

# APPENDIX A

## **Weekday Peak Hour Trip Generation Formulas and Rates for Local Area Transportation Review**

Table A-1  
General Office

Applicable Size	Formula/Rate	Directional Distribution			
		AM		PM	
		Enter	Exit	Enter	Exit
Under 25,000 sf GFA	AM: $T = 1.38(A)$ PM: $T = 2.24(A)$				
25,000 sf GFA and over	AM: $T = 1.70(A) - 8$ PM: $T = 1.44(A) + 20$	87%	13%	17%	83%
Over 300,000 sf GFA with special characteristics (See Table B-1)	AM: $T = 1.70(A) + 115$ PM: $T = 1.44(A) + 127$				
Within 1,000-foot radius of Metrorail station and outside the Beltway (D)	AM: Deduct P = 50% total trips from "T" PM: Deduct P = $4(1000-D)/100$ from "T"				

T = weekday peak-hour vehicle trips      A = gross floor area (GFA) of building in 1,000 sf  
P = percentage reduction in trips (P/100)      D = straight line distance (in feet) from the main entrance to station

Table A-2  
General Retail

Applicable Size	Formula/Rate*	Directional Distribution			
		AM		PM	
		Enter	Exit	Enter	Exit
All sizes except convenience retail	AM: Use 25% of the weekday evening peak-hour trips				
Under 50,000 sf GLA	PM: $T = 12.36(A)$	52%	48%	52%	48%
From 50,000 sf up to 200,000 sf GLA	PM: $T = 7.43(A) + 247$				
Over 200,000 sf GLA	Special analysis required by applicant or use two times applicable ITE rate				
Convenience retail not part of a shopping center or groups of stores	AM and PM: Use applicable ITE formula/rate				

T = weekday peak-hour vehicle trips      A = gross leasable area (GLA) of building in 1,000 sf  
\*For no major food chain store, deduct (P):      P =  $0.05 + 0.002(200-A)$

Table A-3  
Fast Food Restaurants

Formula/Rate		Directional Distribution			
		AM		PM	
Weekday peak-hour trip-generation rates of fast food restaurants vary based on their type of menu selection (e.g., hamburgers vs. tacos vs. chicken) and their location relative to traffic volume on the adjacent roadway.	Develop trip-generation rates based on driveway counts from existing similar fast food restaurants at similar locations (e.g., McDonald's Restaurant on major highways) if data are available or can be obtained from previous studies.  Otherwise, use ITE trip-generation data.	Enter	Exit	Enter	Exit
				53%	47%

Table A-4  
Residential

Applicable Size	Formula/Rate		Directional Distribution			
Single-Family Detached	<b>Under 75 units</b>	<u>75 units or over</u>	AM		PM	
	AM: T = 0.95 (U) PM: T = 1.11 (U)	AM: T = 0.62 (U) + 25 PM: T = 0.82 (U) + 21	Enter	Exit	Enter	Exit
			25%	75%	64%	36%
Townhouses	<b>Under 100 units</b>	<u>100 units and over</u>	AM		PM	
	AM: T = 0.48 (U) PM: T = 0.83 (U)	AM: T = 0.53 (U) - 5 PM: T = 0.48 (U) + 35	Enter	Exit	Enter	Exit
			17%	83%	67%	33%
Garden and Mid-Rise Apartments (one to nine stories)	<b>Under 75 units</b>	<u>75 units and over</u>	AM		PM	
	AM: T = 0.44 (U) PM: T = 0.48 (U)	AM: T = 0.40 (U) + 3 PM: T = 0.47 (U) + 1	Enter	Exit	Enter	Exit
			20%	80%	66%	34%
High-Rise Apartments (ten or more stories)	<b>Under 100 units</b>	<u>100 units and over</u>	AM		PM	
	AM: T = 0.40 (U) PM: T = 0.46 (U)	AM: T = 0.29 (U) + 11 PM: T = 0.34 (U) + 12	Enter	Exit	Enter	Exit
			25%	75%	61%	39%

T = weekday peak-hour vehicle trips    U = housing units

Table A-5  
Private School (Weekday Morning Peak Period)

Applicable Size	Formula/Rate	Comments
K-8	AM: $T = N \times 0.92$	For the weekday morning peak period, a special study is required to determine the trip-generation rate for private schools with over 400 students.
K-12	AM: $T = N \times 0.78$	For the evening peak period, the applicant may be required to provide more data on site-generated traffic if it is anticipated that there will be major school-sponsored events during the evening peak period that would generate 50 or more weekday peak-hour trips.
Private schools predominately grades 10-12	Use the rates in the Institute of Transportation Engineer's <i>Trip Generation Report</i> for high schools (Land Use Code 530)	Trip-generation formulas or rates for private schools were developed based on the number of students during only the weekday morning peak period. Since classes for private schools end before the weekday evening peak period, a trip-generation rate during the weekday evening peak period was not developed.

