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Trip Generation Comparison

Parking Master Plan

Acevedo, Alex

From: Ruenger, Jeffrey
Sent: Wednesday, January 11, 2017 3:44 PM
To: Carr, Brad
Cc: Castro, Lorraine; Acevedo, Alex
Subject: FW: 9-UP-2016 (Fry's Fuel Center)

From: Dennis Haley [mailto:DHaley@azdot.gov]
Sent: Wednesday, January 11, 2017 3:07 PM
To: Projectinput
Cc: Vanessa Nunez; Wayne Mennetti
Subject: 9-UP-2016 (Fry's Fuel Center)

RE: 9-UP-2016 Conditional Use Permit
Fry's Fuel Center
9350 N. 90th St.

Attention: Brad Carr:

Thank you for the notification of Conditional Use Permit for the above-referenced proposed development.
After review, we have determined that due to the parcel's proximity to SR101, the proposed development may have an impact upon the highway's right of way and access control. It is recommended that the developer contact Wayne Mennetti, Phoenix Metro Area Permit Technician, to inquire of the need for an access permit and to ascertain if a traffic study will be necessary.
Wayne can be reached at 602-377-7007 or WMennetti@azdot.gov
We appreciate the opportunity to review and comment.

Dennis Haley, SR/WA
Right of Way Agent III
ADOT ROW Project Coordinator

205 S. 17th Ave MD: 612E
Phoenix, AZ 85007
602-712-7432
WWW.AZDOT.GOV

Memo: Fry's Fuel Center #621 Expansion – Traffic Impact Statement

Date: 08/18/16
TO: City of Scottsdale
FROM: Eric Maceyko, P.E., PTOE
Bryan Martin, P.E.

INTRODUCTION

A new expansion is being planned at the existing Fry's Fuel Center #621, generally located on the northwest corner of 90th Street and Via Linda in Scottsdale, Arizona. The proposed expansion consists of adding four (4) new fueling dispensers south of the existing dispensers in an area currently dedicated to parking.

RESULTS

Table 1 provides the total anticipated increase in peak hour trip generation for the proposed expansion on the existing roadway network.

Table 1: Proposed Expansion Trip Generation

Time Period	AM Peak Hour	PM Peak Hour
Weekday	97	111
Pass-by	(29)	(24)
Interaction	(19)	(22)
TOTAL	**49**	**65**

The proposed expansion is anticipated to have a minimal impact on the existing roadway network.

2045 S Vineyard Avenue, Suite 101, Mesa, AZ 85210
O: 480.503.2250 F: 480.503.2258

LOCATION

The proposed expansion site is located within an existing mixed-use commercial center anchored by a Fry's Marketplace store generally located on the northwest corner of 90th Street and Via Linda. The existing fuel center is located adjacent to 90th Street and shares direct access to 90th Street by two (2) shared access driveways. The northern driveway provides full access and the southern driveway provides right-in, right-out only access. Regional access to the site is primarily provided by 90th Street which has an existing traffic interchange at the Loop 101 freeway south of the site.

Figure 1 provides an aerial photograph of the property vicinity and the adjacent streets. **Figure 2** provides the proposed development site plan.

Figure 1: Vicinity Map

Figure 2: Proposed Development Site Plan

TRIP GENERATION

A previous study, *Fry's #621 Fueling Stations Traffic Impact Analysis*, was completed by EPS Group in May 2011 for the existing fuel center. The trip generation methodology for the proposed expansion generally conforms to the previous report, but has been updated to adhere to the current traffic engineering state of practice. **Attachment A** contains pertinent excerpts from the previous report.

The estimated trip generation for the proposed development was determined through the procedures and data contained within the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition, published in 2012. This document provides traffic volume data from existing developments throughout North America that can be utilized to estimate vehicle trips that might be generated from proposed developments. The traffic data are provided for 172 different categories. The estimated traffic volume is dependent upon independent variables defined by the characteristics and size of each land use category.

