT SITE PLAN SCREENING

County Guidelines assume local serving retail use to have a less than significant impact on VMT, provided the retail development does not include stores larger than 50,000 square feet. The Project's retail component is conceptual at this time and is anticipated to include up to 60,984 total square feet of local serving retail uses such as fast-food users with and without drive-thru window service, a coffee shop, and other local serving retail uses. Given the overall total square

footage, it is not expected that a single store would occupy a space greater than 50,000 feet and is therefore presumed to meet the Retail Project Site screening criteria.

Retail Project Site Plan Screening is met.

PROXIMITY TO TRANSIT BASED SCREENING

County Guidelines states that projects located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor may be presumed to have a less than significant transportation impact if the Project meets the following sub-criteria:

- Has a Floor Area Ratio (FAR) of less than 0.75;
- Includes more parking than required by the County Code;
- Is inconsistent with the applicable Sustainable Communities Strategy RTP/SCS; or
- Replaces affordable residential units with a smaller number of market-rate residential units.

The proposed Project is not located within a TPA nor HQTA (See Attachment C).

TPA screening criteria is not met.

Consistent with County Guidelines, the retail component of the Project meets the Retail Project Site screening criteria. However, the remaining industrial component would not meet any applicable screening criteria and is required to prepare a project level VMT analysis.

VMT ANALYSIS

MODELING METHODOLOGY

The County Guidelines identifies the SCAG model as the appropriate tool for conducting VMT analysis for land use projects in Los Angeles County. The Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) trip-based model is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households, and employment. The current SCAG model has a base year of 2012 and a forecast year of 2040 and can be used to estimate VMT for Project Phase 1 (**Phase 1**) and Project Buildout (Phases 1-4) (**Project Buildout**) conditions. The 2040 model contains the planned transportation improvements in the RTP and growth projections in the SCS.

Urban Crossroads has obtained project generated VMT calculations from Fehr and Peers, who has the SCAG model in-house and is able to provide project level model runs and VMT estimates by individual traffic analysis zones (TAZ).

VMT METRIC AND SIGNIFICANCE THRESHOLD

INDUSTRIAL LAND USES

When calculating VMT for a project, the VMT methodology should match the methodology used to establish the Baseline VMT metrics and impact thresholds. For industrial projects in the City of Palmdale and consistent with County Guidelines, Baseline VMT is defined as a measurement of

Home-Based Work (HBW) VMT per employee, which reflects all commute trips for places of employment in Los Angeles County. All HBW auto vehicle VMT attracted by the Project is divided by the total employment to get the efficiency metric of HBW VMT per employee.

Based on County Guidelines, the City of Palmdale utilizes the following impact threshold:

- The project’s employment VMT per employee exceeding 16.8% below the existing employment VMT per employee for the Los Angeles County area are considered to have a significant VMT impact.

The County Guidelines identifies the Baseline VMT applied in the VMT analysis should be consistent with the year of the analysis or in this case 2022. Using the SCAG model base year (2016) and cumulative year (2040), the Los Angeles County baseline (2022)¹ VMT was calculated using straight line linear interpolation to be 16.3 VMT per employee. The threshold of 16.8% below existing Countywide VMT per employee is **13.6 VMT per employee**.

PROJECT LAND USE CONVERSION

To estimate Project generated VMT, standard land use information such as total building square footage must first be converted into a SCAG travel demand forecasting model compatible dataset. The SCAG model utilizes socio-economic data (SED) (e.g., population, households and employment) instead of land use information for the purposes of vehicle trip estimation. Land use information for the Project has been converted to SED and input into the Project’s TAZ to calculate Project generated HBW VMT. Table 2 and 3 summarize the SED inputs used to reflect the Phase 1 and Buildout conditions, respectively.

TABLE 2: PHASE 1 EMPLOYEE ESTIMATES

Land Use	Quantity	Employment Factor ²	Employees
Industrial	2,373,226 SF	1 employee per 1,000 SF	2,373

TABLE 3: PROJECT BUILDOUT EMPLOYEE ESTIMATES

Land Use	Quantity	Employment Factor ²	Employees
Industrial	8,265,510 SF	1 employee per 1,000 SF	8,266

PROJECT VMT AND COMPARISON TO IMPACT THRESHOLD

PHASE 1

HBW VMT per employee for Phase 1 was calculated for Baseline (2022) conditions using the SCAG travel demand model and is presented in Table 3 along with the estimated number of Phase 1 employees, and the resulting Phase 1 HBW VMT per employee.