Grade	Trip Purpose			Directional Distribution	
	New	Pass-by	Diverted	Enter	Exit
K-8	53%	15%	32%	54%	46%
K-12	65%	6%	29%	59%	41%

T = weekday peak-hour vehicle trips

N = number of students

Table A-6  
Automobile Filling Station

Applicable Size		Formula/Rate					
		<b>Trip Rates per Pumping Station<sup>1</sup>:</b>	<b>AM</b>	<b>PM</b>			
For stations with/without car washes, convenience stores, and garages		Station with fuel sales and:		Upcounty <sup>2</sup>	Downcounty <sup>2</sup>		
T = N x (trip rate)		1) no other facilities	11.31	14.96	14.96		
		2) garage	11.00	16.67	11.09		
		3) convenience store <sup>3</sup>	12.28	21.75	12.32		
		4) car wash and convenience store	17.33	21.75	15.08		
Percentage by Trip Purpose				Directional Distribution			
Weekday Peak Period	New	Pass-by	Diverted	AM		PM	
				Enter	Exit	Enter	Exit
AM	15%	60%	25%	53%	47%	51%	49%
PM	15%	50%	35%				

T = weekday peak-hour vehicle trips

N = number of pumping stations (or positions)

<sup>1</sup>A pumping station is defined as the area at which any one vehicle can stop and pump fuel at any one time. A pumping station could also be referred to as a fueling position in front of a single nozzle dispenser or a multi-produce dispenser

<sup>2</sup>Downcounty locations are considered the urbanized areas with a congestion standard of 1,500 or higher (See Table 1). All other locations are considered up-County.

<sup>3</sup>Note that a convenience store as an accessory use to an automobile filling station must have *less than 1,650 square feet of patron area*. Otherwise, such land uses are considered to be a “convenience store with gasoline pumps” with trip-generation rates available in the ITE *Trip Generation Report* as Land Use Code 853.

Table A-7  
Senior/Elderly Housing

Type of Facility	Formula/Rate
Retirement Community with active seniors and minimal support services	Use ITE Land Use Code 250
	<u>Formula</u>
Independent-Living Facilities with some support services plus minimal assisted-living and nursing home facilities	Up to 150 units: AM: T = 0.05 (U) PM: T = 0.04 (U) Over 150* units: AM: T = 0.08 (U) PM: T = 0.11 (U)
Assisted-Living Facilities	AM: T = 0.03 (U) PM: T = 0.06 (U)
Nursing Homes	As a land use requiring a special exception, site-generated traffic can be determined based on the statement of operations rather than using ITE's trip-generation data. Except for the administrative staff, employees usually arrive before the weekday morning peak period to prepare and serve breakfast. They usually stay through the weekday evening peak period to prepare and serve dinner.
T = weekday peak-hour vehicle trips      U = detached, attached apartment unit and/or room *Usually large facilities with different levels of support services; may be considered "life cycle" care	

Table A-8  
Mini-Warehouse

Type of Facility	Formula/Rate	Comments
<u>On-Site Vehicle Rental</u>		
No	AM: T = 0.01 (N)    PM: T = 0.01 (N)	Based on ITE Land Use Code 151 supplemented with more current local data
Yes	AM: T = 0.015 (N)    PM: T = 0.02 (N)	
T = weekday peak-hour vehicle trips      N = number of storage units		

Table A-9  
Child Daycare Center

Applicable Size		Formula/Rate						
For 6 to 25 staff		AM: T = 1.75N + 17 PM: T = 2.06N + 16						
Trip Purpose		Directional Distribution						
Peak Period		New	Pass-by	Diverted	AM		PM	
					Enter	Exit	Enter	Exit
AM		32%	27%	41%	53%	47%	49%	51%
PM		27%	12%	61%				
T = weekday peak-hour vehicle trips      N = number of staff								