There is adequate data available for fuel center developments. ITE Land Use Code 944 – Gasoline / Service Station, and ITE Land Use Code 945 – Gasoline / Service Station with Convenience Market were utilized for this study. The most readily available and common independent variable between the two land use codes to predict trips is the number of fueling positions. Per ITE, the number of fueling positions is defined as the maximum number of vehicles that can be fueled simultaneously.

For this proposed expansion, each new dispenser is capable of servicing two (2) vehicles simultaneously for a maximum total of eight (8) vehicles, or fueling positions. Volumes utilizing this independent variable were calculated for each time period. Also both equations and average rates are provided in Trip Generation. Both methods were calculated separately for each time period. The largest volumes considering both land use codes and calculation methods were utilized as the estimate for the generated traffic for the proposed development. **Attachment B** provides the detailed trip generation calculations.

Table 2 summarizes the total trip generation for the proposed development during the day and peak hours of traffic for a typical weekday.

Table 2: Total Trip Generation

Time Period	Day			AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Weekday	674	674	1,348	49	48	97	56	55	111

Pass-by trips are trips accomplished by vehicles already on an adjacent street that enter a site, and then leave the site to continue on their original route. Pass-by trips are subtracted from the adjacent through movement at an access. The traffic entering and exiting the site is not reduced, because 100% of the generated trips access the site. Commercial uses typically attract pass-by trips. The ITE publication, Trip Generation Handbook, 3rd Edition, published in 2014 provides measured pass-by trip percentages from existing land uses. **Appendix C** provides excerpts from this document pertinent to the proposed fueling stations, and **Table 3** summarizes the data. For the purposes of this analysis, the average pass-by trip percentage was utilized.

Table 3: Pass-by Trip Percentages for Fueling Stations

ITE Code and Category	AM Peak Hour	PM Peak Hour
944 - Gasoline / Service Station	58%	42%
945 - Gasoline / Service Station w/ Convenience market	62%	56%

Additionally, many of the people who will utilize the fuel center will also visit the grocery store during the same visit – termed trip-chaining or trip interaction. Fry's estimates that 20% to 40% of the vehicles who access the fuel center will also visit the grocery store – implying that these vehicles are included in the existing accesses traffic counts. To be conservative, this percentage was assumed to be 20%. Therefore, the fueling station entering and exiting traffic volumes were reduced by 20%.

Table 4 provides the peak hour trip generation for the proposed expansion with pass-by and trip interaction adjustments. The total volumes reflect the amount of "new" trips that are anticipated to be added to the existing roadway network.

Table 4: Adjusted Trip Generation

Time Period	AM Peak Hour	PM Peak Hour
Weekday	97	111
Pass-by	(29)	(24)
Interaction	(19)	(22)
TOTAL	**49**	**65**

CONCLUSION

The proposed fuel center expansion is anticipated to generate a maximum of 49 morning peak hour trips and 65 evening peak hour trips during an average weekday on the existing roadway network. The proposed expansion is anticipated to have a minimal impact on the existing roadway network

Please contact me at (480) 503-2250, extension 125 if you have any questions or would like to discuss this memorandum.

Expires:6/30/2017

ATTACHMENTS:

A. Pertinent Excerpts from Previous Report
B. Proposed Development Trip Generation
C. ITE Pass-by Percentages

ATTACHMENT A
PERTINENT EXCERPTS FROM PREVIOUS REPORT

Fry's #621 Fueling Stations
Scottsdale, Arizona

Traffic Impact Analysis

May 2011

Prepared for:
FRY'S

For Submittal to:
CITY OF SCOTTSDALE

EPS Group Project Number: 11-058

Prepared by: Paul E. Basha, P.E., P.T.O.E.

eps group, Inc.
Engineers, Planners & Surveyors

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Executive Summary

Introduction

Fry's Grocery intends to supplement their existing store in the northwest corner of 90th Street and Via Linda with 10 fueling stations.