¹Although, the adopted County Guidelines state North County baseline, it has been recommended through consultation of the County’s Traffic Consultant that the entire County baseline be used as this will be consistent with an update to the County Guidelines currently in process.

² This analysis used the employment ratio for Light Industrial from LA City VMT Calculator (LADOT, 2020). https://ladot.lacity.org/sites/default/files/documents/vmt_calculator_documentation-2020.05.18.pdf

TABLE 3: PHASE 1 HBW VMT PER EMPLOYEE

	Phase 1
HBW VMT	42,481
Employment	2,373
HBW VMT per Employee	17.9
County Threshold	13.6
Percent Above Threshold	+32.0%
Potentially Significant?	Yes

In comparison to the VMT threshold of 16.8% below Baseline VMT of Los Angeles County, the Project is 32.0% above the County's thresholds and will result in a potentially significant VMT impact.

PROJECT BUILDOUT

HBW VMT per employee for Project Buildout was also calculated for Baseline (2022) conditions using the SCAG travel demand model and is presented in Table 4 along with the estimated number of Project Buildout employees, and the resulting Project Buildout HBW VMT per employee.

TABLE 4: PROJECT BUILDOUT HBW VMT PER EMPLOYEE

	Buildout
HBW VMT	147,961
Employment	8,266
HBW VMT per Employee	17.9
County Threshold	13.6
Percent Above Threshold	+32.0%
Potentially Significant?	Yes

In comparison to the VMT threshold of 16.8% below Baseline VMT of Los Angeles County, the Project Buildout is also 32.0% above the anticipated updated thresholds and will result in a potentially significant VMT impact.

POTENTIAL VMT REDUCTION STRATEGIES

Potential commute trip reduction strategies have been considered for the purposes of reducing Project related VMT impacts (i.e., commute trips) determined to be potentially significant. As the future building tenants are not known for the Project, the effectiveness of each commute trip reduction measures may be limited. The Project can however consider the following measures that have the potential to reduce work/commute VMT, although no quantified benefit can be taken at this time. Potential VMT reduction measures that could be implemented are as follows:

- The Project may implement a Voluntary Commute Trip Reduction (CTR) measure. The purpose of the CTR would be to encourage alternative modes of transportation such as carpooling, which would reduce VMT. A proposed CTR program for this project could include providing on-site and/or online commute information services including information on available transit and ride coordination for employees.

- Provide designated carpool/vanpool parking in desirable locations on-site could be provided, which could encourage employees to carpool/vanpool to work and reduce VMT.
- The Project could install end-of-trip facilities such as bicycle parking and lockers which could encourage employees to use alternative modes of transportation and thus reduce VMT.
- The Project could install on-site electric vehicle charging stations beyond what is required by the 2019 California Green Building Code Standards (CALGreen) at designated parking areas. Although this measure would not directly reduce VMT, it would reduce greenhouse gas (GHG) emissions.
- The Project could increase sidewalks along the Project frontage and provide connections to existing trails (if applicable) in order to improve pedestrian access. This measure could encourage employees to walk to nearby destinations and thus reduce VMT.

SUMMARY AND CONCLUSION

Based on the results of this analysis the following findings are made:

