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Report Assesses Transportation Demand Management at Fairlee/MetroWest Development

A report by UrbanTrans Consultants assessing Transportation Demand Management, or TDM, for the Fairlee/MetroWest development, which is within the Vienna Metrorail Station area, was released today by the Fairfax County Department of Transportation. The study was to determine if the reductions in peak hour traffic as outlined in the Fairfax County Comprehensive Plan for the Fairlee/MetroWest development were achievable.

According to the report: "The research and analysis elements of the Fairlee/MetroWest TDM Development Program conclude that the trip reduction targets for the proposed project (peak-hour vehicle trip reductions of 47 percent for the residential uses and 25 percent reduction for the office uses) can be achieved through a combination of the physical design characteristics of the site, as proposed, and the full application of the TDM programs and strategies recommended in this document."

UrbanTrans Consultants further stated: "The trip reductions, however, remain aggressive targets. The development of the TDM program recommendations and the trip reduction analysis conducted for this effort considered the project as a whole, with the full level of development planned; the mix and quantity of residential, office and retail uses proposed; and the pedestrian-friendly design of the site as planned. All of the design elements of the proposed project, along with the recommended TDM strategies (programs and budget levels), must work collectively to achieve the trip reduction targets. With all elements in place, however, trip reductions should prove sustainable."

In December 2004, the Fairfax County Board of Supervisors approved a change to the county's Comprehensive Plan for certain land units within the Vienna Metrorail Station area known as Fairlee/MetroWest. One element of the revised Comprehensive Plan language pertains to TDM, or strategies aimed at reducing traffic from the development site. TDM includes alternatives to driving alone, such as ridesharing, public transit, walking and biking, as well as the supporting strategies that encourage the use of transportation modes other than the single occupancy vehicle.

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Report Assesses Transportation Demand Management at Fairlee/MetroWest Development (cont.)

“In general,” states the Comprehensive Plan, “at build out, it is expected that, for the residential portion of the development, a reduction in peak hour trips of 47 percent should be achieved through the use of transit and other means; for the office portion of the development, a peak hour reduction of 25 percent is expected to be achieved through the use of transit and other means.”

It is expected that the Fairlee/MetroWest development applicants will use the information from this report to prepare a draft proffer package and TDM program for the county to review that addresses the need for transportation alternatives and trip reductions for the site.

An advisory team with representatives from the community, county government and the development applicant provided background information and feedback during the development of the report.

The full report is available at www.fairleemetrowest-tdm.com. For further information regarding the report, contact Kevin Luten or Justin Schor with UrbanTrans Consultants at 202-248-1790 or Angela Rodeheaver with the Fairfax County Department of Transportation at 703-324-1100, TTY 711.

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Fairfax County, VA

Fairlee / MetroWest TDM Development Program

July 2005

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Fairlee – MetroWest TDM Development Program

Prepared for:

Fairfax County

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with

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July 2005

Fairlee-Metro West TDM Development Program

Table of Contents

PROJECT BACKGROUND	1
PROJECT OVERVIEW	2
BASELINE TRIP GENERATION	3
CURRENT TRAVEL PATTERNS & PREFERENCES	4
RESIDENT & EMPLOYEE SURVEYS.....	4
CENSUS ANALYSIS.....	8
TRAFFIC COUNTS.....	11
COMPARING TRAFFIC COUNTS TO TRIP GENERATION FORECASTS.....	11
CURRENT TDM PROGRAMS	13
TOD PEER REVIEW	14
COMMUNITY INVOLVEMENT	21
TDM PROGRAM RECOMMENDATIONS – “METROWEST CONNECTIONS”	23
TRIP REDUCTION ANALYSIS	28
MONITORING AND EVALUATION	33
OVERSIGHT AND RESPONSIBILITIES.....	36
PHASE ONE TRIP REDUCTION TARGETS.....	36
SUPPLEMENTAL TDM PROGRAM CONCEPTS.....	38
LONG-TERM PROGRAM MONITORING & ENFORCEMENT	39
TDM PROGRAM STAFFING & BUDGET	40
CONCLUSIONS	42
REFERENCES	43
GLOSSARY	45

Project Background

In December 2004, the Fairfax County, VA, Board of Supervisors approved a change to the County's Comprehensive Plan for certain land units within the Vienna Transit Station Area. The plan change was made in order to provide the opportunity for mixed-use transit-oriented development (TOD) at the Vienna-Fairfax-GMU Metro Station.

The December 6, 2004, Board Motion notes:

"TDM measures employed during the initial and subsequent development phases will have an objective of reducing vehicular trips in the peak hours by a specified amount, with the exact number to be negotiated between the County and the applicant based upon the number and types of units and uses being developed. In general, at build out, it is expected that, for the residential portion of the development, a reduction in peak hour trips of 47% should be achieved through the use of transit and other means; for the office portion of the development, a peak hour trip reduction of 25% is expected to be achieved through the use of transit and other means.

"The TDM program will be evaluated initially in at least three stages during the development process; first at the time of rezoning, second before and during construction and third after project completion or 'build out.' In the first stage of evaluation, at the time of rezoning, a development application should demonstrate that TDM [measures] will be provided to achieve the peak hour trip reduction goals stated above."

Following the December 6, 2004, action by the Board of Supervisors, the Fairfax County Department of Transportation, through Pulte Home Corporation, solicited Requests for Proposal from qualified applicants and/or firms to develop TDM program recommendations for the proposed Fairlee/MetroWest project, and to evaluate the peak period vehicle trip reduction potential of the proposed project (with the inclusion of the TDM program recommendations). The project was not intended as a comprehensive traffic impact study addressing broader traffic or transportation issues beyond the proposed development site.

After reviewing submitted proposals, and following interviews with a number of firms, UrbanTrans Consultants (along with subcontractor LDA Consulting) were selected.

Fairfax County assembled a TDM Program Advisory Team to guide the effort in partnership with the UrbanTrans team. Members of the Advisory Team are indicated at the beginning of this document.

Project Overview

This Final TDM Development Program document summarizes the process used, as well as the results generated, from nearly three months of research and analysis. The research process involved conducting five research and analysis tasks:

- 1) Forecasting peak-period vehicle trip generation for the proposed development using established ITE and Fairfax County trip generation rates.
- 2) Assessing existing commuting / travel patterns, along with transportation-related attitudes and preferences, within the existing Vienna Transit Station Area (the area defined by the Fairfax County Comprehensive Plan as an approximately ½-mile radius from the transit station). Methods utilized included:
 - a. Resident & Employer Surveys: Surveying residents and employees in the study area to assess their attitudes and preferences about travel choices and to understanding current travel behavior and demographic information.
 - b. Traffic Counts: Counting vehicles entering/exiting existing subdivisions, and observing vehicle occupancy during the peak periods.
 - c. Census Analysis: Utilized 2000 Census and Journey to Work data, along with supplemental 2005 demographic data, to understand demographic and household information and commute patterns, for the ½-mile radius Vienna Transit Station Area.
- 3) Investigating TOD “best practices” and lessons-learned throughout the region and across the country.
- 4) Understanding current TDM programs offered within Fairfax County as a whole, and identifying opportunities and barriers to successful TDM implementation at the Fairlee/MetroWest site.
- 5) Meeting with, responding to, and receiving input/suggestions from neighborhood groups and residents within the study area. The project team held six meetings in two months with neighborhood members, including a community open house held on June 1.

The Advisory Team used the information gathered from these research tasks to develop specific TDM program recommendations for Fairlee/MetroWest, and to forecast peak period vehicle trip reduction resulting from the combination of the proposed mixed-use, transit-oriented development, and the recommended TDM program for the development.

Lastly, the team developed an on-going monitoring and evaluation program, along with supplemental TDM strategies for future implementation should monitoring systems find trip generation in excess of target levels (utilizing target ranges and strategies tied to project phasing). Detail on the research and analysis is included in the pages that follow. Back-up information is included in referenced Appendices.

Baseline Trip Generation

UrbanTrans forecasted peak-period vehicle trip generation for the project site using established ITE and Fairfax County trip generation rates. Fairfax County provided detail regarding quantity and type of land uses proposed for the Fairlee/MetroWest project (including delineation of ownership versus rental units, number of buildings, and number of floors per residential building). For all trip generation analysis conducted in Fairfax County, Fairfax County directs the use of generation rates developed by Fairfax County for townhouse residential uses, and the use of ITE rates for all other residential land uses. This county-wide policy was followed in this baseline assessment.

The table below displays weekday, AM and PM peak-hour, vehicle trip generation calculations for the residential and office components of the proposed Fairlee / Metro West development. This represents the baseline trip generation calculation, and does not factor in potential vehicle trip reduction associated with the site's transit proximity, mixed-use, or transportation demand management elements.

Table 1: Baseline Trip Generation Summary

Land Use	Land Use Type (ITE)	Size	Units	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	(222) High Rise Apartment	900	DU	68	203	271	192	123	315
	(232) High Rise Condo / Townhouse	848	DU	55	234	289	200	122	322
Residential	(230) Residential Condo / Townhouse	122	DU	9	45	54	43	21	64
	(232) High Rise Condo / Townhouse	160	DU	10	44	54	38	23	61
Residential	Townhouse*	218	DU	24	94	118	92	50	142
Residential Totals		2,248	DU	166	620	786	565	339	904
Office	(710) General Office	300,000	Sq. Ft.	398	54	452	71	344	415

Note: Based on ITE Trip Generation Manual, 7th Edition.

* Townhouse rates obtained from Fairfax County Department of Transportation.

With the applied vehicle trip reduction targets, the following summarizes the baseline numbers:

Table 2: Baseline Trip Generation and Target Reductions

Land Use	Size	Baseline (peak-hour vehicles)	Reduction Required (peak-hour vehicles)		Target (peak-hour vehicles)
			Residential – 47%	Office – 25%	
Residential	2,248 units	904	425		479
Office	300,000 sq. ft.	452		113	339

Current Travel Patterns & Preferences

The team used multiple methods to better understand current travel patterns and traveler attitudes and preferences with the Vienna Transit Station Area.

- Resident & Employer Surveys: Surveying residents and employees in the study area to assess their attitudes and preferences about travel choices and to understanding current travel behavior and demographic information.
- Traffic Counts: Counting vehicles entering/exiting existing subdivisions, and observing vehicle occupancy during the peak periods, and comparison of traffic counts to ITE/Fairfax County trip generation forecasts.
- Census Analysis: Utilized 2000 Census and Journey to Work data, along with a 2005 demographic assessment (Claritas, Inc. SiteReports, June 2005), to understand demographic and household information and commute patterns, for the Transit Station Area and surrounding areas.

Resident & Employee Surveys

To better understand dynamics within the existing Transit Station Area, the team conducted two surveys. One survey was conducted with residents living near the Fairfax/Vienna Metro station. A second survey was conducted with employees who worked near a Metrorail station. The surveys were performed for two primary purposes:

1. To present a “snapshot” of current commute travel patterns in the Fairfax/Vienna Metro Station area.
2. To identify transportation-related attitudes and preferences, as well as station area household and demographic data, to help inform the development of TDM strategies and trip reduction analyses.

The first step involved discussing and finalizing the travel survey process with the Advisory Team, and assembling a Travel Survey Group consisting of citizen representatives from the area to be surveyed. After receiving the approval of the survey process, the Advisory Team drafted survey instruments for employee and resident surveys. The survey instrument (questions and layout) were discussed with Advisory Team and the Travel Survey Group and revised per suggestions made by both groups.

Upon receiving approval from the Advisory Team, the design of both hard copy and web-based surveys was completed. The online travel surveys included both employee and resident surveys which were tested and revised before being posted to the project website. Hard copy resident surveys were designed, printed and distributed to 3,700 households. This involved printing 7,400 hard copy resident surveys, each with an individual identification number, as well as sorting mailing addresses for the transit station area (approximately ½-mile radius from the station), affixing postage to the surveys, preparing a pre-paid return postage identifier and system, and sorting and delivering hard copy surveys to the US Postal Service for delivery. Due to the nature of

the survey mailing area (defined around USPS Zip+4 boundaries), 14% of survey respondent live outside of a ½-mile radius from the transit station.

The Advisory Team took additional measures to ensure the hard copy surveys were effectively distributed and completed. This involved following up with area Home Owner's Association (HOA) groups to confirm deliveries, hand-delivering surveys to two locations where surveys were not initially received, and cross-referencing mailing addresses for consistency. It also involved coordinating with HOAs to distribute prepared emails and flyers for use in communicating with their members about the survey. Additional communication with HOAs was done in coordination with the Supervisor's office to ensure maximum survey completion rates.



For the employee survey, three employers within ½-mile of a suburban Metrorail Station were identified and asked to assist in distributing information about the travel survey to their employees. Within ½-mile of the Vienna Metro Station, ICF Consulting (photo, left) is the only employer who was surveyed. In order to provide comparable results to that of ICF Consulting, employees from Serco and L3 Communications were selected to be

surveyed due to their proximity to the Dunn-Loring/Merrifield Metro Station, which is also on the Orange Line and suburban in nature. The employee survey was conducted entirely online, with no hard copy surveys distributed.

Survey Findings

For the resident survey, the exact number of qualified respondents within these households is not known. However, the 2005 demographic data for the ½ mile radius Transit Station Area indicates that approximately 20% of the households within this area have only one person, while the remaining households consist of two or more. Assuming that most of the two-plus-resident households consist of two adults, the consulting team estimated the number of qualified respondents at approximately 6,600. The response rate for the resident survey was approximately 7%, with 482 residents responding. The response rate for the employee survey was 10%, with 148 employees responding.

Because these samples did not constitute random samples (nor were they intended to, as part of the survey design), it was not possible to compute precise confidence levels for the survey results. However, for the resident survey, the analysis of survey results compared demographic and travel pattern results against data from the 2005 Demographic Data (Claritas, 2005) and other published statistics as were available to

validate the responses from the survey. Demographic distributions for the survey sample very closely tracked the distributions for these other sources, suggesting the respondents were similar in primary characteristics to what would have been expected for the entire sample frame. Additionally, residents within the survey area are relatively homogenous in key demographic characteristics. With the survey respondent demographic profile consistent with the known 2005 demographic data, and the homogenous nature of the survey population, the survey results provided a high-level of value in understanding the travel patterns and attitudes/preferences.

Key findings of the **Resident Survey** included:

- Table 3 presents mode shares as a percentage of weekly commute to work trips. This table includes both the traditional types of transportation: drive alone, Metrorail/train, carpool/vanpool, bus, and bicycle/walk, and two additional categories – compressed work schedule day off and teleworking. These are not actually travel modes but are included to show the percentage of weekly work trips that were eliminated through use of these work schedule options.

Table 3: Weekly Trips by Mode

Transportation Type (n=380)	Percentage of Weekly Commute Trips	Average Days Used per Week
Drive alone	51%	4.4
Metrorail/other train	36%	4.0
Carpool/vanpool	7%	3.2
Bus	3%	3.4
Bicycle/walk	1%	2.5
Compressed work schedule day off	1%	1.1
Telework/work at home	2%	1.5

- The mode distribution shown above is for all employed respondents. But the mode distribution was different for respondents who worked in different states. As shown in Table 4, 80% of respondents who worked in Virginia and 68% of respondents who worked in Maryland drove alone to work. By contrast, only nine percent of respondents who worked in the District of Columbia drove to work; 77% of these respondents chose Metrorail. About 1/3 of all respondents worked in Washington, DC.

Table 4: Primary Commute Mode by Work Location

<i>Commute Mode</i>	Virginia (n= 202)	Maryland (n=19)	DC (n=120)
Drive alone	80%	68%	9%
Carpool/vanpool	4%	5%	9%
Metrorail	13%	16%	77%

- 40% work a flexible schedule – that is, they can choose their start and end times as long as they work a required number of hours in a day or week. TOD research has shown availability of a flexible work schedule as a key determinant of transit ridership (Lund, 2004).
- Of respondent who use Metrorail to go to work, a large majority (88%) walk to the station. Only about seven percent of respondents drive alone and park.
- Respondents traveled on average 13.1 miles and 35 minutes to work. The distance was less than the regional average of 16.5 miles one way, but the time was about the same as the 34 minute average for the region in 2004.
- Respondents generally have good access to transit at their work location: 52% work within 10 minutes walk of a Metrorail station and 60% work within 10 minutes of a bus stop.
- More than half (56%) have free parking at work. The remaining 44% pay a fee to park.
- About four in ten (44%) respondents said their employers offer discount transit passes or will reimburse part of their commute cost.
- Respondents who said they drive alone were most likely to have free parking at their worksites:
 - 84% of these respondents said they did not have to pay to park.
 - 13% of respondents who primarily use Metrorail to get to work had free parking available at their work location.
- About two-thirds of respondents who primarily used Metrorail said their employers offered financial incentives, other than for parking. But only about one-quarter (27%) of respondents who drove alone could receive a financial incentive.
- 78% of all respondents made one or more non-work trips in the two workdays preceding the survey. Most (67%) of these trips were made by driving alone. About 27% were made by driving or riding with someone (carpool).
- Demographics:
 - About half (48%) of the respondents said two people live in their household. About a third (36%) said they have three or more people in the household. The remaining 16% said they live alone.
 - Most (62%) of the respondents said they do not have any children under 16 in the household.

- About one-third (34%) of the respondents said they have one vehicle (car, truck, SUV, van, motorcycle) in their household. Most (64%) said they have two or more vehicles. Only two percent said they do not have any vehicles.
- About half (47%) of the respondents were between the ages of 25 and 44. About a third (38%) were between 45 and 64. One in ten (12%) was 65 or older.

Key findings of the **Employee Survey** included:

- Driving alone is the most popular commute transportation among respondents, with over more than three-fourths (76%) of respondents using this as the primary mode. The second most popular mode was Metrorail. About one in five (17%) respondents primarily used Metrorail to travel to work.
- Driving alone accounts for about 73% of weekly commute trips for these respondents and Metrorail accounts for about one in five (18%) weekly trips.
- A large proportion (76%) of respondents said they live in Virginia: 48% in Fairfax County and 28% in another Virginia County. About one in ten (10%) lived in the District of Columbia. The remaining 14% lived in Maryland.
- Respondents traveled on average 15.3 miles and 39 minutes to work.
- Nearly all (95%) respondents park on-site when they drive to work.
- About one-third (31%) said they park for free. The remaining 69% said they pay a fee to park, with an average fee of \$13.00 per month.
- Most (88%) respondents said their employers offer discount transit passes or offer to reimburse part of their commuting expense. About two-thirds of these respondents (64%) said the employer offers between \$31 and \$60 per month. Another quarter (23%) said they can receive less than \$31.

A complete summary of survey methodology, the survey instruments, and complete survey results are available in Appendix 1: Resident & Employee Survey Summary.

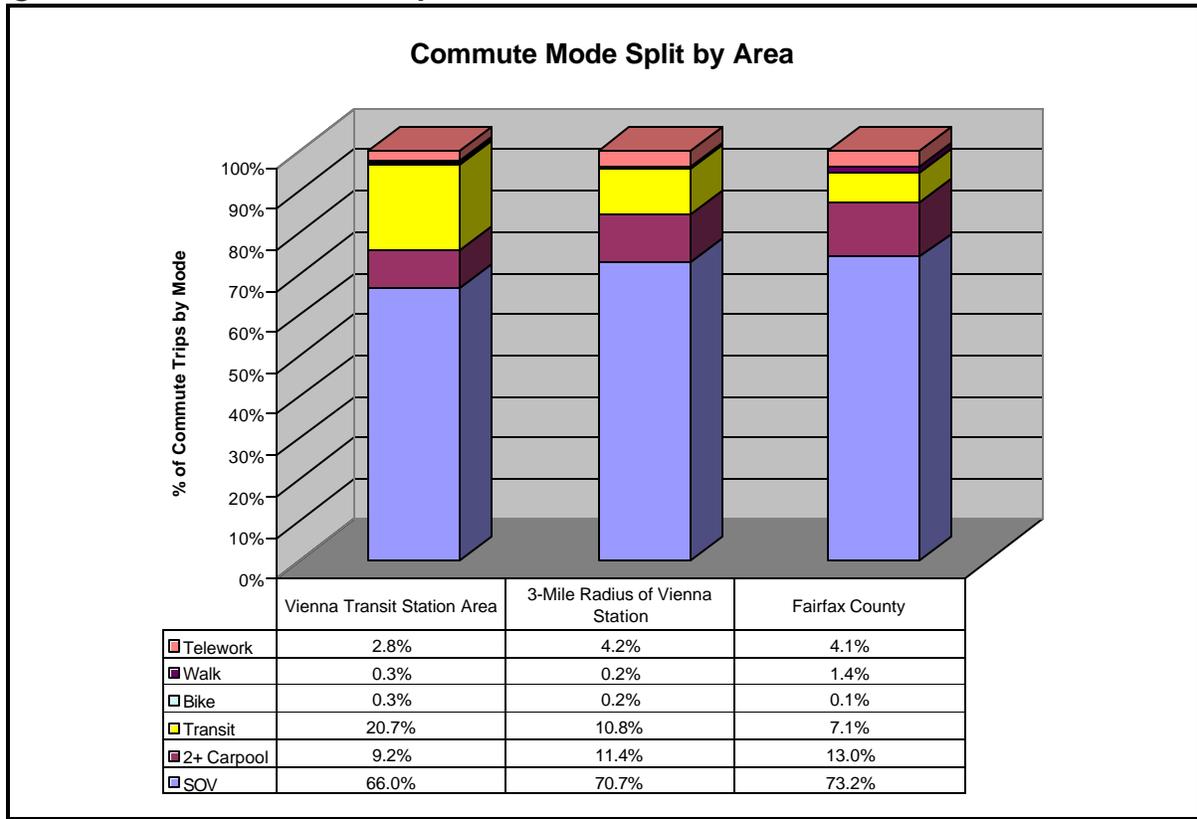
Census Analysis

The following information summarizes findings regarding commute mode choice and demographic data for the Vienna Transit Station Area, alongside data for Fairfax County as a whole. Commute mode split information is also included for the area within a 3-mile radius of the Vienna Metro station. All data is from the 2000 Census, including data from the Census Transportation Planning Package (CTPP), which includes 2000 Census Journey to Work data. All data pertains only to *residents* living within the defined geographies.

Key findings from the 2000 Census data analysis include:

- Transit mode share approximately three times higher within the Transit Station Area than the County as a whole. See summary chart below (Figure 1).

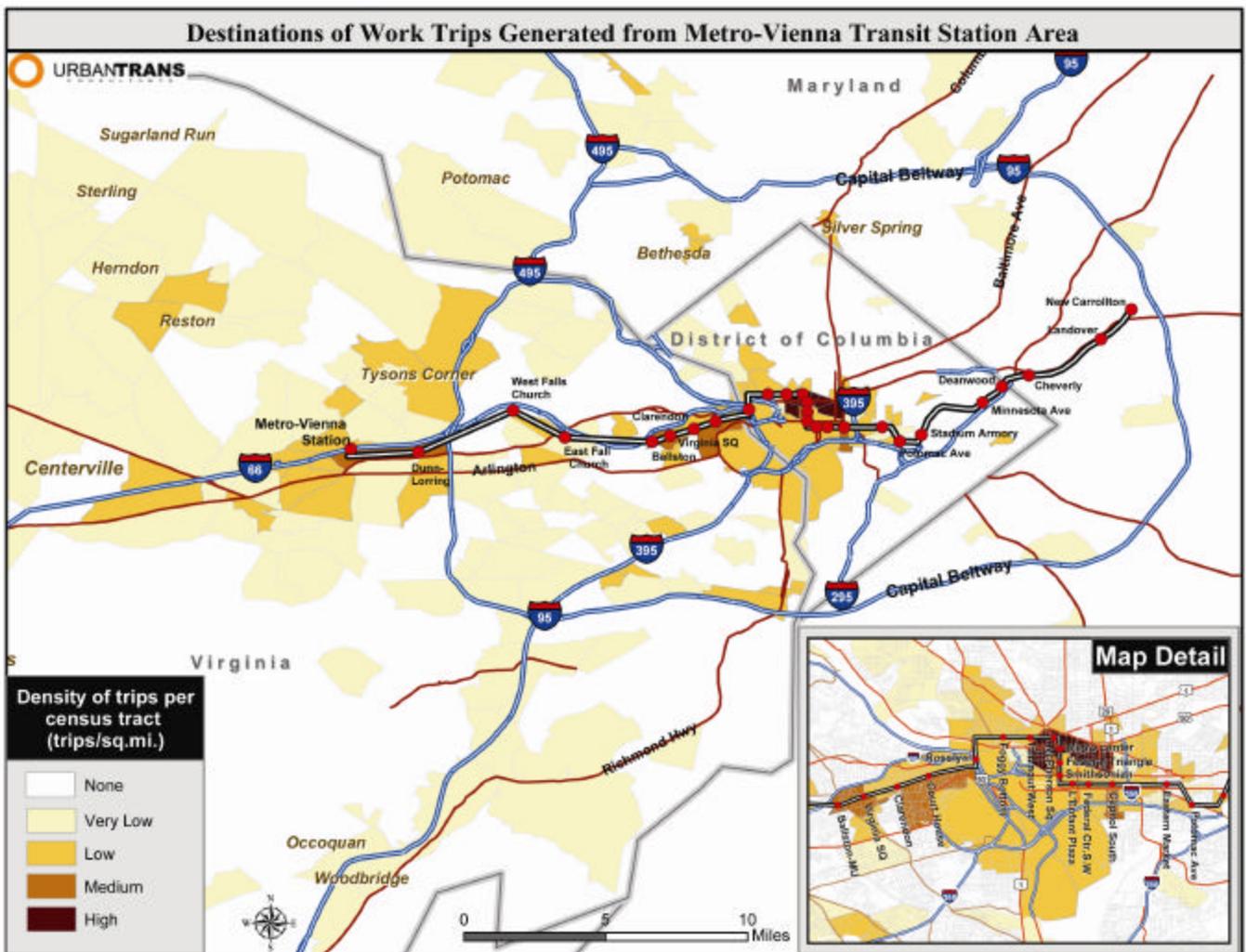
Figure 1: Commute Mode Split, 2000 Census



- Higher individual income levels, across all modes, with the Transit Station Area. Particularly high income representation among Transit Station Area carpoolers. High-income representation for transit users:
 - 56.7% of Transit Station Area transit riders earn >\$50,000 (47.8% County-wide).
- Greater representation of residents aged 25-44 within the Transit Station Area, tracking across modes.
- Race/ethnicity distribution distinct for carpooling only, in the Transit Station Area and County-wide. No significant race/ethnicity distinctions between the Transit Station Area and the County.
- Greater male representation in the Transit Station Area than County-wide across all modes except transit riders.
- Lower levels of vehicle ownership within the Transit Station Area, with the largest number of households owning 1 or fewer vehicles being transit riders (39.5% of transit riders with the Transit Station Area own <1 vehicle in their HH).
- Residents with the Transit Station Area (65.4%) and specifically transit riders within the Transit Station Area (75.3%) live in households with no children under age 18.

The team also utilized 2000 Census data to assess origin-destination patterns for residents living within a one-mile radius of the Vienna Transit Station Area. The map below displays the density of work locations (the darker the shaded area, the more people that work in these locations). This mapping reveals an existing high concentration of people working in proximity to the existing Metrorail lines, with higher concentrations in Arlington County and Downtown D.C. Additional employment locations include other activity centers within Fairfax County, as well as others along the Metrorail lines into Maryland (such as Bethesda and Silver Spring). This data is consistent with the resident travel survey finding, where 52% of residents reported having access to Metrorail within 10 minutes walk from their work location (Appendix 1, Table 13).

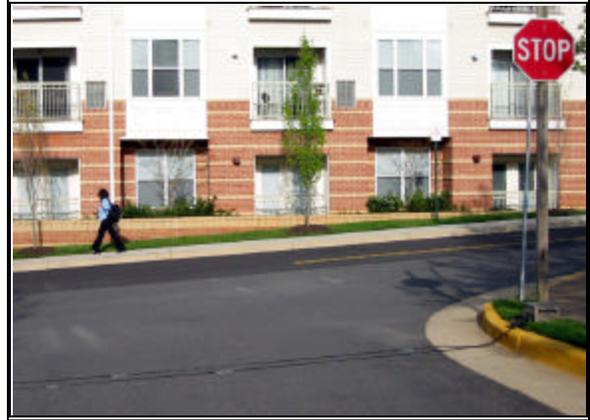
Figure 2: Work Locations for Transit Station Area Residents, 2000 Census



Traffic Counts

The team completed manual and machine traffic counts to capture information about existing travel patterns and average vehicle occupancies within the Vienna Metro Station Area.

The Advisory Team identified 13 locations in the study area for machine and manual traffic counts and defined traffic count processes. These locations were reviewed with the Travel Survey Group, who also commented on the processes and helped obtain permission from HOAs for placement of machine counters.



Upon receiving permission from all affected HOAs, the team conducted field visits to finalize exact count positions. Machine counters were then placed at 13 locations for a 72-hour period at each location (Tuesday-Thursday). The raw data collected from the traffic count machines was then used to calculate hourly and daily average traffic volumes for each location.

In addition to collecting vehicle volumes with traffic counter machines, the team conducted manual / visual traffic counts at 13 locations during two, three-hour period for each location (AM and PM peaks). The raw data gathered from manual traffic counts (volumes, occupancy, turning movements) was used to calculate summaries and average vehicle occupancies (AVO).

The team obtained base maps to develop a map of all count locations as well as each specific location. The maps were then used as part of graphic summaries that visually displayed manual and machine counts, vehicle volumes, directions, and AVO for each of 13 locations. Full traffic count summaries are included in Appendix 2: Traffic Counts.

Preliminary data summaries and maps were presented to and reviewed by the Advisory Team, Travel Survey Group, and Open House attendees.

Comparing Traffic Counts to Trip Generation Forecasts

Utilizing the machine traffic count data collected throughout the Vienna Transit Station Area in late April 2005, UrbanTrans attempted to complete a comparison of trip generation forecasts for four station area subdivisions (using ITE/Fairfax County trip generation rates, along with tallies of the number of dwelling units and types of land uses in each existing subdivision) and the machine traffic counts for each of the subdivisions. (The counts for the Hunter's Branch area were not incorporated, since vehicle counts included trips generated from both the residential units and the adjacent office uses at the ICF building.) Sites assessed included:

- Vienna Station
- Marquis / Acadia
- Virginia Center/Country Creek Townhouses
- Circle Woods

A direct, accurate comparison of the machine traffic counts and the ITE/Fairfax trip generation forecasts is not possible. This is because the machine traffic counters tallied vehicles at the entry/exit point of a development (referred to as measuring the vehicle trips of a “generator”), and the ITE/Fairfax trip generation rates refer to the vehicle trips forecast for the “adjacent street.” This distinction between “generator” and “adjacent street” numbers does not allow for direct, accurate one-to-one comparisons.

However, there are still several points of note which can be gleaned from this comparison. A closer look at subdivision locations (relative to the transit station), traffic directional flow data, and vehicle occupancy data reveals the following:

- Off-peak, off-direction (i.e., entering a development in the AM peak period) travel appears to be notably higher than forecasts would suggest. During the AM and PM peak hours, the traffic count volumes exhibit a relatively high degree of off-peak, off-direction travel, which is indicative of non-commute-to-work travel (travel to schools, retail/shopping travel, etc.). This finding suggests a correlation to the lower (relative to surrounding neighborhoods) commute to work SOV rates found through the resident travel survey (51% of all weekly commute trips by single-occupant vehicle) and the census analysis (66% of daily commutes by single-occupant vehicle). These findings suggest higher levels of alternative mode use for commute to work trips, and lower levels of alternative mode use (thus, higher trip generation) for non-commute to work trips. In fact, the resident survey found that two-thirds (67%) of the non-commute trips made between 6 am and 9 am were made by driving alone (see Appendix 1, Table 15). Taken together, these findings suggest that existing transit-adjacent subdivisions within the ½ mile transit station area are seeing high levels of transit use for commute trips, and high levels of automobile use for other trip purposes.
- Subdivisions with closer proximity to the transit station produced relatively fewer trips than sites further from the transit station.
- Sites with better/safer pedestrian connectivity to the site produced fewer trips than sites with poor/less safe pedestrian connections.
- Some, yet not a large number, of vehicle trips may be attributed to residents driving to the Vienna Metro park-n-ride. In a November 2004 Fairfax County analysis of the home location of cars parking at the Vienna/Fairfax-GMU park-n-rides, the County identified vehicles from both the Virginia Center/Country Creek Townhouses and Circle Woods subdivisions, indicating that some vehicle trip generation from these areas could be attributed to transit riders driving to Vienna Transit Station (though this cannot be confirmed utilizing the data available).

- At the Circle Woods count location, an unusually high number of high-occupancy vehicles were observed traveling in the off-peak, off-directions (into the development in the AM peak, out of the development in the PM peak). 35% of vehicles entering the area between 6-9 a.m. had 2 or more passengers, equaling an average vehicle occupancy (AVO) of 1.71 people per car. The AVO at all other count locations in the Transit Station Area fell roughly between 1.1 and 1.3. This suggests a degree of non-typical trip generation may have occurred within this subdivision during the traffic count days.

Current TDM Programs

Identifying opportunities and barriers to successful TDM strategy implementation involved researching and summarizing current TDM programs offered by state, regional, and county TDM providers. The service providers identified include:

- Metropolitan Washington TDM Services
- Fairfax County TDM Employer, Commuter and Residential Outreach
- Fairfax County HOV Lanes
- Fairfax County Current Transit Services
- Fairfax County Park & Rides
- Fairfax County Vanpool Providers
- Fairfax County TDM Organizations
- Virginia Commonwealth-Wide TDM Services



These services were identified as the foundation of TDM programs upon which the MetroWest TDM program would build.

With this foundation laid, the team could proceed with a TDM Opportunities and Barriers Assessment. The assessment considered opportunities and barriers that are part of existing conditions within the Vienna Transit Station Area. Opportunities are best understood as elements which aid and facilitate successful TDM application and barriers can be considered as hurdles to the potential success of TDM measures, if not sufficiently addressed or mitigated with other strategies or recommendations.

The assessment identified six opportunities:

- Existing Mass Transit Network
- HOV Lanes on I-66
- Neighborhood Retail
- Existing Bicycle and Pedestrian Trail Networks & Infrastructure

- FlexCar Fleet at Vienna-Fairfax Metro Station

The assessment also identified four barriers:

- Infrequent headways and limited neighborhood penetration on local bus services
- HOV lanes on I-66 nearing capacity
- Metrorail Orange Line faces capacity limitations during peak periods
- Poor pedestrian/bicycle connectivity between Vienna Transit Station Area and surrounding neighborhoods and neighborhood retail.



The complete summary of existing TDM programs and services, as well the complete analysis of TDM opportunities and barriers is included in Appendix 4: Current TDM Programs, Opportunities, and Barriers.

TOD Peer Review

Analyzing what TDM strategies are successfully implemented at TOD sites included investigating “best practices” and lessons learned throughout the region and across the country. The team obtained and reviewed existing TDM and TOD literature sources and prepared a listing of relevant TDM and TOD resources for the project website. UrbanTrans complemented this research with site visits to TOD sites in Oregon, Seattle, and Minneapolis, and used the opportunity to talk with TOD planners at these sites.

The results of the research were a comparison of four national examples of communities and TODs, an examination of their level of transit service, TOD characteristics, mobility programs, and results:

- Pleasant Hill, Contra Costa County, CA (San Francisco)
- Redmond Ridge PUD, King County, WA
- Lloyd District, Portland, OR
- Metropolitan Place, Renton WA

The sites were selected based on multiple criteria:

- Location outside of traditional downtowns.
- Representation of a cross section of TOD attributes of success (see below), where not every peer example exhibited all of the attributes.
- Availability of data on travel patterns and reductions.

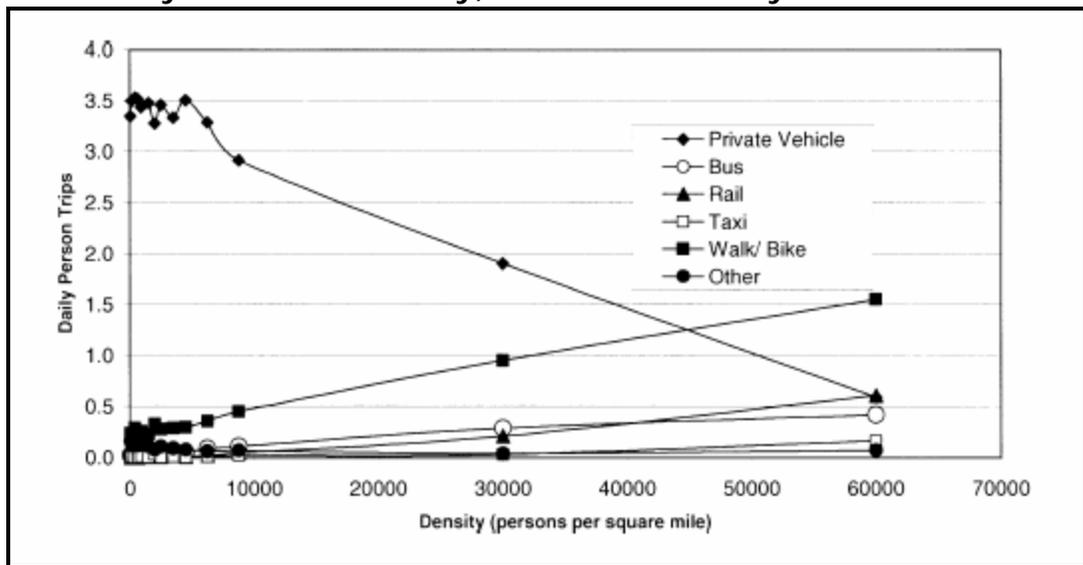


Pleasant Hill, CA Dept. of Transportation

The peer comparison looked at both traditional TOD physical attributes of success, as well as TDM attributes of success. The literature review and the case studies reveal a cross-section of TOD “attributes of success” which formed a framework for understanding different TOD characteristics and their relationship to travel demand and trip reduction. The attributes of success framework outlined the following three primary areas of importance:

1. High-Capacity Transit Service: Essentially, the existence of strong transit service, typically through light rail or heavy rail transit, with connections to a large number of regional activity centers.
2. Physical Attributes of Success: These are the more traditional attributes used in assessing TODs (often called the “Three Ds”), covering the key physical design features of a TOD, including:
 - *Intensity of Uses*. This attribute refers to location of uses within walking distance of the station (typically within ¼ - ½ mile). “At higher densities, use of alternative modes — particularly transit and pedestrian travel — is higher. Per-capita passenger vehicle trips and VMT are lower” (Kuzmyak, 2003). One point of note from the research is that density is often closely related to other factors, such as diversity of uses (as more people can support more retail at a particular location), pedestrian-friendly design, and lower levels of vehicle ownership per household. Figure 3 below illustrates the relationship between daily person trips and density.