Results

The proposed fueling stations are anticipated to generate the following traffic volumes.

Time Period	AM Peak Hour	PM Peak Hour
Site Traffic	170	200
Passby Traffic	-49	-36
Trip Interaction	-34	-34
New Traffic	**87**	**130**

Conclusions and Recommendations with Addition of Fueling Stations

The addition of fueling stations at the existing Fry's will have minimal impact on the existing street system. During the evening peak hour, the northernmost 90th Street egress will change from its current level-of-service of "E" to "F". Often minor streets and driveways experience level-of-service "F" at intersections with major streets. Drivers will either tolerate this delay or choose alternate routes. At this site, drivers can turn left at the Via Linda access, then turn left at 90th Street. Both of these movements have acceptable operation. Recognizing that the southernmost access has a right-turn egress, it would not be necessary to provide separate left-turn and right-turn lanes at the northernmost egress.

Introduction and Scope of Study

Fry's Grocery intends to supplement their existing store in the northwest corner of 90th Street and Via Linda with 10 fueling stations. There are four (4) purposes for this analysis:

- Evaluate existing traffic conditions at 90th Street and Via Linda, and site accesses
- Estimate new traffic generated by proposed fueling services
- Assign and distribute new traffic to surrounding street system
- Evaluate operation at 90th Street and Via Linda, and site accesses with fueling services

Figure 1 provides a site plan of the existing store with the proposed fueling services.