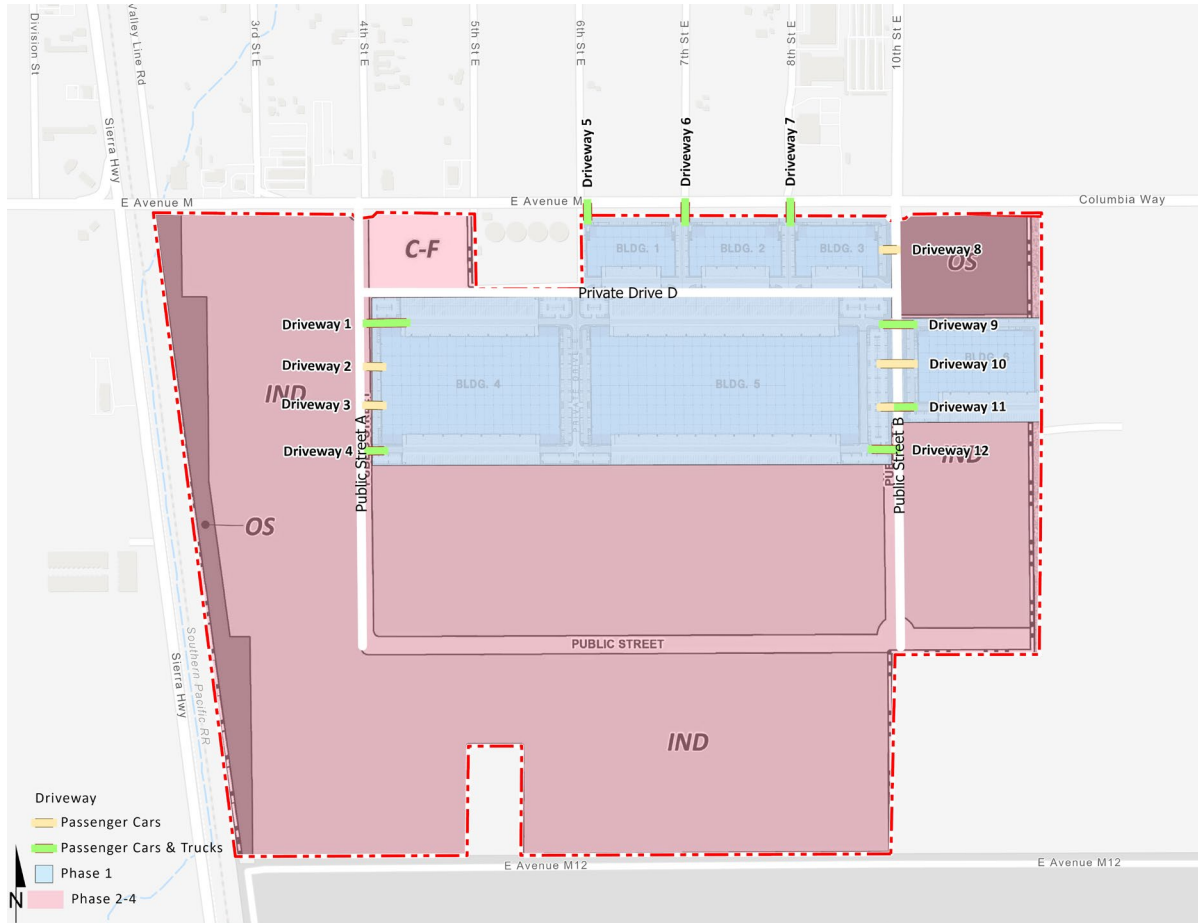
- The Project was evaluated against screening criteria as outlined in the County Guidelines. The retail component of the Project meets the Retail Project Site screening criteria. However, the remaining industrial component would not meet any applicable screening criteria and a VMT analysis was prepared for the industrial component.
- A VMT analysis was performed for the Project's industrial component and Project generated VMT per employee was found to exceed the County's VMT per employee threshold by 32.0% for both Phase 1 and Project Buildout.
- Implementation of feasible VMT reduction measures would not definitively reduce Project VMT or Project VMT impacts. Therefore, even with implementation of these measures, the Project VMT impact is assumed to exceed the County VMT threshold. The Project VMT impact is therefore considered significant and unavoidable.

If you have any questions, please contact me directly at aso@urbanxroads.com.

REFERENCES

1. **Los Angeles County Public Works.** *Transportation Impact Analysis Guidelines.* Los Angeles : Public Works, 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 11th Edition. 2021.