Figure 3: Average daily person trips per person in the United States by mode and density, 1990 NPTS survey



(Dunphy and Fisher, 1996, from Kuzmyak, 2003)

- *Diversity of Uses / Mix of Uses*. This attribute refers to the inclusion of an integrated mix of land uses, such as residential, retail, and employment uses. Diversity of uses is often connected to the intensity of uses, as

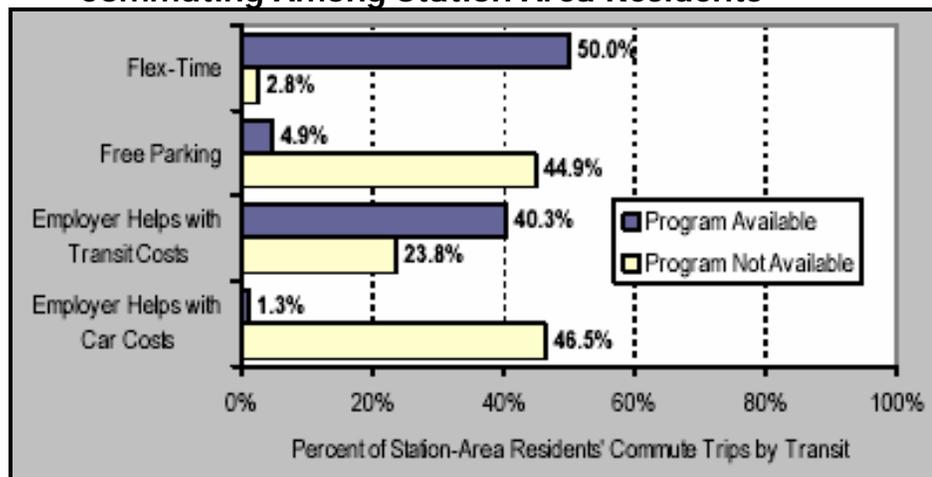
noted above, and the impact of mixed-use developments on trip reduction is also linked to pedestrian-friendly design factors. Providing a mix of uses can impact primary mode choice decisions, and can also facilitate bike/walk access to transit (at the origin and/or destination). In one research example, analysis of over 15,000 households in 11 metropolitan areas found that “both land use mix and residential densities are linked with mode choice decisions... The analysis revealed that close proximity of retail uses and residents was associated with non-automotive commuting in two ways — more walking and cycling for short trips and marginally greater transit travel” (Parsons Brinkerhoff, 1996, from Kuzmyak, 2003).

- *Site Design*. This attribute refers to the “pedestrian-friendly” or “transit-supportive” nature of the site design. Design is also linked to both intensity of use and mix of use, as it pertains to how these uses are linked together, and the degree to which design features – such as safe / appealing walking environments (i.e., sidewalks, crosswalks), short block lengths, and direct linkages between walkways and building entrances – support walking and bicycling. Research on the individual impact of these factors, sometimes referred to as pedestrian environmental factors (or PEFs), faces challenges isolating the direct relationship between individual design attributes and travel behavior. A study of two San Francisco East Bay neighborhoods found that transit and pedestrian friendly design features were linked to an increased likelihood of using a non-auto mode for non-work trips of about 10 percentage points (Parsons Brinkerhoff, et al, 1996, as presented in Kuzmyak, 2003). In another effort, the impact of PEFs on travel behavior were modeled for the Portland, OR, region. “These tests suggested that substituting a very pedestrian-friendly neighborhood for one with an average pedestrian environment should result in 10 percent less VMT per individual in an average household, holding everything else constant” (Kuzmyak, 2003).
3. TDM Attributes of Success: In addition to the physical attributes, additional programmatic and policy-related factors were added to the analysis of TOD success. These TDM attributes – the “Five Ps”TM – are too often overlooked in traditional assessments of TOD performance. They include the programs and services that can significantly impact travel behavior and vehicle trip generation:
- *Promotion and Marketing (including individual travel planning)*. Refers to programs that market available transportation options, as well as educate users on how different options work. Individualized marketing programs (which provide one-on-one travel assistance) have been implemented in Australia, Europe, and the U.S., with SOV trip reductions in targeted communities of between 8 and 14 percent (FTA Press Release, April 2004).
 - *Pricing / Incentives*. Pricing and incentives refer to the use of financial incentives and disincentives for different travel options, including subsidies for transit and vanpool fares, reward-based incentive programs, and variable pricing (e.g., pricing which varies by time of day, to encourage

non-peak utilization). A 2001 survey of employees nationwide found that employees who have commuter assistance programs (such as discounted transit passes) were nearly eight times more likely to use public transportation than those employees that did not have such assistance (15 percent versus 2 percent), (Zylo, 2001, from ACT, 2004).

- *Parking Management.* Parking management refers to the management of parking through supply, pricing, and/or time-based measures. Parking management can also include provision of parking incentives, such as reserved, preferential parking spaces for carpools and vanpools.
- *Policies.* Policies refer to the existence of an overarching policy framework supporting development and implementation of TDM measures. Such policy frameworks can range in scale from an individual employer (where policies such as flexible work hours or parking cash out programs can support the use of non-SOV travel options), or may relate to an entire region or state (such as the commute trip reduction law in the state of Washington). Figure 4, below, illustrates the impact of employer policies on the percentage of California TOD residents using transit.

Figure 4: Influence of Employer Policies on Transit Commuting Among Station Area Residents



(Lund, 2004)

- *Program Management.* Unlike the physical attributes, TDM programs require continual implementation. As such, “having someone in charge,” is an essential attribute of success. This can mean a dedicated program coordinator and/or an area transportation management association

Table 5 below demonstrates the degree to which each of the TOD Peer Review sites examined exhibit the various attributes of success, and the available results from each project.

Table 5: TOD Attributes of Success

Site	Location	Transit Service	Traditional TOD Physical Attributes of Success				TDM Attributes of Success					Results
			High-Capacity Transit Service	Intensity of Uses	Diversity of Uses	Design / Ped-Transit Friendly	Promotion	Pricing / Incentives	Parking Management	Policies	TDM Program Management	
Metropolitan Place	Seattle, WA	Bus	●	●	●	●	○	○	●	●	○	Approximately 33% transit mode share for resident commute trips, about three times higher than surrounding areas.
Pleasant Hill	Contra Costa County, CA.	Heavy Rail - BART	●	●	●	●	○	○	○	○	○	49% commute SOV rate for residents. 45% transit use, three times higher than the average rate within the city (Walnut Creek).
Lloyd District	Portland, OR	Light Rail	●	●	●	●	●	●	●	●	●	41% commute SOV rate for employees. 41% of employee commute trips are on transit.
Redmond Ridge	Redmond, WA	Minimal Bus Service	○	●	●	●	●	●	○	●	●	70% commute SOV rate for residents, about 2-3 times higher non-SOV rates than surrounding areas.
Warner Center (17 million SF office, 5,000 residents)	San Fernando Valley, CA	Bus, connections to rail transit	●	●	●	○	●	●	●	●	●	Approximately 33% of commuters to the area arrive by non-SOV modes.
Roslyn-Ballston Corridor	Arlington County, VA	Heavy Rail - Metro Rail	●	●	●	●	●	●	●	●	●	42% commute SOV rate for employees working in the 4-station corridor.

- = Exhibits high level of success factor
- = Exhibits some elements of success factor
- = Exhibits few or no elements of success factor

While the table outlines the degree to which the case examples exhibit each of the attributes of success, it also, by implication, highlights the degree to which a majority of TOD examples nationwide fail to integrate both the physical attributes and the TDM attributes. This is a clear shortcoming of many TOD projects, highlighting that good design alone is not enough to achieve the highest possible levels of trip reduction. “If You Build It They Will Come” is not the formula for TOD projects delivering on their full potential for reducing vehicle trips.

Conversely, TDM programs nationally have experienced a wide range of implementation success and failure. More often than not, where TDM programs can fall short of expectations, one or more of the following types of elements are missing: available alternatives to the automobile, sustainable program funding, active program management (by a dedicated program manager or organization), or lack of programmatic support by key implementing institutions (i.e., employers).

The team also looked at 2000 Census Data, a publication on travel characteristics of TODs in California (Lund, 2004), and other sources to compare information on Gender, Age, Race/Ethnicity, Income, Vehicles per Household, Ratio of Drivers to Vehicles, and Primary Commute Mode of four different stations and their corresponding County or City census data. Those comparisons included:

- Vienna Transit Station Area (Metrorail) vs. Fairfax County
- Rosslyn-Ballston Corridor (Metrorail) vs. Arlington County
- San Francisco: Pleasant Hill (BART) vs. City of Walnut Creek
- San Francisco: South Alameda County (4 BART Stations) vs. the South Alameda Counties of Hayward, Union City, and Fremont

The summary of this comparison is in Table 6 on the following page.

All of the TOD peer research and comparison data is included in Appendix 5: TOD Peer Research.

Table 6: Demographic & Mode Share Comparison Data for Four Areas

	Vienna Transit Station Area (MetroRail)		Roslyn-Ballston Corridor (MetroRail)		San Francisco: Pleasant Hill (BART)		San Francisco: South Alameda County (4 BART Stations)		
	Station Area	Fairfax County	R-B Corridor	Arlington County	Station Area	City	Station Area	City	
Gender									
	Male	56.3%	54.1%			43.2%	46.2%	47.3%	50.0%
	Female	43.7%	45.9%			56.8%	53.8%	52.7%	50.0%
Age*									
	65+	2.2%	2.6%			17.1%	35.6%	10.4%	16.4%
	45-64	30.4%	36.5%			28.8%	29.3%	28.1%	30.9%
	25-44	57.6%	50.6%			54.1%	16.0%	61.5%	23.8%
	16-24	9.9%	10.3%				19.0%		29.0%
Race / Ethnicity									
	African American	3.9%	7.9%			2.4%	1.1%	6.5%	6.8%
	White	67.3%	67.5%			71.8%	86.7%	45.4%	46.2%
	Asian	17.0%	11.8%			13.7%	9.7%	38.0%	34.1%
	Other	4.4%	2.9%			8.1%	2.5%	7.3%	12.8%
	Hispanic Origin	7.4%	9.9%			4.0%	6.0%	2.8%	22.2%
Income**									
	\$75,000+	24.8%	22.1%			14.3%	27.0%	10.5%	29.3%
	\$50,000 - 74,999	27.0%	20.0%			26.9%	26.2%	37.2%	30.1%
	\$30,000 - 49,999	23.9%	23.3%			27.8%	26.2%	40.0%	25.7%
	\$15,000 - 29,999	13.1%	18.3%			22.7%	12.9%	4.8%	10.3%
	\$14,999 or less	11.3%	16.3%			8.4%	7.5%	7.6%	7.5%
Vehicle per Household									
	3 Vehicles	26.5%	30.0%	6.0%					
	2 Vehicles	48.3%	48.3%	21.0%					
	1 Vehicle	23.9%	19.3%	56.0%					
	0 Vehicles	1.2%	2.3%	17.0%					
Primary Commute Mode									
		Residents		Employees		Residents		Residents	
	Drove Alone	66.0%	73.2%	41.7%	54.9%	48.9%	77.1%	56.5%	89.0%
	2+ Carpool	9.2%	13.0%	8.2%	11.5%	4.0%		5.1%	
	Transit	20.7%	7.1%	38.0%	23.3%	44.8%	13.8%	37.8%	5.8%
	Bicycle	0.3%	0.1%	1.2%	1.4%	0.0%	n/a	0.6%	n/a
	Walk	0.3%	1.4%	8.0%	5.6%	2.3%	n/a	0.0%	n/a
	Telework	2.8%	4.1%	1.9%	3.5%	n/a	n/a	n/a	n/a

* Age categories for CA examples: Over 50, 36-50, 18-35, Under 18

** Fairfax income based on Individual Income. CA examples based on Household income (categories \$100k+, \$60-100k, \$30-60k, 15-30k, <\$15k)

Sources:

Vienna / Fairfax, UrbanTrans, Census 2000 Data
R-B / Arlington, Leach, Reconnecting America Presentation, 2003
CA Examples, "Travel Characteristics of TOD in California," 2004

Community Involvement

An integral part of the research and analysis processes was making sure that the community was involved every step up of the way. The Advisory Team ensured this occurred by meeting with and receiving input from a number of neighborhood groups in the study area. Those meetings were as follows:

Advisory Team Meetings: April 7, April 21, May 12, May 24, June 9, June 15, June 29
Travel Survey Group Meetings: April 18, May 25
Fairfax County Land Use Seminar: May 2, June 21
Collective HOA meeting: May 12
Town of Vienna Mayor & Council and Staff Meeting: May 19
Community Open House: June 1

The Advisory Team meetings were attended by residents of the neighborhoods affected by the proposed development, Fairfax County staff, Pulte employees, Fairfax County Elected Officials, and staff of the Coalition for Smarter Growth. The Advisory Team was an integral part of the decision making made about the direction of Fairlee-Metro West TDM project.

The Travel Survey Group consisted of members of several HOAs who are impacted by the proposed TOD project. In the first meeting with the Travel Survey Group they provided feedback on resident survey design and gave permission to complete traffic counts in their developments. In the second meeting with the group they provided feedback on the data collected from the resident survey and traffic counts. This group also helped promote the resident survey and Open House meeting to their HOA members by distributing emails and hard copies of a flyer designed by The Advisory Team.

The Fairfax County Land use seminar was a forum for residents to learn about how county land use decisions are made. One of the topics at the May 2 Seminar was the Fairlee Metro West TDM Development project process. The seminar, which had over 100 residents in attendance, had two breakout sessions where attendees could ask more specific questions about the TDM development project. The team presented a second time, as part of the land use seminar series, on June 21.

The Collective HOA meeting was an opportunity for several of the HOAs impacted by the proposed Vienna Metro TOD to learn about the TDM assessment process and make recommendations. The citizen groups in attendance included representatives from Blake Manor, Blake View, Country Creek, Vienna Station, Country Creek-Section 7, Circle Woods, Hunters Branch-Condos, L&M/Popular Terrace, Villa D'Este, Southwest Vienna Citizens Association, Dunn Loring Gardens, Hunter Mill Defense League, and Sierra Club.

A member of the Advisory Team met with the Town of Vienna Mayor, Council and Staff to explain the TDM assessment process and listen to their recommendations for the process.

The Fairlee-Metro West TDM Development Project Open House was held June 1, 2004 from 7:00 to 9:00 p.m. The meeting was held at the Marshall Road Elementary School located at 730 Marshall Road, Fairfax. Thirty one meeting participants signed in, not including staff or consultants. A sign in table was set up at the entrance to the open house and each meeting attendee was provided with a project overview handout and a general comment form.



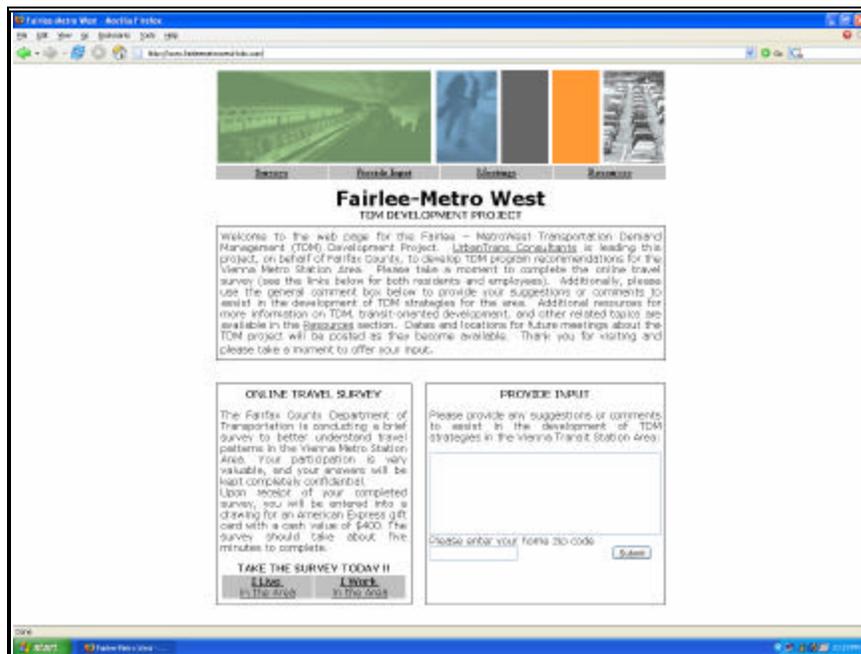
Three stations, described below, were set up around the room:

- Station 1: Existing Conditions
- Station 2: Existing TDM Programs
- Station 3: TDM Opportunities & Barriers

In addition to comments received from the general comment forms, attendees were given the opportunity to post their concerns on the displays at the stations listed above.

The community was also encouraged to provide their input on the TDM Project, through Advisory Team's project website (www.fairleemetrowest-tdm.com). The website had

links to the survey and an online open house area for suggestions and comments. It included links for meetings and resources.



A full summary of all materials, meetings, and comments is included in Appendix 6: Community Involvement.

TDM Program Recommendations – “MetroWest Connections”

The following TDM program recommendations are for the proposed Fairlee / MetroWest project site. The recommendations are based on (1) the findings of the research and analysis conducted through this project and summarized in the previous sections (including surveys, traffic counts, Census analysis, TDM opportunities and barriers assessment, TOD peer research); (2) national research on travel behavior, TDM programs and program effectiveness, and national TOD experience; and (3) the direct professional experience of the project team in planning, implementing, and evaluating TDM programs nationally.

Recommended TDM strategies are organized around the following areas:

- Parking Management
- Physical Facilities
- TDM Programs & Services
- TDM Program Management
- TDM Funding Mechanisms (as noted, complete budgets pending)

Parking Management

1. For Apartment / Condo Residential Buildings:

- Limit condo units to one parking space as a bundled asset sold with the purchase of each condo unit. For additional spaces, explore graduated market-rate pricing scale for purchase and/or leasing arrangements for access to spaces in excess of one per unit.
- For rental apartment units, develop a graduated monthly parking fee scale for all dedicated parking spaces.
- Provide dedicated, free preferential parking spaces in convenient locations (covered, near entry/exit locations, and close to elevators) for vanpools.

2. For Office Buildings:

- “Unbundle” leasing and pricing for office space from leasing and pricing for parking spaces.
- Provide for loading/unloading of carpools and vanpools.
- Provide dedicated, preferential parking spaces in convenient locations (covered, near entry/exit locations, and close to elevators) for carpools and vanpools.
- Develop parking rate agreements charging single-occupant vehicles market rate pricing, along with graduated parking discounts:
 - One-half market rate for carpools.
 - No parking charge for vanpools.
 - Develop carpool/vanpool verification and monitoring system linked to identification of employment with a tenant employer.

3. In General:

- Develop a comprehensive parking management plan that documents the integration of parking management strategies across all site uses, coordinate

with Metro to assess need for measures to discourage use of Metro parking garages by MetroWest users, management of permitted uses in all locations, utilization of market rate pricing for all non-residential spaces, and disbursement of on-street parking meter revenues to the TDM program (additional detail provided in the Funding Mechanism section).

- Provide permanently designated, on-street parking spaces in central locations for:
 - Shared-car vehicles
 - Taxi vehicles
 - Loading / unloading of vanpools. Locate proximate to service-oriented retail locations.
- For all on-site garages (residential and office), ensure that 5% of all spaces provide sufficient clearance for vanpool vehicles (minimum 7'2" clearance).
- Provide parking management by time and price for all on-street spaces.

Physical Facilities

1. Off-Site Pedestrian & Bicycle Connectivity. Assessment, identification, and upgrades to off-site pedestrian and bicycle crosswalks at two locations (i.e., Blake Lane/Saintsbury Drive, Nutley Street/Lee Highway) to facilitate safe walking/biking between the Vienna Transit Station / MetroWest and surrounding communities, retail locations, and schools . Location and upgrade specifications (i.e., pavement treatments, pedestrian islands) developed under guidance from Virginia DOT.
2. Retail Mix. Developer/retail leasing team strongly encouraged to pursue the following retail uses on-site, and to prioritize the location of these uses in initial phasing of residential building construction:
 - Specialty, Small Grocer (e.g., Trader Joes)
 - Child Care (prioritize development of proposed childcare in early development phase)
 - Copy / Shipping Store (e.g., FedEx Kinkos, UPS Store)
 - Dry Cleaning
 - Banking / ATM Services
 - Café / Coffee Shop, Restaurants

Market the availability of retail services, and the arrival of upcoming new retail tenants, to area residents and employees.

3. On-Site Wireless Access. Establish broadband wireless connectivity through the non-townhouse portion of the site.
4. Bicycle Racks. Provide sufficient, secure bicycle storage facilities for each condo/apartment building, and at retail locations. Locate racks in prominent locations. Utilize industry standard bike rack designs.
5. Bike Station. Integrate bike station into MetroWest Connections store (see Program Management recommendations below). The facility should provide indoor, valet-service parking for bicycles, bicycle support sales and maintenance, and should explore provision of free loaner bikes for project residents. Dedicate free retail

space for this use. Explore opportunities to bid out management of the bike station to interested retailers, using national best practices/experience.

6. Shower Facilities. Integrate shower and changing / locker room facilities into office uses.

Programs & Services

1. For Residential Buildings:

- Develop target marketing program for new residential sales and apartment rental (programs and methods at developer discretion):
 - Integrate transportation benefit messaging into overall residential product messaging, including “one less car” messaging and education providing details on the benefits of households using TOD amenities and transit services to reduce the need for one household vehicle.
 - Integrate transportation choice information into sales kits.
 - Specifically target marketing of the residential units to (1) existing transit riders, (2) people working along Metrorail lines, particularly along the Orange/Blue lines (not transfer trips), and (3) to full-time teleworkers.
- Integrate transportation information and education materials, specifically tailored to the site, into residential sales kits and new resident welcome kits.
- Integrate “personalized transportation advising” into new unit walk-throughs as new residents (ownership and rental) move into new units. This concept involves one-on-one discussions with new residents about utilizing transportation options for various trip types – tailored to this specific location. Transition responsibilities from residential sales teams to TDM program manager as project build-out approaches.
- Distribute SmarTrip cards to all new residents (regardless of age).
- Provide initial SmarTrip value loading to all residents 16 years or older. To be eligible, residents must participate in a one-on-one transportation advising session and/or visit the MetroWest Connections Store. Explore bundled shared-car membership linkages as part of this process.
- Pursue on-going SmarTrip value loading as part of specific marketing and reward campaigns.
- Develop marketing and incentive programs that encourage off-peak vehicle travel, specifically for non-commute trip types (which are often more discretionary). Tailor programs for the age-restricted units encouraging non-peak travel.
- Develop residential-based vanpool program. Explore use of minivans. Provide vanpool subsidies to make minivan vanpool cost-competitive with full-sized vans offered regionally.

2. For Office Buildings:

- During the leasing phase, and after occupancy, strongly encourage employers to offer the following employee benefits options:

- Parking cash out (giving employees the option to choose between the value of a dedicated parking space, tax-free transit or vanpool fares, or taxable cash).
 - Pre-tax and/or payroll subsidy for transit and vanpool fares (up to the maximum amount allowed under federal law, currently \$105/month).
 - Flex-time and alternative work schedule programs.
 - Live-near-work incentives.
 - Conduct carpool and vanpool formation programs and information programs on site, including providing ridematching services. Coordinate with Fairfax County TDM program managers.
 - Communicate and facilitate availability of guaranteed ride home program (offered by the regional Commuter Connections program).
3. In General:
- Safe Routes to Schools. Develop programs to encourage carpooling, walking, and biking to schools, including:
 - “SchoolPool” programs which connect parents with children attending the same schools and assist in coordination of SchoolPool scheduling.
 - Promotion of carpooling, biking, and walking among high school students attending Oakton High School, including education and reward incentives.
 - “Walking School Bus” programs which coordinate parent/child meetings at a central location (on-site retail location, for example), with two parents leading groups of children by bike/walk to school locations (targeted to elementary age students attending Mosby Woods or Marshall Road schools). Coordination of daily/weekly parent responsibility.
 - See “Physical Facilities” for additional recommendations on school routes.
 - Shared-Car Programs. Integrate information and marketing materials on shared-car availability and pricing. Work with shared-car providers (e.g., FlexCar, ZipCar) to provide discounted shared-car memberships to interested residents linked to provision of Metro SmarTrip cards. Incorporate shared-car rewards (free hours) into overall rewards program.
4. MetroWest Connections Online. Develop site-specific project website replicating the MetroWest Connections storefront online (either a stand-alone site or as a direct link off of a larger project webpage for residents/employees). Integrate:
- Multimodal transportation information.
 - Real-time travel and transit data (i.e., Metrorail train arrival info).
 - Explore online transit pass sales and/or SmarTrip value loading (consider options utilizing existing software tools/vendors, e.g., WageWorks, CommuterDirect).
 - Provide specific links and resources supporting telework.

Program Management

1. MetroWest Connections Store. Provide on-site retail storefront site for TDM program manager. Co-locate with residential sales office during construction phases. Provide information, promotional materials, and one-on-one consultation to all on-site users, for all trip types.
2. Program Manager. Designate TDM program manager as central point of contact and lead manager of all on-site programs.
3. Program Oversight & Coordination. Establish an Advisory Board to guide the TDM program and activities of the TDM Program Manager. Assemble the Advisory Board as needed (likely quarterly). Participants for the Advisory Board, and for overall program coordination, should include the following designated contacts:
 - Office tenant contacts and/or office property manager contacts.
 - Individual and umbrella HOA “transportation” contacts (invite each HOA to designate a transportation liaison).
 - Fairfax County TDM Program Representative. Ensure maximum coordination and economies of scale by partnering closely with Fairfax County TDM program managers, while maintaining the site-specific, tailored nature of MetroWest information and materials.
 - Others as appropriate.
4. Residential Sales Team / Rental Leasing Agents. Provide sufficient training for sales and leasing teams to serve as extensions of the TDM program management staff. Integrate transportation and commute considerations into sales messages and establish up-front linkages and relationships for future transportation assistance and resources.

Funding Mechanisms

1. From Residential Buildings:
 - Utilize Condo/Townhouse HOA fees to provide on-going, sustainable funding for the MetroWest Mobility Program. “Unbundle” monthly unit-based condo association fees from monthly parking space user fees. Graduate parking space user fees based on number of spaces linked to a unit.
 - Develop comparable per-space fees for rental apartment units. Incorporate per-space fees into rental leasing agreements.
2. From Office Buildings:
 - Utilize Common Area Maintenance (CAM) fees to fund the TDM program. CAM fees dedicated to providing monthly transit subsidies for all registered tenant employees, and to providing on-going, sustainable funding for the MetroWest Mobility Program.
3. From On-Street Parking. Dedicate on-street parking meter revenues to fund the TDM program. Maintain parking meter pricing and revenue dedication in perpetuity.

Trip Reduction Analysis

In an effort to assess the trip reduction potential of the proposed MetroWest project, with the addition of the recommended TDM strategies outlined in the previous section, UrbanTrans conducted extensive research on trip generation modification methodology. This research led us to a 5-step analysis and validation process:

1. Establish trip generation rates.
2. Identify if any trips are inter or intra-related to the site's land uses.
3. Identify TOD and TDM attributes and programs and their forecast changes to residential land use trip generation.
4. Identify TOD and TDM attributes and programs and their forecast changes to office land use trip generation.
5. Validate against a modeling tool (possible only for office uses)

The following information summarizes the results of the trip reduction analysis. Appendix 7 includes the detailed trip reduction calculations. The sections below directly reference the tables in Appendix 7.

Step 1 confirmed the following Trip Generation Baseline and Target Trip Reductions (from Table 1: Trip Generation Baseline Summary, page 3):

Table 1: Baseline Trip Generation and Target Reductions

Land Use	Size	Baseline (peak-hour vehicles)	Reduction Required (peak-hour vehicles)		Target (peak-hour vehicles)
			Residential – 47%	Office – 25%	
Residential	2,248 units	904	425		479
Office	300,000 sq. ft.	452		113	339

Step 2 identified factors that would result in fewer trips as a result primarily of the physical design of the site (the TOD Physical Attributes of Success). This planning concept is further supported by the Institute of Transportation Engineers (ITE) in their recommendations regarding mixed-use developments and pass-by trips, diverted linked trips and as internal capture rate. These ITE-identified trip reduction opportunities included as part of the physical design of the site included:

- Age-Restricted Units. Different use of residential units types that will be regulated by agreement: 368 units of 55+ age-restricted condo residences. The use of ITE trip generation rates for this land use type (which is lower than for the standard condo residences included in the baseline calculations) led to a reduction of 4.4% of trips from the residential baseline. See Appendix 7, Table 2.1.
- Internal Capture Rate. Internal capture rate refers to trips “captured” entirely within the development itself (e.g., traveling from a condo to the on-site grocery,

and back home again, all within the site). With the provision of the proper mix of retail uses (as recommended in the TDM recommendations), ITE guidance suggests that as many as one in four daily trips can be associated with internal capture, due to the mixed-use nature of the site and the pedestrian-friendly design elements. Quantifying the peak-hour trip reduction associated with this factor, specific percent reductions were used for residential and office uses, leading to a reduction of 2% of trips from the office baseline and a 10.3% reduction in trips from the residential baseline, due to the availability of resources such as grocer, restaurant, convenience retail/service, banking, recreation/exercise, mail/copy services. Specific rates were developed through research results (Cervero 2004; Edwards 2003; Hedges 2005; ITE 2004; Nelson, Niles 2000; USDOT nd) and blended with professional judgment per accepted ITE practice. See Appendix 7, Table 2.2.

- External Linked Trips. External linked trips are part of what is often described as “trip-chaining,” or linking multiple trip purposes in one journey (e.g., traveling from a condo to the onsite day care facility, dropping off a child, and then continuing onto to work at an offsite location). Where one portion of the total linked trip is completed within the boundaries of the project site, a trip that would have otherwise left the site is therefore reduced. ITE guidance distinguishes these trips from simple internal capture rates. The analysis looked at both trips linked from the residential / office uses onsite to external destinations, and at trips linked from external destinations to the onsite residential / office uses, and different trip reduction factors were used for each. These factors led to vehicle trip reductions of 3.5% of trips from the office baseline and a 9.4% reduction in trips from the residential baseline. Specific rates were developed through research results (Cervero 2004; Edwards 2003; Hedges 2005; ITE 2004; Nelson, Niles 2000; USDOT nd) and blended with professional judgment per accepted ITE practice. See Appendix 7, Table 2.3.

In each element of the trip reduction analysis related to the physical characteristics of the site, the analysis approach utilized percent reductions at the conservative end of the ranges established in the research on the impact of these factors. It is important to note that internal capture and external linked trips are both directly supported by the intensity of uses proposed within close proximity of the retail, the mix of uses onsite (retail, services), as well as the TDM programs (such as parking management). Furthermore, these factors are also influenced by the number of vehicles owned per household, where lower average vehicle ownership levels are associated with higher internal capture rates and external linked trips. As the 2000 Census analysis of the Vienna Transit Station Area (supplemented by the research of residents of TODs in California) suggests, and the proposed TDM program supports, residents of the site are projected to own fewer vehicles per household.

Lastly, it is important to note that the relationship between all of these factors is wholly inclusive of the development. This means that to achieve the full trip generation

reductions, the site must be developed with all of its components and characteristics, from the mix of uses and pedestrian-oriented design to the TDM program.

Steps 3 and 4 in the process were to identify the trip reductions related to further specifics of the TOD, such as availability of transit and, moreover, reductions affiliated with the TDM attributes of success. While the specific program details and delivery have minor differences between residential and office application, the general categories produce results that have some comparative relationships.

Using national research, supplemented by the research conducted for this project, suggested ranges of reductions even greater than identified below. In all cases, however, the analysis opted for the most conservative approach in order to not overstate planned trip reductions and to factor out the potential for interrelationships between these factors (avoiding double counting of trip reductions). Furthermore, potential trips by carpool were identified and minimized by an occupancy of 2.25 people per vehicle (not providing for a 1 reduced trip to 1 person ratio).

The trip reduction factors analyzed for the residential (Step 3) and office (Step 4) uses included (see Appendix 7, Tables 3.1 and 4.1):

1. **Transit Proximity/Accessibility:** Associated with the availability of high-capacity transit service, the orientation of uses with within walking distance of transit, and existence of pedestrian-friendly design characteristics. These factors led to vehicle trip reductions of 10% of trips from the office baseline and a 10.1% reduction in trips from the residential baseline. The transit proximity/accessibility represents trip reductions tied to transit use above and beyond the reductions partly associated with transit use described below (onsite TDM programs and active parking management), which also lead to enhanced transit ridership. The range of reductions was developed by combining and interpreting research (Cervero et al 2004; Chrisholm 2002; ITE 2004; Kuzmyak et al 2003) followed by a use of professional judgment to identify specific factors.
2. **On-Site Transportation Programs:** On-site TDM programs and services summarized in the TDM program recommendations. These factors led to vehicle trip reductions of 4% of trips from the office baseline and a 3.9% reduction in trips from the residential baseline. The range of reductions was developed by combining and interpreting research (Cervero et al 2004; Chrisholm 2002; Kuzmyak et al 2003; US DOT nd) with professional experience followed by a use of professional judgment to identify specific factors.
3. **Active Parking Management:** Parking pricing and time management for residential, office, and on-street uses. These factors led to vehicle trip reductions of 8.4% of trips from the office baseline and an 8.5% reduction in trips from the residential baseline. The range of reductions was developed by combining and interpreting research (Kuzmyak et al 2003; US DOT nd; Vaca et al

2003) with professional experience followed by a use of professional judgment to identify specific factors.

4. Residence-to-Office: Commute to work trips captured within the site by people working and living on site. Assessing this factor required taking a look at the likely demographics and household characteristics for the project (see Appendix 7, Table 3.2 and 3.3). 5% of population is assumed to both live and work on site. This population is likely to emerge primarily from office employees working onsite and then deciding to live onsite as well. The natural turnover of both rental and ownership units onsite will allow for this element to emerge over time. The 5% of people both living and working onsite equates to vehicle trip reductions of 6% of trips from the office baseline and a 4.1% reduction in trips from the residential baseline. The range of reductions was developed by combining and interpreting research (Cervero et al 2004; Chrisholm 2002; Kuzmyak et al 2003; US DOT nd; Vaca et al 2003) followed by a use of professional judgment to identify specific factors.

What is significant about these findings, which were substantiated by various Transportation Research Board (TRB) documents and studies, was that with the planned, focused attention to these TDM Attributes of Success, more than 240 residential and 128 office trips, as shown on the Trip Generation Adjustment Summary Table (Table 7 below), can be re-distributed via other travel modes, to other travel times of the day, or eliminated altogether (as with telework).

In **Step 5**, one of the few models that exists relative to travel choice programs was loaded with site data to assess before and after situations related to programmatic elements, and to test and validate the overall methodology used in this trip reduction analysis. The intent was to determine if the methodology used in this effort could be validated by use of a wholly separate model. This model, developed by the Center for Urban Transportation Research (CUTR), is focused on work trips and modeling the impacts of workplace programs designed to reduce trips. This model is a neural network model based on approximately 7,000 real-world programs, and has been field tested by the developers with a higher success rate than previous regression models.

After site data is loaded and potential programmatic elements are input, the number of trips per 100 employees is calculated. See Appendix 7, Tables 5.1 and 5.2.

Through this validation process, the office trip reduction forecast from the methodology used for this effort and the modeled trip reduction from the CUTR model were within 3%. Based on this model validation process, 3% of trips were added back into the calculations for the office uses. This comparison served as a useful validation that the trip reduction analysis used for this effort was accurately reflecting likely travel behavior changes, and not reflecting double counting of reductions or other potential concerns.

Table 7 below summarizes all elements of the trip reduction analysis.

Table 7: Trip Reduction Assessment Summary

		AM Peak Hour - Office Uses			PM Peak Hour - Residential Uses		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Trips Generated Related to the Office Peak Hour	Per ITE Calculation	398	54	452	-	-	-
Trips Generated Related to the Residential Peak Hour	Per ITE Calculation	-	-	-	565	339	904
Target Trip Generation Reduction as a % ITE Rates for Peak Hour Land Use				-25%			-47%
Target Trip Generation Reduction		-99	-14	-113	-266	-159	-425
Target Peak Hour Trip Generation	<i>(Trip Generation less Trip Reduction Targets)</i>	299	40	339	299	180	479
Modifiers from Physical Attributes - Step 2							
	Age Restricted Residential	0	0	0	-25	-15	-40
	Internal Trips	-4	-5	-9	-42	-51	-93
	Linked Trips	-8	-8	-16	-34	-51	-85
	Total Adjustments - Step 2	-12	-13	-25	-101	-117	-218
Modifiers from TDM Attributes - Step 3 & 4							
	Transit Proximity	-40	-5	-45	-57	-34	-91
	Onsite Transportation Programs	-16	-2	-18	-22	-13	-35
	Active Parking Management	-33	-5	-38	-48	-29	-77
	Residence to Office	-26	-1	-27	-32	-5	-37
	Total Adjustments - Steps 3 & 4	-115	-13	-128	-159	-81	-240
Adjustments to Trip Generation - Steps 2-4	<i>(Removes Trips from system)</i>	-127	-26	-153	-260	-198	-458
Adjustment of Trips based on CUTR Model - Step 5	<i>(Adds Trips back into system)</i>	12	2	14	-	-	-
		AM Peak Hour - Office Uses			PM Peak Hour - Residential Uses		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Net Adjusted Peak Hour Trip Generation		283	30	313	305	141	446

Monitoring and Evaluation

As identified by the Board of Supervisors in the December 2004 Board Motion, "The TDM program will be evaluated initially in at least three stages during the development process; first at the time of rezoning, second before and during construction and third after project completion or 'build out.'"