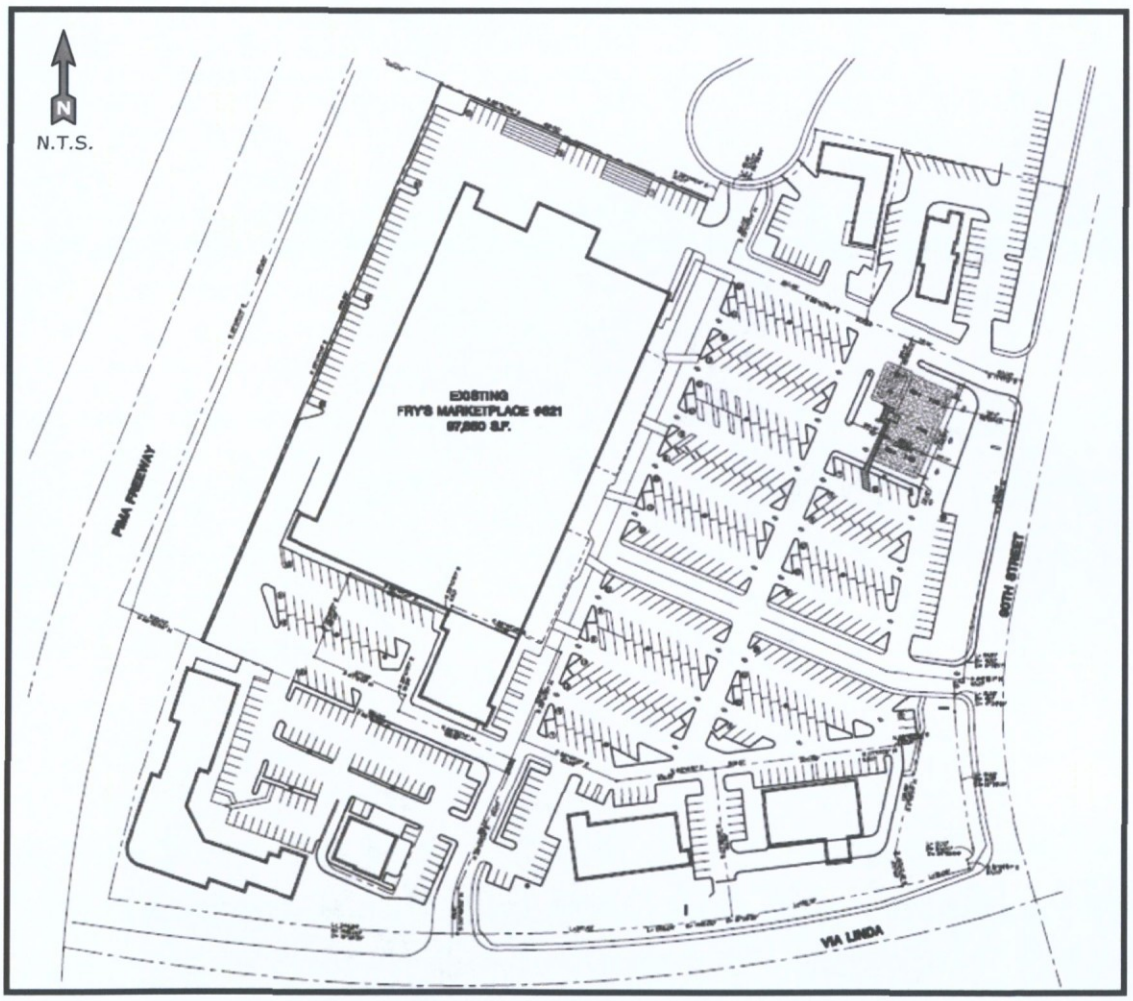

Figure 1: Site Plan

Figure 2 provides an aerial photograph of the site. **Figure 3** provides an aerial photograph of the immediate vicinity of the existing Fry's grocery store.

Figure 2: Aerial Photograph – Existing Site

Proposed Site – Trip Generation

The estimated trip generation for the proposed Fry's store fueling stations addition was determined through the procedures and data contained within the Institute of Transportation Engineers (ITE) *Trip Generation*, 8th Edition, published in 2008. This document provides traffic volume data from existing developments throughout North America that can be utilized to estimate vehicle trips that might be generated from proposed developments. The traffic data are provided for 162 different categories. The estimated traffic volume is dependent upon independent variables defined by the characteristics and size of each land use category.

Trip Generation provides sufficient data for fueling stations for this analysis. For this study, ITE Land Use Code 852, Convenient Market with Gasoline Pumps, ITE Land Use Code 945, Gasoline / Service Station with Convenience Market, and ITE Land Use Code 944, Gasoline / Service Station, were all utilized. Three (3) independent variables –fueling stations, morning peak hour traffic volume, and evening peak hour traffic volume – are available for ITE Code 944 to predict trips. For both ITE Codes 852 and 945, the additional independent variable of convenience market building area is available. For the proposed Fry's fueling station, no additional building area will be constructed, and therefore, this independent variable was not utilized.

For the proposed addition of fueling stations for the existing Fry's grocery store, predicted traffic volumes were determined for all three (3) land use codes and all three (3) independent variables, and the maximum value was utilized for the analysis. **Appendix C.1** provides the complete results of these calculations. **Table 4** summarizes the estimated trip generation.

Table 4: Fry's Fueling Stations Estimated Trip Generation

Time Period	Day			AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Weekday	2,713	2,713	5,426	85	85	170	100	100	200
Weekend Day	2,295	2,294	4,589	-	-	-	252	215	467

Proposed Site – Trip Distribution

The final determination related to site traffic is the direction the generated traffic utilizes to enter and exit the site. The fueling station access trip distribution was assumed to be equal to the existing site access distribution. **Table 5** and **Table 6** provide the existing site access traffic volumes and percentages for the morning and evening peak hours respectively. It was assumed that all of the new and only fueling station traffic would utilize the 90th Street accesses, with none of the new fueling station traffic utilizing the Via Linda access. This is a conservative assumption as 45% of the current site entering traffic and 28% of the current site exiting traffic utilize the Via Linda access. The fueling station traffic was assumed to utilize the 90th Street accesses in the same ratio as the existing site traffic.