ATTACHEMENT A
PRELIMINARY SITE PLAN



ATTACHMENT B
PROJECT TRIP GENERATION

TABLE B-1: TRIP GENERATION RATES

Land Use ¹	ITE Code	Units ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
General Light Industrial ³	110	TSF	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
Manufacturing ³	140	TSF	0.517	0.163	0.680	0.229	0.511	0.740	4.750
Passenger Cars			0.500	0.150	0.650	0.217	0.493	0.710	4.300
2-Axle Trucks			0.003	0.002	0.005	0.002	0.003	0.005	0.075
3-Axle Trucks			0.003	0.003	0.006	0.003	0.004	0.006	0.093
4+-Axle Trucks			0.011	0.008	0.019	0.008	0.011	0.019	0.282
Warehousing ³	150	TSF	0.131	0.039	0.170	0.050	0.130	0.180	1.710
Passenger Cars			0.120	0.030	0.150	0.034	0.116	0.150	1.110
2-Axle Trucks			0.002	0.001	0.003	0.003	0.002	0.005	0.100
3-Axle Trucks			0.002	0.002	0.004	0.003	0.003	0.006	0.124
4+-Axle Trucks			0.007	0.006	0.013	0.010	0.009	0.019	0.376
High-Cube Fulfillment Center (Non-Sort) ³	155	TSF	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
High-Cube Fulfillment Center (Sort) ³	155	TSF	0.705	0.165	0.870	0.468	0.732	1.200	6.440
Passenger Cars			0.695	0.155	0.850	0.458	0.722	1.180	6.250
2-Axle Trucks			0.002	0.001	0.003	0.002	0.001	0.003	0.032
3-Axle Trucks			0.002	0.002	0.004	0.002	0.002	0.004	0.039
4+-Axle Trucks			0.006	0.007	0.013	0.006	0.007	0.013	0.119
High-Cube Parcel Hub ³	156	TSF	0.350	0.350	0.700	0.435	0.205	0.640	4.630
Passenger Cars			0.305	0.305	0.610	0.394	0.186	0.580	4.050
2-Axle Trucks			0.008	0.007	0.015	0.007	0.003	0.010	0.097
3-Axle Trucks			0.009	0.010	0.019	0.008	0.004	0.012	0.120
4+-Axle Trucks			0.028	0.028	0.056	0.026	0.012	0.038	0.363
High-Cube Cold Storage Warehouse ³	157	TSF	0.085	0.025	0.110	0.034	0.086	0.120	2.120
Passenger Cars			0.076	0.004	0.080	0.019	0.071	0.090	1.370
2-Axle Trucks			0.003	0.007	0.010	0.005	0.005	0.010	0.260
3-Axle Trucks			0.001	0.002	0.003	0.002	0.001	0.003	0.083
4+-Axle Trucks			0.005	0.011	0.016	0.008	0.008	0.016	0.407
Shopping Center (40,000-150,000 SF, no groc	821	TSF	1.07	0.66	1.73	2.54	2.65	5.19	67.52
Fast-Food Restaurant without Drive-Thru	933	TSF	25.04	18.14	43.18	16.61	16.60	33.21	450.49
Fast-Food Restaurant with Drive-Thru	934	TSF	22.75	21.86	44.61	17.18	15.85	33.03	467.48
Coffee/Donut Shop with Drive-Thru	937	TSF	43.80	42.08	85.88	19.50	19.50	38.99	533.57

¹ Trip Generation and Vehicle Mix Source: Institute of Transportation Engineers (ITE), [Trip Generation Manual](#), 11th Edition (2021).

² DU = dwelling units; TSF = thousand square feet; AC = acres

³ 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.

Normalized % - With Cold Storage: 34.7% 2-Axle trucks, 11.0% 3-Axle trucks, 54.3% 4-Axle trucks.