Rigorous monitoring and evaluation are absolutely critical to this proposed TDM development program. To ensure credibility and performance, the monitoring and evaluation program must assess whether the development and implemented TDM measures are, in fact, meeting the forecast peak-period vehicle trip reduction targets.

The process below is recommended for implementation during the final two phases identified by the Board Motion.

1. During the construction period
2. One year after project completion or "build out"

The peak-period vehicle trip reduction targets are the baseline of this measurement process, and as such, the following methodology outlines a vehicle-based measurement system. The vehicle-based measurement system should be supplemented by onsite, online surveys of residents and employees, with a goal only to continue to refine and improve TDM program and service offerings.

Phase 1 – During Construction

Phase one monitoring and evaluation should be implemented at such time as buildings representing **55%** of total planned residential dwelling units are certified for occupancy. The following phase one monitoring plan assumes that a proportionate amount of planned retail uses have also be constructed and occupied, but assumes offices uses have not been constructed.

Monitoring systems could include:

- Cordon machine traffic counts. Conduct machine traffic counts at the adjacent streets to all vehicle entry/exit locations providing access to/from the site as a whole at the time of measurement. Calibrate the cordon machines to pick up vehicle size in order to take into account construction vehicles entering and exiting the site. Conduct counts over a one-week period, collecting vehicle count data at 15-minute intervals for the entire week and supplement that data with peak hour turning counts.
- Residential machine counts. Conduct machine traffic counts at all completed condo/apartment building parking garage entry/exit location during the same period as the cordon counts.
- Manual retail and residential counters. Position individuals at retail parking locations, during three weekday AM and PM peak periods (Tuesday-Thursday) to

identify vehicles accessing retail service locations that are not MetroWest residents or employees. Depending on parking management systems in place, a method for identifying MetroWest residents and employees is needed (i.e., vehicle parking permit stickers). Alternatively, at garage entrances providing retail parking, visual or verbal assessments of residency can be conducted. This system should be used to determine the percentage of all non-resident vehicles accessing the site for retail purposes.

In order to assess peak-period vehicle trip generation for the project at this phase, cordon machine traffic counts should be averaged for weekday and weekend trips, and a single peak hour identified. The peak-hour identified should represent the four consecutive 15-minute increments which, when totaled, represent the highest volume of vehicles. The percentage of trips associated with non-resident travel should be subtracted from this total to isolate the total trip generation of all collected residential uses on site.

Phase 1A – During Construction

If Phase One monitoring indicates that trip reduction performance is not on track, then an additional phase of monitoring and evaluation is recommended. Determination that Phase 1A is needed should occur within 30 days of the final assessment (from Phase 1) that trip reduction is not on track. This additional phase requires a preliminary assessment of TDM measures already in place and evaluation of what is working (based on phase one survey results and traffic count / travel pattern analysis).

Assessment and evaluation systems should include:

- Residential Travel Survey Analysis. Identify which current TDM Measures are best received and utilized by residents of the development and explore which measures that have not been implemented have the greatest potential to be used.
- Strategy Development. Focus more attention on aggressively implementing the TDM measures that will be most effective and yield the best results.
- Implement Additional/More Aggressive TDM Measures. Timely implementation (within 90 days of phase one determination) is critical to ensure that TDM measures can take effect and yield behavior change before time of subsequent monitoring and evaluation.

Upon completion of the preliminary assessment of existing TDM measures, strategic planning for what additional measures need to be taken, and implementation of those additional measures, conduct a supplemental monitoring and evaluation phase to again assess performance between the initial monitoring phase and full build out. Phase 1A monitoring and evaluation should be implemented at such time as buildings representing **75%** of total planned residential dwelling units are certified for occupancy.

Implement the same monitoring program outlined for phase one. However, supplement the monitoring program with delineations to enable specific assessment of travel behavior changes for the new residential buildings constructed following phase one. Compare survey results for residents that moved to the site following the phase one monitoring.

Phase 2 – One Year After Build Out

Phase two monitoring and evaluation should be implemented one year after all planned residential and office buildings are certified for occupancy. The following monitoring plan assumes that all planned retail uses have also be constructed and occupied.

Monitoring systems should include:

- All elements included in phase one.
- Machine counts at office uses. Mirror the cordon machine count process (in terms of count times and increments) by locating vehicle count devices at all entry/exit locations for garages serving office buildings.

In order to assess peak-period vehicle trip generation for the residential portion of the project at this phase, cordon machine traffic counts should be averaged for weekday and weekend trips, and a single peak hour identified. The peak-hour identified should represent the four consecutive 15-minute increments which, when totaled, represent the highest volume of vehicles. The percentage of trips associated with non-resident retail travel should be subtracted from this total. Additionally, the counts from the office locations should be subtracted from the total to isolate the total trip generation of all collected residential uses on site.

In order to assess peak-period vehicle trip generation for the office portion of the project at this phase, office entry/exit machine traffic counts should be averaged for weekday and weekend trips, and a single peak hour identified. The peak-hour identified should represent the four consecutive 15-minute increments which, when totaled, represent the highest volume of vehicles.

Additional Evaluation

Supplementing the vehicle-based monitoring of vehicle trip generation at each of the monitoring phases, an online survey of residents and employees (when relevant) should be conducted. The purpose of the survey should not be connected to the measurement of vehicle trip generation relative to the established baseline. The purpose of the survey should be to better understand:

- Transportation attitudes and preferences.
- Interest in, effectiveness of, and potential improvements to existing TDM programs and services on site.
- Travel and trip-making patterns, for the purpose of targeting future TDM programs.
- Demographics and household characteristics of residents and employees.

Oversight and Responsibilities

Fairfax County Department of Transportation should lead the monitoring and evaluation processes at each of the two phases, utilizing outside contractors as needed. Funding for these activities should be provided by the project developer, utilizing a separate escrow account to fund outside contractors managed by Fairfax County, as appropriate. Monitoring and evaluation efforts should be closely coordinated with the MetroWest TDM Program Coordinator.

Results of each monitoring and evaluation phase should be reported to the Board of Supervisors and be available publicly.

Phase One Trip Reduction Targets

The vehicle trip reduction analysis summarized in a previous section identifies forecast trip reductions upon full build out of all elements of the proposed development. In order to assess progress toward the ultimate build-out trip reduction targets, the Phase One monitoring and evaluation process should determine if the site is “on track” midway through the phased development process.

The table below summarizes potential phasing of the project, in two phases, utilizing initial phasing concepts provided by the project developer (actual phasing will be dependent on market conditions and absorption). The table utilizes the same trip generation rates used in the baseline computations.

Table 8: Trip Generation by Phase

			Site Plan Building #s	Size	Units	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
						IN	OUT	TOTAL	IN	OUT	TOTAL
Phase One	Residential	(222) High-Rise Apartments	10	314	DU	24	71	95	67	43	110
		(232) 6-8 Story Condominium	14-17	280	DU	18	77	95	66	40	106
		(232) 4 Story Condominium	11-13, 19-20	160	DU	10	44	54	38	23	61
		(232) 6 Story 55+	2-4	230	DU	15	63	78	54	33	87
		(230) Stacked - 2 over 2		122	DU	9	45	54	43	21	64
		Townhouses		218	DU	24	94	118	92	50	142
		RESIDENTIAL TOTAL					100	394	494	360	210
Phase Two	Residential	(222) High-Rise Apartments	6-7	586	DU	44	132	176	125	80	205
		(232) 10 Story 55+	5	138	DU	9	38	47	33	20	53
		(232) 8-9 Story Condominium	18	200	DU	13	55	68	47	29	76
	RESIDENTIAL TOTAL				66	225	291	205	129	334	
OFFICE TOTAL		8-9	300,000	SQ FT	398	54	452	71	344	415	
PHASE ONE	Residential		1,324	DU	100	394	494	360	210	570	
PHASE TWO	Residential		924	DU	66	225	291	205	129	334	
	Office		300,000	SQ FT	398	54	452	71	344	415	
PHASE ONE & TWO	Residential		2,248	DU	166	619	785	565	339	904	
	Office		300,000	SQ FT	398	54	452	71	344	415	

Based on the peak-period vehicle trip generation summarized above, each of the trip reduction factors discussed in the prior Trip Reduction Analysis section, UrbanTrans assessed each of the TOD and TDM attributes (i.e., inclusion of age-restricted units, internal capture rate, etc.) in light of the amount of development planned in an initial phase (where phase one is selected as representing about 55% of the residential dwelling units – just past the half-way point in the development of the full project). For

each of the attributes, the team determined a forecast “percent of the total trip reduction” impact that could be expected given that the full project was not yet complete at the end of Phase 1. These forecasts are based on professional judgment of the interaction of each attribute with the presence/absence of different land uses and site design characteristics. As such, the forecasts for Phase 1 are expressed as ranges.

Phase 1 assumes approximately 55% of residential units are certified for occupancy, that no office uses have been completed, and that approximately 50% of planned retail square footage is available. For Phase 1, the forecast target range for measured peak-period vehicle trip reduction is between 22-29% for residential uses (compared the build-out target of 47% reduction, and measured against the trip generation baseline for Phase 1 of 570 peak-period vehicles). This is associated with the incomplete development of all retail space, the lack of office uses on site, and the incomplete nature of the development generally. Details of the assumptions regarding each attribute is shown in the table below.

Table 9: Phase One Trip Reduction, Target Range

	Full Build-Out Trip Reduction	Percent of Total Trip Reduction Impact at Each Phase - RANGE		Trip Reduction at Each Phase - RANGE		Summary of Phased Trip Reductions	
Trip Reduction with Only Phase 1 (assumes 50% retail build-out)							
<i>Trip Reductions</i>		LOW	HIGH	LOW	HIGH		
Age Restricted	3.9%	62.5%	62.5%	2%	2%		
Internal Capture Rate	9.2%	25.0%	45.0%	2%	4%	Phase One Trip Gen	570
Linked / Pass-by	8.4%	25.0%	45.0%	2%	4%	Trip Reduction Ranges	
Transit Proximity	9.0%	70.0%	90.0%	6%	8%	Low (22%)	128
On Site Transportation Programs	3.5%	70.0%	90.0%	2%	3%	High (29%)	166
Active Parking Management	7.6%	90.0%	100.0%	7%	8%	Forecast Trip Generation Range	
Residence to Office	5.4%	0.0%	0.0%	0%	0%	Low	442
TOTAL TRIP REDUCTION	47%			22%	29%	High	404

The ranges presented are linked to the following concepts relating to the sensitivity of various trip-reduction areas to build out levels:

- Age-Restricted: Based on straight linkages to percent of units built.
- Internal Capture and Linked Trips: Reductions particularly sensitive to the availability of retail, as well as the diversity of retail available. The less retail on site, the more trips that will need to go external to the site, or not link to site uses.
- Transit Proximity: Sensitive primarily to the availability of pedestrian connections, and the quality of experience associated with the pedestrian link.
- On Site Transportation Programs: Programs are targeted directly to individuals, and thus have independent results. However, some programs may not come on line or be as fully developed prior to build-out (e.g., bike station).
- Active Parking Management: The majority of programs are targeted to individuals, though small scale impacts could be associated with more vehicles competing for on-street parking spaces at full build-out.
- Residence to Office: Direct connection to presence of office uses.

In general, this analysis again highlights the importance of the mixed-use nature of the project. As noted previously, the Trip Reduction Analysis assumes all elements of the proposed project are completed as planned, and that all elements of the TDM program are implemented.

Supplemental TDM Program Concepts

Following the monitoring and evaluation process conducted in Phase 1, if measured peak-period vehicle trips are not within the forecast 22-29% reduction range, or are at the low end of this range (measured against the baseline peak-period vehicle trips forecast for this initial phase), supplemental TDM programs must be implemented to ensure improved performance of the project through the remaining phases of construction and, notably, by the next Phase 1A monitoring and evaluation phase.

The supplemental TDM concepts provided below introduce sample additional demand management measures, as well as dedication of additional funding to strategies highlighted in the previous section on TDM Program Recommendations. Importantly, the resident survey conducted in Phase 1 should be utilized to inform development of supplemental TDM programs, in order to better tailor programs to fit stated preferences within the survey and build on what is working.

Supplemental TDM programs concepts include:

1. Additional funding for transit pass subsidies. Core strategies included initial addition of value to resident SmarTrip cards to establish transit use patterns initially following occupancy, and on-going addition of value to cards as part of marketing and promotion campaigns. This step would transition transit subsidies onto a more permanent schedule (addition of a transit card value on a monthly or quarterly basis, for registered residents visiting the Connections Store).
2. Enhanced telework target marketing and home office subsidy program. Utilize more aggressive target marketing for residential sales/rental to full-time and part-time teleworkers by offering home office set-up incentives (i.e., computers, telecommunications equipment, and broadband internet access) and free telework support and training upon move-in.
3. Off-peak travel incentives. Fund reward-based incentive programs (prizes, SmarTrip value) encouraging off-peak travel for non-commute trips. Explore implementation options to reward residents for shifting discretionary travel off-peak. Focus on incentives targeted to 55+ residential condos.
4. On-site concierge and courier services. Fund free/discounted concierge and courier services, staffed out of the Connections Store, to eliminate off-site retail/service trips.
5. MetroWest fleet vehicles. Work with shared-car companies to establish a "fleet car" system for project residents. This idea builds on the shared-car recommendations by ensuring availability of a dedicated number of shared-car vehicles on-site, and providing a specified number of free shared-car hours for all

residents. Market this amenity to potential residents, linked to previously recommend “one less car” marketing.

6. Additional part-time TDM Program staff. Dedicate .5 FTE additional TDM Program staff member through one-year following project build out. Focus staff member resources on “personalized transportation advising” to expand availability of this service. Dedicate additional funding to provide incentives for residents to meet with program staff members.

Long-Term Program Monitoring & Enforcement

The TDM program is intended to be a core component of the development site in perpetuity. As a result, the following long-term monitoring and enforcement structures should be considered:

- Long-term Monitoring. In the period following the Phase 2 monitoring and measurement program, the MetroWest Connections TDM Program Manager should submit biennial reports to the Fairfax County DOT and TDM Program Manager. Reports could include:
 - Results of an online survey of residents and employees assessing travel patterns, mode splits, and attitudes and preferences regarding current and potential TDM programs.
 - Budget summaries of TDM program revenues and expenditures.
 - A TDM Program Workplan, with budgets, for the upcoming two year period.
 - Traffic counts.
 - Certification that all elements of the development agreement related to the TDM program remain in place.
- Long-term enforcement. Following project build-out, as described in the funding mechanisms portion of the TDM strategy recommendations, residential HOAs fees and office CAM fees will provide the sustainable, long-term funding required to maintain the MetroWest Connections TDM program activities and staffing. Upon submittal of the biennial report, Fairfax County DOT should determine continued compliance with the core elements of the TDM related proffers (including TDM funding mechanisms and program staffing). A finding of non-compliance would render the area in violation of the site’s zoning code (to be determined through the rezoning process), subject to standard County zoning enforcement processes.

TDM Program Staffing & Budget

At the point of full project build-out, a full-time TDM Program Manager is recommended for implementation of the TDM Program. National experience suggests a TDM program coordinator spend a minimum of one hour per week for every 200 people (employees or residents). Using employee per square foot and residential occupancy estimates equates to approximately 5,100 driving-age residents and employees, which translates into about 25 hours per week for a TDM Program Manager. Given the aggressive nature of the proposed TDM plan and the importance of achieving the project's trip reduction targets, a full-time staff person (40 hours per week) is recommended at full build-out.

During the initial phases of project marketing and sales, an employee (likely a member of the project sales staff) should be designated at .25 FTE as the TDM Program Manager. During this phase, the TDM Program Manager will work to refine TDM programs, develop initial marketing approaches and materials, and detail a multi-year TDM Business Plan. Upon issuance of the first residential certificate of occupancy, the TDM Program Manager should shift to .5 FTE hour commitment.

By the completion of Phase 1, as outlined in previous sections, the TDM Program Coordinator should shift to .75 FTE hour commitment.

By project build-out, the TDM Program Coordinator should be at 1 FTE.

Budget

Annual budgets for the recommended TDM program, in the four phases referenced above relative to staffing levels, are provided in the table below. Forecast expenses and revenue streams are detailed on an annual basis. The following concepts and assumptions are part of the proposed budget:

- Expenses for physical facility recommendations are assumed to be covered as part of overall development costs, and are not reflected in this budget.
- Assessments between residential and office uses are determined based on the percentage of overall project trips reduced by the proposed TDM program (75% of trips reduced are from residential uses, 25% from office uses).
- Program revenues from residential uses, outside of initial developer contributions, are derived from parking space user fees. User fees tied to TDM program funding should be assessed on a per-space basis, with each additional spaces (if any) assessed higher rates on a graduated scale. Individual HOAs should be responsible for a pro-rata share of TDM program funding and given flexibility, as needed, to manage HOA revenues and expenses as needed.
- Revenues from on-street parking meters are not included in this budget, but should also be dedicated to the TDM program to fund additional TDM programs and services (i.e., higher levels of incentives and subsidies).

- Retail space rent for the storefront / bike station is not assumed in the overhead calculations below.
- “Incentives / Subsidies” expenses are intended to cover a broad array of programs, from transit pass and shared-car incentives to vanpool subsidies.

Table 10: TDM Program Annual Budget Outline

	ANNUAL BUDGETS			
	Pre-Construction	Start-Up	Phase One	Build Out
Residential Units	0	300	1,324	2,248
Office SF	0	0	0	300,000
Program Coordinator	.25 FTE	.5 FTE	.75 FTE	1 FTE
Salary - \$65,000	\$16,250	\$32,500	\$48,750	\$65,000
Labor Fringe & Storefront Overhead (1.5 multiplier)	\$8,125	\$16,250	\$24,375	\$32,500
Collateral & Marketing Materials	\$50,000	\$0	\$5,000	\$15,000
Web Development / Maintenance / Upgrades	\$65,000	\$5,000	\$10,000	\$20,000
SmarTrip Cards (initial + on-going via turnover)	\$16,860	\$500	\$2,000	\$3,500
Incentives / Subsidies		\$5,000	\$30,000	\$50,000
Promotional Events		\$5,000	\$25,000	\$40,000
TOTAL EXPENSES	\$156,235	\$64,250	\$145,125	\$226,000
Residential Assessment (75% of revenue at build-out)		\$22,620	\$120,153	\$169,500
Per parking space annual user fee (primary space)		\$56.55	\$56.55	\$56.55
Per parking space annual user fee (additional spaces, 25%)		\$75.40	\$75.40	\$75.40
Office Assessment (25% of revenue at build-out)		\$0	\$0	\$56,500
Per square foot		\$0	\$0	\$0.19
Developer Assessment	\$156,235	\$41,630	\$24,972	\$0
TOTAL REVENUE	\$156,235	\$64,250	\$145,125	\$226,000

Note: All figures in 2005 dollars.

Conclusions

The research and analysis elements of the Fairlee/MetroWest TDM Development Program indicate that the trip reduction targets for the proposed project (peak-hour vehicle trip reductions of 47% for the residential uses and 25% reductions for the office uses) can be achieved through a combination of the physical design characteristics of the site, as proposed, and the full application of the TDM programs and strategies recommended in this document.

The trip reductions, however, remain aggressive targets. The development of the TDM program recommendations and the trip reduction analysis conducted for this effort considered the project as a whole, with the full level of development planned; the mix and quantity of residential, office, and retail uses proposed; and the pedestrian-friendly design of the site as planned. All of the design elements of the proposed project, along with the recommended TDM strategies (programs and budget levels), must work collectively to achieve the trip reduction targets. With all elements in place, however, trip reductions should prove sustainable.

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Glossary

The following terms and definitions are provided for reference:

Access - The ability to enter or approach a facility or to make use of a facility.

Accessibility - Measure of the ability or ease of individuals to travel among all origins and destinations in an area.

Access Mode - Mode or type of transportation used to reach the major mode of transportation used to reach a destination. Walking, bicycling, or driving to a park-and-ride lot are all examples of access modes.

Advanced Traveler Information Systems (ATIS) - A categorization of intelligent transportation systems (ITS) and other advanced technologies to provide real-time traffic, transit, weather, and other information to commuters, commercial operators, and travelers. Technologies and approaches include in-vehicle systems, changeable message signs, and computers in the home and office.

Alignment - The horizontal and vertical ground plan of a roadway, HOV lane, transit route, rail system or other transportation facility as it appears in plan and profile.

Alternative Transportation - Modes of transportation other than the single-passenger motor vehicle, including but not limited to carpools, vanpools, buspools, public transit, walking, and bicycling.

Alternative Work Schedule - Work policies and programs such as flexible and staggered work hours, variable work hours, flextime, and compressed work weeks that allow employees to avoid commuting during the most congested or peak travel periods in the morning and afternoon.

Arterial Street or Roadway - A major thoroughfare serving higher speed through trips, with limited access to adjacent property.

Average Daily Traffic (ADT) - The average number of vehicle trips generated during a 24-hour period from a specific site or area. This term also applies to traffic volumes on a roadway over a 24-hour period.

Average Vehicle Occupancy (AVO) - The total number of persons in all vehicles divided by the number of vehicles traveling past a selected point during a predetermined time period. AVO is usually expressed to two or three significant decimal places, such as 1.2 or 1.26.

Average Vehicle Ridership (AVR) - The average number of employees who report to a work site divided by the average number of vehicles driven by these employees, calculated for an established time period. This calculation recognizes vehicle trip reductions from telecommuting, compressed work weeks, and non-motorized transportation.

Barrier-Separated HOV Facility - An HOV lane that is physically separated from the adjoining general-purpose lanes by some type of barrier. A concrete barrier is the most commonly used approach, but wide buffers, movable barriers, and pylons may be used. A barrier-separated HOV lane may be a one direction/reversible facility or a two lane bi-directional facility.

Bicycle Lane or Bike Lane - A portion of a roadway reserved for preferential or exclusive use by bicycles through striping, signing, and pavement markings.

Bicycle Path or Bike Path - A path or trail reserved for exclusive use by bicycles and physically separated from motorized vehicle traffic by an open space or barrier. A bicycle path may be in a separate right-of-way, such as the use of an abandoned railroad line, or in a roadway right-of-way. Bicycle paths or trails may also be open to other user groups such as walkers, joggers, or in-line skaters.

Bicycle Facilities - Shelters, racks, storage facilities, and other elements for bicycles.

Bus - A self-propelled, rubber-tired vehicle designed to carry a substantial number of passengers.

Bus, Express - A bus that operates a portion of the route without stops or with a limited number of stops.

Bus, Feeder - A bus service that picks up and delivers passengers to a rapid transit station or express bus stop or terminal.

Capacity - The maximum number of vehicles (vehicular capacity) or persons (person capacity) that can pass over a given section of roadway in one or both directions during a given period of time under a prevailing management strategy that assures an acceptable level of free-flow service, usually expressed as vehicles per hour or persons per hour.

Capital Cost - The costs associated with the purchase, development or construction of fixed assets such as land, roadways, guideways, stations, buildings, and vehicles.

Carpool or Carpooling - Any automobile or private vehicle containing two or more occupants including the driver.

Carpool Lane - Another term used to describe an HOV lane, especially in areas with lower levels of bus service and high numbers of carpools.

Casual Carpool - Term used to describe the formation of a carpool on a periodic basis, with no formal arrangement for regular riders, or where drivers pick up random passengers at predetermined locations. Often used interchangeably with informal and instant carpooling.

Central Business District (CBD) - The major concentration of business activity in a downtown area. Formally defined by the Census Bureau.

Collector (Distributor Street) - A road generally parallel to an expressway which collects and distributes traffic at access points to the expressway involving through lanes.

Commuter Trips - Trips that are made on a daily or regular basis to work, including those with intermediate stops to and from a work site.

Commuter Alternatives - Alternatives to driving alone such as carpooling, vanpooling, transit, bicycling, and walking, or alternative work schedules that shift, commute trip to less congested periods, or remove work trips from the system altogether.

Commuter – A person who travels regularly between home and work or school.

Commuter Assistance Programs - Programs which provide services to help commuters identify and use alternative modes, such as ridesharing and transit, and provide support facilities and services.

Commuter Rail and Commuter Rail Transit - Passenger rail service which is often operated on existing railroad rights-of-way or on trackage shared with freight railroads. Commuter rail is characterized by long distance trips, faster operating speeds, and limited service, with longer distances between stops.

Compressed Work Week - One alternative work schedule technique that consists of condensing the standard 5-day work week into a fewer number of longer workdays. Common schedules include 4-10 hour days with one day off a week, and 9-9 hour days, with one day off every two weeks.

Congestion Pricing - The concept of charging for the use of a transportation facility, such as a roadway, based on the level of traffic congestion. The greater the level of congestion, which usually occurs during the morning and afternoon peak-periods, the higher the cost to use the facility.

Corridor - A geographical area usually defined by a freeway, roadway, or other physical element and its immediate surrounding area, including collector routes, that has similar characteristics.

Delay - The increased travel time experienced by a person or a vehicle due to circumstances that impede the desirable movement of traffic. Delay is measured as the time difference between the experienced travel time and the travel time during free-flow conditions.

Demand - The quantity of a good or service, such as transportation, desired. The desire for a good or service may be different based on different costs or benefits.

Demand-Responsive Transit Services - A bus, van, or other vehicle that is dispatched and operated only in response to a specific request for a passenger.

Destination - The point, area, or zone in which a trip terminates.

Directional Split - The distribution of traffic flows on a two-way facility, usually expressed as a percentage of the total two-way traffic.

Disincentive - Programs, policies, and techniques aimed at discouraging a specific type of behavior, such as driving alone.

Employee Transportation Coordinator (ETC) - An individual designated by a company or a group of companies to develop, implement, and administer an employee transportation demand management program. Duties may include coordinating vanpool and carpool programs, providing information on commute options, promoting the use of public transit, monitoring employee participation, and other related activities.

Estimated Trip Reduction - The estimated percentage of vehicle trips to be reduced through implementation of various commute alternative strategies, usually at one worksite or a small area.

Fare - The payment required to ride public transit. A variety of payment methods or media may be used including cash, tokens, tickets, passes, and other techniques.

Flexible Work Hours and Flextime - One alternative work schedule technique that gives employees the option of varying their starting and stopping times each workday. The intent is to allow employees more flexibility to adjust their work hours to individual needs and to avoid congested travel periods. Most policies specify a core period in the middle of the workday, such as 10:00 A.M. to 3:00 P.M., when all employees are required to be present.

Forecasting - The planning process of estimating future conditions, such as population and employment levels, demographic characteristics, and demand for roadway and transit facilities.

Frequency of Service - The number of vehicles on a route traveling in the same direction often expressed as the number of vehicles that will pass a certain point in the route within an hour period.

General-Purpose Lanes - The travel lanes on a freeway or roadway that are open to all motor vehicles.

Grade Separation - The vertical separation of an intersecting transportation facility to prevent conflicts.

Guaranteed Ride Home Program - Programs that provide commuters who rideshare, take transit, or use other alternative modes with a way to get home or to another location in the case of an emergency. A Guaranteed Ride Home program may be offered by an employer, a group of employers, a transit agency, or other groups, and a variety of techniques may be used to provide the service.

Headway - The time interval between buses operating on a route or out of a transit facility.

High-Occupancy Toll (HOT) Lane - Concept of using congestion or priority pricing on a toll or HOV facility. An example would be charging variable toll rates depending on the number of people in a vehicle and the time of day.

High-Occupancy Vehicle (HOV) - Motor vehicles with at least two or more persons, including carpools, vanpools, and buses. Individual HOV facilities may require different vehicle occupancy levels, which are usually expressed as either two or more (2+), three or more (3+), or four or more (4+) passengers per vehicle.

Home-Based Trip - A trip where either the origin or the destination is the traveler's home.

Home-Based Work Trip - A trip to or from the home for the purpose of one's employment.

Inbound - A trip toward a downtown, CBD, or major activity center.

Incentive - Programs, policies, and techniques aimed at a specific type of behavior, such as taking the bus or carpooling.

Informal Carpool - The composition of the carpool passengers varies from one day to another and there is no formal arrangement for regular riders. Often used interchangeably with casual and instant carpooling.

Infrastructure - All fixed components of a transportation system including roadways and bridges, park-and-ride lots, fixed transit components, and other elements.

Intelligent Transportation Systems (ITS) - The application of a wide range of advanced technologies to enhance the operation and management of the surface transportation system.

Intermodal - The integration of multiple modes in a corridor or area.

Jitney - A privately owned vehicle operated on a fixed or semi-fixed schedule for a fare.

Joint Development - Projects that involve the joint use or improvement of a piece of property. Joint developments usually involve the public and private sectors working together on a project, but they may also include public/public partnerships.

Kiss-and-Ride Lot or Facility - Short term parking spaces and pick up/drop off areas for commuters who are driven to a transit station or park-and-ride lot and are then picked up on the return trip.

Land Use - Refers to the manner in which portions of land or the structures on them are used, i.e., commercial, residential, retail, etc.

Level of Service (LOS) - A qualitative measure that describes the operational conditions on a road or intersection, as defined by the Highway Capacity Manual. The various service levels are defined by a range from A to F, with A representing freeflow traffic conditions and F representing stop-and-go traffic.

Light Rail Transit (LRT) - A mode of transit that operates on steel rails and obtains its power from overhead electrical wires. LRT may operate in single or multiple cars on separate rights-of-way or in mixed traffic.

Linked/Unlinked Trip - An unlinked trip is a passenger trip made on a single vehicle, such as a single automobile or bus ride. A linked trip is a person's entire trip between an origin and destination, which may involve transferring between vehicles (e.g., Park & Ride or bus and rail transit), or multiple stops, such as stopping at a daycare center or store along a commute trip.

Local Bus Service or Local Routes - Bus routes and services characterized by frequent stops and relatively slow operating speeds that usually link neighborhood areas and downtowns or major activity centers using the local street system.

Marketing - A comprehensive approach to identifying the need of various user groups, matching services to meet those needs, and promoting the use of specific services.

Market Research - Broad term used to describe a general approach to identifying markets and their characteristics and the marketing services to those markets. May include a variety of techniques and approaches.

Mass Transit and Mass Transportation - Transportation provided by public or private operators by bus, rail, ferry, or other mode that operates on a regular basis, and serves large numbers of riders.

Mixed-Use Development – Defined by the Urban Land Institute as developments with the following criteria: (1) three or more revenue-producing uses that in well-planned projects are mutually supporting, (2) significant physical and functional integration of project components, including uninterrupted pedestrian connections, and (3) development in conformance with a coherent plan.

Mobility – The ability to move or be moved from place to place.

Mode - A particular form of travel conveyances, including buses, automobiles, carpools, vanpools, single occupant vehicles, walking, bicycling, rail, air, and water-borne vessels.

Mode Shift - The act of changing from one mode, such as driving alone, to another mode, such as taking the bus.

Mode Split - The proportion of total person-trips using the various modes of travel.

Multimodal - More than one mode operating in a corridor or area.

Network - A system that comprises all transportation elements.

Non-Commute Trips - Vehicle-trips made for purposes other than work-related reasons. Examples of non-commute trip purposes include shopping, personal business, medical, school, day care, and recreation.

Off-Peak Direction of Travel - The direction of travel in a corridor experiencing lower demand during a peak commuting period. In a radial corridor, the off-peak direction has traditionally been away from the central business district in the morning and toward the central business district in the evening. This situation is no longer the case in many metropolitan areas and in suburban areas; circumferential freeways often experience congestion in both directions.

Off-Peak Period - The period of time outside the peak commuting period, usually the midday, evening, night, and early morning.

Origin - The point or zone where a trip starts.

Paratransit - Transit services that are operated on demand, rather than on a fixed route and fixed schedule. Examples include dial-a-ride, jitney services, and shared-ride taxis.

Paratransit Vehicle - Usually smaller vehicles than conventional buses used on fixed route services. Examples include taxis, jitneys, vans, mini-vans, and small buses.

Park-and-Pool Lot and Park-and-Pool Facility - A facility where individuals can park their private vehicle and join a carpool or vanpool. The facility is not normally served by public transportation.

Park-and-Ride Lot and Park-and-Ride Facility - A facility where individuals can park their private vehicle for the day and access public transportation or rideshare for the major portion of their trip. Park-and-ride lots are found with HOV facilities, LRT, heavy rail, commuter rail systems, and ferry services.

Parking Cash Out - A strategy that employers can utilize to encourage employees to use alternative modes of commuting by giving up their tax-free parking and using the cash value to pay for expenses associated with other modes like carpooling or to receive a tax-free subsidy for their transit or vanpools.

Parking Management - Policies and programs aimed at managing both the supply of and the demand for parking at employment sites and major activity centers. May include strategies focusing on pricing, space availability and location, and priority treatments for carpools and vanpools. Measures that favor carpools and vanpools, including parking charges for drive-alone commuter parking, preferential parking for pool vehicles, and the elimination of free, low-cost, or on-street parking in employment areas.

Parking Pricing - Using pricing mechanisms to control the demand for parking and to encourage carpooling and vanpooling. Approaches include charging higher rates for driving alone, reducing or eliminating fees for carpools and vanpools, parking cash-out programs, and other approaches.

Peak Direction and Peak Direction of Travel - The direction of higher travel demand during a peak commuting period. In a radial corridor, the peak direction has traditionally been toward the central business district in the morning and away from the central business district in the evening. This situation is no longer the case in many metropolitan areas and in suburban areas; circumferential freeways often experience congestion in both directions.

Peak Hour - The hour in the morning and in the afternoon when the maximum demand occurs on a given transportation facility or corridor.

Peak Period - The time period in the morning and in the afternoon when the heaviest demand occurs on a given transportation facility or corridor. Usually two or more hours.

Person Throughput - Term used to describe the number of persons, not vehicles, being carried on a facility. Usually measured at a specific point on the roadway facility for a predetermined period of time.

Preferential Parking - Parking lots, spaces, or other areas reserved for carpools and vanpools. Preferential parking is usually located closer to the destination, in a parking garage, or in some other area which is more desirable.

Preferential Treatment - Providing special privileges to a specific mode or modes of transportation, such as bus lanes or signal priority for buses at intersections.

Priority Lane - Lane providing preferential treatment to buses, carpools, and vanpools.

Proximate Commute - Working at the employer worksite closest to the employee's home can be implemented by multi-site employers such as banks, retail, etc.

Public Transit and Public Transportation - Passenger transportation service to the public on a regular basis using vehicles that transport more than one person for compensation, usually but not exclusively over a set route or routes from one fixed point to another. Routes or schedules of this service may be predetermined by the operator or may be determined through a cooperative arrangement.

Qualified Transportation Fringe Benefit - This represents a transportation fringe benefit that is tax-free for the employee. This benefit can be in the form of a mass transit subsidy, vanpool subsidy, and employer-provided parking. Carpool subsidy does not qualify.

Rail Transit - General term used for all types of rail transit systems including light rail transit (LRT), heavy rail, and commuter rail.

Reverse Commute - Regular travel between home and work or school in the opposite direction of the peak direction of traffic. Travel from a central city area to a suburb is one example of a reverse commute trip.

Ride Matching - The process of creating carpools and vanpools through finding people whose travel characteristics (origin and destination and time of travel) closely match.

Ridesharing - The function of sharing a ride with other passengers in a common vehicle. The term is usually applied to carpools and vanpools.

Right-of-Way - The area or property reserved for a specific transportation function such as a roadway or transit guideway.

Schedule - A listing of trips and time points for buses or other transit vehicles for a given route.

Service Frequency - The number of buses or other transit vehicles on a given route, passing a specific point within a given time period.

Shared Ride - A trip other than by public transit where more than one person occupies the same vehicle.

Shuttle – A public or private vehicle that travels back and forth over a particular route, especially a short route or one that provides connections between transportation systems, employment centers, etc.

Single Occupant Vehicle (SOV) - A motor vehicle occupied by only one person.

Staggered Work Hours - One alternative work scheduling technique that allows employees to begin and end work at times different than the normal 8:00 A.M. to 5:00 P.M. schedule. Work hours are usually staggered over a range from 15 minutes to two hours. Most staggered work hour programs require that employees maintain a set schedule, such as 7:30 A.M. to 4:30 P.M., on a regular basis.

Support Program - Policies, programs, and services that enhance the public acceptance or usage of an HOV facility, including ridesharing programs, employer-sponsored incentives, public information, and marketing activities.

Taxi and Taxicab - A vehicle to be operated by a professional and licensed driver for hire for a fee.

Telecommunications - The conveyance of information by electronic means. Examples include the telephone, interactive cable facilities, computer networks, and video conference centers.

Telecommuting - A work arrangement program whereby employees work at a location other than the conventional office or central headquarters, usually from home or an office close to home. Telecommuting can remove commute trips from the roadway system or reduce the length of commute trips.

Traffic Mitigation – The use of transportation management techniques to reduce the traffic impact of new development.

Traffic Volume - The number of vehicles on a freeway, roadway, HOV lane, or other transportation facility.

Transfer - The act of changing from one vehicle or route to another. Also, the paper provided to a passenger by a transit operator upon paying a fare that allows the individual to board the second vehicle without paying another fare.

Transit - General term referring to all vehicles and systems that move more than one individual includes carpools, vanpools, minibuses, buses, coaches, LRT, heavy rail, and commuter rail.

Transit Center or Transit Station - A facility serving transit buses and other modes such as automobiles and pedestrians. Centers and stations provide locations for individuals to access transit services and to transfer between buses or between buses and other modes.

Transit Dependent - An individual or group of individuals that are dependent on public transit to meet their private mobility needs because they are unable to drive, do not own a car, are not licensed to drive, or choose not to drive. Groups often considered transit dependents include the elderly, the young, low income individuals, and households without an automobile available.