Proposed Site – Pass-by Traffic and Trip Interaction Traffic

Pass-by trips are trips accomplished by vehicles already on an adjacent street that enter a site, and then leave the site to continue on their original route. Pass-by trips are subtracted from the adjacent through movement at an access. The traffic entering and exiting the site is not reduced, because 100% of the generated trips access the site. Commercial uses typically attract pass-by trips. The ITE publication, *Trip Generation Handbook*, provides measured pass-by trip percentages from existing land uses. **Appendix C.2** provides excerpts from this document pertinent to the proposed fueling stations and **Table 7** summarizes the data. For the purposes of this analysis, to be conservative, the minimum pass-by trip percentage was utilized. The pass-by percentages were applied to the through northbound and southbound movements on 90th Street.

Table 7: Pass-by Trip Percentages for Fueling Stations

ITE Code and Category	AM PEAK HOUR	PM PEAK HOUR
852 - Market with Gasoline	63%	66%
945 - Gasoline with Market	62%	56%
944 - Gasoline	58%	42%

The pass-by traffic volumes for the Fry's fueling stations – those to be subtracted from the existing traffic – are provided in **Figure 13** and **Figure 14** respectively the for morning and evening peak hour turning movement volumes at the site accesses and the 90th Street / intersection.

Additionally, many of the people who will utilize the fueling station will also visit the grocery store during the same visit – termed trip-chaining or trip interaction. Fry's estimates that 20% to 40% of the vehicles who access the fueling station will also visit the grocery store – implying that these vehicles are included in the existing accesses traffic counts. To be conservative, this percentage was assumed to be 20%. Therefore, the fueling station entering and exiting traffic volumes were reduced by 20%.

ATTACHMENT B
PROPOSED DEVELOPMENT TRIP GENERATION

EPS GROUP

PROJECT	FRY'S FUEL CENTER #621 EXPANSION			
PARCEL	ENTIRE SITE			
ITE LAND USE CATEGORY AND CODE	GASOLINE/SERVICE STATION - 944			
INDEPENDENT VARIABLE	VEHICLE FUELING POSITIONS			
SIZE	8			
		TRIPS		
		ENTERING	EXITING	TOTAL
***WEEKDAY* DAILY**		50%	50%	
NUMBER OF STUDIES	6			
AVERAGE SIZE	8			
MINIMUM RATE	73.00	292	292	584
AVERAGE RATE	168.56	674	674	1,348
MAXIMUM RATE	306.00	1,224	1,224	2,448
STANDARD DEVIATION	71.19			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**674**	**674**	**1,348**
AM PEAK HOUR ADJACENT STREET		51%	49%	
NUMBER OF STUDIES	15			
AVERAGE SIZE	7			
MINIMUM RATE	7.33	30	29	59
AVERAGE RATE	12.16	49	48	97
MAXIMUM RATE	17.50	71	69	140
STANDARD DEVIATION	4.29			
EQUATION: T = 10.27 * (X) + 13.89	R^2 = 0.56	49	47	96
LARGEST OF AVERAGE OR EQUATION		**49**	**48**	**97**
AM PEAK HOUR GENERATOR		50%	50%	
NUMBER OF STUDIES	13			
AVERAGE SIZE	8			
MINIMUM RATE	7.33	30	29	59
AVERAGE RATE	12.58	51	50	101
MAXIMUM RATE	17.50	70	70	140
STANDARD DEVIATION	4.55			
EQUATION: T = 13.30 * (X) - 5.40	R^2 = 0.60	51	50	101
LARGEST OF AVERAGE OR EQUATION		**51**	**50**	**101**
PM PEAK HOUR ADJACENT STREET		50%	50%	
NUMBER OF STUDIES	28			
AVERAGE SIZE	8			
MINIMUM RATE	5.00	20	20	40
AVERAGE RATE	13.87	56	55	111
MAXIMUM RATE	27.33	110	109	219
STANDARD DEVIATION	6.65			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**56**	**55**	**111**
PM PEAK HOUR GENERATOR		50%	50%	
NUMBER OF STUDIES	14			
AVERAGE SIZE	8			
MINIMUM RATE	6.83	28	27	55
AVERAGE RATE	15.65	63	62	125
MAXIMUM RATE	29.33	118	117	235
STANDARD DEVIATION	6.62			
EQUATION: T = 20.56 * (X) - 37.20	R^2 = 0.55	64	63	127
LARGEST OF AVERAGE OR EQUATION		**64**	**63**	**127**

