



MEMORANDUM

Date: July 31, 2019
To: Ilan Golech, Golech Group
From: Paul Herrmann, P.E.
Mae Tamayo
Subject: Trip Generation Assessment for the Ball and Sunkist Gas Station and Car Wash

OC19-0658

This memorandum documents a trip generation assessment conducted by Fehr & Peers for the proposed gas station, 7-Eleven, and car wash (Project) located at the northeast corner of East Ball Road & Sunkist Street in Anaheim, California. The Project trip generation was estimated and reviewed at the request of the City of Anaheim. This memorandum is organized into the following sections: Project Description, Trip Generation for the Project, Trip Generation for the existing site and net new Trip Generation.

Project Description

The Project will replace an existing 20,200 square-foot (SF) shopping center with a gas station with 12 vehicle fuel positions, 3,010 SF 7-Eleven convenience store, and 4,480 SF automated car wash facility located at the northeast corner of East Ball Road & Sunkist Street in Anaheim, California.

Trip Generation

Trip generation estimates for the Project and existing shopping center were determined using trip generation rates from *Trip Generation, 10th Edition* (Institute of Transportation Engineers [ITE], 2017) as approved by the City.

Project Trip Generation Estimate

Trip generation rates for the Project (ITE Land Use Codes 945 and 948) were used to estimate the number of trips. The ITE trip generation rate for an automated car wash (ITE Land Use Code 948) does not include rates for the AM peak period. In order to estimate the AM peak period trips, empirical data collected from a traffic impact analysis (TIA) for a similar automated car wash was

referenced¹. The car wash PM data presented in this TIA, is higher than the PM ITE trip generation rates, and therefore, the AM data is considered to be a conservative rate.

Pass-by reduction rates were determined using the LADOT Transportation Impact Study Guidelines (2016)². Fehr and Peers applied a 50% pass-by reduction for the gas station with convenience market and 20% pass-by reduction for the automated car wash.

A 10% internalization reduction rate was assumed for compatible land uses. It can be assumed that 10% of vehicle trips from the car wash will be users of the adjacent gas station.

As presented in **Table 1**, the Project is expected to generate an estimated net external 1,912 daily trips, including 117 trips (59 inbound/58 outbound) during the AM peak hour and 134 trips (68 inbound/66 outbound) during the PM peak hour.

Shopping Center Trip Generation

Since the Project will be replacing an existing shopping center, trip generation rates for Shopping Center (ITE Land Use Code 820) from *Trip Generation, 10th Edition* (Institute of Transportation Engineers [ITE], 2017) were used to determine the existing trip generation. The existing project square footage was estimated using aerial photos. Given the proximity to the freeway and the local serving uses at the shopping center, Fehr and Peers applied a 50% pass-by reduction for the existing site. As presented in **Table 1**, the existing shopping center generates net 381 daily trips, including 9 trips (6 inbound/3 outbound) during the AM peak hour and 38 trips (18 inbound/20 outbound) during the PM peak hour.

Site Trip Generation Estimate

As presented in **Table 1**, the Project site is expected to generate an estimated net new 1,531 daily trips, including 108 trips (53 inbound/55 outbound) during the AM peak hour and 96 trips (50 inbound/46 outbound) during the PM peak hour.

¹ Matt's Express Car Wash TIA, City of Redlands. Kunzman Associates, Inc., 2014.

² These rates were derived from the "Trip Generation Handbook: An ITE Recommended Practice", 2003.

**TABLE 1
TRIP GENERATION ESTIMATE
BALL ROAD & SUNKIST STREET GAS STATION AND CAR WASH**

Land Use	ITE Land Use Code	Size	Trip Generation Rates [a]							Estimated Trip Generation								
			Daily Rate	AM Peak Hour			PM Peak Hour			Trip Rate Unit	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips			
				Rate	% In	% Out	Rate	% In	% Out			In	Out	Total	In	Out	Total	
Project																		
Gas Station with Convenience Market <i>Pass-by reduction (50%)</i>	945	12 vfp	205.36	12.47	51%	49%	13.99	51%	49%	per vfp	2,465	77	73	150	86	82	168	
Net Gas Station with Convenience Market Trips											-1,233	-39	-36	-75	-43	-41	-84	
Automated Car Wash <i>Internalization reduction (10%)</i>	948	4.840 ksf	[b]	[b]			14.2	50%	50%	per ksf	1,232	38	37	75	43	41	84	
Net Automated Car Wash Trips with Internalization <i>Pass-by reduction (20%)</i>											944	29	29	58	35	34	69	
Net Automated Car Wash Trips											-94	-3	-3	-6	-4	-3	-7	
Net Automated Car Wash Trips											850	26	26	52	31	31	62	
Net Automated Car Wash Trips											-170	-5	-5	-10	-6	-6	-12	
Project Trips Total											1,912	59	58	117	68	66	134	
Existing																		
Shopping Center <i>Pass-by reduction (50%)</i>	820	20.200 ksf	37.75	0.94	62%	38%	3.81	48%	52%	per ksf	763	12	7	19	37	40	77	
Net Existing Credit											-382	-6	-4	-10	-19	-20	-39	
Net New External Trips											1,531	53	55	108	50	46	96	

Notes:

- a. Source: Institute of Transportation Engineers (ITE), *Trip Generation, 10th Edition, 2017*, unless otherwise noted.
- b. Driveway counts at similar land use in City of Redlands. Matt's Express Car Wash TIA, Kunzman Associates, INC. 2014
- c. vfp = vehicle fuel position
- d. ksf = 1,000 square feet
- e. 10% Internalization reduction was assumed for compatible land use type
- f. Pass-by reductions values from LADOT TIS Guidelines, 2016. These rates were derived from the "Trip Generation Handbook: An ITE Recommended Practice", 2003.