Transportation Demand Management and Travel Demand Management (TDM) - A variety of strategies and techniques aimed at increasing the use of buses, carpools, vanpools, and other alternative commute modes, reducing single-occupant vehicles, and spreading travel to less congested time periods. Strategies may include both incentives, such as employer subsidized bus passes, and disincentives, such as higher parking rates for single-occupant vehicles.

Transportation Management Association/Organization (TMA/TMO) - Organizations comprised of some combination of employers, developers, building owners, and local government representatives formed to help address local transportation problems and to encourage greater use of high-occupancy vehicles and other strategies.

Transportation System Management (TSM) - Improvements focused on enhancing the management of the transportation system, including various elements of the transportation system. Examples of TSM projects include ramp metering, HOV ramp meter bypasses, and signal improvements.

Travel Time - The length of time it takes to travel between two points.

Travel Time Reliability - Term referring to the lack of variability in travel time that can be expected using different facilities.

Travel Time Savings - The time saved by use of an HOV facility rather than driving alone. Calculated by the difference in travel times between two points using the HOV facility and the general-purpose lane.

Trip Generation Rates - The number of vehicular trips to and from a development, cited per unit of measure such as square foot, thousand square feet, housing unit, or acre. The trip rates published by the Institute of Transportation Engineers (ITE) or developed by local jurisdictions are used to identify the potential impacts of new projects and to develop approaches to mitigate negative impacts.

Trip Reduction Ordinances - Laws or policies enacted by local governments that require developers, property owners, and employers to manage the number of vehicle-trips from a work site or development and to assist in financing necessary for transportation improvements.

Unlinked Trip - Trip that goes directly from origin to destination and does not include any intermediate stops or waiting or walking time.

Vanpool - A prearranged ridesharing function in which a number of people travel together on a regular basis in a van, usually designed to carry six or more persons.

Variable Work Hours - One alternative work schedule technique that allows employees to select work starting and ending times different than the normal 8:00 A.M. to 5:00 P.M. schedules. Most variable work hour programs require that employees maintain a set schedule, such as 7:30 A.M. to 4:30 P.M., on a regular basis.

Vehicle - Any motorcycle, car, truck, van, bus, or rail car designed to carry passengers or goods.

Vehicle Miles of Travel (VMT) - The total distance traveled in miles by all motor vehicles of a specific group in a given area at a given time.

Vehicle Occupancy - The number of people in a car, truck, bus, or other vehicle.

Violation of HOV Facility Requirements - An infraction of the rules and regulations for use of an HOV facility or other transportation system. On an HOV facility, not having the required number of people in a vehicle is a violation.

Volume to Capacity Ratio - The ratio of demand flow rate to capacity for a given type of transportation facility. The flow rate is typically given in terms of the number of vehicles passing a point for a given unit of time and the capacity is given in terms of vehicles for the same period of time.

Zoning - Land use regulations that divide a community into districts which have different allowable uses, development requirements, and regulations.

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APPENDICES

List of Appendices

- Appendix 1 – Resident & Employee Survey Summary
- Appendix 2 – Traffic Counts
- Appendix 3 – 2000 Census Analysis
- Appendix 4 – Current TDM Programs, Opportunities, and Barriers
- Appendix 5 – TOD Peer Research
- Appendix 6 – Community Involvement
- Appendix 7 – MetroWest Trip Reduction Analysis
- Appendix 8 – Claritas SiteReport, 2005
- Appendix 9 – TDM Program Development Request for Proposals (RFP)

Appendix 1

Resident & Employee Survey Summary

**FAIRFAX/VIENNA METRO
TDM PROJECT
RESIDENT AND EMPLOYEE
SURVEY RESULTS**

June 9, 2005

TABLE OF CONTENTS

SECTION 1 - INTRODUCTION	1
SECTION 2 - SURVEY METHODOLOGY	2
SURVEY SAMPLE	2
QUESTIONNAIRE DESIGN	2
SURVEY ADMINISTRATION	3
SURVEY ANALYSIS	4
SECTION 3 - RESIDENT SURVEY RESULTS	6
CHARACTERISTICS OF THE SAMPLE	6
COMMUTING PATTERNS	9
COMMUTING SERVICES AVAILABLE AT WORK	15
NON-COMMUTE TRIPS MADE DURING WEEKDAYS	19
SUMMARY OF RESULTS	20
SECTION 4 - EMPLOYEE SURVEY RESULTS	23
CHARACTERISTICS OF THE SAMPLE	23
COMMUTING PATTERNS	25
NON-COMMUTE TRIPS MADE DURING THE WORK DAY	31
COMMUTING SERVICES AVAILABLE AT WORK	32
SUMMARY OF RESULTS	35



SECTION 1 INTRODUCTION

PURPOSE OF THE SURVEY

This report presents results of two surveys undertaken for the Fairfax/Vienna Metro TDM project. These surveys comprised one of several data collection efforts in the project. One survey was conducted with residents living near the Fairfax/Vienna Metro station. A second survey was conducted with employees who worked near a Metrorail station. The surveys were performed for two primary purposes:

- 1) Present a “snapshot” of current commute travel patterns in the Fairfax/Vienna Metro Station area
- 2) Identify the need and potential demand for various TDM services in the station area

The report is divided into three sections following this introduction:

- Section 2 – Survey methodology
- Section 3 – Resident Survey Results
- Section 4 – Employee Survey Results

Following these sections are four appendices:

- Appendix A – Resident Survey Questionnaire
- Appendix B – Employee Survey Questionnaire
- Appendix C – Resident Survey Frequency Tabulations
- Appendix D – Employee Survey Frequency Tabulations

SECTION 2 SURVEY METHODOLOGY

Described below are the following components of the survey methodology for each of the two surveys, resident and employee:

- Survey sample
- Questionnaire design
- Survey administration
- Survey analysis

SURVEY SAMPLE

Resident Survey

The sample frame for the resident survey included all residents 18 years or older, living within zip+four zip codes within a ½ mile radius of the station. The consulting team obtained address lists for all households within this area. Because the zip code area boundaries did not coincide exactly with the station area boundary, a small percentage of the households included in the sample were outside the ½ mile station area limit.

Approximately 3,800 households were included in the address list. The exact number of qualified respondents within these households is not known, but the 2000 Census data indicate that approximately 21% of the households within this area have only one person, while the remaining households consist of two or more. Assuming that most of the two+ resident households consist of two adults, the consulting team estimated the number of qualified respondents at approximately 6,600.

Employee Survey

The original sample frame for the employee survey included all employees working within ½ mile of the Fairfax/Vienna station. But this included only one employer, thus the consulting team also surveyed employees of two employers located within walking distance of the Dunn Loring Metro station. The Dunn Loring station area was chosen because it was considered similar to the area around the Fairfax/Vienna station and because, being the closest station to Fairfax/Vienna, it was expected to draw employees from similar home areas. The combined employee population at the three sites was approximately 1,500.

QUESTIONNAIRE DESIGN

The two surveys were developed by the consulting team, with review and input from two groups: 1) the project Advisory Team and 2) a Survey Area Group, consisting of citizen and homeowners representatives living in the study area. Prior to developing a draft questionnaire, the consulting team discussed the survey purpose with the Advisory Team members and described the types of questions likely to be included.

For the resident survey, these included:

- Current commuting patterns, work location, and work schedule
- Availability of TDM services at work/through employer

- Interest in/motivating value of TDM services for non-drive alone commuting
- Non-commute travel from home
- Demographic characteristics

For the employee survey, these topics included:

- Current commuting patterns, home location, and work schedule
- Availability of TDM services at work/through employer
- Interest in/motivating value of TDM services for non-drive alone commuting
- Non-commute trips made around the work location during the work day
- Demographic characteristics

The consulting team prepared draft questionnaires for each of the two surveys and distributed them to the Advisory Team for initial review. Concurrently, the consultants presented the draft questionnaires to the Survey Area Group members to solicit their comments and suggestions. This evening meeting was held on April 18. On April 21st, the consultants met with the Advisory Team to present the comments received from the Survey Area Group and to obtain other comments and suggestions from the Advisory Team members.

Following these two meetings, the consultants prepared revised draft surveys and distributed them once more to the Advisory Team for final review. A few additional minor changes were made to both drafts and they were finalized.

For the resident survey, both paper/mail or fax back and internet versions were then prepared. The employee survey was distributed only as an internet version. Links to the internet versions of the surveys were tested by the consultants and were provided to the Advisory Team members for their testing as well.

Due to the very short time available to develop and administer the survey, the survey was not formally pre-tested. However, the review performed by the Survey Area Group and the Advisory Team provided valuable suggestions on local terminology that the consultants believe enhanced the accuracy of the responses.

SURVEY ADMINISTRATION

Resident Survey

The resident survey was distributed by mail to each household in the zip+four area previously defined. As noted above, the resident survey respondents were given the option of completing the survey by mail or on-line. Thus the letter accompanying the questionnaire informed respondents that they could respond on-line and provided the website address for the on-line survey.

To simplify respondents' access to the questionnaire, two copies of the questionnaire were mailed to each household. Respondents who had more than two adults in the household were told they could obtain additional questionnaires from their homeowners association or from the consulting team. To minimize the possibility of respondents submitting multiple questionnaires, each questionnaire was coded with a unique

number that was used for survey tracking purposes. Respondents who preferred to respond on-line were asked to enter this number as part of the on-line submittal.

A mail distribution firm prepared the questionnaire packets for mailing. The packet included the questionnaire, a cover letter stating the purpose of the survey and instructions on completing and submitting the questionnaires, and a flyer announcing that respondents would be entered into a prize drawing. The questionnaire packets were mailed by first-class mail. Respondents were given until June 19th, approximately 7-10 days, to complete and return the survey. Due to a two-day delay in the mail distribution of the questionnaires, the deadline for returning the questionnaires was extended by several days and questionnaires were accepted for 10 days after the original postmark date.

To enhance response rate, the consultants entered respondents who were willing to provide their names and phone numbers into the drawing for a \$400 American Express gift card. Approximately 90% of the respondents participated in the drawing. Homeowners association (HOA) representatives also were asked to alert their residents that the survey would be conducted and to encourage residents to participate. Most of the HOAs did assist the consultants with this alert. Several of the HOA representatives also sent follow-up reminders to residents as the survey deadline approached.

Employee Survey

As noted earlier, the employee survey was conducted only by internet at three worksites. As part of the sample selection process, the consulting team contacted each of the three firms selected to request their participation and assistance in conducting the survey.

When the survey had been finalized and tested on-line, the consulting team provided a sample email, with a link to the internet survey site, to the survey coordinator at each of the employment sites. These representatives then distributed the email and link to employees at their worksites. Employees were asked to complete the questionnaire by June 19th. No extensions were needed for this survey, because the survey was distributed on schedule.

As with the resident survey, consultants entered respondents who were willing to provide their names and phone numbers into the drawing for a \$400 American Express gift card. Approximately 90% of the respondents participated in the drawing.

SURVEY ANALYSIS

When all questionnaires were returned, a datafile of responses was prepared. Resident questionnaires that had been completed in paper form were added to the file of responses entered directly from the internet. No paper questionnaires were collected for the employee survey. Next, the data were reviewed for response inconsistencies, out-of-range values, and other errors and were cleaned as needed. Three duplicate records were eliminated.

The response rate for the resident survey was 7.3%, with 482 residents responding. The response rate for the employee survey was 10%, with 148 employees responding. Because these samples did not constitute random samples, it was not possible to compute confidence levels for the surveys. However, for the resident survey, the consultants compared demographic and travel pattern results against data from the 2000

Census and other published statistics as were available to validate the responses from the survey. Distributions for the survey sample appeared to track distributions for these other sources, suggesting the respondents were similar in key characteristics to what would have been expected for the entire sample frame.

Then the following analysis activities were undertaken for the resident survey:

- Prepared frequency tabulations for each question
- Computed averages and ranges for numeric values where appropriate
- Computed or created additional variables, such as: primary travel mode, commute mode split, work location area, distance from home to Fairfax/Vienna Metro station, non-commute mode split, and other variables that would be used in the analysis
- Prepared cross-tabulations for some combinations of questions, particularly examining responses for commuters who primarily drive alone to work and those who use Metrorail for commuting

The employee survey was more limited in its questions, thus the analysis was limited to the following:

- Prepared frequency tabulations for each question
- Computed averages and ranges for numeric values where appropriate
- Computed or created additional variables, such as: primary travel mode, commute mode split, work location area, distance from home to a bus or train station, non-commute mode split, and other variables that would be used in the analysis

Preliminary results were presented to both the Advisory Team and the Survey Area Group. Both groups proposed questions that encouraged the consultants to conduct additional analysis. The Survey Area Group additionally was asked to provide assistance in grouping neighborhoods into logical groupings for distance analysis.

SECTION 3 RESIDENT SURVEY RESULTS

This section of the report presents the key findings of the resident survey. The tables show both the percentages of respondents who answered each question as well as the number of respondents who answered the question. These numbers are shown as “n= ____.” Where relevant, survey results are compared for sub-groups of respondents, for example, respondents who drove alone to work compared with respondents who used Metrorail.

The results in this section are presented in the following sub-sections.

- Characteristics of the sample
- Commute patterns
- Commuting services available at work
- Non-commuting trips

CHARACTERISTICS OF THE SAMPLE

At the end of the survey, respondents were asked a series of questions about themselves and their households, including: age, number of persons in the household, number of children under 16 years old in the household, the number of motor vehicles owned or leased by household members, and neighborhood location. These results are presented first, to define characteristics of the sample. When comparable data were available from a 2005 demographic report for a ½ mile radius around the Vienna Transit Station, these comparisons are shown (Claritas, Inc. SiteReport. June 22, 2005).

Age

As shown in Table 1, about half (47%) of the respondents were between the ages of 25 and 44 and 38% were between 45 and 65. One in ten (12%) was 65 years or older. The last column of the table shows the age distribution from the 2005 demographic report. This comparison suggests that the survey sample might slightly over-represent respondents 45 year or older (50% for survey vs 46% for 2005 Demographics) and under-represent respondents under 25 (3% for survey and 7% for 2005 Demographics).

Table 1
Respondent Age

(n=479)

Age Group	Survey Percentage	2005 Demographics
18-24	3%	7%
25-34	26%	22%
35-44	21%	26%
45-54	19%	21%
55-64	19%	16%
65 or older	12%	8%

Household Size and Composition

Tables 2 present results on household size and composition. Table 2 shows that 48% of the respondents said two persons lived in their household. About a third (36%) said they had three or more person in the household. The remaining 16% said they live alone. As shown in the last column, the survey sample might slightly over-represent two-person households (48% for survey vs 37% for the 2005 Demographic Report).

Table 2
Household Size – Number of Household Members

(n=480)

Number of HH Members	Survey Percentage		2005 Demographics
1	16%		20%
2	48%		37%
3 to 4	30%		36%
5 to 6	6%		7%
7 or more	0%		1%

As seen in Tables 3, the majority of households (68%) had no children under the age of 16. These children comprise about 19% of the total household members. This is quite close to the 2005 Demographic Report calculation of 20% of household members under 16 years of age.

Table 3
Household Size – Number of Household Members Under 16 Years Old

(n=388)

HH Members Under 16	Percentage
0	68%
1	16%
2	13%
3	3%
4 or more	1%

Motor Vehicles in the Household

Respondents were asked how many motor vehicles (cars, trucks, SUVs, or motorcycles) were owned or leased by members of their household. These results are presented in Table 4.

Table 4
Motor Vehicles Owned or Leased by Household Members
(n=482)

Number of Vehicles	Survey Percentage	2005 Demographics
0	2%	1%
1	34%	33%
2 to 4	63%	65%
5 or more	1%	1%

About a third (34%) said they had one motor vehicle. Nearly two-thirds (63%) said they had between two and four motor vehicles. One percent said they had five or more. Just two percent said they did not own any vehicles.

Neighborhood Location

Finally, respondents were asked to indicate the “neighborhood” where they lived. More than 30 neighborhoods were cited, many noting the name of the condominium or townhouse complex in which they lived or naming a specific street. Details of the named neighborhood distribution are presented in Appendix 3 (Resident survey frequency tabulations). The locations were grouped into categories representing their approximate distances to the Fairfax/Vienna Metro station. These results are shown in Table 5 below. About 24% of the respondents lived within ¼ mile of the station. The majority (62%) lived between ¼ mile and ½ mile and 14% lived more than ½ mile from the station.

Table 5
Neighborhood Locations – Distance from Metro Station
(n=459)

Distance	Percentage
Within ¼ mile	24%
¼ mile to ½ mile	62%
More than ½ mile	14%

COMMUTING PATTERNS

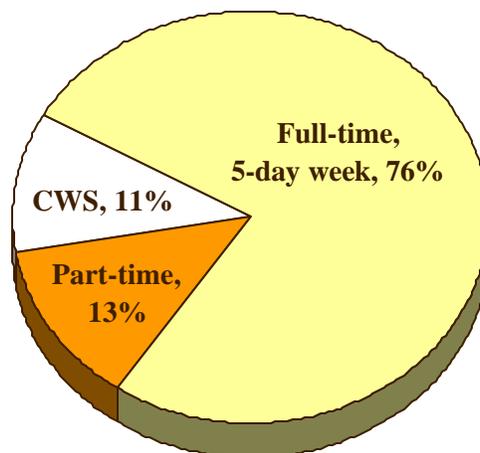
The majority (80%) of survey respondents said they regularly traveled to a work or school location outside their home, one or more days per week. A second section of the survey questioned these respondents about their weekly commute patterns, including:

- Type of work schedule
- Time arriving at work
- Work location
- Commute mode(s) used and the frequency of use
- Length of commute

Work Schedule

Days Worked Per Week – As presented in Figure 1, a large majority (76%) of respondents who were employed said they work a full-time, “standard” work schedule; that is five days per week for a total of 35 or more hours. About one in eight (13%) said they work part-time and one in ten (10%) said they work a form of compressed work schedule, in which they work a full-time work week in fewer than five days per week.

Figure 1
Work Schedule Type
(n=386)



Work Schedule Flexibility – Nearly half (40%) of respondents also said they have some flexibility in setting their work hours. They can choose their starting and ending work times, as long as they work a required number of hours in a day or week. Such flexibility would allow these respondents to choose their work hours to avoid traveling during congested times.

Work Arrival Time

Respondents were asked what time they arrive at work. The analysis also examined the time that respondents left their homes for work. This question was not asked directly, but was computed from the work arrival time and the length of time it took to travel to work. Results for both of these variables are shown in Table 6.

Table 6
Work Arrival Time and Leave Home for Work Time

Time Group	Percentage Arrival at Work (n=377)	Percentage Leave for Work (n=374)
12 midnight - 5:59 am	0%	4%
6 am - 6:59 am	6%	18%
7 am - 7:29 am	11%	14%
7:30 am - 7:59 am	11%	18%
8 am - 8:29 am	19%	18%
8:30 am - 8:59 am	17%	14%
9 am - 9:29 am	19%	5%
9:30 am - 9:59 am	6%	3%
10 am - 5:59 pm	11%	6%
6 pm - 11:59 pm	0%	0%

About half (46%) arrive at work between 7:30 am and 8:59 am. The remaining respondents were equally divided between those who arrive before 7:30 am (17%) and arrive at or after 9 am (18%). About half (50%) also said leave home to go to work between 7:30 am and 8:59 am. But more than a third (36%) leave for work before 7:30 am. About one in eight (14%) leave home at 9 am or later.

Work Location

Table 7 displays the distribution of respondents' work locations. As shown, well over half (59%) of the respondents worked in Virginia; 41% in Fairfax County and 18% in another Virginia County. About a third (35%) worked in the District of Columbia. A small percentage (6%) worked in Maryland.

Table 7
Work Locations
(n=386)

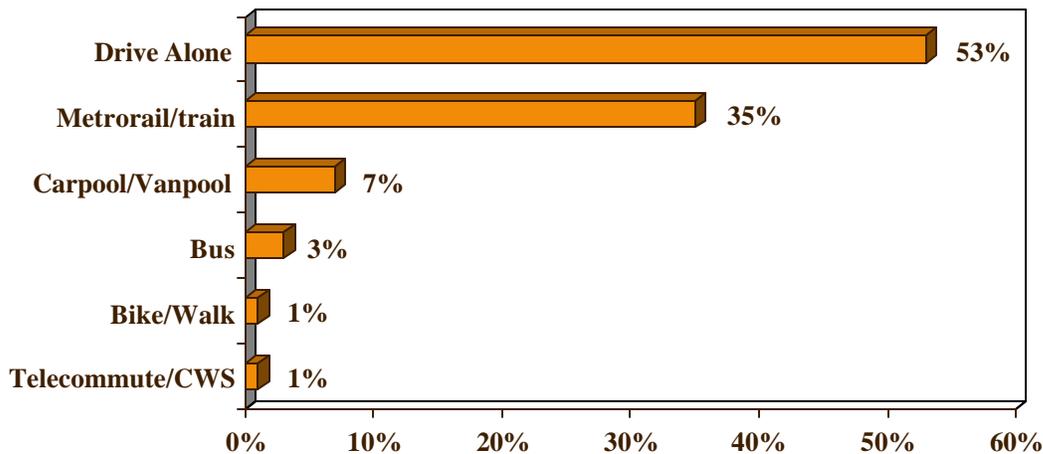
State/County	Percentage	State/County	Percentage
Virginia Counties	59%	Maryland Counties	6%
Alexandria City	2%	Montgomery Co.	5%
Arlington Co.	11%	Prince George’s Co.	1%
Fairfax Co.	41%		
Loudoun Co.	4%		
District of Columbia	35%	Other	<1%

Types of Transportation Used for Travel to Work

Respondents were asked what types of transportation they used to travel to work each weekday (Monday-Friday) during the previous week. If they were sick, on holiday or vacation, or otherwise absent from work one or more days, they indicated one or more “absent” days. Figure 2 and Table 7 present several different views of the use of various types of transportation type.

“Primary” Commute Mode – Figure 2 presents the distribution of respondents by their “primary” mode; that is, the type of transportation they used most days during the week. The largest percentage (53%) of respondents said they usually drove alone to work. More than a third (36%) said they usually rode Metro-rail. Smaller percentages said they usually carpooled or vanpooled (7%), rode a bus (3%), or bicycled or walked (1%). About one percent said they primarily teleworked or worked from their homes.

Figure 2
Primary Commute Mode
(n=380)



Percentage of Weekly Trips by Mode – Table 8 presents the mode shares as a percentage of weekly commute trips. This table includes both the traditional types of transportation: drive alone, Metrorail/train, carpool/vanpool, bus, and bicycle/walk, and two additional categories – compressed work schedule day off and teleworking. These are not actually travel modes but are included to show the percentage of weekly work trips that were eliminated through use of these work schedule options.

Table 8
Weekly Trips by Mode
(n=380)

Transportation Type	Percentage of Weekly Trips	Average Days Used per Week
Drive alone	51%	4.4
Metrorail/other train	36%	4.0
Carpool/vanpool	7%	3.2
Bus	3%	3.4
Bicycle/walk	1%	2.5
Compressed work schedule day off	1%	1.1
Telework/work at home	2%	1.5

Driving alone accounted for just over half (51%) of weekly commute trips. About a third (36%) of weekly trips were made by Metrorail/train and seven percent were made by carpool or vanpool. Three percent of trips were made by bus and one percent were made by bicycling or walking. About three percent of “trips” were eliminated by use of teleworking or compressed work schedule.

Average Days Using Each Mode – Table 8 also provides the average number of days respondents used each type of transportation. Respondents generally were consistent in their choice of commute mode. All of the traditional commute modes, excluding bicycling/walking, were used at least three days per week on average. This is consistent with other results in the survey, which show that about 75% used the same type of transportation every day they commuted to work.

Respondents who drove alone or used Metrorail, used these modes on average four or more days per week. Respondents who carpooled/vanpooled or rode a bus used these modes slightly less often, about 3.2 to 3.4 days per week. Bicycling/walking, and teleworking were used 2.5 days and 1.5 days per week on average.

Travel Mode by Work Location – The mode distribution shown above is for all employed respondents. But the mode distribution was different for respondents who worked in different states. As shown in Table 9, 80% of respondents who worked in Virginia and 68% of respondents who worked in Maryland

drove alone to work. By contrast, only nine percent of respondents who worked in the District of Columbia drove to work; 77% of these respondents chose Metrorail.

Table 9
Primary Commute Mode by Work Location

Commute Mode	Virginia (n= 202)	Maryland (n=19)	DC (n=120)
Drive alone	80%	68%	9%
Carpool/vanpool	4%	5%	9%
Metrorail	13%	16%	77%

Length of Commute

Number of Miles – Commuters in the sample had a wide range of commute distances, ranging from less than one mile to 50 miles. Table 10 presents the distribution of distance. The average one-way commute distance was 13.1 miles, somewhat less than the 16.5 mile average calculated for the Washington region in the 2004 regional State of the Commute Survey conducted by the Council of Governments.

Table 10
Commute Distance (miles)
(n=373)

Number of Miles	Percentage	Cumulative Percentage
Less than 5 miles	11%	11%
5 to 9.9 miles	19%	30%
10 to 14.9 miles	22%	52%
15 to 19.9 miles	30%	82%
20 to 29.9 miles	15%	97%
30 or more miles	3%	100%
Average/mean	13.1 miles	

About one-third (30%) of the respondents commuted fewer than 10 miles one-way. About half (52%) said they traveled between 10 and 19.9 miles. About one in five (18%) had commute distances of 30 miles or greater.

Commute Travel Time – Survey respondents commuted, on average, about 35 minutes one way, approximately the same as the 34 minute regional average as measured in the 2004 State of the Commute Survey. As shown in Table 11, about a third (37%) of respondents commuted less than 30 minutes and 53% commuted between 30 and 59 minutes. The remaining 11% traveled more than an hour.

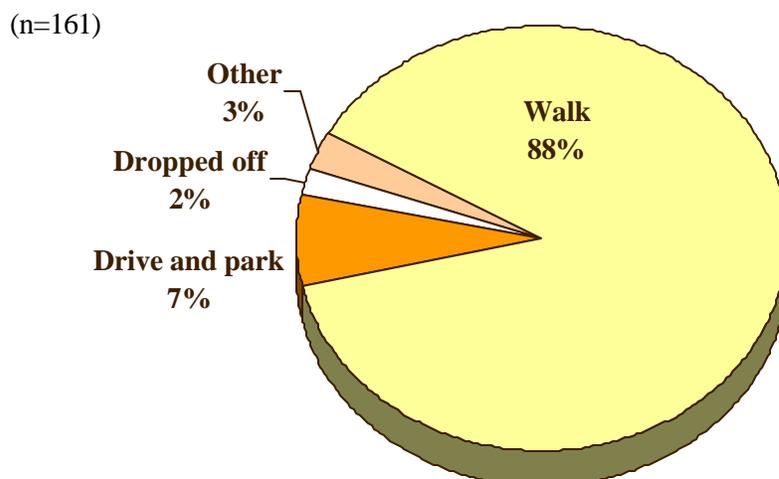
Table 11
Commute Time (minutes)
(n=378)

Number of Minutes	Percentage	Cumulative Percentage
Less than 15 minutes	11%	11%
15 to 29 minutes	26%	37%
30 to 44 minutes	28%	64%
45 to 59 minutes	25%	89%
60 to 89 minutes	10%	99%
90 or more minutes	1%	100%
Average/mean	35 minutes	

Access to Metrorail Station

As noted earlier, about a third of the employed respondents said they use Metrorail for their commute. As displayed in Figure 3, nearly all (88%) of these respondents said they walk to the station. About seven percent said they drive themselves to the station and park. Two percent said they are dropped off, such as by a family member. The remaining three percent mentioned another access method, such as “bus,” “carpool,” or “bicycle.”

Figure 3
Access to Metrorail Station



COMMUTING SERVICES AVAILABLE AT WORK

Respondents who were employed were asked a third set of questions about commute assistance services that were available to them at their work. They also were asked if various commute assistance services would encourage them to use carpool, vanpool, transit, or bicycling/walking for their commute. The intent of this section was to examine both the currently available services and the motivating value of other commuting services that could be offered to residents. Results to these questions are provided below.

Parking and Commute Financial Incentives Available at Worksite

Over half (56%) of the respondents said they have free parking at their worksite. The remaining 44% said they have to pay a fee to park if they drive to work. About four in ten (44%) respondents said their employer offers free or discounted transit passes, such as Metrochek, or offers to pay or reimburse a portion of the respondents commuting expenses, other than for parking. The remaining 56% said they did not have access to this financial incentive or they did not know if their employer offered it.

But as shown in Table 12, the availability of free parking and financial incentives for commute modes other than driving alone were not uniformly distributed across respondents.

Table 12
Availability of Free Parking and Commute Financial Incentives
by Primary Commute Mode and Work State

Sub-Group	(n=___)	Percentage with Free Parking	Percentage with Incentive
Primary Commute Mode			
Drive alone	195	84%	27%
Carpool/vanpool	25	60%	68%
Metrorail	127	13%	63%
Work State			
Virginia	202	73%	26%
Maryland	19	85%	35%
District of Columbia	120	14%	64%

Parking and Incentives by Commute Mode – Respondents who said they drive alone were most likely to have free parking at their worksites; 84% of these respondents said they did not have to pay to park.

About 60% of carpoolers/vanpoolers said they had free parking. But among respondents who primarily use Metrorail to get to work, only 13% had free parking available at their work location.

The third column of the table shows a different distribution for financial incentives. About two-thirds of respondents who primarily used either Metrorail (63%) or carpool/vanpool (68%) said their employers offered financial incentives, other than for parking. Only about one-quarter (27%) of respondents who drove alone could receive a financial incentive.

Parking and Incentives by Work Location – These results suggest that availability of free parking encourages driving alone and availability of financial incentives encourages use of train and ridesharing. Research in many areas of the U.S. supports these conclusions. However, the bottom section of Table 12 shows that free parking is primarily available to respondents who work in either Virginia or Maryland and is largely not available to respondents who work in the District of Columbia. Only 14% of respondents who worked in DC said they had free parking.

And financial incentives also are primarily available to DC workers. Two-thirds (64%) of respondents who worked in DC had access to financial incentives, compared to about one-third (35%) of respondents who worked in Maryland and one-quarter (26%) of respondents who worked in Virginia.

But respondents who worked in the District would be faced with greater impediments to driving alone, such as congestion, longer commute distances, greater availability and frequency of transit service than would be experienced by workers outside the District. And workers in downtown areas generally have greater access to shopping and convenience services at the work location, which would make it possible to conduct personal business near work without a car. These factors also could influence respondents' commute mode choices.

Distance from Work Location to Transit

Respondents were asked how far they would have to walk to reach the nearest Metrorail station and the nearest bus stop. Respondents generally had good access to transit at work. Results for these questions are presented in Table 12.

Table 13
Time to Walk from Work Location to Bus Stop and Rail Station

Walk Time	Bus Stop (n=386)	Metro Station (n=386)
Less than 5 minutes	44%	25%
5 to 10 minutes	15%	27%
11 to 20 minutes	5%	14%
More than 20 minutes	3%	25%
Don't know	33%	8%

Distance to Bus Stop – As illustrated, about 60% of respondents said they would have to walk no more than 10 minutes to the nearest bus stop. Another eight percent said they would have to walk 11 or more minutes. It is important to note that a third (33%) of respondents did not know the location of the nearest bus stop. It is likely that many of these respondents answered “don’t know” because they are not aware of any bus service in their work area. This suggests that the actual walk time would be more than 20 minutes away for a large portion of the “don’t know” respondents.

Distance to Metrorail Station – About half (52%) of the respondents said the nearest Metrorail station was within 10 minutes walk of their work location and 39% said the nearest station was 11 or more minutes away. It is worth noting that the percentage of “don’t know” responses was much less for rail stations than for bus stops. This is likely because the Metrorail stations are in permanent and more visible locations than are bus stops, thus respondents are more aware of where the stations are in relation to their work locations.

Distance to Transit by Primary Commute Mode – As was the case for other commute characteristics, the walk to transit time was different for respondents who drove alone to work and those who used Metrorail. The overwhelming majority (85%) of respondents who used Metrorail to travel to work said their work location was within 10 minutes of a rail station. But among respondents who drove alone to work, only one third (34%) could walk to a Metrorail station in 10 minutes or less. About 16% said the walk time would be between 11 and 20 minutes, while half (49%) said they would have to walk 20 or more minutes to reach a Metrorail station.

Interest in Other Commute Assistance Services

Respondents were asked if various commute assistance services would encourage them to use non-drive alone types of transportation for their work trips. Some of the services, such as “\$100 subsidy for van-pool,” were targeted to a specific non-drive alone mode. Others, such as “Guaranteed Ride Home in case of emergency,” could be used for any non-drive alone mode. Respondents were asked to specify if each service: “would encourage,” “might encourage,” or “would not encourage” them to use transit, ridesharing, or bicycle/walk, as appropriate. Respondents who used the targeted modes now were asked to check “use this mode now.”

Table 14 presents the results of this series of questions. The 12 services presented to respondents are grouped into three categories: financial incentives, access to transit, and information/convenience services. The second column, with the heading of “n=__”, shows the number of respondents who were not currently using the targeted mode who answered the question.

Services Perceived as Most Valuable – As the table indicates, 30% or more respondents cited eight services, those shaded in the table, as services that either “would encourage” or “might encourage” them to use the targeted types of transportation. Four of the services that appear to be influential were in the “Access to Transit” category. These included: safe walking path to Metrorail station, bus/train stop within 10 min walk of work, shuttle to Metrorail station, and more Metrorail station parking. These services were noted by 44%, 42%, 35%, and 30% of respondents, respectively, as having some motivational impact.

Two services were noted in the “Financial Incentive” category. About 36% of respondents said “\$100 subsidy for bus/train,” would or might encourage them to use transit and 30% said “\$100 subsidy for vanpool” would or might encourage them to use vanpooling.

Two services in the “Information/Convenience Services” category also had support by more than 30% of respondents. These included: “Guaranteed Ride Home in case of emergency, cited by 38% as potentially influential, and “Convenience shopping at Metro station,” which was noted by 31%.

Table 14
Motivational Value of Various Commute Assistance Services

Service	(n= __)	Would Encourage	Might Encourage	Would not Encourage
Financial Incentives				
\$100 subsidy for bus/train	195	17%	18%	64%
\$100 subsidy for vanpool	326	14%	16%	70%
Access to Transit				
Safe walking path to Metrorail station	209	30%	13%	56%
Bus/train stop within 10 min walk of work	191	29%	13%	58%
Shuttle to Metrorail station	222	22%	14%	65%
More Metrorail station parking	206	16%	14%	70%
Information/Convenience Services				
Guaranteed Ride Home in case of emergency	183	19%	19%	62%
Convenience shopping at Metro station	199	17%	15%	69%
Carpool/vanpool formation assistance	308	10%	18%	72%
Bus/train schedule/route information	189	9%	15%	76%
Showers at work for bicyclists	315	10%	11%	79%
Secure bike storage lockers at work	315	9%	10%	81%

The importance of access to transit is notable, particularly when compared to the functions of other services that were tested in this question. While the specific factors influencing mode choice vary from one commuter to another, most commuters choose their modes based on four factors: availability, cost, time, and convenience of the modes. Since most respondents have a vehicle available for commuting, driving alone is an available option, but transit might be unavailable or difficult to access. The four services included in the “Access to Transit” category are designed to make it easier to reach transit on either the home or work end of the commute trip.

Information and convenience services, with the exception of “Guaranteed Ride Home” and “convenience shopping at Metrorail station,” were generally perceived as less valuable to respondents. It is worth noting that the lower rankings of the two bicycle support services could be due in part to other constraints on bicycling to work, such as long commuting distance or the need to drop a child at school or day care on the way to work.

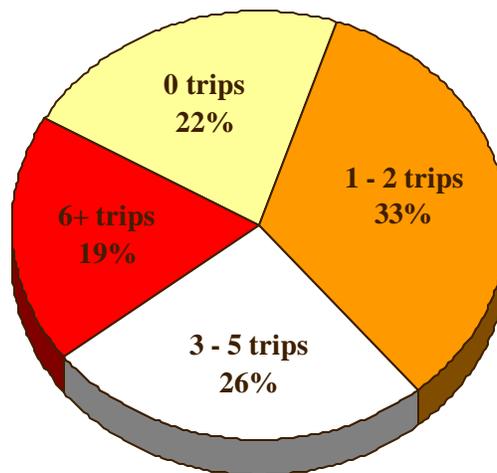


NON-COMMUTE TRIPS MADE DURING WEEKDAYS

The preceding sections have described results about commuting behavior of the resident respondents who were employed or who regularly traveled to a school location on weekdays. Respondents who were not commuting to a work or school location skipped these commute questions. But all respondents were asked several questions about trips they made from their homes on weekdays for purposes other than for commuting. These questions thus were answered by respondents who are retired or otherwise not working.

Respondents were first asked if they had made any trips in the past two weekdays from their home to another location, for a purpose other than travel to work or school. As shown in Figure 4, about one quarter (22%) of respondents said they did not make any non-commute trips in the past two weekdays. The remaining 78% said they made one or more trips. One third (33%) made one or two trips, a quarter (26%) made three to five trips, and 19% made six or more trips over the two day period. On average respondents made 3.2 trips per person over the two day period or about eight trips per week per respondent.

Figure 4
Number of Non-Commute Trips Made in Past Two Weekdays
(n=476)



Non-Commute Trips Made During the Peak Morning Period

Respondents who said they had made trips for purposes other than commuting were asked how many of these trips were made between 6 am and 9 am. Only about one in five respondents said they made non-commute trips during these morning hours. On average, respondents made 0.8 trips over the two day period or about two trips per week during the morning peak period. Thus, the majority of non-commute trips made from the home location were made in the mid-day or evening hours, rather than during the early morning hours.

Types of Transportation Used for Peak Period Non-Commute Trips

As shown in Table 15, two-thirds (67%) of the non-commute trips made between 6 am and 9 am were made by driving alone. About a quarter (27%) of the trips were made by driving or riding with someone. A large portion of these trips likely were made to pick-up or drop-off someone at another location.