EPS GROUP

PROJECT	FRY'S FUEL CENTER #621 EXPANSION			
PARCEL	ENTIRE SITE			
ITE LAND USE CATEGORY AND CODE	GASOLINE/SERVICE STATION - 944			
INDEPENDENT VARIABLE	VEHICLE FUELING POSITIONS			
SIZE	8			
		TRIPS		
	RATE	ENTERING	EXITING	SUM
***SATURDAY* DAILY**		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
PEAK HOUR GENERATOR		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
***SUNDAY* DAILY**		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
PEAK HOUR GENERATOR		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**

EPS GROUP

PROJECT	FRY'S FUEL CENTER #621 EXPANSION			
PARCEL	ENTIRE SITE			
ITE LAND USE CATEGORY AND CODE	GASOLINE/SERVICE STATION W/ CONVENIENCE MARKET - 945			
INDEPENDENT VARIABLE	FUELING POSITIONS			
SIZE	8			
		TRIPS		
		ENTERING	EXITING	TOTAL
***WEEKDAY* DAILY**		50%	50%	
NUMBER OF STUDIES	11			
AVERAGE SIZE	12			
MINIMUM RATE	90.67	363	362	725
AVERAGE RATE	162.78	651	651	1,302
MAXIMUM RATE	299.50	1,198	1,198	2,396
STANDARD DEVIATION	68.16			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**651**	**651**	**1,302**
AM PEAK HOUR ADJACENT STREET		50%	50%	
NUMBER OF STUDIES	36			
AVERAGE SIZE	11			
MINIMUM RATE	3.50	14	14	28
AVERAGE RATE	10.16	41	40	81
MAXIMUM RATE	33.40	134	133	267
STANDARD DEVIATION	6.01			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**41**	**40**	**81**
AM PEAK HOUR GENERATOR		50%	50%	
NUMBER OF STUDIES	35			
AVERAGE SIZE	11			
MINIMUM RATE	3.50	14	14	28
AVERAGE RATE	10.56	42	42	84
MAXIMUM RATE	33.40	134	133	267
STANDARD DEVIATION	6.15			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**42**	**42**	**84**
PM PEAK HOUR ADJACENT STREET		50%	50%	
NUMBER OF STUDIES	39			
AVERAGE SIZE	10			
MINIMUM RATE	4.25	17	17	34
AVERAGE RATE	13.51	54	54	108
MAXIMUM RATE	57.80	231	231	462
STANDARD DEVIATION	7.91			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**54**	**54**	**108**
PM PEAK HOUR GENERATOR		50%	50%	
NUMBER OF STUDIES	37			
AVERAGE SIZE	10			
MINIMUM RATE	4.25	17	17	34
AVERAGE RATE	13.57	55	54	109
MAXIMUM RATE	57.80	231	231	462
STANDARD DEVIATION	7.94			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**55**	**54**	**109**