TABLE B-2: PROJECT TRIP GENERATION SUMMARY PHASE 1

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Phase 1 (2025):								
General Light Industrial	103.418 TSF							
Passenger Cars:		67	9	76	9	57	66	478
Total Truck Trips (Actual Vehicles):		0	0	0	0	0	0	26
Warehousing	516.396 TSF							
Passenger Cars:		62	15	77	18	60	78	574
Total Truck Trips (Actual Vehicles):		5	4	9	9	8	17	316
High-Cube Fulfillment (Sort)	680.469 TSF							
Passenger Cars:		473	105	578	312	491	803	4,254
Total Truck Trips (Actual Vehicles):		6	6	12	6	6	12	132
High-Cube Cold Storage	251.057 TSF							
Passenger Cars:		19	1	20	5	18	23	344
Total Truck Trips (Actual Vehicles):		2	6	8	4	3	7	190
High-Cube Fulfillment (Non-Sort)	753.171 TSF							
Passenger Cars:		84	14	98	43	70	113	1,190
Total Truck Trips (Actual Vehicles):		9	8	17	4	4	8	174
Manufacturing	68.715 TSF							
Passenger Cars:		34	10	44	15	34	49	296
Total Truck Trips (Actual Vehicles):		1	1	2	1	1	2	32
Industrial Component Passenger Cars		739	154	893	402	730	1,132	7,136
Industrial Component Trucks		23	25	48	24	22	46	870
Phase 1 (2025) Total Trips (Actual Vehicles)²		762	179	941	426	752	1,178	8,006

TABLE B-3: PROJECT TRIP GENERATION SUMMARY BUILDOUT

Land Use	Quantity Units ¹	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Phases 2 through 4 (2030):								
High-Cube Parcel Hub	1,630.362 TSF							
Passenger Cars:		497	497	994	642	303	945	6,604
Total Truck Trips (Actual Vehicles):		74	73	147	66	31	97	946
Manufacturing	137.448 TSF							
Passenger Cars:		69	21	90	30	68	98	592
Total Truck Trips (Actual Vehicles):		2	1	3	1	3	4	64
Warehousing	412.342 TSF							
Passenger Cars:		49	12	61	14	48	62	458
Total Truck Trips (Actual Vehicles):		5	4	9	6	6	12	250
High-Cube Cold Storage	928.033 TSF							
Passenger Cars:		71	4	75	17	66	83	1,272
Total Truck Trips (Actual Vehicles):		8	19	27	13	13	26	698
High-Cube Fulfillment (Non-Sort)	2,784.099 TSF							
Passenger Cars:		312	51	363	158	259	417	4,400
Total Truck Trips (Actual Vehicles):		29	28	57	15	14	29	644
Commercial Retail	53.984 TSF							
Internal Capture:		-5	-5	-10	-47	-34	-81	-1,056
Pass-by Reduction (40% PM/Daily):		0	0	0	-44	-44	-88	-1,036
Fast-Food Restaurant without Drive-Thru	2.500 TSF							
Internal Capture:		63	45	108	42	42	84	1,126
Pass-by Reduction (50% AM; 55% PM/Daily):		-2	-2	-4	-12	-16	-28	-360
Pass-by Reduction (50% AM; 55% PM/Daily):		-31	-31	-62	-14	-14	-28	-422
Fast-Food Restaurant with Drive-Thru	2.500 TSF							
Internal Capture:		57	55	112	43	40	83	1,170
Pass-by Reduction (50% AM; 55% PM/Daily):		-2	-2	-4	-11	-16	-27	-350
Pass-by Reduction (50% AM; 55% PM/Daily):		-28	-28	-56	-13	-13	-26	-452
Coffee/Donut Shop with Drive-Thru	2.000 TSF							
Internal Capture:		88	84	172	39	39	78	1,068
Pass-by Reduction (90% AM; 98% PM/Daily):		-1	-1	-2	-11	-15	-26	-346
Pass-by Reduction (90% AM; 98% PM/Daily):		-78	-78	-156	-24	-24	-48	-708
Commercial Component Total:		119	72	191	85	88	173	2,280
Industrial Component Passenger Cars		998	585	1,583	861	744	1,605	13,326
Industrial Component Trucks		118	125	243	101	67	168	2,602
Phases 2 through 4 Total Trips (Actual Vehicles)²		1,235	782	2,017	1,047	899	1,946	18,208
Commercial Component Passenger Cars		119	72	191	85	88	173	2,280
Industrial Component Passenger Cars		1,737	739	2,476	1,263	1,474	2,737	20,462
Industrial Component Trucks		141	150	291	125	89	214	3,472
Project Buildout Total Trips (Actual Vehicles)²		1,997	961	2,958	1,473	1,651	3,124	26,214

¹ TSF = thousand square feet

² Total Trips = Passenger Cars + Trucks

ATTACHMENT C
TPA SCREENING MAP