Table 15
Types of Transportation Used for Non-Commute Trips

Type of Transportation	Percentage	Ave Trips Per Week
Drive alone	67%	1.3
Riding/driving with someone (CP/VP)	27%	0.5
Metrorail, other train, bus	4%	0.1
Walk or bicycle	2%	<0.1
Ave weekly trips per respondent		2.0

SUMMARY OF RESULTS

The two primary purposes of the Resident Survey were to examine current commute behavior and explore residents' access to and interest in commute assistance services at their work locations. Following is a summary of the key results:

Work Schedule

- 80% of all respondents surveyed said they regularly travel to a work or school location. The remaining 20% were not currently working.
- 76% of employed respondents work full time (35 or more hours per week). Another 13% said they work part-time. About 10% said they work a “compressed work schedule.”
- 40% work a flexible schedule – that is, they can choose their start and end times as long as they work a required number of hours in a day or week.
- About a third (36%) of respondents said they leave for work before 7:30 am. Another 50% said they leave between 7:30 am and 8:59 am.

Commute Patterns

- Driving alone is the most popular commute mode among respondents, with over half (52%) of respondents using this as the primary mode. But Metrorail accounts for more than a third of weekly commute trips for respondents.

- Respondents generally were consistent in their choice of type of transportation. About 75% said they used the same type of transportation every day they commuted to work.
- A large majority (88%) of respondents who use Metrorail to go to work walk to the station. Only about seven percent of respondents drive alone and park.
- More than half of the employed respondents (59%) said they work in Virginia: 41% in Fairfax County and 18% in another Virginia county. A third (35%) work in the District of Columbia.
- Respondents traveled on average 13.1 miles and 35 minutes to work. The distance was less than the regional average of 16.5 miles one way, but the time was about the same as the 34 minute average for the region in 2004.

Commuter Assistance Services at the Work Location

- Respondents generally have good access to transit at their work location: 52% work within 10 minutes walk of a Metrorail station and 60% work within 10 minutes of a bus stop.
- More than half (56%) have free parking at work. The remaining 44% pay a fee to park.
- About four in ten (44%) respondents said their employers offer discount transit passes or will reimburse part of their commute cost.
- Respondents who said they drive alone were most likely to have free parking at their worksites; 84% of these respondents said they did not have to pay to park. But only 13% of respondents who primarily use Metrorail to get to work had free parking available at their work location.
- About two-thirds of respondents who primarily used Metrorail said their employers offered financial incentives, other than for parking. But only about one-quarter (27%) of respondents who drove alone could receive a financial incentive.
- Respondents who drive alone to work said some commute services would or might encourage them to use transit or other non-drive alone transportation to get to work. Valuable services included:

	<u>Encourage</u>	<u>Maybe encourage</u>
<u>Financial Incentives</u>		
\$100 subsidy for bus/train	17%	18%
\$100 subsidy for vanpool	14%	16%
<u>Access to Transit</u>		
Safe walking path to Metro station	30%	13%
Bus/train station <10 min walk from work	29%	13%
Shuttle to Metrorail station	22%	14%
More Metrorail station parking	16%	14%
<u>Other Services</u>		
Guaranteed Ride Home	19%	19%
Convenience shops at Metrorail station	17%	15%

Non-Commuting Trips – All Survey Respondents

- 78% of all respondents made one or more non-work trips in the two workdays preceding the survey.

- 20% made 1 or more non-work trips between 6 am and 9 am. Respondents made an average of two non-work trips per week during the early morning hours.
- Most (67%) of these trips were made by driving alone. About 27% were made by driving or riding with someone (carpool).

Demographic Characteristics – All Survey Respondents

- About a quarter (24%) of the respondents live within ¼ mile of the Vienna Metro station. Most (62%) live between ¼ mile and ½ mile from the station.
- About half (48%) of the respondents said two people live in their household. About a third (36%) said they have three or more people in the household. The remaining 16% said they live alone.
- Most (62%) of the respondents said they do not have any children under 16 in the household.
- About one-third (34%) of the respondents said they have one vehicle (car, truck, SUV, van, motorcycle) in their household. Most (64%) said they have two or more vehicles. Only two percent said they do not have any vehicles.
- About half (47%) of the respondents were between the ages of 25 and 44. About a third (38%) were between 45 and 64. One in ten (12%) was 65 or older.

SECTION 3 EMPLOYEE SURVEY RESULTS

This section of the report presents the key findings of the employee survey. The tables show both the percentages of respondents who answered each question as well as the number of respondents who answered the question. These numbers are shown as “n= ____.” Where relevant, survey results are compared for sub-groups of respondents, for example, respondents who drove alone to work compared with respondents who used Metrorail.

The results in this section are presented in the following sub-sections.

- Characteristics of the sample
- Commute patterns
- Non-commuting trips made during the work day
- Commuting services available at work

CHARACTERISTICS OF THE SAMPLE

At the end of the survey, respondents were asked a series of questions about themselves and their households, including: age, number of motor vehicles owned or leased by household members, racial/ethnic background and occupation. These results are presented first, to define characteristics of the sample.

Age

As shown in Table 16, about half (54%) of the respondents were between the ages of 25 and 44 and 32% were between 45 and 65. One in ten (13%) was between 18 and 24.

Table 16
Respondent Age
(n=148)

Age Group	Percentage
18-24	13%
25-34	28%
35-44	26%
45-54	18%
55-64	14%
65 or older	2%

Motor Vehicles in the Household

Respondents were asked how many motor vehicles (cars, trucks, SUVs, or motorcycles) were owned or leased by members of their household. These results are presented in Table 17. About a third (34%) said they had one motor vehicle. Another third (37%) said they had two motor vehicles. About one in four (22%) said they had three or more. Eight percent said they did not own any vehicles.

Table 17
Motor Vehicles Owned or Leased by Household Members
 (n=148)

Number of Vehicles	Percentage
0	8%
1	32%
2	37%
3 to 4	21%
5 or more	1%

Racial/Ethnic Background

A significant majority (83%) of respondents said they were of White/non-Hispanic ethnic/racial heritage. As shown in Table 18, small percentages of respondents said they were African-American (6%), Asian (5%), Hispanic (3%), or Other (3%) ethnic/racial background.

Table 18
Racial/Ethnic Background
 (n=136)

Racial/Ethnic Group	Percentage
White, non-Hispanic	83%
African-American	6%
Asian	5%
Hispanic	3%
Other	3%

Occupation

Finally, respondents were asked to indicate their occupation from choices provided in the list shown in Table 19. The overwhelming majority (72%) of respondents said their jobs were “professional.” An additional 17% said they were in “executive/managerial” positions. Because the survey was conducted at only employers, all of which are consulting or professional service employers, this large percentage of white-collar occupations is not surprising. About six percent of the respondents said they worked in “administrative support or clerical” positions. A small number of respondents said they had another occupation.

Table 19
Occupation
(n=147)

Occupation	Percentage
Professional	72%
Executive/managerial	17%
Administrative support, clerical	6%
Technician	3%
Military	1%
Sales	1%
Laborer	0%
Precision craft	0%
Machine operator, assembler	0%
Maintenance, facilities services	0%
Retail, hospitality service	0%

COMMUTING PATTERNS

A second section of the survey questioned respondents about their weekly commute patterns, including:

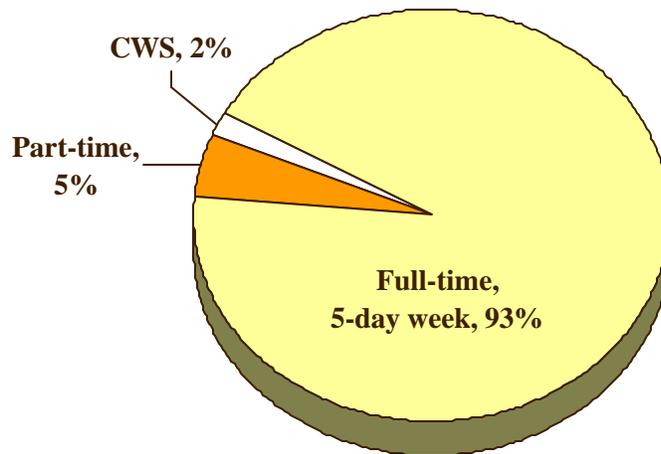
- Type of work schedule
- Time arriving at work
- Home location
- Commute mode(s) used and the frequency of use
- Length of commute

Work Schedule

Days Worked Per Week – As presented in Figure 5, nearly all (93%) of respondents said they worked a full-time, “standard” work schedule; that is five days per week for a total of 35 or more hours. About one in twenty (5%) said they work part-time and a very small number (2%) said they work a form of compressed work schedule, in which they work a full-time work week in fewer than five days per week.

Figure 5
Work Schedule Type

(n=147)



Work Schedule Flexibility – Almost three-quarters (71%) of respondents said they have some flexibility in setting their work hours. They can choose their starting and ending work times, as long as they work a required number of hours in a day or week. Such flexibility would allow these respondents to choose their work hours to avoid traveling during congested times.

Work Arrival and Departure Times

Respondents were asked what time they arrived at work and what time they usually left work to go home. Results for the arrival time are shown in Table 20. Results for departure time are presented in Table 21.

Arrival Time – About half (54%) of the respondents said they arrive at work between 6 am and 8:59 am. About a quarter (23%) arrive just at the end of the peak period, between 9 am and 9:29 am. The remaining 23% of respondents arrived at or after 9:30 am.

Table 20
Work Arrival Time
(n=147)

Time Group	Percentage (n=147)	Time Group	Percentage (n=147)
During the a.m. Peak		After the a.m. Peak	
6 am - 7:59 am	8%	9 am - 9:29 am	23%
7 am - 7:29 am	4%	9:30 am - 9:59 am	16%
7:30 am - 7:59 am	12%	10 am - 5:59 pm	7%
8 am - 8:29 am	15%	6 pm - 11:59 pm	0%
8:30 am - 8:59 am	15%	12 midnight - 5:59 am	0%

Departure Time – Departure times were more concentrated than were arrival times. As shown in Table 21, 80% of respondents said they leave work during the peak period hours of 4 pm to 6:59 pm. Two-thirds (65%) leave work between 5 pm and 6:59 pm and 15% leave between 4 pm and 4:59pm. Only about seven percent leave earlier than 4 pm and only 13% leave at 7 pm or later.

Table 21
Work Departure Time

Time Group	Percentage (n=147)	Time Group	Percentage (n=147)
During the p.m. Peak		Before the p.m. Peak	
4 pm – 4:29 pm	7%	6 am – 9:59 am	0%
4:30 pm – 4:59 pm	8%	10 am – 3:59 pm	7%
5 pm – 5:29 pm	16%		
5:30 pm – 5:59 pm	15%	After the p.m. Peak	
6 pm – 6:29 pm	22%	7 pm - 7:59 pm	12%
6:30 pm - 6:59 pm	12%	8 pm – 5:59 am	1%

Types of Transportation Used for Travel to Work

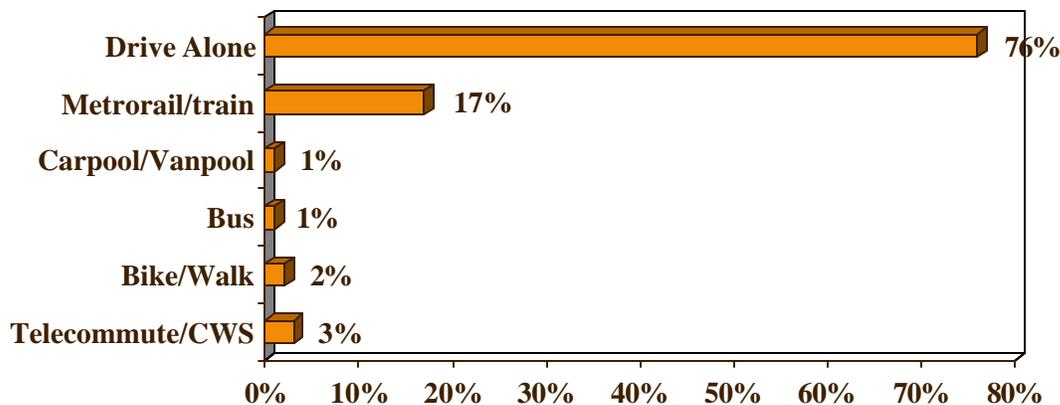
Respondents were asked what types of transportation they used to travel to work each weekday (Monday-Friday) during the previous week. If they were sick, on holiday or vacation, or otherwise absent from

work one or more days, they indicated one or more “absent” days. Figure 6 and Table 22 present two different views of the use of various types of transportation type.

“Primary” Commute Mode – Figure 7 presents the distribution of respondents by their “primary” mode; that is, the type of transportation they used most days during the week. The largest percentage (76%) of respondents said they usually drove alone to work. About one in five (17%) said they usually rode Metro-rail. Smaller percentages said they usually carpooled or vanpooled (1%), rode a bus (1%), or bicycled or walked (2%). About four percent said they primarily teleworked or worked from their homes.

Figure 6
Primary Commute Mode

(n=145)



Percentage of Weekly Trips by Mode – Table 22 presents the mode shares as a percentage of weekly commute trips. This table includes both the traditional types of transportation: drive alone, Metrorail/train, carpool/vanpool, bus, and bicycle/walk, and two additional categories – compressed work schedule day off and teleworking. These are not actually travel modes but are included to show the percentage of weekly work trips that were eliminated through use of these work schedule options.

Table 22
Weekly Trips by Mode

(n=145)

Transportation Type	Percentage of Weekly Trips	Average Days Used per Week
Drive alone	73%	4.2
Metrorail/other train	18%	3.7
Carpool/vanpool	1%	1.8
Bus	1%	2.0

Bicycle/walk	2%	3.2
Compressed work schedule day off	0%	1.0
Telework/work at home	5%	1.7

Driving alone accounted for nearly three-quarters (73%) of weekly commute trips. About one in five (18%) weekly trips was made by Metrorail/train and two percent were made by walking or bicycling. A small number (1%) were made by carpool/vanpool and one percent were made by bus. Teleworking accounted for about five percent of “trips,” but these were actually trips eliminated when the respondent did not travel to the work location on those work days.

Average Days Using Each Mode – Table 22 also provides the average number of days respondents used each type of transportation. Respondents generally were consistent in their choice of commute mode, with most traditional commute modes, excluding bus and carpool/vanpool, were used at least three days per week on average. This is consistent with other results in the survey, which show that about 72% used the same type of transportation every day they commuted to work.

Respondents who drove alone used this mode on average 4.2 days per week. Respondents who used Metrorail or bicycle/walking also were regular users of these modes, using them on average 3.7 and 3.2 days per week, respectively. Carpoolers/vanpoolers and bus riders were less consistent users of these modes, using them on average two or fewer days per week. Respondents who teleworked used this work schedule option an average of 1.7 days per week.

Home Location

Table 23 displays the distribution of respondents’ home locations. Over three-quarters (76%) lived in Virginia; 48% in Fairfax County, 15% in Arlington County, and 13% in another Virginia County. About one in ten (10%) lived in the District of Columbia. The remaining 14% lived in Maryland.

Table 23
Home Locations
(n=148)

State/County	Percentage	State/County	Percentage
Virginia Counties	76%	Maryland Counties	14%
Alexandria City	6%	Montgomery Co.	11%
Arlington Co.	15%	Prince George’s Co.	3%
Fairfax Co.	48%		
Other	7%		
District of Columbia	10%		

Length of Commute

Number of Miles – Commuters in the sample had a wide range of commute distances, ranging from less than one mile to 60 miles. Table 24 presents the distribution of distance. The average one-way commute distance was 15.3 miles, about equal to the 16.5 mile regional average, as calculated for the Washington region in the 2004 regional State of the Commute Survey conducted by the Council of Governments.

Table 24
Commute Distance (miles)

(n=147)

Number of Miles	Percentage	Cumulative Percentage
Less than 5 miles	11%	11%
5 to 9.9 miles	20%	31%
10 to 14.9 miles	23%	54%
15 to 19.9 miles	20%	74%
20 to 29.9 miles	16%	90%
30 or more miles	10%	100%
Average/mean	15.3 miles	

About one-third (31%) commuted fewer than 10 miles one-way. About four in ten (43%) said they traveled between 10 and 19.9 miles. About one-quarter (26%) had commute distances of 30 miles or greater.

Commute Travel Time – Survey respondents commuted, on average, about 39 minutes one way, slightly higher than the 34 minute regional average as measured in the 2004 State of the Commute Survey. As shown in Table 25, about four in ten (40%) of respondents commuted less than 30 minutes and 53% commuted between 30 and 59 minutes. The remaining 19% traveled an hour or more.

Table 25
Commute Time (minutes)

(n=147)

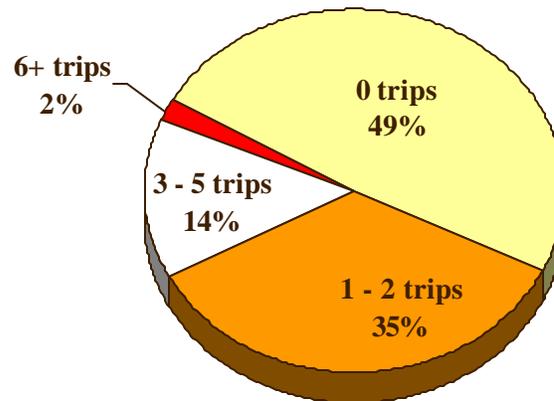
Number of Minutes	Percentage	Cumulative Percentage
Less than 15 minutes	8%	8%
15 to 29 minutes	33%	41%
30 to 44 minutes	23%	64%
45 to 59 minutes	17%	81%

60 to 89 minutes	14%	95%
90 or more minutes	5%	100%
Average/mean	35 minutes	

NON-COMMUTE TRIPS MADE DURING THE WORK DAY

The preceding sections have described results about commuting behavior. Respondents also were asked several questions about trips they made during their work day for purposes other than for commuting. These results are shown in Figure 7 and Table 26.

Figure 7
Number of Non-Commute Trips Made in Past Two Weekdays
 (n=148)



About half (49%) of respondents said they did not make any non-commute trips during their work day in the past two weekdays. The remaining 51% said they made one or more trips. One third (35%) made one or two trips, 15% made three to five trips, and two percent made six or more trips over the two day period. On average, respondents made 1.2 trips over the two day period or about three trips per week.

Two-thirds (69%) of the non-commute trips were made by driving alone. About 17% were made by train or bus and one in ten (9%) trips was made by driving or riding with someone.

Table 26
Types of Transportation Used for Non-Commute Trips
 (n=75)

Type of Transportation	Percentage	Ave Trips Per Week
Drive alone	69%	2.0
Riding/driving with someone (CP/VP)	9%	0.3
Metrorail, other train, bus	17%	0.5
Walk or bicycle	5%	0.2
Ave weekly trips per respondent		3.0

COMMUTING SERVICES AVAILABLE AT WORK

Respondents were asked a third set of questions about commute assistance services that were available to them at their work. They also were asked if various commute assistance services would encourage them to use carpool, vanpool, transit, or bicycling/walking for their commute. The intent of this section was to examine both the currently available services and the motivating value of other commuting services that could be offered to employees. Results to these questions are provided below.

Parking and Commute Financial Incentives Available at Worksite

Parking Location and Fees – Respondents were asked where they parked if they drove to work and if they had to pay to park. Nearly all (95%) of the respondents said they parked “on-site” when they drove. The remaining five percent said they parked “off-site,” “on the street,” or in “another location.”

Table 27 shows the distribution of parking fees paid by employees. About three in ten (31%) said they have free parking at their work location. The majority (69%) said they have to pay a fee to park if they drive to work. Respondents paid between \$5 per month and \$115 per month to park, with an average fee of \$13 per month. Sixty-five percent paid between \$1 and \$24 per month.

Table 27
Amount of Parking Fee at Work

(n=75)

Monthly parking charge	Percentage
\$0 (free parking)	31%
\$1 to \$24 per month	65%
\$25 to \$49 per month	2%
\$50 to \$74 per month	0%
\$75 to \$99 per month	0%
\$100 or more per month	2%

Financial Incentives for Non-Drive Alone – Nearly all (88%) of respondents said their employer offers free or discounted transit passes, such as Metrochek, or offers to pay or reimburse a portion of the respondents commuting expenses, other than for parking. The remaining 12% said they did not have access to this financial incentive or they did not know if their employer offered it.

Table 28 presents the distribution of respondents by the amount of incentive payment or reimbursement the employer provides. As shown, about two-thirds of respondents who said they had access to a financial incentive for non-drive alone commuting could receive between \$31 and \$60 per month. About a quarter said the incentive was less than \$31 per month and 13% said they could receive more than \$60 per month.

Table 28
Amount of Financial Incentive per Month

(n=78)

Monthly incentive	Percentage
\$1 to \$30 per month	23%
\$31 to \$60 per month	64%
\$61 to \$99 per month	3%
\$100 or more per month	10%

Interest in Other Commute Assistance Services

Respondents were asked if various commute assistance services would encourage them to use non-drive alone types of transportation for their work trips. Some of the services, such as “\$100 subsidy for van-pool,” were targeted to a specific non-drive alone mode. Others, such as “Guaranteed Ride Home in case of emergency,” could be used for any non-drive alone mode. Respondents were asked to specify if each service: “would encourage,” “might encourage,” or “would not encourage” them to use transit, ridesharing, or bicycle/walk, as appropriate. Respondents who used the targeted modes now were asked to check “use this mode now.”

Table 29 presents the results of this series of questions. The 11 services presented to respondents are grouped into three categories: financial incentives, access to transit, and information/convenience services. The second column, with the heading of “n=__”, shows the number of respondents who were not currently using the targeted mode who answered the question.

Services Perceived as Most Valuable – As the table indicates, 30% or more respondents cited six services, those shaded in the table, as services that either “would encourage” or “might encourage” them to use the targeted types of transportation. Two of the services that appear to be influential were in the “Access to Transit” category. These included: shuttle to Metrorail station, and more Metrorail station

parking. These services were noted by 39%, and 33% of respondents, respectively, as having some motivational impact.

Two services were noted in the “Financial Incentive” category. About 44% of respondents said “\$100 subsidy for bus/train,” would or might encourage them to use transit and 34% said “\$100 subsidy for van-pool” would or might encourage them to use vanpooling.

Two services in the “Information/Convenience Services” category also had support by more than 30% of respondents. These included: “Guaranteed Ride Home in case of emergency, cited by 44% as potentially influential, and “Convenience shopping at Metro station,” which was noted by 33%.



Table 29
Motivational Value of Various Commute Assistance Services

Service	(n=___)	Would Encourage	Might Encourage	Would not Encourage
Financial Incentives				
\$100 subsidy for bus/train	102	27%	17%	56%
\$100 subsidy for vanpool	130	13%	21%	66%
Access to Transit				
Shuttle to Metrorail station	85	25%	14%	61%
More Metrorail station parking (home end)	96	19%	16%	66%
Safe walking path from Metrorail station	93	17%	12%	71%
Information/Convenience Services				
Guaranteed Ride Home in case of emergency	105	18%	26%	56%
Convenience shopping at Metro station	99	21%	12%	67%
Carpool/vanpool formation assistance	130	7%	21%	72%
Showers at work for bicyclists	109	15%	12%	73%
Bus/train schedule/route information	100	10%	15%	75%
Secure bike storage lockers at work	114	13%	11%	75%

The importance of access to transit is notable, particularly when compared to the functions of other services that were tested in this question. While the specific factors influencing mode choice vary from one commuter to another, most commuters choose their modes based on four factors: availability, cost, time, and convenience of the modes. Since most respondents have a vehicle available for commuting, driving alone is an available option, but transit might be unavailable or difficult to access. The four services included in the “Access to Transit” category are designed to make it easier to reach transit on either the home or work end of the commute trip.

Information and convenience services, with the exception of “Guaranteed Ride Home” and “convenience shopping at Metrorail station,” were generally perceived as less valuable to respondents. It is worth noting that the lower rankings of the two bicycle support services could be due in part to other constraints on bicycling to work, such as long commuting distance or the need to drop a child at school or day care on the way to work.

SUMMARY OF RESULTS – EMPLOYEE SURVEY

The two primary purposes of the Employee Survey were to examine current commute behavior and explore residents' access to and interest in commute assistance services at their work locations. Following is a summary of the key results:

Work Schedule

- 93% of employed respondents worked full time (35 or more hours per week). About 2% said they work a “compressed work schedule.”
- 71% worked a flexible schedule – that is, they can choose their start and end times as long as they work a required number of hours in a day or week.
- About a quarter (24%) arrived at work before 8 am. About half (53%) arrived between 8 am and 9:29 am. The remaining quarter arrived at 9:30 am or later.
- Work departure times were more concentrated than were arrival times. About two-thirds (65%) leave between 5 pm and 6:59 pm. Another 15% said they leave work between 4 pm and 4:59 pm.

Commute Patterns

- Driving alone is the most popular commute transportation among respondents, with over more than three-fourths (76%) of respondents using this as the primary mode. The second most popular mode was Metrorail. About one in five (17%) respondents primarily used Metrorail to travel to work.
- Driving alone accounts for about 73% of weekly commute trips for these respondents and Metrorail accounts for about one in five (18%) weekly trips.
- Respondents generally were consistent in their choice of type of transportation. About 72% said they used the same type of transportation every day they commuted to work.
- A large proportion (76%) of respondents said they live in Virginia: 48% in Fairfax County and 28% in another Virginia County. About one in ten (10%) lived in the District of Columbia. The remaining 14% lived in Maryland.
- Respondents traveled on average 15.3 miles and 39 minutes to work.

Non-Commute Trips During the Work Day

- About half (51%) of respondents made one or more non-commute trips during their workday in the over a two day period. Respondents made an average of 3 trips per week during their workday.
- About two-thirds (69%) of these trips were made by driving alone. About 17% were made by transit and 10% were made by driving or riding with someone. Five percent were made by walking or bicycling.

Commuter Assistance Services at the Work Location

- Nearly all (95%) respondents park on-site when they drive to work.

- About one-third (31%) said they park for free. The remaining 69% said they pay a fee to park, with an average fee of \$13.00 per month.
- Most (88%) respondents said their employers offer discount transit passes or offer to reimburse part of their commuting expense. About two-thirds of these respondents (64%) said the employer offers between \$31 and \$60 per month. Another quarter (23%) said they can receive less than \$31.
- Respondents who drive alone now said some commute services would or might encourage them to use transit or other non-drive alone transportation to get to work. Valuable services included:

	<u>Encourage</u>	<u>Maybe encourage</u>
<u>Financial Incentives</u>		
\$100 subsidy for bus/train (44%)	27%	17%
\$100 subsidy for vanpool (34%)	13%	21%
<u>Access to Transit</u>		
Shuttle to Metrorail station (39%)	25%	14%
More Metrorail station parking (35%)	19%	16%
<u>Other Services</u>		
Guaranteed Ride Home (44%)	18%	26%
Convenience shops at Metrorail station (33%)	21%	12%

Demographics

- About two-thirds (69%) of respondents said they had one or two motor vehicles owned or leased by members of their household.
- About half (54%) of the respondents were between the ages of 25 and 44. About a third (34%) were 45 of age or older.
- Nearly three-quarters (72%) of the respondents said they worked in “professional” occupations. Another 17% worked in “executive/managerial” jobs.
- About three-quarters (76%) of respondents were of White/non-Hispanic racial background. Five percent were of Asian background, five percent were African-American, and three percent were Hispanic.

LIST OF APPENDICES

Appendix 1 – Resident Survey Questionnaire

Appendix 2 – Employee Survey Questionnaire

Appendix 3 – Resident Survey Frequency Tabulations

Appendix 4 – Employee survey Frequency Tabulations

APPENDIX 1 – RESIDENT SURVEY QUESTIONNAIRE

(Paper version, on-line version also available)

Fairfax County Resident Transportation Survey

The Fairfax County Department of Transportation is conducting this survey to find ways to improve transportation services around the Vienna-Fairfax-GMU Metrorail Station. Your participation is valuable and your answers will be confidential. Please ask each member of your household 18 years or older to complete this survey and postmark it **by May 13, 2005** to: Vienna Metro Survey, c/o UrbanTrans Consultants, 318 Aspen Street, NW, Washington, DC 20012

ENTER TO WIN A PRIZE – Residents who complete the survey will be entered into a drawing for an American Express gift card worth \$400. To participate, provide your name and phone number at the end of the survey.

THANK YOU – WE VALUE YOUR INPUT AND COMMENTS!

1. Do you regularly travel to a work or school location outside your home, one or more days per week?

- No (*Skip to question 11, on the other side*) Yes (*Continue to question 2*)

2. Which of the following best describes your assigned work or school schedule? (*Check only one box*)

- I work or am at school less than 35 hours per week
 I work or am at school 5 days per week, 35 or more hours per week
 I work a 9/80 compressed (alternative) schedule (9 days every two weeks, 80 hours)
 I work a 4/40 compressed (alternative) schedule (4 10-hour days per week, 40 hours)
 I work a 3/36 compressed (alternative) schedule (3 12-hour days per week, 36 hours)
 Other _____

3. Do you work a flexible schedule or flex-time, in which you choose the times you start and stop work, as long as you work a required number of hours in a day or week?

- No Yes

4. In the table below, indicate the number of WEEKDAYS (Mon-Fri) you used each of the types of transportation shown to get to work or school LAST WEEK. If you used more than one type on any day, e.g., walked to a bus stop then rode the bus, count ONLY the type you used for the longest distance part of the trip.

If you were **NOT** at your regular work or school location one or more weekdays, indicate if you worked at home all day (telecommute) or if you were absent for another reason (e.g., regular day off, sick, business trip, etc.).

Type of Transportation (longest distance part of trip)	Number of Weekdays Used LAST WEEK
Drove alone in a car, truck, SUV, or motorcycle	
Rode in a taxi	
Drove or rode with others (carpool or vanpool)	
Took Metrorail, MARC, Amtrak, or VRE train	
Took Metrobus, Fairfax Connector, CUE, or other bus	
Walked or bicycled (entire trip from home to work)	
Other _____	
Worked at home all day (telecommuted)	
Absent from work for other reason	

Example	
3	Example: I worked five days: I drove alone 3 days, took Metrorail 1 day, and worked at home (telecommute) 1 day
1	
1	

5. If you take a bus or train from the Vienna Metrorail station to go to work or school, how do you get to the station?

- I don't ever take a bus or train to work/school I catch the bus or train at a location other than the Vienna station
 I drive myself and park I take a bus I carpool and we park I'm dropped off (kiss & ride)
 I walk I bicycle Other _____

6. About how many miles is it from your home to your usual work/school location? _____ miles
 How many minutes does it typically take you to travel from home to this location? _____ minutes
 At what time do you usually arrive at work/school? _____ a.m. / p.m.. (please circle one)
 What is the zip code of your work/school location? _____

7. Is FREE parking available to you at or near your work/school? (Please answer, even if you never drive to work)
 Yes No Don't know

PLEASE TURN OVER AND COMPLETE THE QUESTIONS ON THE OTHER SIDE OF THIS SHEET

8. Does your employer/school offer you free or discounted transit passes (e.g., Metrochek) or offer to pay or reimburse part of your commute expenses, other than for parking?
 Yes No don't know

9. Listed below are services that could help you travel by carpool, vanpool, bus, train, or bicycle. For each service, check if the service would encourage you to use the type of transportation underlined for your trip to work or school. For example, check "Yes," for "safe walking route/path to Metrorail station for train, bus riders," if that service would encourage you to take the train or bus. If you already use the type of transportation noted, check the box "Use Now."

Commuting Service	Would this service encourage you to use carpool, vanpool, bus, train, or bicycle to get to work?			
	Yes	Maybe	No	Use Now
Assistance to form a <u>carpool or vanpool</u>				
Route/schedule information for <u>bus or train</u>				
\$100 monthly subsidy for <u>vanpools</u>				
\$100 monthly subsidy for <u>bus or train</u>				
Secure locker, storage at work for <u>bicycle</u>				
Personal showers at work for employees who <u>bicycle</u>				
More parking at Metrorail stations for <u>train or bus</u> riders				
Safe walking route/path to Metrorail station for <u>train, bus</u> riders				
Guaranteed Ride Home for <u>carpool, vanpool, bus, or train</u>				
Convenience shopping near Metrorail station for <u>train, bus</u> riders				
Shuttle bus to <u>bus</u> stop or <u>train</u> station				
<u>Bus</u> stop or <u>train</u> station less than 10 minutes walk from work				

10. How long does it (or would it) take you to walk from your work or school to the nearest...
 Metrorail station? less than 5 min. 5-10 min. 11-20 min. More than 20 min. Don't know
 Bus stop? less than 5 min. 5-10 min. 11-20 min. More than 20 min. Don't know

11. In the PAST TWO WEEKDAYS (Mon-Fri), about how many trips did you make from your home to another location for a purpose OTHER THAN travel to work or school (e.g., shopping, personal appointment, pick-up a child)?
 No non-work trips (skip to question 13) _____ non-work trips

12. Did you make any of these non-work trips between the hours of 6 am and 9 am?

- No (skip to question 13)
 Yes _____

12a. How many did you make by each of the following types of transportation?

_____ Drove alone	_____ Drove or rode with others
_____ Rode bus or Metrorail	_____ Walked or bicycled

Please also answer questions 13-16. This information will be confidential and used ONLY for classification purposes.

13. In what neighborhood do you live (e.g., Circle Woods, Country Creek)? _____

14. How many persons live in your home? Please count yourself, family, and anyone who may be unrelated to you such as live-in housekeepers or boarders. How many of these household members are under the age of 16?

Total persons in the household _____

Number of household members under 16 _____

15. How many motor vehicles (cars, trucks, SUVs, motorcycles) are owned or leased by members of your household?

0

1

2

3 - 4

5 or more

16. Which of the following categories includes your age?

18 - 24

25 - 34

35 - 44

45 - 54

55 - 64

65 or older

THANK YOU FOR COMPLETING THE SURVEY!

If you would like to be entered into the prize drawing for the \$400 gift card, provide your name and phone number below.

Name _____ Phone: _____

Please check the submit button below. (Paper version will say: Please return the survey to _____)

APPENDIX 2 – EMPLOYEE SURVEY QUESTIONNAIRE

(Paper version, but survey was conducted on-line)

Employee Transportation Survey

The Fairfax County Department of Transportation is conducting this survey to find ways to improve transportation services around the Vienna-Fairfax-GMU Metrorail Station. Your participation is valuable and your answers will be confidential. Please complete this survey and postmark it **by May 13, 2005** to: Employee Travel Survey, c/o UrbanTrans Consultants, 318 Aspen Street, NW, Washington, DC 20012

ENTER TO WIN A PRIZE – Employees who complete the survey will be entered into a drawing for an American Express gift card worth \$400. To participate, provide your name and phone number at the end of the survey.

THANK YOU – WE VALUE YOUR INPUT AND COMMENTS!

1. Which of the following best describes your assigned work schedule? (Check only one box)

- I work less than 35 hours per week
- I work 5 days per week, 35 or more hours per week
- I work a 9/80 compressed (alternative) schedule (9 days every two weeks, 80 hours)
- I work a 4/40 compressed (alternative) schedule (4 10-hour days per week, 40 hours)
- I work a 3/36 compressed (alternative) schedule (3 12-hour days per week, 36 hours)
- Other _____

2. Do you work a flexible schedule or flex-time, in which you choose the times you start and stop work, as long as you work a required number of hours in a day or week?

- No Yes

3. At what time do you usually arrive at work? _____ a.m. p.m. (please circle one)

At what time do you usually leave work? _____ a.m. p.m. (please circle one)

4. About how many miles is it from your home to your usual work location? _____ miles

How many minutes does it typically take you to travel from home to this location? _____ minutes

5. In the table below, indicate the number of DAYS (Mon-Fri) you used each of the types of transportation shown to get to your regular work location LAST WEEK. If you used more than one type on any day, e.g., walked to a bus stop then rode the bus, count ONLY the type you used for the longest distance part of the trip.

If you DID NOT work at your regular work location any day, Monday-Friday, please indicate it you worked at home all day (telecommute) or if you were absent for another reason (e.g., regular day off, sick, business trip, etc.).

Type of Transportation (longest distance part of trip)	Number of Weekdays Used LAST WEEK	Example	Example: I worked five days: I drove alone 3 days, took Metrorail 1 day, and worked at home (telecommute) 1 day
Drove alone in a car, truck, SUV, or motorcycle		3	
Rode in a taxi			
Drove or rode with others (carpool or vanpool)			
Took Metrorail, MARC, Amtrak, or VRE train		1	
Took Metrobus, Fairfax Connector, CUE, or other bus			
Walked or bicycled (entire trip from home to work)			
Other _____			
Worked at home all day (telecommuted)		1	
Absent from work for other reason			

6. In the PAST TWO WORK DAYS (Mon-Fri), about how many trips did you make during your work day for purposes **OTHER THAN** travel to work (e.g., shopping, personal appointment, pick-up a family member, etc.)?

No non-work trips (*skip to question 7*)

_____ non-work trips

6a. How many of these trips did you make by each of the following types of transportation?

_____ Drive alone _____ Drive/ride with others
 _____ Bus or Metrorail _____ Walk or bicycle

7. On days that you drive to work, even if you only drive occasionally, where do you park?

I never drive to work (*skip to question 8*)

I park: in a lot/garage at my work location
 in a public lot/garage off-site
 on the street
 other _____

7a. How much do you pay to park?

_____ No charge, I park for free
 \$ _____ per: day / month (*circle one*)

8. Does your employer offer you free or discounted transit passes (e.g., Metrochek) or offer to pay or reimburse part of your commute expenses, **other than** for parking?

No, don't know (*skip to question 9*)

Yes _____

8a. How much does your employer offer to pay per month?

\$1-30 \$31-60 \$61-99 \$100+ Don't know

9. Listed below are services that could help you travel by carpool, vanpool, bus, train, or bicycle. For each service, please check if the service would encourage you to use the type of transportation underlined for your trip to work. For example, check "Yes," for "safe route/path to walk from Metrorail station for train riders," if that service would encourage you to take the train. If you already use the type of transportation noted, check the box "Use Now."