EPS GROUP

PROJECT	FRY'S FUEL CENTER #621 EXPANSION			
PARCEL	ENTIRE SITE			
ITE LAND USE CATEGORY AND CODE	GASOLINE/SERVICE STATION W/ CONVENIENCE MARKET - 945			
INDEPENDENT VARIABLE	FUELING POSITIONS			
SIZE	8			
		TRIPS		
	RATE	ENTERING	EXITING	SUM
***SATURDAY* DAILY**		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
PEAK HOUR GENERATOR		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
***SUNDAY* DAILY**		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**
PEAK HOUR GENERATOR		NA	NA	
NUMBER OF STUDIES	NA			
AVERAGE SIZE	NA			
MINIMUM RATE	NA	NA	NA	NA
AVERAGE RATE	NA	NA	NA	NA
MAXIMUM RATE	NA	NA	NA	NA
STANDARD DEVIATION	NA			
EQUATION: NOT PROVIDED	NA	NA	NA	NA
LARGEST OF AVERAGE OR EQUATION		**NA**	**NA**	**NA**

EPS GROUP

ATTACHMENT C
ITE PASS-BY PERCENTAGES

EPS GROUP

Table F.33 Pass-By and Non-Pass-By Trips Weekday
Land Use Code 938—Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (Coffee/Espresso Stand)

SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			SOURCE
						PRIMARY	DIVERTED	TOTAL	
0.1	Vancouver, WA	Nov. 1997	69	6:00 a.m.–6:00 p.m.	83	—	—	17	Kittelson & Associates Inc.

"—" means no data were provided

Table F.34 Pass-By and Non-Pass-By Trips Weekday
Land Use Code 938—Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (Coffee/Espresso Stand)

EMPLOYEES	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			SOURCE
						PRIMARY	DIVERTED	TOTAL	
1	Vancouver, WA	Nov. 1997	70	6:00 a.m.–6:00 p.m.	83	—	—	17	Kittelson & Associates Inc.
1	Woodburn, OR	Feb. 1998	109	6:00 a.m.–6:00 p.m.	95	—	—	5	Kittelson & Associates Inc.
1	Vancouver, WA	Feb. 1998	83	6:00 a.m.–1:00 p.m.	89	—	—	11	Kittelson & Associates Inc.

Average Pass-By Trip Percentage: 89
"—" means no data were provided

Table F.35 Pass-By and Non-Pass-By Trips Weekday, AM Peak Period
Land Use Code 944—Gasoline/Service Station

SIZE (1,000 SQ. FT. GFA)	VEHICLE FUELING POSITIONS	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
2.3	6	Gaithersburg, MD	1992	37	7:00–9:00 a.m.	32	41	27	68	2,080	RBA
2.1	6	Bethesda, MD	1992	26	7:00–9:00 a.m.	58	23	19	42	2,080	RBA
1.7	6	Wheaton, MD	1992	21	7:00–9:00 a.m.	67	14	19	33	900	RBA
2.0	8	Gaithersburg, MD	1992	46	7:00–9:00 a.m.	87	13	0	13	2,235	RBA
1.2	6	Damascus, MD	1992	21	7:00–9:00 a.m.	43	28	29	57	870	RBA
0.3	12	Wheaton, MD	1992	36	7:00–9:00 a.m.	61	8	31	39	3,480	RBA

Average Pass-By Trip Percentage: 58
"—" means no data were provided

Table F.36 Pass-By and Non-Pass-By Trips Weekday, PM Peak Period Land Use Code 944—Gasoline/Service Station

SIZE (1,000 SQ. FT. GFA)	VEHICLE FUELING POSITIONS	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
—	—	Chicago suburbs, IL	1987	48	3:00–7:00 p.m.	21	—	—	79	—	Kenig, O'Hara, Humes, Flock
—	—	Chicago suburbs, IL	1987	34	3:00–6:00 p.m.	25	—	—	75	—	Kenig, O'Hara, Humes, Flock
—	—	Chicago suburbs, IL	1987	42	3:00–6:00 p.m.	20	—	—	80	—	Kenig, O'Hara, Humes, Flock
2.3	6	Gaithersburg, MD	1992	55	4:00–6:00 p.m.	40	11	49	60	2,760	RBA
2.1	6	Bethesda, MD	1992	30	4:00–6:00 p.m.	53	20	27	47	1,060	RBA
1.7	6	Wheaton, MD	1992	18	4:00–6:00 p.m.	61	6	33	39	2,510	RBA
2.0	8	Gaithersburg, MD	1992	47	4:00–6:00 p.m.	62	23	15	38	2,635	RBA
1.2	6	Damascus, MD	1992	26	4:00–6:00 p.m.	58	11	31	42	1,020	RBA
0.3	12	Wheaton, MD	1992	52	4:00–6:00 p.m.	38	10	52	62	3,835	RBA