Commuting Service	Would the service encourage you to use carpool, vanpool, bus, train, or bicycle to get to work?			
	Yes	Maybe	No	Use Now
Assistance to form a <u>carpool or vanpool</u>				
Route/schedule information for <u>bus or train</u>				
\$100 monthly subsidy for <u>vanpools</u>				
\$100 monthly subsidy for <u>bus or train</u>				
Secure locker, storage at work for <u>bicycle</u>				
Personal showers at work for employees who <u>bicycle</u>				
More parking at home-area Metrorail station for <u>train</u> riders				
Safe route/path to walk from Metrorail station for <u>train</u> riders				
Guaranteed Ride Home for <u>carpool, vanpool, bus, or train</u>				
Convenience shopping near Metrorail station for <u>train</u> riders				
Shuttle bus to <u>bus</u> stop or <u>train</u> station				

Please also answer questions 10-14. This information will be confidential and used ONLY for classification purposes.

10. What is your zip code at home? _____

11. How many motor vehicles (cars, trucks, SUVs, motorcycles) are owned or leased by members of your household?

0 1 2 3-4 5 or more

12. Which of the following categories includes your age?

18 - 24 25 - 34 35 - 44 45 - 54 55 - 64 65 or older

13. Which of the following categories best describes your occupation?

Sales Technician Executive/managerial Administrative support, clerical
 Laborer Professional Machine operator, assembler Maintenance, facilities service
 Military Precision craft Retail, hospitality service Other _____

14. What is your MAIN racial or ethnic heritage?

White, non-Hispanic Hispanic/Latino Asian African-American Other

THANK YOU FOR COMPLETING THE SURVEY!

If you would like to be entered into the prize drawing for a \$400 gift card, provide your name and phone number below.

Name _____ Phone: _____

Please check the submit button below. (Paper version will say: Please return the survey to_____)

APPENDIX 3 – RESIDENT SURVEY FREQUENCY TABULATIONS

- Information included in the following pages.

APPENDIX 4 – EMPLOYEE SURVEY FREQUENCY TABULATIONS

- Information included in the following pages, following the Resident Survey Frequency Tabulations.

Fairfax/Vienna Metro TDM - Resident Survey

Final Results - June 9, 2005

Approximate Sample Frame 6,600
 Total Sample Size 482 **Note: This survey sample does NOT constitute a statistically "random" sample.**
 Response rate 7%

Web responses 83 17%
 Paper responses 399 83%

Commuters in sample 386 80%

Drive alone commuters 216

Metrorail/train commuters 165

Q1 Do you regularly travel to a work or school location outside your home, one or more days per week?

	Frequency	Percent	Valid Perc
No	96	20%	20%
Yes	386	80%	80%
Valid Subtotal	482	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	482	100%	

Q2 Which of the following best describes your assigned work or school schedule?

	Frequency	Percent	Valid Perc
Less than 35 hours per week	49	10%	13%
5 days/week, 35+ hours per week	295	61%	76%
9/80 compressed schedule	30	6%	8%
4/40 compressed schedule	7	1%	2%
3/36 compressed schedule	1	0%	0%
Other	4	1%	1%
Valid Subtotal	386	80%	100%
DK	0	0%	
Missing/Blank	0	0%	
Do not commute	96	20%	
Total	482	100%	

Fairfax/Vienna Metro TDM - Resident Survey

Q3 Do you work a flexible schedule or flex-time, in which you choose the times you start and stop work, as long as you work a required number of hours in a day or week?

	Frequency	Percent	Valid Perc
No	230	48%	60%
Yes	156	32%	40%
Valid Subtotal	386	80%	100%
DK	0	0%	
Missing/Blank	0	0%	
Do not commute	96	20%	
Total	482	100%	

Q4 - Summary of Commute Mode Spl't - "Primary Mode" - Mode Used Most Days

	Frequency	Percent	Valid Perc		2000 Census Valid Perc
Drive alone	203	42%	53%	} 38%	66%
Carpoo/vanpool	26	5%	7%		9%
Metrorail/train	135	28%	35%		21%
Bus	11	2%	3%		<1%
Walk/Bicycle	2	0%	1%		3%
Telecommute	3	1%	1%		100%
Total Users*	380	80%	100%		
DK	5	1%			
Missing/Blank	1	0%			
Do not commute	96	20%			
Total	482	100%			

Q4 - Summary of Commute Mode Split (percentage of weekly bips by mode) and Average Days Modes are Used

	Mode Users	Ave Days Per Week	Total Wkly Round-Trip	Percent Wlk Trips
Drive alone	216	4.4	941	51%
Carpoo/vanpool	37	3.2	120	7%
Metrorail/train	165	4.0	660	36%
Bus	15	3.4	51	3%
Walk/Bicycle	4	2.5	10	1%
Telecommute	23	1.5	35	2%
CWS	11	1.1	12	1%
Total Users*	380		1,829	100%

* Subset of "commuters"

Fairfax/Vienna Metro TDM - Resident Survey

Q4a - Number of WEEKDAYS last week you... DROVE ALONE (or rode in taxi)

	Frequency	Percent	Valid Perc	
0 days	170	35%	44%	→ 44% DA 0 days/wk
1 day	9	2%	2%	} 6% DA 1-2 days/wk
2 days	13	3%	3%	
3 days	19	4%	5%	} 50% DA 3+ days/wk
4 days	26	5%	7%	
5 days	149	31%	39%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Q4b - Number of WEEKDAYS last week you... DROVE OR RODE WITH OTHERS (carpool/vanpool)

	Frequency	Percent	Valid Perc	
0 days	349	72%	90%	→ 90% Used CP/VP 0 days/wk
1 day	5	1%	1%	} 3% Used CP/VP 1-2 days/wk
2 days	8	2%	2%	
3 days	8	2%	2%	} 6% Used CP/VP 3+ days/wk
4 days	5	1%	1%	
5 days	11	2%	3%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Q4c - Number of WEEKDAYS last week you... TOOK METRORAIL OR OTHER TRAIN

	Frequency	Percent	Valid Perc	
0 days	221	46%	57%	→ 57% Used Metrorail 0 days/wk
1 day	17	4%	4%	} 9% Used Metrorail 1-2 days/wk
2 days	17	4%	4%	
3 days	12	2%	3%	} 34% Used Metrorail 3+ days/wk
4 days	19	4%	5%	
5 days	100	21%	26%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q4d - Number of WEEKDAYS last week you... TOOK METROBUS OR OTHER BUS

	Frequency	Percent	Valid Perc	
0 days	371	77%	96%	→ 96% Used Bus 0 days/wk
1 day	5	1%	1%	} 1% Used Bus 1-2 days/wk
2 days	0	0%	0%	
3 days	1	0%	0%	} 3% Used Bus 3+ days/wk
4 days	2	0%	1%	
5 days	7	1%	2%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Q4e - Number of WEEKDAYS last week you... WALKED OR BICYCLED (entire trip)

	Frequency	Percent	Valid Perc	
0 days	382	79%	99%	→ 99% Used Bike/walk 0 days/wk
1 day	2	0%	1%	} 1% Used Bike/walk 1-2 days/wk
2 days	0	0%	0%	
3 days	0	0%	0%	} 1% Used Bike/walk 3+ days/wk
4 days	2	0%	1%	
5 days	0	0%	0%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Q4f - Number of WEEKDAYS last week you... TELECOMMUTED or WORKED AT HOME

	Frequency	Percent	Valid Perc	
0 days	363	75%	94%	→ 94% Telecommuted 0 days/wk
1 day	15	3%	4%	} 5% Telecommuted 1-2 day/wk
2 days	5	1%	1%	
3 days	2	0%	1%	} 1% Telecommuted 3+ day/wk
4 days	1	0%	0%	
5 days	0	0%	0%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q4g - Number of WEEKDAYS last week you... HAD A COMPRESSED WORK SCHEDULE DAY OFF

	Frequency	Percent	Valid Perc	
0 days	375	78%	97%	→ 97% CWS day off 0 days/wk
1 day	10	2%	3%	} 3% CWS day off 1-2 day/wk
2 days	1	0%	0%	
3 days	0	0%	0%	} 0% CWS day off 3+ day/wk
4 days	0	0%	0%	
5 days	0	0%	0%	
Valid Subtotal	386	80%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Do not commute	96	20%		
Total	482	100%		

Q4h - Number of WEEKDAYS last week you... WERE ABSENT FROM WORK

	Frequency	Percent	Valid Perc
0 days	368	76%	95%
1 day	9	2%	2%
2 days	3	1%	1%
3 days	2	0%	1%
4 days	0	0%	0%
5 days	4	1%	1%
Valid Subtotal	386	80%	100%
DK	0	0%	
Missing/Blank	0	0%	
Do not commute	96	20%	
Total	482	100%	

Fairfax/Vienna Metro TDM - Resident Survey

Q5 If you take a bus or train from the Vienna Metrorail station to go to work or school, how do you get to the station?

	Frequency	Percent	Valid Perc	
Drive myself and park	12	2%	7%	→ 7% Drive and park
Take a bus	1	0%	1%	
Carpool and park	2	0%	1%	
Dropped off (kiss & ride)	4	1%	2%	
Walk	141	29%	88%	→ 88% Walk to station
Bicycle	1	0%	1%	
Other	0	0%	0%	
Valid Subtotal	161	33%	100%	
Don't ever take bus/train	208	43%		
Take bus/train from other location	4	1%		
DK	10	2%		
Missing/Blank	3	1%		
Do not commute	96	20%		
Total	482	100%		

Q6a About how many miles is it from your home to your usual work/school location?

	Frequency	Percent	Valid Perc	CumulPerc	
Less than 5 miles	41	9%	11%	11%	} 82% travel less than 20 mi. to work
5 - 9.9 miles	70	15%	19%	30%	
10 - 14.9 miles	83	17%	22%	52%	
15 - 19.9 miles	112	23%	30%	82%	
20 - 29.9 miles	56	12%	15%	97%	
30 or more miles	11	2%	3%	100%	
Valid Subtotal	373	78%	100%		
DK	12	2%			
Missing/Blank	1	0%			
Do not commute	96	20%			
Total	482	100%			
Average distance	13.1	miles			

Note: Ave distance slightly less than 16.5 regional average (2004 SOC survey)

Fairfax/Vienna Metro TDM - Resident Survey

Q6a How many minutes does it typically take you to travel from home to this location?

	Frequency	Percent	Valid Perc	CumulPerc
Less than 15 min.	41	9%	11%	11%
15 - 29 min.	98	20%	26%	37%
30 - 44 min.	104	22%	28%	64%
45 - 59 min.	95	20%	25%	89%
60 - 89 min.	37	8%	10%	99%
90 or more min.	3	1%	1%	100%
Valid Subtotal	378	79%	100%	
DK	7	1%		
Missing/Blank	1	0%		
Do not commute	96	20%		
Total	482	100%		
Average time	35	minutes		

34 minutes average 2000 Census

Q6b At what time do you usually arrive at work/school?

	Frequency	Percent	Valid Perc	
12 midnight - 5:59 am	1	0%	0%	} 17% arrive before 7:30am
6 am - 6:59 am	21	4%	6%	
7 am - 7:29 am	41	9%	11%	
7:30 am - 7:59 am	41	9%	11%	} 46% arrive btw 7:30-8:59am
8 am - 8:29 am	70	15%	19%	
8:30 am - 8:59 am	63	13%	17%	
9 am - 9:29 am	73	15%	19%	} 18% arrive 9am or later
9:30 am - 9:59 am	24	5%	6%	
10 am - 5:59 pm	43	9%	11%	
6 pm - 11:59 pm	0	0%	0%	
Valid Subtotal	377	78%	100%	
DK	4	1%		
Missing/Blank	5	1%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q6a/Q6b At what time do you usually leave for work/school?

	Frequency	Percent	Valid Perc	
12 midnight - 5:59 am	14	3%	4%	} 36% leave home before 7:30am
6 am - 6:59 am	68	14%	18%	
7 am - 7:29 am	54	11%	14%	
7:30 am - 7:59 am	66	14%	18%	} 50% leave home btw 7:30-8:59am
8 am - 8:29 am	67	14%	18%	
8:30 am - 8:59 am	54	11%	14%	
9 am - 9:29 am	18	4%	5%	} 14% leave home 9am or later
9:30 am - 9:59 am	12	2%	3%	
10 am - 5:59 pm	21	4%	6%	
6 pm - 11:59 pm	0	0%	0%	
Valid Subtotal	374	78%	99%	
DK	0	0%		
Missing/Blank	12	2%		
Do not commute	96	20%		
Total	482	100%		

Q6d In what zip code is your work/school location? (Grouped into Counties/States)

	Frequency	Percent	Valid Perc	
District of Columbia	120	25%	35%	→ 35% Work in DC
Virginia Counties				
Alexandria	8	2%	2%	
Arlington	37	8%	11%	
Culpepper	2	0%	1%	
Fairfax	139	29%	41%	
Loudoun	13	3%	4%	
Prince William	1	0%	0%	
Total Virginia	200	41%	59%	→ 59% Work in VA
Maryland Counties				
Baltimore	1	0%	0%	
Montgomery	17	4%	5%	
Prince George's	2	0%	1%	
Total Maryland	20	4%	6%	→ 6% Work in MD
Other	1	0%	0%	
Valid Subtotal	341	71%	100%	
DK	0	0%		
Missing/Blank	45	9%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q7 Is free parking available at or near your work/school?

	Frequency	Percent	Valid Perc
No	162	34%	44%
Yes	205	43%	56%
Valid Subtotal	367	76%	100%
DK	19	4%	
Missing/Blank	0	0%	
Do not commute	96	20%	
Total	482	100%	

→ 56% Have free parking at work

Q8 Does your employer/school offer you free or discounted transit passes (e.g., Metrochek) or offer to pay or reimburse part of your commute expenses, other than for parking?

	Frequency	Percent	Valid Perc
No	201	42%	56%
Yes	158	33%	44%
Valid Subtotal	359	74%	100%
DK	27	6%	
Missing/Blank	0	0%	
Do not commute	96	20%	
Total	482	100%	

→ 44% Have access to discount transit pass or other commute cost reimbursement

Q9 Would commute services encourage you to use (type of transportation) for your trip to work or school?

Q9 - Summary of Incentive Value of Commute Services - Commuters NOT using alt mode now

	Would Service Encourage Use of Mode?				
	Mode	Non-User (n=)	% Yes	% Maybe	% No
CP/VP formation assistance	CP/VP	308	10%	18%	72%
Bus/train information	Bus/train	189	9%	15%	76%
\$100 subsidy for vanpool	Vanpool	326	14%	16%	70%
\$100 subsidy for bus/train	Bus/train	195	17%	18%	64%
Secure bike lockers at work	Bicycle	315	10%	10%	81%
Showers at work for bikers	Bicycle	315	10%	10%	79%
More Metrorail station parking	Bus/train	206	16%	14%	70%
Safe walk path to Metro station	Bus/train	209	30%	13%	56%
Guaranteed Ride home	All Non-DA	183	19%	19%	62%
Convenience shop at Metrorail sta	Bus/train	199	17%	15%	69%
Shuttle to Metrorail station	Bus/train	222	22%	14%	65%
Bus/train sta <10 min from work	Bus/train	191	29%	13%	58%

Fairfax/Vienna Metro TDM - Resident Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

Q9a - Assistance to form carpool or vanpool

	Frequency	Percent	Valid Perc	
Yes	32	7%	10%	} 28% "yes" or "maybe"
Maybe	54	11%	18%	
No	222	46%	72%	
Valid Subtotal	308	64%	100%	
Use mode now	35	7%		
DK	0	0%		
Missing/Blank	43	9%		
Do not commute	96	20%		
Total	482	100%		

Q9b - Route/schedule information for bus or train

	Frequency	Percent	Valid Perc	
Yes	17	4%	9%	} 24% "yes" or "maybe"
Maybe	29	6%	15%	
No	143	30%	76%	
Valid Subtotal	189	39%	100%	
Use mode now	169	35%		
DK	0	0%		
Missing/Blank	28	6%		
Do not commute	96	20%		
Total	482	100%		

Q9c - \$100 monthly subsidy for vanpools

	Frequency	Percent	Valid Perc	
Yes	47	10%	14%	} 30% "yes" or "maybe"
Maybe	52	11%	16%	
No	227	47%	70%	
Valid Subtotal	326	68%	100%	
Use mode now	2	0%		
DK	0	0%		
Missing/Blank	58	12%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

Q9d - \$100 monthly subsidy for bus or train

	Frequency	Percent	Valid Perc	
Yes	34	7%	17%	} 36% "yes" or "maybe"
Maybe	36	7%	18%	
No	125	26%	64%	
Valid Subtotal	195	40%	100%	
Use mode now	167	35%		
DK	0	0%		
Missing/Blank	24	5%		
Do not commute	96	20%		
Total	482	100%		

9e - Secure locker, storage at work for bicycle

	Frequency	Percent	Valid Perc	
Yes	30	6%	10%	} 19% "yes" or "maybe"
Maybe	30	6%	10%	
No	255	53%	81%	
Valid Subtotal	315	65%	100%	
Use mode now	10	2%		
DK	0	0%		
Missing/Blank	61	13%		
Do not commute	96	20%		
Total	482	100%		

9f - Personal showers at work for employees who bicycle

	Frequency	Percent	Valid Perc	
Yes	33	7%	10%	} 21% "yes" or "maybe"
Maybe	33	7%	10%	
No	249	52%	79%	
Valid Subtotal	315	65%	100%	
Use mode now	8	2%		
DK	0	0%		
Missing/Blank	63	13%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

9g - More parking at Metrorail stations for train or bus riders

	Frequency	Percent	Valid Perc	
Yes	33	7%	16%	} 30% "yes" or "maybe"
Maybe	29	6%	14%	
No	144	30%	70%	
Valid Subtotal	206	43%	100%	
Use mode now	131	27%		
DK	0	0%		
Missing/Blank	49	10%		
Do not commute	96	20%		
Total	482	100%		

9h -Safe walking route/path to Metrorail station for train, bus riders

	Frequency	Percent	Valid Perc	
Yes	63	13%	30%	} 44% "yes" or "maybe"
Maybe	28	6%	13%	
No	118	24%	56%	
Valid Subtotal	209	43%	100%	
Use mode now	144	30%		
DK	0	0%		
Missing/Blank	33	7%		
Do not commute	96	20%		
Total	482	100%		

9i - Guaranteed Ride Home for carpool, vanpool, bus, or train

	Frequency	Percent	Valid Perc	
Yes	35	7%	19%	} 38% "yes" or "maybe"
Maybe	34	7%	19%	
No	114	24%	62%	
Valid Subtotal	183	38%	100%	
Use mode now	179	37%		
DK	0	0%		
Missing/Blank	24	5%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

9j - Convenience shopping near Metrorail station for train, bus riders

	Frequency	Percent	Valid Perc	
Yes	33	7%	17%	} 31% "yes" or "maybe"
Maybe	29	6%	15%	
No	137	28%	69%	
Valid Subtotal	199	41%	100%	
Use mode now	161	33%		
DK	0	0%		
Missing/Blank	26	5%		
Do not commute	96	20%		
Total	482	100%		

9k - Shuttle bus to bus stop or train station

	Frequency	Percent	Valid Perc	
Yes	48	10%	22%	} 35% "yes" or "maybe"
Maybe	30	6%	14%	
No	144	30%	65%	
Valid Subtotal	222	46%	100%	
Use mode now	121	25%		
DK	0	0%		
Missing/Blank	43	9%		
Do not commute	96	20%		
Total	482	100%		

9l - Bus stop or train station less than 10 minutes walk from work

	Frequency	Percent	Valid Perc	
Yes	56	12%	29%	} 42% "yes" or "maybe"
Maybe	24	5%	13%	
No	111	23%	58%	
Valid Subtotal	191	40%	100%	
Use mode now	174	36%		
DK	0	0%		
Missing/Blank	21	4%		
Do not commute	96	20%		
Total	482	100%		

Fairfax/Vienna Metro TDM - Resident Survey

Q10a How long does it (or would it) take you to walk from your work or school to the nearest rail station?

	Frequency	Percent	Valid Perc	
Less than 5 min.	98	20%	28%	} 56% 10 minutes or less to rail station
5 - 10 min.	105	22%	30%	
11 - 20 min.	54	11%	15%	
More than 20 min	97	20%	27%	
Valid Subtotal	354	73%	100%	
DK	22	5%		
Missing/Blank	10	2%		
Do not commute	96	20%		
Total	482	100%		

Q10b How long does it (or would it) take you to walk from your work or school to the nearest bus stop?

	Frequency	Percent	Valid Perc	
Less than 5 min.	170	35%	66%	} 88% 10 minutes or less to bus stop
5 - 10 min.	59	12%	23%	
11 - 20 min.	19	4%	7%	
More than 20 min	11	2%	4%	
Valid Subtotal	259	54%	100%	
DK	66	14%		
Missing/Blank	61	13%		
Do not commute	96	20%		
Total	482	100%		

Q11 In the PAST TWO WEEKDAYS, about how many trips did you make from your home to another location for a purpose OTHER THAN travel to work or school?

	Frequency	Percent	Valid Perc	
0	104	22%	22%	} 78% made 1 or more non-work trips in past two days
1 to 2	160	33%	34%	
3 to 5	124	26%	26%	
6 to 9	55	11%	12%	
10 or more	33	7%	7%	
Valid Subtotal	476	99%	100%	
DK	6	1%		
Missing/Blank	0	0%		
Total	482	100%		
Average trips	3.2	trips/person		

Fairfax/Vienna Metro TDM - Resident Survey

Q12 Non-work trips during peak a.m. period (6 am - 9 am)?

	Frequency	Percent	Valid Perc
0	378	78%	80%
1 to 2	44	9%	9%
3 to 5	30	6%	6%
6 to 9	15	3%	3%
10 or more	8	2%	2%
Valid Subtotal	475	99%	100%
DK	7	1%	
Missing/Blank	0	0%	
Total	482	100%	
Average trips	0.8 trips/person		

20% made 1 or more non-work trips during peak period in past two days

Q12a - Summary of Commute Mode Split for Peak Period Non-Work Trips (trips made in two days)

	Total Resp	Mode Users	Ave Trips Per 2 Day	Total Trips	Percent Trips
Drive alone	475	75	0.5	255	67%
Carpoo/vanpool	475	34	0.2	101	27%
Train/bus	475	7	0.0	16	4%
Walk/Bicycle	475	4	0.0	8	2%
Total	475		0.8	380	100%

2.0 Average non-work trips made PER WEEK by each respondent

Fairfax/Vienna Metro TDM - Resident Survey

Q13 In what neighborhood do you live?

	Frequency	Percent	Valid Perc
Acadia	13	3%	3%
Barkley	4	1%	1%
Blake Tree Manor	8	2%	2%
Blakeview	4	1%	1%
Cedar Grove	6	1%	1%
Circle Towers	22	5%	5%
Circle Woods	54	11%	12%
Country Creek	98	20%	21%
Cyrandall Valley North	6	1%	1%
Fairfax	4	1%	1%
Fairfax Circle	12	2%	3%
Hunters Branch	32	7%	7%
L & M	5	1%	1%
Linden Square	15	3%	3%
Lindenbrook Square	5	1%	1%
Mantua	33	7%	7%
Marquis	13	3%	3%
Oakton Crest	4	1%	1%
Poplar Terrace	8	2%	2%
Regents Park	45	9%	10%
Vienna	12	2%	3%
Vienna Station	16	3%	3%
Virginia Center	25	5%	5%
Other	21	4%	5%
Valid Subtotal	465	92%	95%
DK	0	0%	
Missing/Blank	17	4%	
Total	482	96%	

Q13 Neighborhood locations - grouped by location relative to Metrorail station

	Frequency	Percent	Valid Perc
Within 1/4 mile	109	23%	24%
1/4 mile - 1/2 mile	286	59%	62%
More than 1/2 mile	64	13%	14%
Valid Subtotal	459	95%	100%
DK	5	1%	
Missing/Blank	18	4%	
Total	482	100%	

Fairfax/Vienna Metro TDM - Resident Survey

Q14 How many persons live in your home?

	Frequency	Percent	Valid Perc
1	77	16%	16%
2	230	48%	48%
3 to 4	142	29%	30%
5 to 6	29	6%	6%
7 or more	2	0%	0%
Valid Subtotal	480	100%	100%
DK	0	0%	
Missing/Blank	2	0%	
Total	482	100%	

2000 Census	
	Percent
1	21%
2	37%
3 to 4	34%
5 to 6	7%
7+	1%
	100%

Q14b How many of these household members are under the age of 16?

	Frequency	Percent	Valid Perc
0	264	55%	68%
1	61	13%	16%
2	49	10%	13%
3	12	2%	3%
4 or more	2	0%	1%
Valid Subtotal	388	80%	100%
DK	0	0%	
Missing/Blank	94	20%	
Total	482	100%	

Percent HH members under 16 Survey Census
 19% 17%

Q15 How many motor vehicles (cars, trucks, SUVs, motorcycles) are owned or leased by members of your household?

	Frequency	Percent	Valid Perc
0	11	2%	2%
1	166	34%	34%
2 to 4	302	63%	63%
5 or more	3	1%	1%
Valid Subtotal	482	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	482	100%	

2000 Census	
	Percent
0	1%
1	24%
2	48%
3+	27%

Fairfax/Vienna Metro TDM - Resident Survey

Q16 Which of the following categories includes your age?

	Frequency	Percent	Valid Perc
18 - 24	15	3%	3%
25 - 34	124	26%	26%
35 - 44	100	21%	21%
45 - 54	93	19%	19%
55 - 64	90	19%	19%
65 or older	57	12%	12%
Valid Subtotal	479	100%	100%
DK	0	0%	
Missing/Blank	3	<1%	
Total	482	100%	

} 47%
 } 38%

2000 Census	
	Percent
18 -24	10%
25 -44	52%
45 -64	31%
65+	8%
	99%

Fairfax/Vienna Metro TDM - Resident Survey

Selected CrossTabulations

Travel to Work/School Location by Age Group

	18 - 34	35 - 44	45 - 54	55 - 64	65+
n=	139	100	93	90	57
Yes	91%	93%	92%	69%	30%
No	9%	7%	8%	31%	70%
Total	100%	100%	100%	100%	100%

Primary Commute Mode by County of Work Location

	DA	Metrorail	CP/VP	Bus	All Non-DA
n=	182	121	20	8	149
DC	6%	76%	55%	38%	71%
Alexandria	4%	1%	0%	0%	1%
Arlington	9%	14%	10%	13%	13%
Fairfax	65%	6%	25%	25%	9%
Loudoun	6%	1%	5%	0%	1%
Montgomery	6%	2%	5%	25%	3%
Other	3%	1%	0%	0%	1%
Total	100%	100%	100%	100%	100%

71% of DA commuters work in Fairfax or Loudoun Counties
 90% of Metrorail commuters work in DC or Arlington County

Primary Commute Mode by Distance to Vienna Metro Station

	DA	Metrorail	CP/VP	Bus	All Non-DA
n=	194	130	25	9	164
Within 1/4 mile	22%	31%	20%	56%	30%
1/4 mile - 1/2 mile	64%	58%	72%	44%	60%
More than 1/2 mile	13%	11%	8%	0%	10%
Total	100%	100%	100%	100%	100%

22% of DA commuters live within 1/4 mi of Vienna Metro station
 31% of Metrorail commuters live within 1/4 mi of Vienna Metro station

Primary Commute Mode by Travel Distance

	DA	Metrorail	CP/VP	Bus	All Non-DA
n=	197	131	25	11	167
Less than 10 miles	42%	12%	20%	27%	14%
10 - 19.9 miles	44%	67%	52%	36%	63%
20 - 29.9 miles	11%	18%	28%	36%	20%
30 or more miles	4%	3%	0%	0%	2%
Total	100%	100%	100%	100%	100%

86% of DA commuters traveled fewer than 20 miles
 85% of Metrorail commuters traveled between 10 and 29.9 miles

Fairfax/Vienna Metro TDM - Resident Survey

Primary Commute Mode by Commute Time

n=	DA	Metrorail	CP/VP	Bus
	200	133	25	11
Less than 15 min.	15%	6%	8%	0%
15 - 29 min.	40%	4%	24%	27%
30 - 44 min.	28%	29%	32%	18%
45 - 59 min.	14%	44%	24%	18%
60 or more min.	4%	18%	12%	36%
Total	100%	100%	100%	100%

All Non-DA
169
6%
8%
28%
39%
18%
100%

68% of DA commuters traveled between 15 and 44 minutes
 72% of Metrorail commuters traveled between 30 and 59 minutes

Primary Commute Mode by Work Arrival Time

n=	DA	Metrorail	CP/VP	Bus
	197	134	25	11
12M - 5:59 am	0%	0%	0%	0%
6 am - 6:59 am	7%	5%	0%	0%
7 am - 7:59 am	21%	19%	44%	27%
8 am - 8:59 am	36%	40%	20%	18%
9 am - 9:59 am	24%	25%	28%	36%
10 am - 5:59 pm	13%	10%	8%	18%
Total	100%	100%	100%	100%

All Non-DA
170
0%
4%
24%
36%
26%
10%
100%

Primary Commute Mode by Home Departure Time

n=	DA	Metrorail	CP/VP	Bus
	197	132	25	11
12M - 5:59 am	4%	4%	4%	0%
6 am - 6:59 am	18%	17%	24%	27%
7 am - 7:59 am	30%	39%	32%	18%
8 am - 8:59 am	33%	31%	28%	27%
9 am - 9:59 am	9%	7%	4%	18%
10 am - 5:59 pm	6%	3%	8%	9%
Total	100%	100%	100%	100%

All Non-DA
168
4%
18%
36%
30%
7%
4%
100%

30% of DA commuters leave home between 7 am and 7:59 am
 39% of Metrorail commuters leave home between 7 am and 7:59 am

Fairfax/Vienna Metro TDM - Resident Survey

Primary Commute Mode by Free Parking Available

	DA	Metrorail	CP/VP	Bus
n=	195	127	25	9
No	16%	87%	40%	44%
Yes	84%	13%	60%	56%
Total	100%	100%	100%	100%

All Non-DA
161
78%
22%
100%

84% of DA commuters have free parking at their work location

13% of Metrorail commuters have free parking at their work location

Primary Commute Mode by Employer Offers Financial Incentive

	DA	Metrorail	CP/VP	Bus
n=	183	132	25	10
No	73%	37%	32%	40%
Yes	27%	63%	68%	60%
Total	100%	100%	100%	100%

All Non-DA
167
37%
63%
100%

27% of DA commuters are offered commute financial incentives by their employers

63% of Metrorail commuters are offered commute financial incentives by their employers

Primary Commute Mode by Time to Walk from Work to Metrorail Station

	DA	Metrorail	CP/VP	Bus
n=	177	133	25	10
Less than 5 min.	12%	46%	32%	40%
5 - 10 min.	22%	39%	24%	50%
11 - 20 min.	16%	12%	32%	0%
More than 20 min	49%	3%	12%	10%
Total	100%	100%	100%	100%

All Non-DA
168
43%
38%
14%
5%
100%

34% of DA commuters work within 10 walk of a Metrorail station

85% of Metrorail commuters work within 10 walk of a Metrorail station

Primary Commute Mode by Age

	DA	Metrorail	CP/VP	Bus
n=	203	134	26	11
18 - 24	5%	2%	0%	0%
25 - 34	26%	36%	27%	36%
35 - 44	25%	25%	19%	9%
45 - 54	23%	19%	42%	9%
55 - 64	17%	13%	12%	36%
65 or older	4%	4%	0%	9%
Total	100%	100%	100%	100%

All Non-DA
171
2%
35%
23%
22%
15%
4%
100%

Fairfax/Vienna Metro TDM - Resident Survey

Free Parking Available by Work Location State

	VA	DC	MD
n=	191	116	20
No	23%	85%	15%
Yes	77%	15%	85%
Total	100%	100%	100%

All Non-DA
136
75%
25%
100%

77% of VA commuters have free parking at their work location

15% of DC commuters have free parking at their work location

Employer Offers Financial Incentive by Work Location State

	VA	DC	MD
n=	183	118	19
No	72%	35%	63%
Yes	28%	65%	37%
Total	100%	100%	100%

All Non-DA
137
39%
61%
100%

28% of VA commuters are offered commute financial incentives by their employers

65% of DC commuters are offered commute financial incentives by their employers

Fairfax/Vienna Metro TDM Study - Employee Survey

Final Results - June 9, 2005

Approximate Sample Frame 1,500
 Total Sample Size 148
 Response rate 10%

Note: This survey sample does NOT constitute a statistically "random" sample.

Drive alone commuters 123

Q1 Which of the following best describes your assigned work or school schedule?

	Frequency	Percent	Valid Perc
Less than 35 hours per week	7	5%	5%
5 days/week, 35+ hours per week	138	93%	94%
9/80 compressed schedule	0	0%	0%
4/40 compressed schedule	1	1%	1%
3/36 compressed schedule	1	1%	1%
Other	0	0%	0%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

Q2 Do you work a flexible schedule or flex-time, in which you choose the times you start and stop work, as long as you work a required number of hours in a day or week?

	Frequency	Percent	Valid Perc
No	43	29%	29%
Yes	105	71%	71%
Valid Subtotal	148	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	148	100%	

Fairfax/Vienna Metro TDM Study - Employee Survey

Q3a At what time do you usually arrive at work?

	Frequency	Percent	Valid Perc	
12 midnight - 5:59 am	0	0%	0%	} 24% arrive before 8 am
6 am - 6:59 am	12	8%	8%	
7 am - 7:29 am	6	4%	4%	
7:30 am - 7:59 am	17	11%	12%	} 53% arrive btw 8am - 9:29am
8 am - 8:29 am	22	15%	15%	
8:30 am - 8:59 am	22	15%	15%	
9 am - 9:29 am	34	23%	23%	} 23% arrive 9:30am or later
9:30 am - 9:59 am	24	16%	16%	
10 am - 5:59 pm	10	7%	7%	
6 pm - 11:59 pm	0	0%	0%	
Valid Subtotal	147	99%	100%	
DK	0	0%		
Missing/Blank	1	1%		
Total	148	100%		

Q3b At what time do you usually leave work?

	Frequency	Percent	Valid Perc	
10am-3:59pm	10	7%	7%	} 22% leave work before 5 pm
4pm-4:29pm	11	7%	7%	
4:30pm-4:59pm	12	8%	8%	
5pm-5:29pm	23	16%	16%	} 65% leave work btw 5pm-6:59pm
5:30pm-5:59pm	22	15%	15%	
6pm-6:29pm	33	22%	22%	
6:30pm-6:59pm	17	11%	12%	} 13% leave work after 7 pm
7pm-7:59pm	18	12%	12%	
8pm-5:59am	1	1%	1%	
6am-9:59am	0	0%	0%	
Valid Subtotal	147	99%	100%	
DK	0	0%		
Missing/Blank	1	1%		
Total	148	100%		

Fairfax/Vienna Metro TDM Study - Employee Survey

Q4a About how many miles is it from your home to your usual work location?

	Frequency	Percent	Valid Perc	CumulPerc
Less than 5 miles	16	11%	11%	11%
5 - 9.9 miles	30	20%	20%	31%
10 - 14.9 miles	34	23%	23%	54%
15 - 19.9 miles	29	20%	20%	74%
20 - 29.9 miles	23	16%	16%	90%
30 or more miles	15	10%	10%	100%
Valid Subtotal	147	99%	100%	
DK	0	0%		
Missing/Blank	1	1%		
Total	148	100%		
Average distance	15.3	miles		

Note: Ave distance slightly shorter than the 16.4 regional average commute distance (State of the Commute survey - 2004)

Q4b How many minutes does it typically take you to travel from home to this location?

	Frequency	Percent	Valid Perc	CumulPerc
Less than 15 min.	12	8%	8%	8%
15 - 29 min.	48	32%	33%	41%
30 - 44 min.	34	23%	23%	64%
45 - 59 min.	25	17%	17%	82%
60 - 89 min.	20	14%	14%	95%
90 or more min.	7	5%	5%	100%
Valid Subtotal	146	99%	100%	
DK	0	0%		
Missing/Blank	2	1%		
Total	148	100%		
Average time	39	minutes		

Note: Ave commute time slightly longer than the 34 minute regional average commute distance (State of the Commute survey - 2004)

Q5 - Summary of Commute Mode Split and Average Days Using Each Mode

	Mode Users	Ave Days Per Week	Total Wkly Round-Trip	Percent Wk Trips
Drive alone	123	4.2	513	73%
Carpoo/vanpool	4	1.8	7	1%
Metrorail/train	34	3.7	127	18%
Bus	3	2.0	6	1%
Walk/Bicycle	5	3.2	16	2%
Telecommute	20	1.7	34	5%
Total Users*	148		703	100%

Fairfax/Vienna Metro TDM Study - Employee Survey

Q5a - Number of WEEKDAYS last week you... DROVE ALONE (or rode in taxi)

	Frequency	Percent	Valid Perc	
0 days	23	16%	16%	} 84% DA 1+ days/wk } 74% DA 3+ days/wk
1 day	4	3%	3%	
2 days	11	7%	8%	
3 days	20	14%	14%	
4 days	13	9%	9%	
5 days	75	51%	51%	
Valid Subtotal	146	99%	100%	
DK	0	0%		
Missing/Blank	2	1%		
Total	148	100%		

Q5b - Number of WEEKDAYS last week you... DROVE OR RODE WITH OTHERS (carpool/vanpool)

	Frequency	Percent	Valid Perc	
0 days	143	97%	97%	} 3% Used CP/VP 1+ days/wk } 1% Used CP/VP 3+ days/wk
1 day	3	2%	2%	
2 days	0	0%	0%	
3 days	0	0%	0%	
4 days	1	1%	1%	
5 days	0	0%	0%	
Valid Subtotal	147	99%	100%	
DK	0	0%		
Missing/Blank	1	1%		
Total	148	100%		

Q5c - Number of WEEKDAYS last week you... TOOK METRORAIL OR OTHER TRAIN

	Frequency	Percent	Valid Perc	
0 days	112	77%	77%	} 23% Used Metrorail 1+ days/wk } 16% Used Metrorail 3+ days/wk
1 day	4	3%	3%	
2 days	6	4%	4%	
3 days	4	3%	3%	
4 days	1	1%	1%	
5 days	19	13%	13%	
Valid Subtotal	146	100%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Total	146	100%		

Fairfax/Vienna Metro TDM Study - Employee Survey

Q5d - Number of WEEKDAYS last week you... TOOK METROBUS OR OTHER BUS

	Frequency	Percent	Valid Perc
0 days	144	97%	98%
1 day	2	1%	1%
2 days	0	0%	0%
3 days	0	0%	0%
4 days	1	1%	1%
5 days	0	0%	0%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

2% Used Bus 1+ days/wk

1% Used Bus 3+ days/wk

Q5e - Number of WEEKDAYS last week you... WALKED OR BICYCLED (entire trip)

	Frequency	Percent	Valid Perc
0 days	142	96%	97%
1 day	1	1%	1%
2 days	1	1%	1%
3 days	1	1%	1%
4 days	0	0%	0%
5 days	2	1%	1%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

3% Used Bike/walk 1+ days/wk

2% Used Bike/walk 3+ days/wk

Q5f - Number of WEEKDAYS last week you... TELECOMMUTED or WORKED AT HOME

	Frequency	Percent	Valid Perc
0 days	127	86%	86%
1 day	13	9%	9%
2 days	3	2%	2%
3 days	2	1%	1%
4 days	1	1%	1%
5 days	1	1%	1%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

14% Telecommuted 1+ day/wk

3% Telecommuted 3+ day/wk

Fairfax/Vienna Metro TDM Study - Employee Survey

Q5g - Number of WEEKDAYS last week you... WERE ABSENT FROM WORK

	Frequency	Percent	Valid Perc
0 days	139	94%	95%
1 day	4	3%	3%
2 days	3	2%	2%
3 days	1	1%	1%
4 days	0	0%	0%
5 days	0	0%	0%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

Q6 In the PAST TWO WORK DAYS (Mon-Fri), about how many trips did you make during your work day for purposes OTHER THAN travel to work?

	Frequency	Percent	Valid Perc
0	73	49%	49%
1 to 2	52	35%	35%
3 to 5	20	14%	14%
6 to 9	2	1%	1%
10 or more	1	1%	1%
Valid Subtotal	148	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	148	100%	
Average trips	1.2 trips/person		

51% made 1 or more trips during past two days

Q6a - Summary of Mode Split for Mid-day Non-Commute Trips

	Total Resp	Mode Users	Ave Trips Per 2 Day*	Total Trips	Percent Trips
Drive alone	148	58	0.8	123	69%
Carpoo/vanpool	148	10	0.1	16	9%
Train/bus	148	16	0.2	30	17%
Walk/Bicycle	148	5	0.1	8	5%
Total	148		1.2	177	100%

* Average non-commute trips made during work day in two days by each respondent

Fairfax/Vienna Metro TDM Study - Employee Survey

Q7 On days that you drive to work, even if you only drive occasionally, where do you park?

	Frequency	Percent	Valid Perc
On-site	126	85%	95%
Off-site	4	3%	3%
On the street	1	1%	1%
Other	1	1%	1%
Valid Subtotal	132	89%	100%
DK	16	11%	
Missing/Blank	0	0%	
Never drive to work	0	0%	
Total	148	100%	

7a How much do you pay to park (per month)?

	Frequency	Percent	Valid Perc
\$0 (Free parking)	40	27%	31%
\$1 - \$24	83	56%	65%
\$25 - \$49	3	2%	2%
\$50 - \$74	0	0%	0%
\$75 - \$99	0	0%	0%
\$100 or more	2	1%	2%
Valid Subtotal	128	86%	100%
DK	0	0%	
Missing/Blank	5	3%	
Never drive to work	15	10%	
Total	148	100%	
Ave park fee	\$ 13 per month		

69% of employees pay a fee to park

Q8 Does your employer offer you free or discounted transit passes (e.g., Metrochek) or offer to pay or reimburse part of your commute expenses, other than for parking?

	Frequency	Percent	Valid Perc
No, DK	16	11%	12%
Yes	121	82%	88%
Valid Subtotal	137	93%	100%
Missing/Blank	11	7%	
Total	148	100%	

Fairfax/Vienna Metro TDM Study - Employee Survey

8a How much does your employer offer to pay per month?

	Frequency	Percent	Valid Perc
\$1 - \$30	18	12%	23%
\$31 - \$60	50	34%	64%
\$61 - \$99	2	1%	3%
\$100 or more	8	5%	10%
Valid Subtotal	78	53%	100%
DK	0	0%	
Missing/Blank	54	36%	
No payment/reimbursement	16	11%	
Total	148	100%	

Q9 Would commute services encourage you to use (type of transportation) for your trip to work or school?

Q9 - Summary of Incentive Value of Commute Services - Commuters NOT using alt mode now

	Would Service Encourage Use of Mode?				
	Mode	Non-User Base	% Yes	% Maybe	% No
CP/VP formation assistance	CP/VP	130	7%	21%	72%
Bus/train information	Bus/train	100	10%	15%	75%
\$100 subsidy for vanpool	Vanpool	130	13%	21%	66%
\$100 subsidy for bus/train	Bus/train	102	27%	17%	56%
Secure bike lockers at work	Bicycle	114	13%	12%	75%
Showers at work for bikers	Bicycle	109	15%	12%	73%
More Metrorail station parking	Bus/train	96	19%	16%	66%
Safe walk path from Metro station	Bus/train	93	17%	12%	71%
Guaranteed Ride home	All alt mode	105	18%	26%	56%
Convenience shop at Metrorail sta	Bus/train	99	21%	12%	67%
Shuttle to Metrorail station	Bus/train	85	25%	14%	61%

Q9a - Assistance to form carpool or vanpool

	Frequency	Percent	Valid Perc	
Yes	9	6%	7%	} 28% "yes" or "maybe"
Maybe	27	18%	21%	
No	94	64%	72%	
Valid Subtotal	130	88%	100%	
Use mode now	1	1%		
DK	0	0%		
Missing/Blank	17	11%		
Total	148	100%		

Fairfax/Vienna Metro TDM Study - Employee Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

Q9b - Route/schedule information for bus or train

	Frequency	Percent	Valid Perc
Yes	10	7%	10%
Maybe	15	10%	15%
No	75	51%	75%
Valid Subtotal	100	68%	100%
Use mode now	37	25%	
DK	0	0%	
Missing/Blank	11	7%	
Total	148	100%	

} 25% "yes" or "maybe"

Q9c - \$100 monthly subsidy for vanpools

	Frequency	Percent	Valid Perc
Yes	17	11%	13%
Maybe	27	18%	21%
No	86	58%	66%
Valid Subtotal	130	88%	100%
Use mode now	0	0%	
DK	0	0%	
Missing/Blank	18	12%	
Total	148	100%	

} 34% "yes" or "maybe"

Q9d - \$100 monthly subsidy for bus or train

	Frequency	Percent	Valid Perc
Yes	28	19%	27%
Maybe	17	11%	17%
No	57	39%	56%
Valid Subtotal	102	69%	100%
Use mode now	33	22%	
DK	0	0%	
Missing/Blank	13	9%	
Total	148	100%	

} 44% "yes" or "maybe"

Fairfax/Vienna Metro TDM Study - Employee Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

9e - Secure locker, storage at work for bicycle

	Frequency	Percent	Valid Perc
Yes	15	10%	13%
Maybe	14	9%	12%
No	85	57%	75%
Valid Subtotal	114	77%	100%
Use mode now	13	9%	
DK	0	0%	
Missing/Blank	21	14%	
Total	148	100%	

} 25% "yes" or "maybe"

9f - Personal showers at work for employees who bicycle

	Frequency	Percent	Valid Perc
Yes	16	11%	15%
Maybe	13	9%	12%
No	80	54%	73%
Valid Subtotal	109	74%	100%
Use mode now	17	11%	
DK	0	0%	
Missing/Blank	22	15%	
Total	148	100%	

} 27% "yes" or "maybe"

9g - More parking at home-area Metrorail stations for train or bus riders

	Frequency	Percent	Valid Perc
Yes	18	12%	19%
Maybe	15	10%	16%
No	63	43%	66%
Valid Subtotal	96	65%	100%
Use mode now	28	19%	
DK	0	0%	
Missing/Blank	24	16%	
Total	148	100%	

} 34% "yes" or "maybe"

Fairfax/Vienna Metro TDM Study - Employee Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

9h - Safe walking route/path from Metrorail station for train, bus riders

	Frequency	Percent	Valid Perc
Yes	16	11%	17%
Maybe	11	7%	12%
No	66	44%	71%
Valid Subtotal	93	62%	100%
Use mode now	34	23%	
DK	0	0%	
Missing/Blank	24	16%	
Total	151	100%	

} 29% "yes" or "maybe"

9i - Guaranteed Ride Home for carpool, vanpool, bus, or train

	Frequency	Percent	Valid Perc
Yes	19	13%	18%
Maybe	27	18%	26%
No	59	40%	56%
Valid Subtotal	105	71%	100%
Use mode now	33	22%	
DK	0	0%	
Missing/Blank	10	7%	
Total	148	100%	

} 44% "yes" or "maybe"

9j - Convenience shopping near Metrorail station for train, bus riders

	Frequency	Percent	Valid Perc
Yes	21	14%	21%
Maybe	12	8%	12%
No	66	45%	67%
Valid Subtotal	99	67%	100%
Use mode now	33	22%	
DK	0	0%	
Missing/Blank	16	11%	
Total	148	100%	

} 33% "yes" or "maybe"

Fairfax/Vienna Metro TDM Study - Employee Survey

Q9 (cont) Would commute services encourage you to use (type of transportation)?

9k - Shuttle bus to bus stop or train station

	Frequency	Percent	Valid Perc	
Yes	21	14%	25%	} 39% "yes" or "maybe"
Maybe	12	8%	14%	
No	52	35%	61%	
Valid Subtotal	85	57%	100%	
Use mode now	49	33%		
DK	0	0%		
Missing/Blank	14	9%		
Total	148	100%		

Q10 What is your zip code at home?

	Frequency	Percent	Valid Perc	
District of Columbia	15	10%	10%	→ 10% Live in DC
Virginia Counties				
Alexandria	9	6%	6%	
Arlington	22	15%	15%	
Fairfax	72	49%	49%	
Prince William	4	3%	3%	
Other	6	4%	4%	
Total Virginia	113	76%	76%	→ 76% Live in VA
Maryland Counties				
Montgomery	16	11%	11%	
Prince George's	4	3%	3%	
Total Maryland	20	14%	14%	→ 14% Live in MD
Valid Subtotal	148	100%	100%	
DK	0	0%		
Missing/Blank	0	0%		
Total	148	100%		

Fairfax/Vienna Metro TDM Study - Employee Survey

Q11 How many motor vehicles (cars, trucks, SUVs, motorcycles) are owned or leased by members of your household?

	Frequency	Percent	Valid Perc
0	12	8%	8%
1	48	32%	32%
2	55	37%	37%
3 to 4	31	21%	21%
5 or more	2	1%	1%
Valid Subtotal	148	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	148	100%	

Q12 Which of the following categories includes your age?

	Frequency	Percent	Valid Perc
18 - 24	19	13%	13%
25 - 34	41	28%	28%
35 - 44	38	26%	26%
45 - 54	27	18%	18%
55 - 64	20	14%	14%
65 or older	3	2%	2%
Valid Subtotal	148	100%	100%
DK	0	0%	
Missing/Blank	0	0%	
Total	148	100%	

Q13 Which of the following categories best describes your occupation?

	Frequency	Percent	Valid Perc
Sales	1	1%	1%
Technician	4	3%	3%
Executive/Managerial	25	17%	17%
Administrative support, Clerical	9	6%	6%
Laborer	0	0%	0%
Professional	106	72%	72%
Machine Operator, assembler	0	0%	0%
Maintenance, facilities service	0	0%	0%
Military	2	1%	1%
Precision craft	0	0%	0%
Retail, Hospitality service	0	0%	0%
Valid Subtotal	147	99%	100%
DK	0	0%	
Missing/Blank	1	1%	
Total	148	100%	

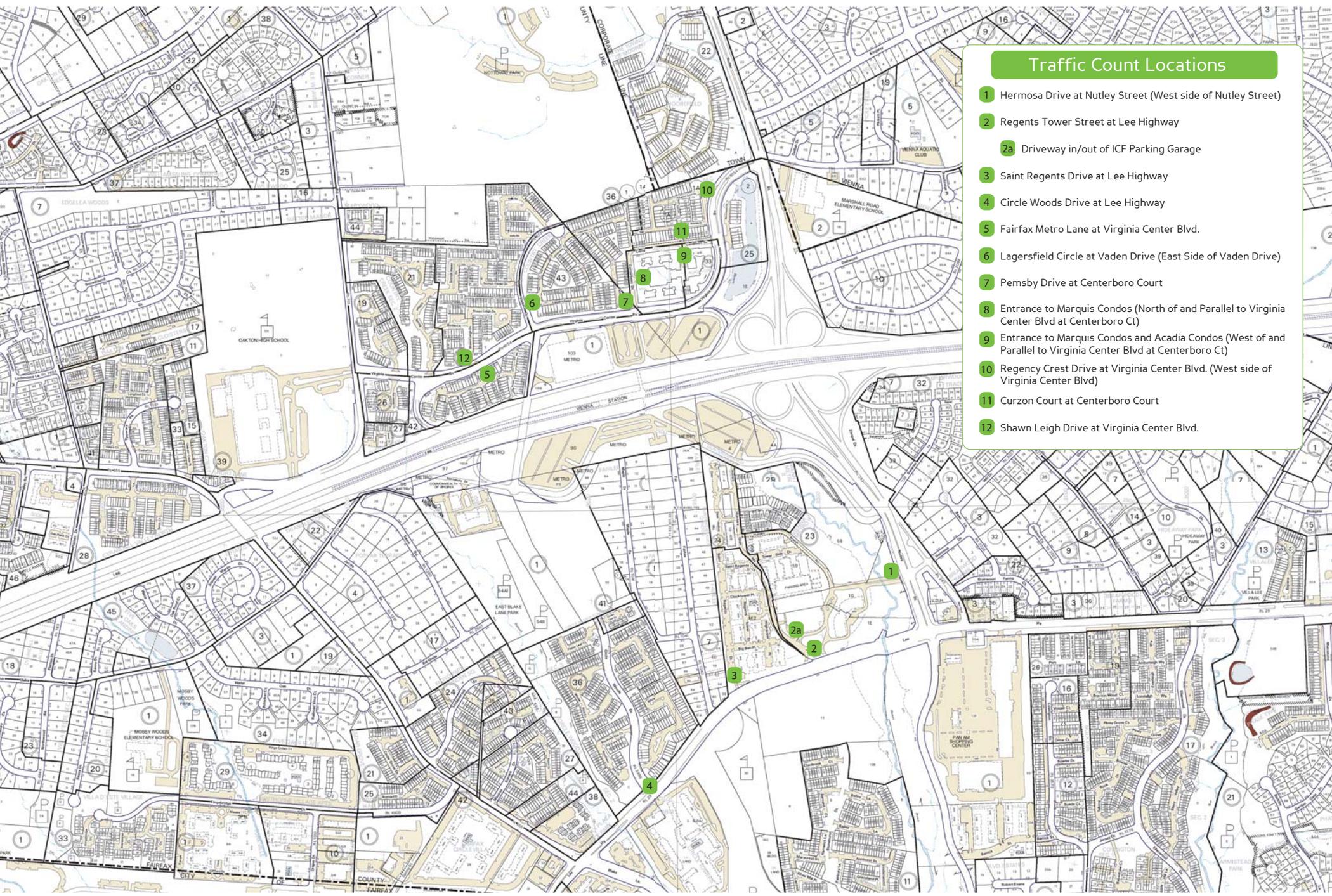
Fairfax/Vienna Metro TDM Study - Employee Survey

Q14 What is your MAIN racial or ethnic heritage

	Frequency	Percent	Valid Perc
White, non-hispanic	113	76%	83%
Hispanic	4	3%	3%
Asian	7	5%	5%
African-American	8	5%	6%
Other	4	3%	3%
Valid Subtotal	136	92%	100%
DK	0	0%	
Missing/Blank	12	8%	
Total	148	100%	

Appendix 2

Traffic Count Summary



Traffic Count Locations

- 1 Hermosa Drive at Nutley Street (West side of Nutley Street)
- 2 Regents Tower Street at Lee Highway
- 2a Driveway in/out of ICF Parking Garage
- 3 Saint Regents Drive at Lee Highway
- 4 Circle Woods Drive at Lee Highway
- 5 Fairfax Metro Lane at Virginia Center Blvd.
- 6 Lagersfield Circle at Vaden Drive (East Side of Vaden Drive)
- 7 Pemsby Drive at Centerboro Court
- 8 Entrance to Marquis Condos (North of and Parallel to Virginia Center Blvd at Centerboro Ct)
- 9 Entrance to Marquis Condos and Acadia Condos (West of and Parallel to Virginia Center Blvd at Centerboro Ct)
- 10 Regency Crest Drive at Virginia Center Blvd. (West side of Virginia Center Blvd)
- 11 Curzon Court at Centerboro Court
- 12 Shawn Leigh Drive at Virginia Center Blvd.

Hermosa Drive at Nutley Street



This is the intersection at Hermosa Drive and Nutley Street.

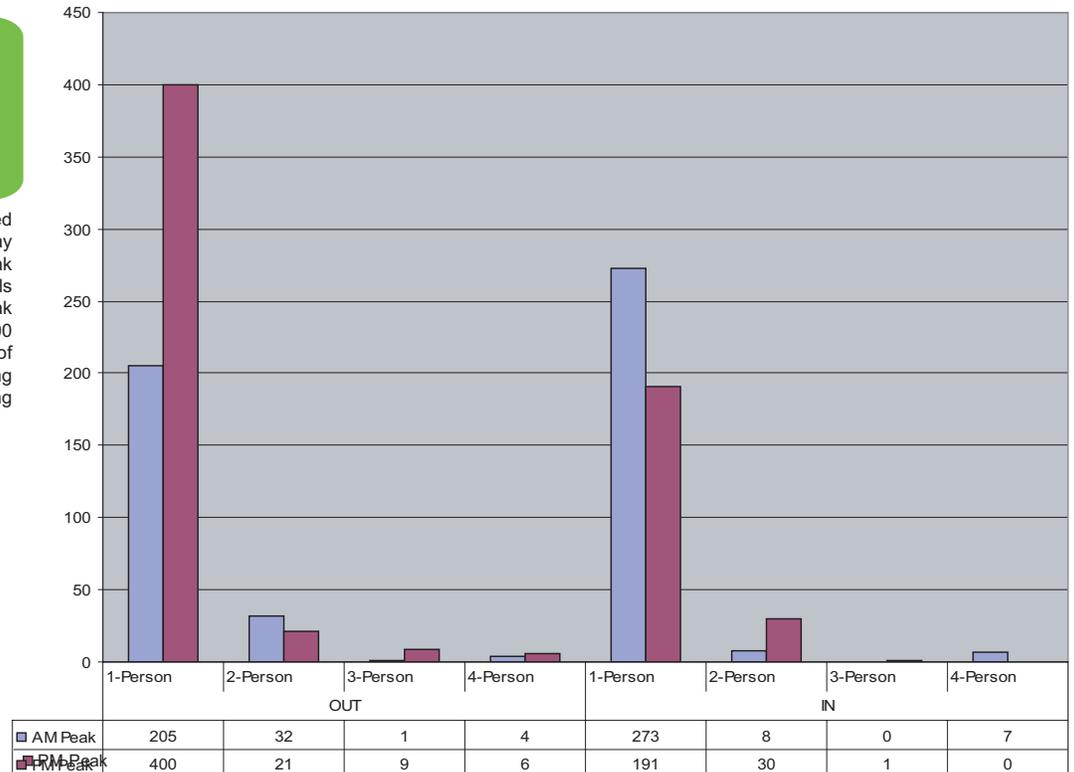
Average Vehicle Occupancy

MORNING PEAK		EVENING PEAK	
IN	1.10	IN	1.14
OUT	1.16	OUT	1.14

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

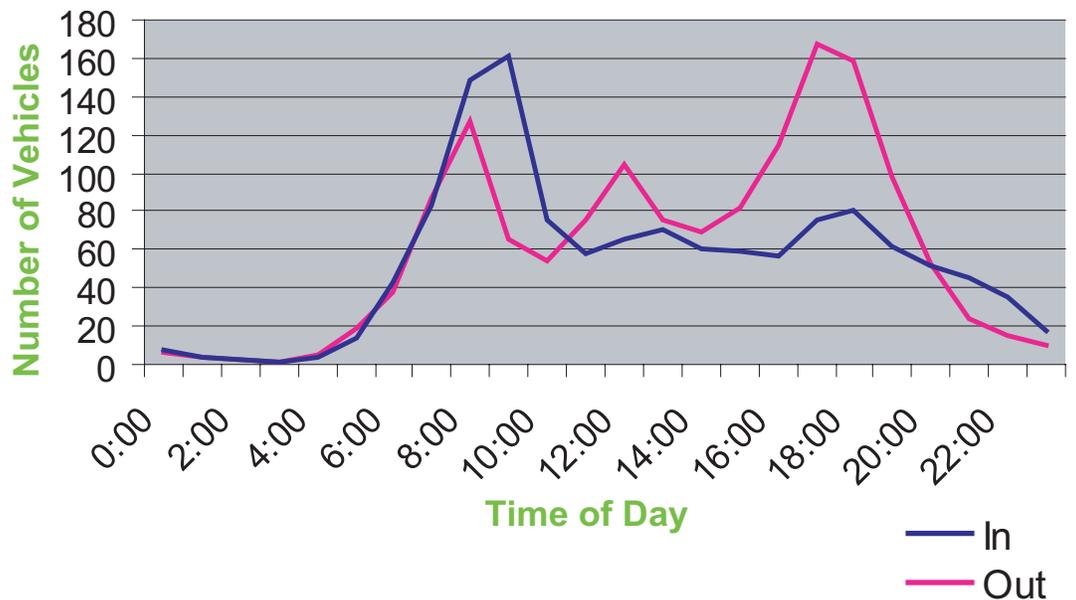
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



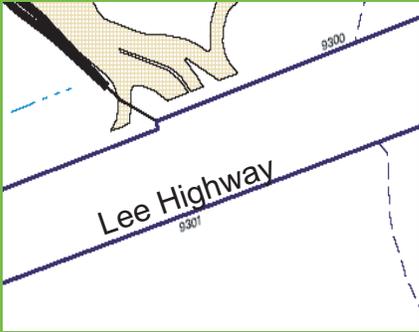
Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Regents Tower Street at Lee Highway



This is the intersection of Regents Tower Street and Lee Highway.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.19

IN 1.15

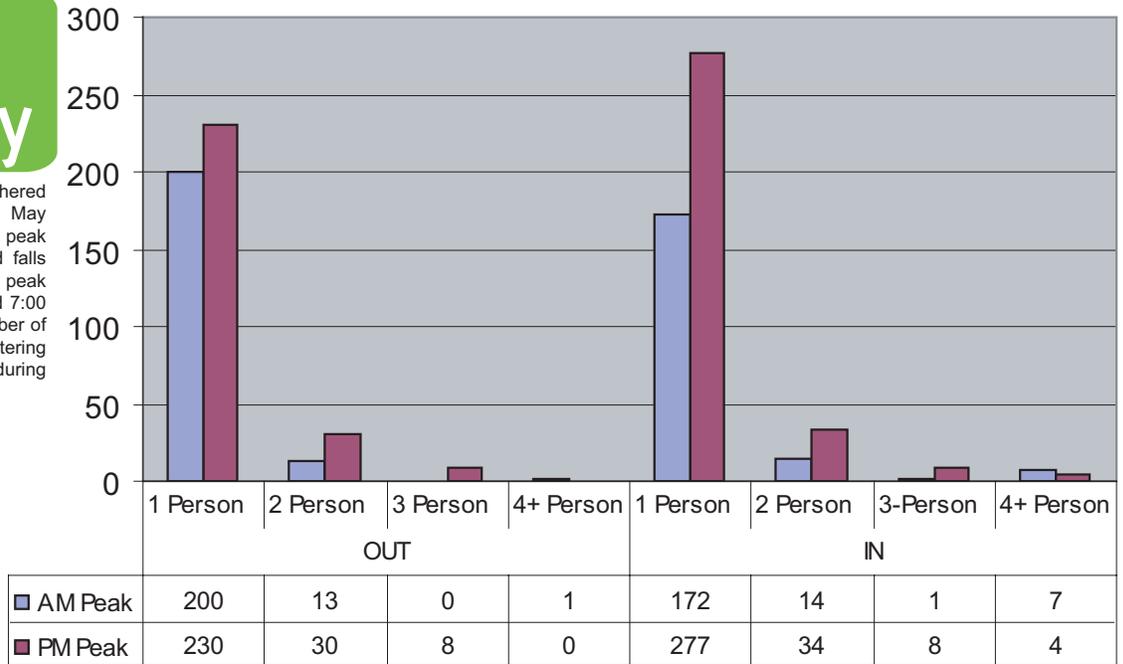
OUT 1.07

OUT 1.17

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

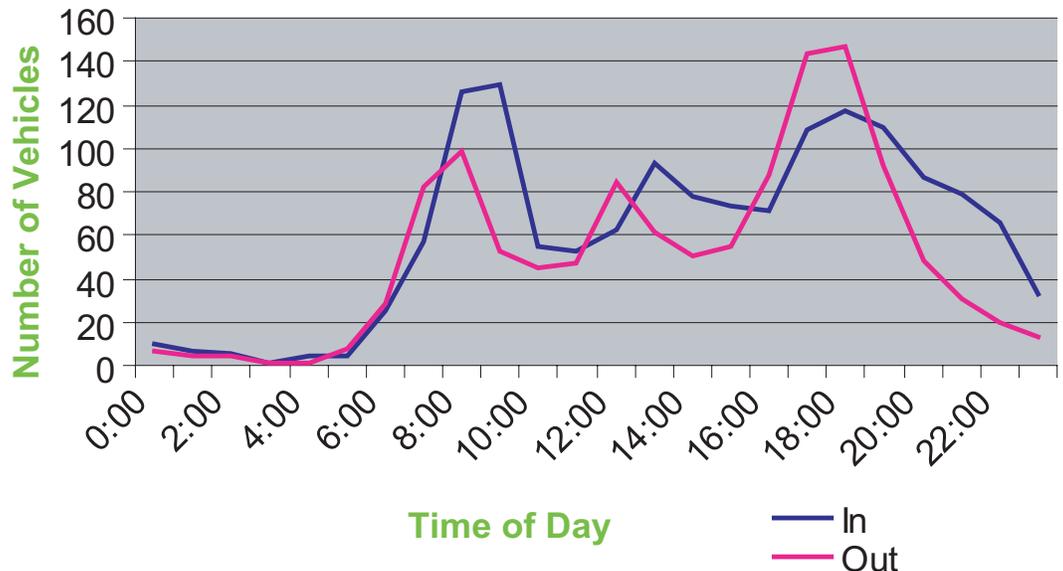
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



2a

Driveway in/out of ICF Parking Garage



This is the driveway leading in and out of the ICF Parking Garage.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.21

IN 1.33

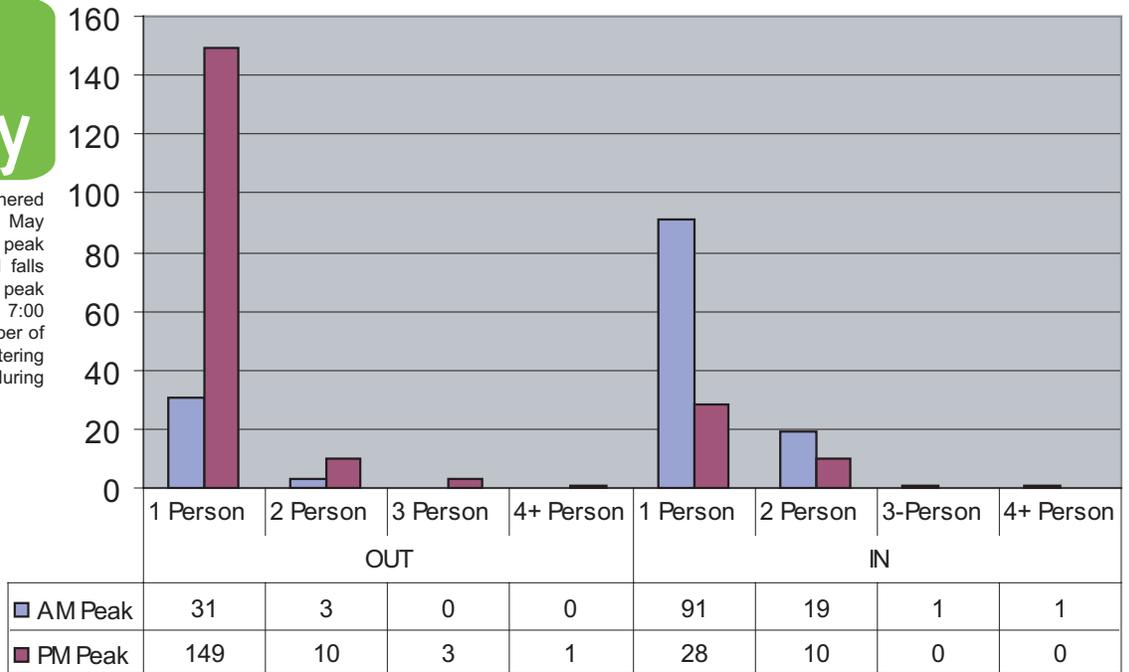
OUT 1.09

OUT 1.12

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

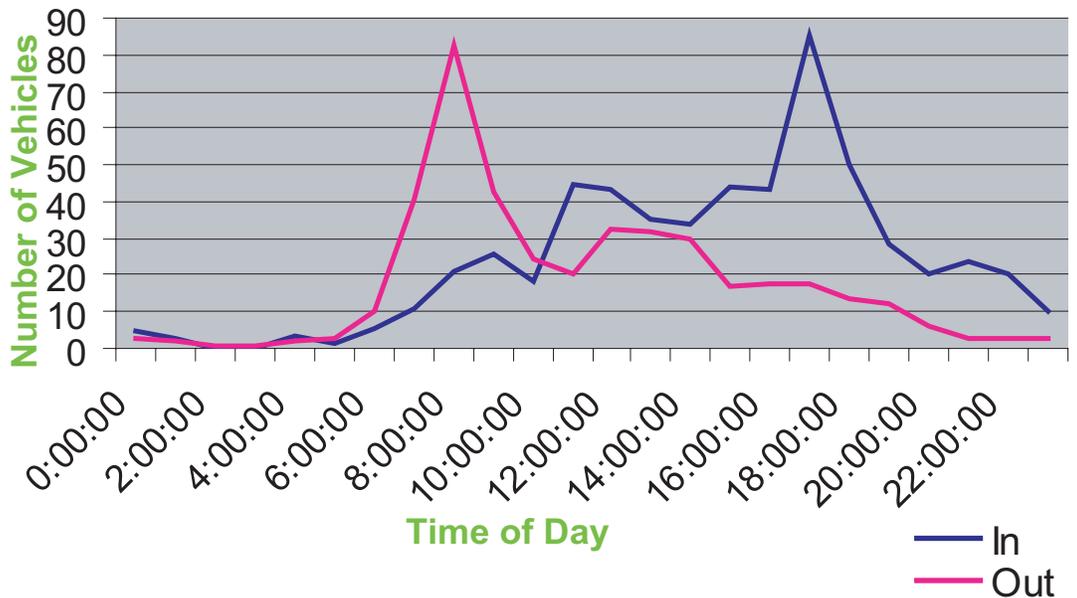
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Saint Regents Drive at Lee Highway



This is the intersection of Saint Regents Drive and Lee Highway.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.04

IN 1.31

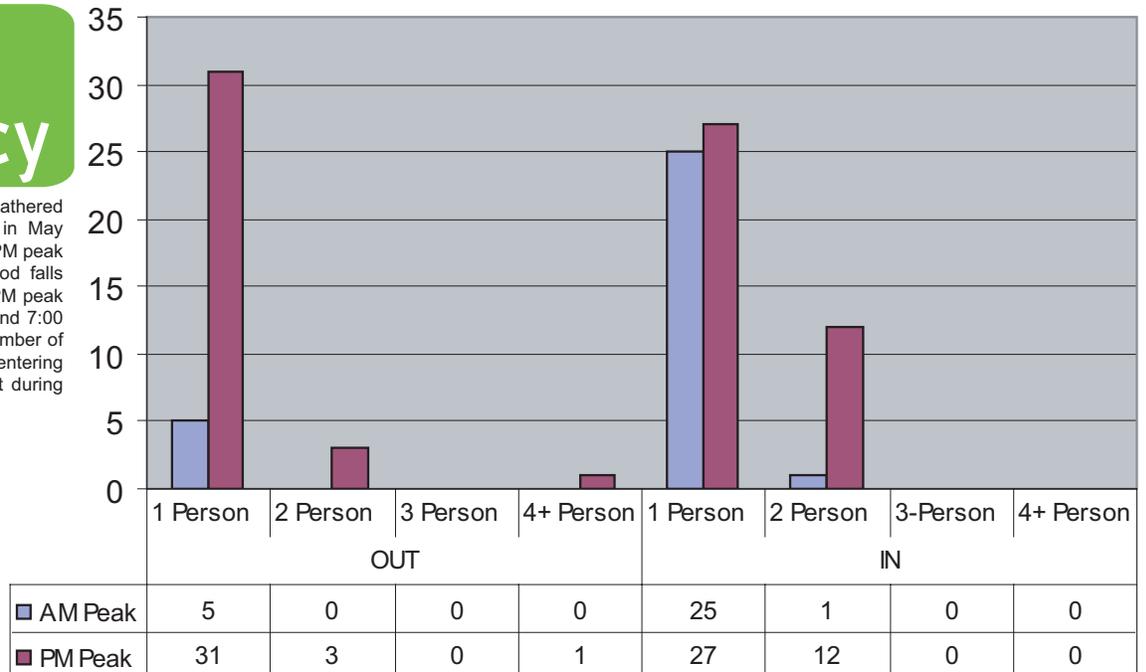
OUT 1.00

OUT 1.17

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

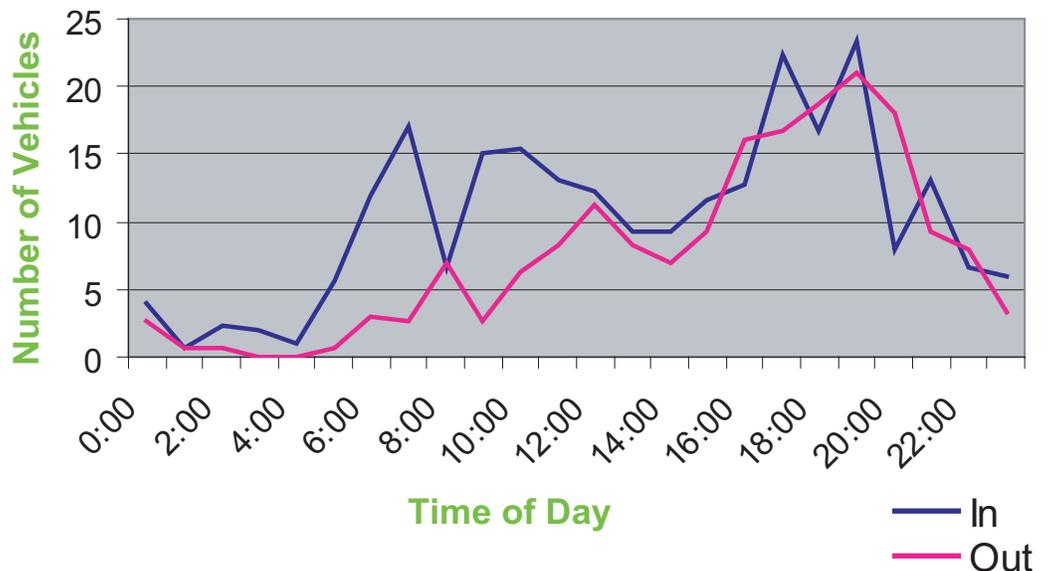
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



4

Circle Woods Drive at Lee Highway



This is the intersection of Circle Woods Drive at Lee Highway.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