Average Pass-By Trip Percentage: 42
"—" means no data were provided

Table F.37 Pass-By and Non-Pass-By Trips Weekday, AM Peak Period Land Use Code 945—Gasoline/Service Station with Convenience Market

SIZE (1,000 SQ. FT. GFA)	VEHICLE FUELING POSITIONS	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
0.8	8	Louisville area, KY	1993	61	7:00–9:00 a.m.	60	15	25	40	4,000	Barton-Aschman Assoc.
0.6	8	Louisville, KY	1993	48	7:00–9:00 a.m.	68	13	19	32	1,307	Barton-Aschman Assoc.
0.7	10	Louisville, KY	1993	47	7:00–9:00 a.m.	67	11	22	33	1,105	Barton-Aschman Assoc.
0.7	8	Louisville area, KY	1993	—	7:00–9:00 a.m.	56	22	22	44	1,211	Barton-Aschman Assoc.
0.7	10	Louisville area, KY	1993	—	7:00–9:00 a.m.	46	42	12	54	1,211	Barton-Aschman Assoc.
0.3	—	Louisville area, KY	1993	75	7:00–9:00 a.m.	72	15	13	28	—	Barton-Aschman Assoc.
0.8	8	Silver Spring, MD	1992	36	7:00–9:00 a.m.	47	14	39	53	3,095	RBA
0.4	8	Derwood, MD	1992	46	7:00–9:00 a.m.	75	0	25	25	3,770	RBA
2.2	8	Kensington, MD	1992	31	7:00–9:00 a.m.	47	34	19	53	1,785	RBA
1	8	Silver Spring, MD	1992	35	7:00–9:00 a.m.	78	9	13	22	7,080	RBA

Average Pass-By Trip Percentage: 62
"—" means no data were provided

Table F.38 Pass-By and Non-Pass-By Trips Weekday, PM Peak Period Land Use Code 945—Gasoline/Service Station with Convenience Market

SIZE (1,000 SQ FT GFA)	VEHICLE FUELING POSITIONS	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
0.8	8	Louisville area, KY	1993	83	4:00–6:00 p.m.	52	8	40	48	4,965	Barton-Aschman Assoc.
0.6	8	Louisville, KY	1993	60	4:00–6:00 p.m.	53	20	27	47	1,491	Barton-Aschman Assoc.
0.7	10	Louisville, KY	1993	—	4:00–6:00 p.m.	57	19	24	43	1,812	Barton-Aschman Assoc.
0.7	8	Louisville area, KY	1993	—	4:00–6:00 p.m.	72	7	21	28	2,657	Barton-Aschman Assoc.
0.7	10	Louisville area, KY	1993	—	4:00–6:00 p.m.	55	16	29	45	2,657	Barton-Aschman Assoc.
0.8	8	Silver Spring, MD	1992	36	4:00–6:00 p.m.	67	14	19	33	3,095	RBA
0.4	8	Derwood, MD	1992	46	4:00–6:00 p.m.	46	11	43	54	3,770	RBA
2.1	8	Kensington, MD	1992	31	4:00–6:00 p.m.	52	13	35	48	1,785	RBA
1	8	Silver Spring, MD	1992	35	4:00–6:00 p.m.	54	3	43	46	7,080	RBA

Average Pass-By Trip Percentage: 56
"—" means no data were provided