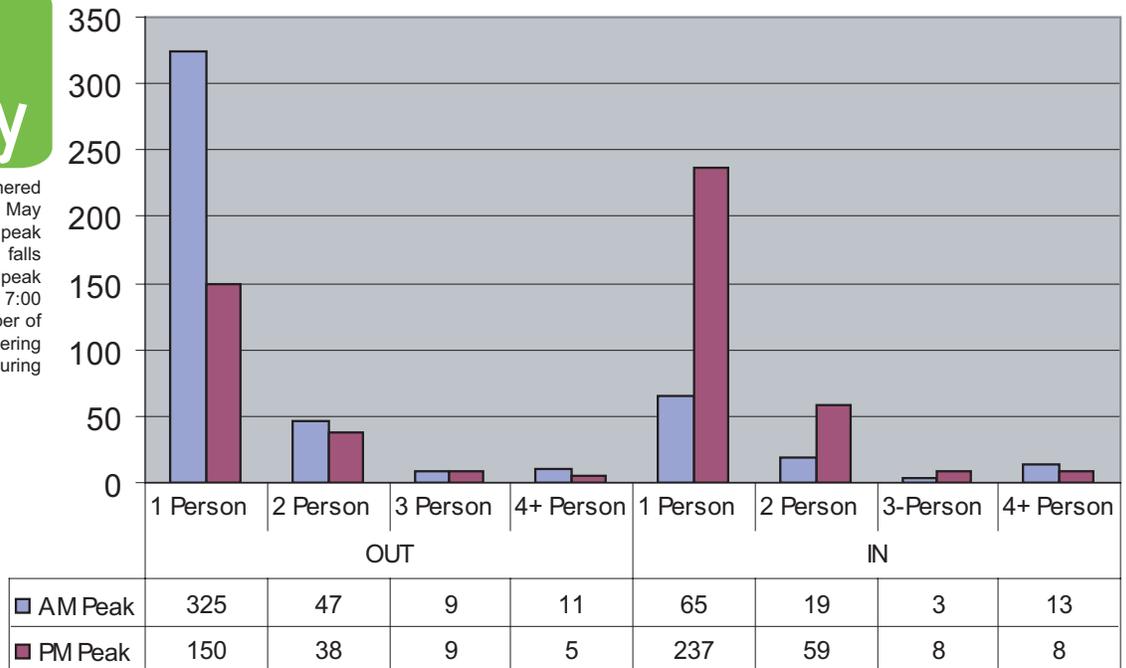
IN 1.71
OUT 1.25

IN 1.32
OUT 1.35

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

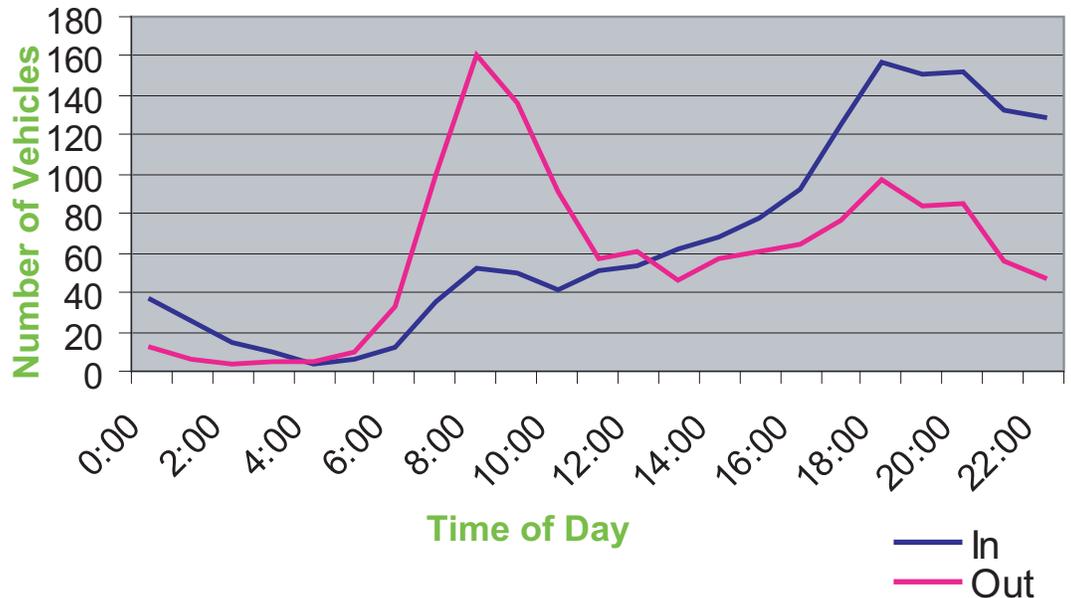
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



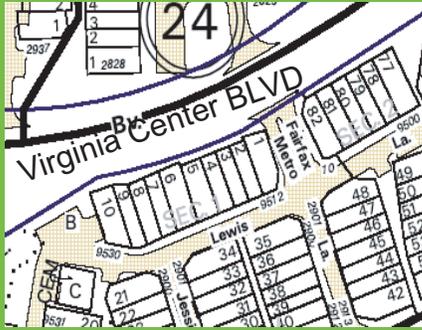
Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Fairfax Metro Lane



This is the intersection of Fairfax Metro Lane at Virginia Center Blvd.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.20

IN 1.13

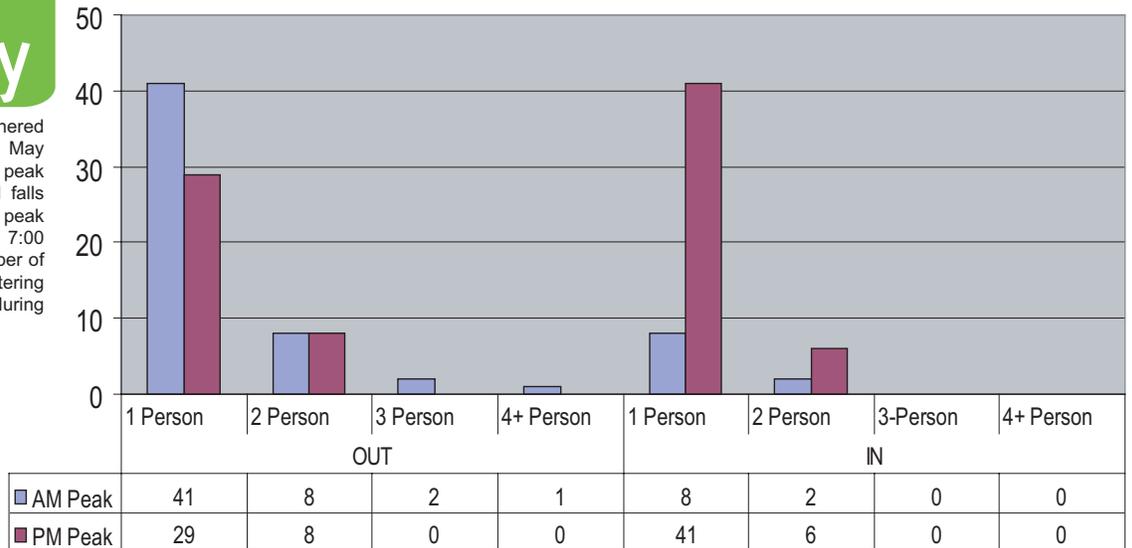
OUT 1.35

OUT 1.16

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

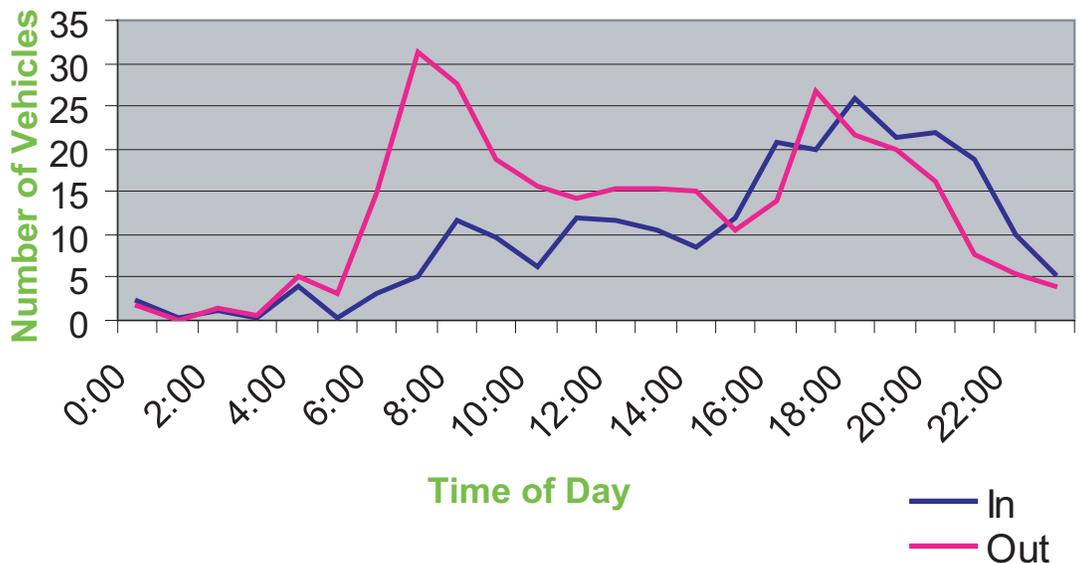
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

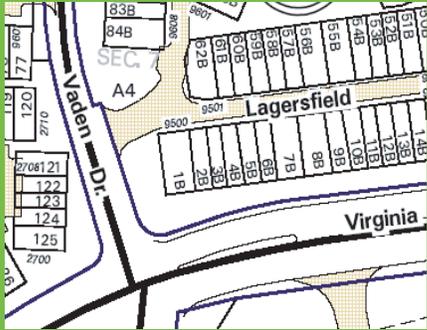
Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



6

Lagersfield Circle at Vaden Drive



This is the intersection of Lagersfield Circle at Vaden Drive (East Side of Vaden Drive).

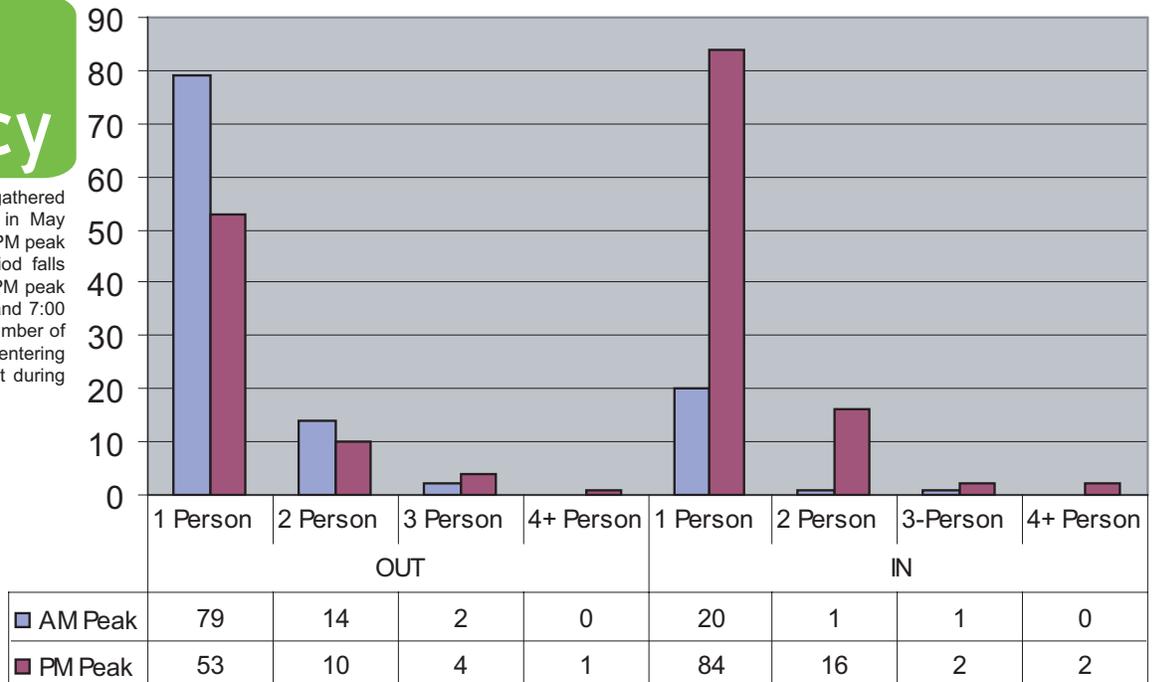
Average Vehicle Occupancy

MORNING PEAK		EVENING PEAK	
IN	1.14	IN	1.28
OUT	1.19	OUT	1.31

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

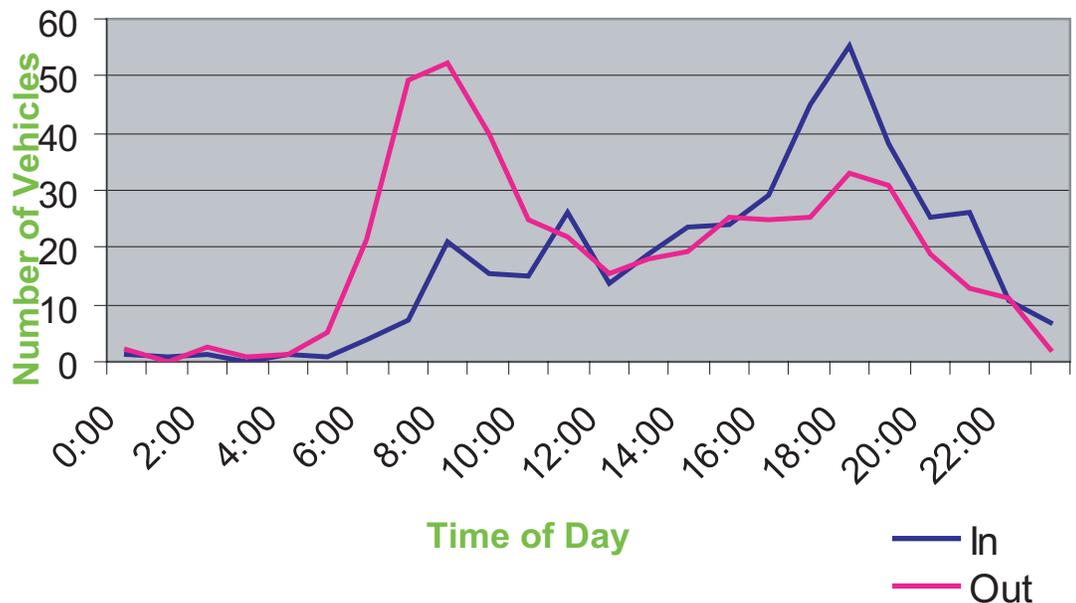
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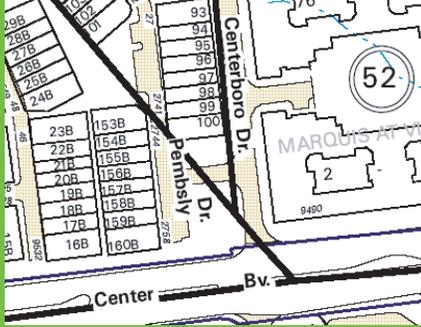
Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Pemsby Drive at Centerboro Court



This is the intersection of Pemsby and Centerboro Court.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.22

IN 1.00

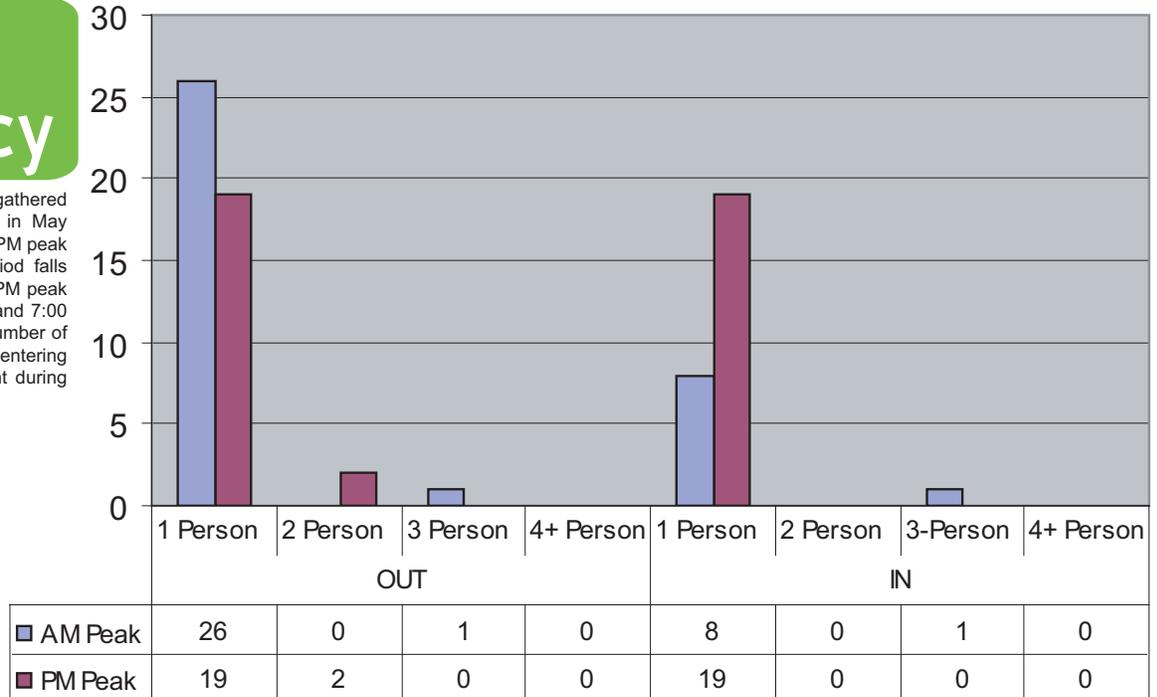
OUT 1.07

OUT 1.10

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

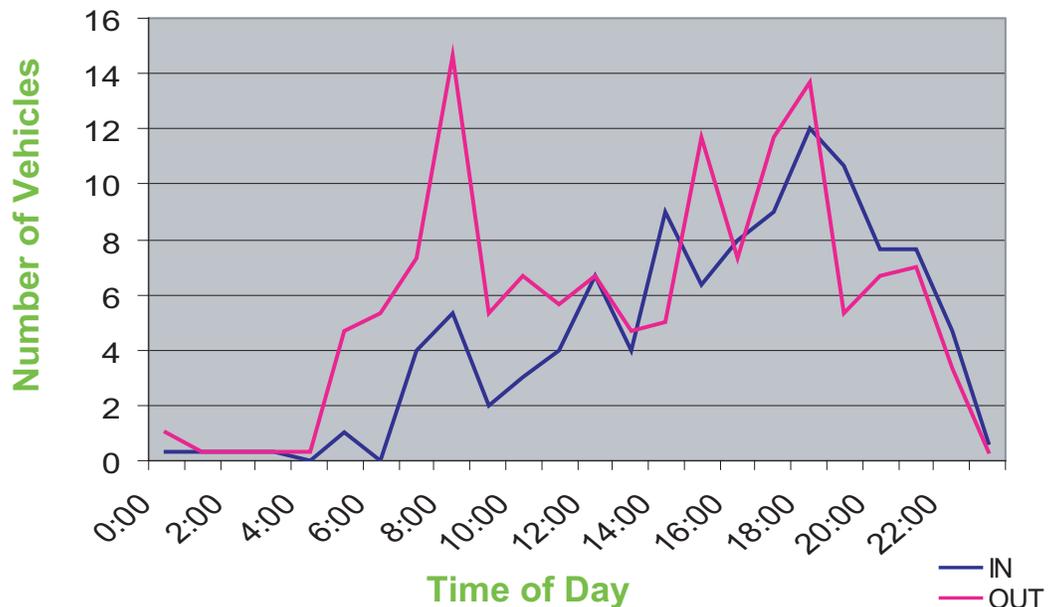
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



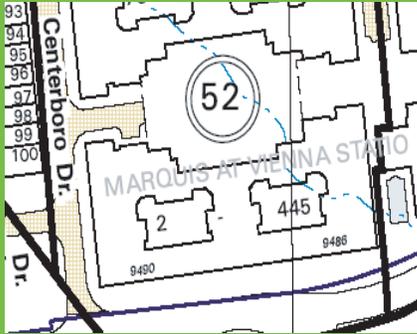
Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Entrance to Marquis Condos



This is the entrance to Marquis Condos (North of and Parallel to Virginia Center Blvd at Centerboro Ct).

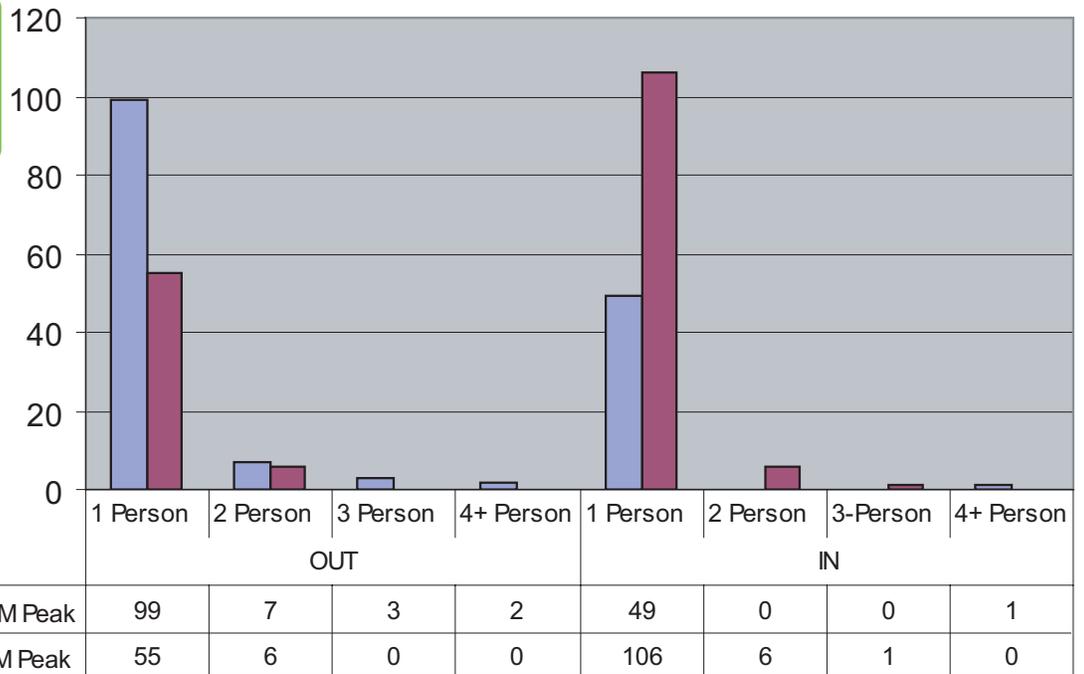
Average Vehicle Occupancy

MORNING PEAK		EVENING PEAK	
IN	1.06	IN	1.07
OUT	1.17	OUT	1.10

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

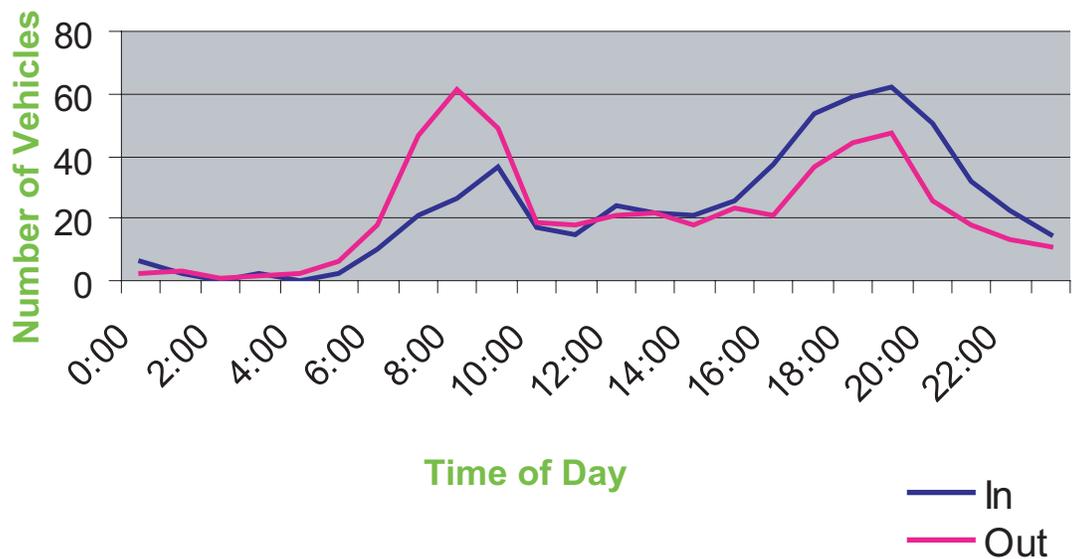
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

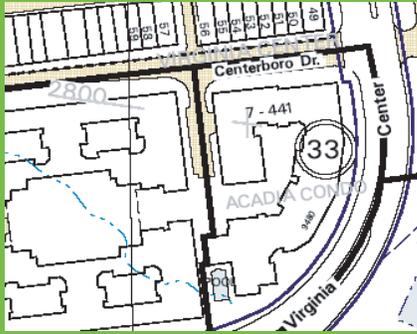
Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Time of Day

— In
— Out

Entrance to Marquis and Acadia Condos



This is the entrance to Marquis Condos and Acadia Condos (West of and parallel to Virginia Center Blvd at Centerboro Ct).

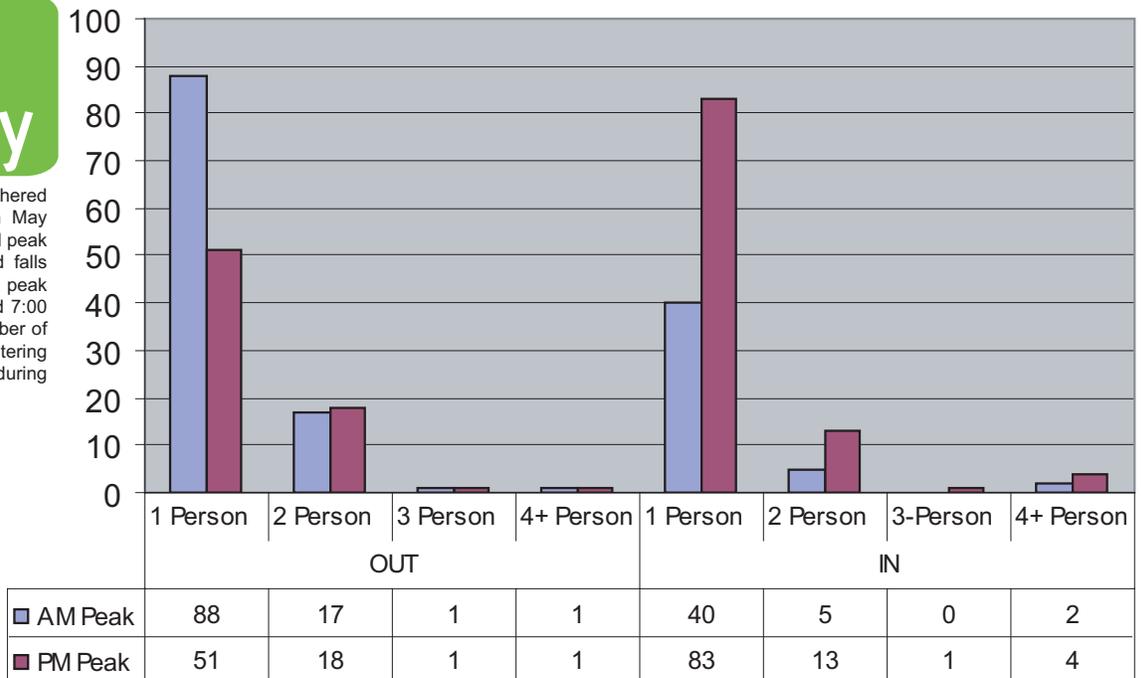
Average Vehicle Occupancy

MORNING PEAK		EVENING PEAK	
IN	1.29	IN	1.29
OUT	1.21	OUT	1.32

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

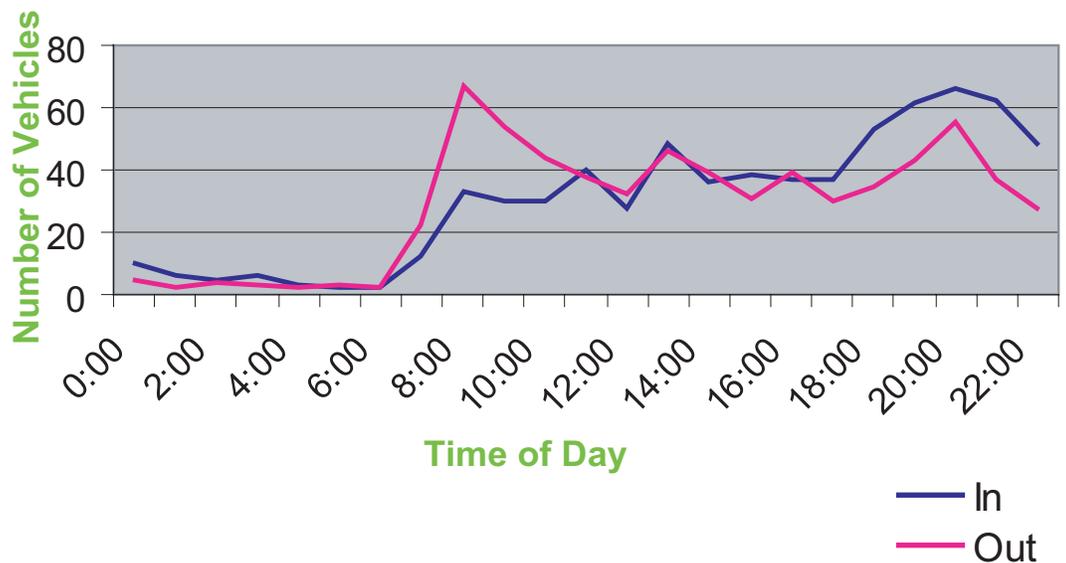
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Regency Crest Drive at Virginia Center



This is the intersection of Regency Crest Drive at Virginia Center Blvd. (West side of Virginia Center Blvd)

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

IN 1.04



IN 1.18



OUT 1.35



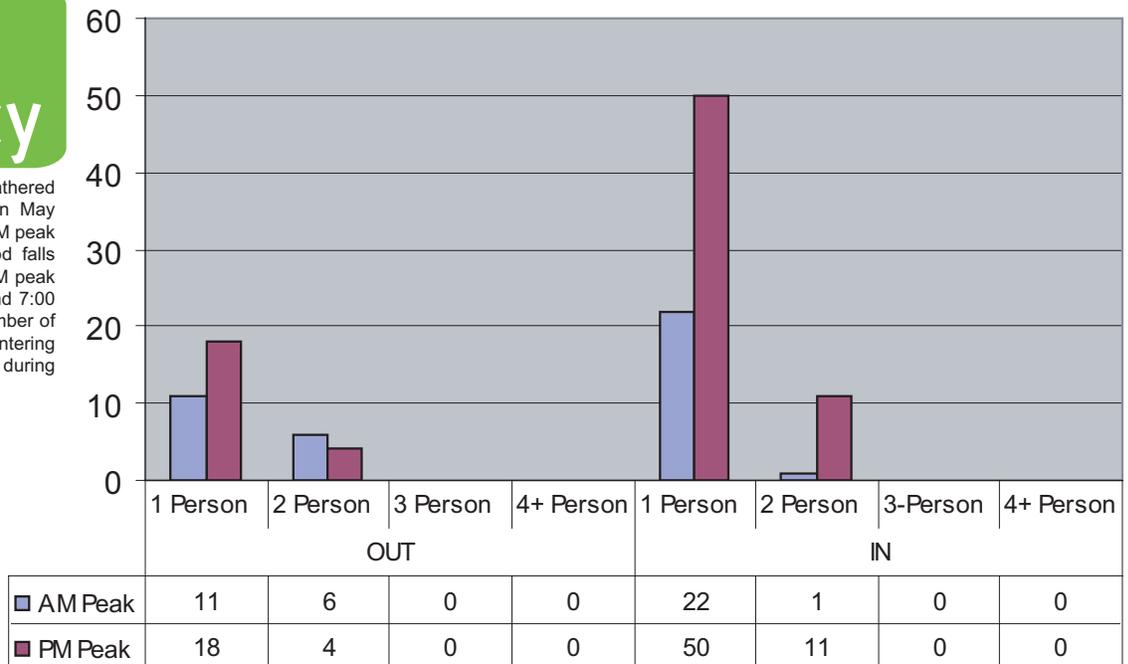
OUT 1.18



The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

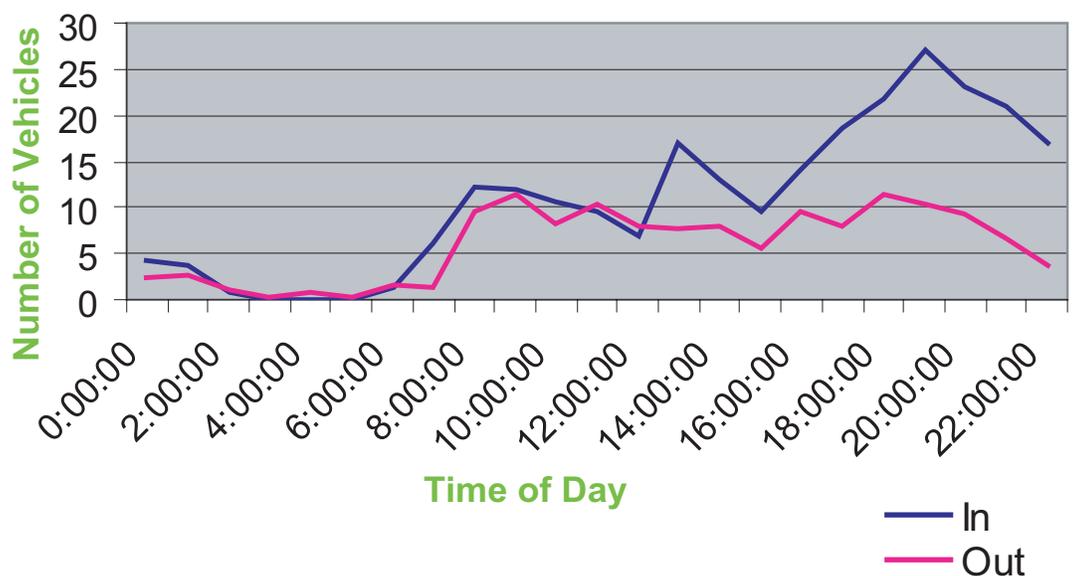
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Curzon Court at Centerboro Court



This is the intersection of Curzon Court and Centerboro Court.

Average Vehicle Occupancy

MORNING PEAK

EVENING PEAK

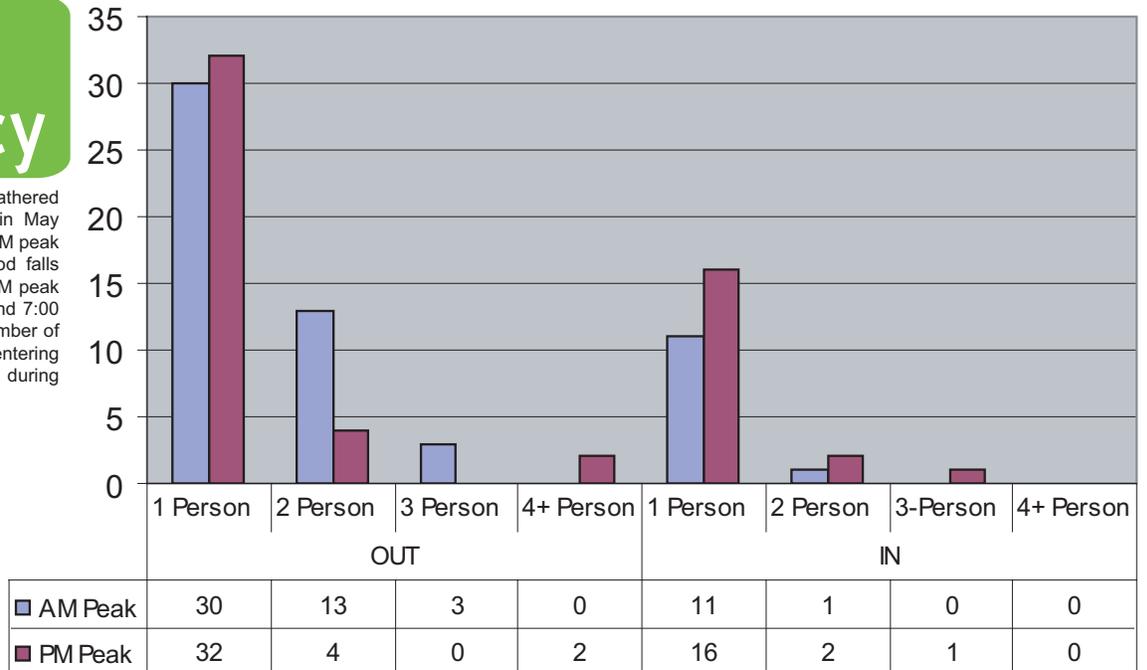
IN 1.08
OUT 1.41

IN 1.21
OUT 1.26

The Average Vehicle Occupancy (AVO) is the average number of passengers in vehicles leaving and entering this access point to this development during the entire AM and PM peak travel periods.

Vehicle Occupancy

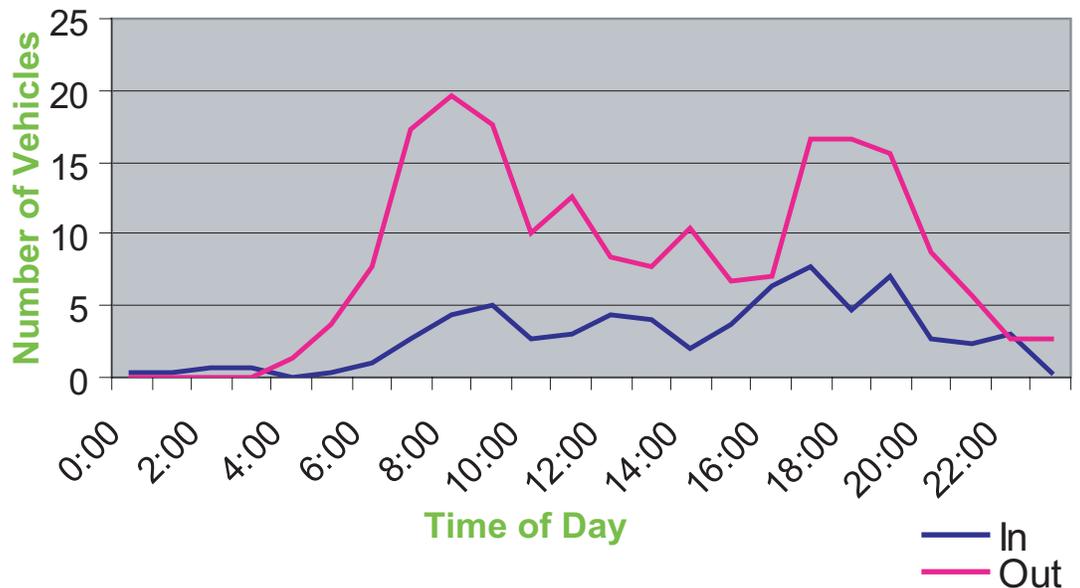
Vehicle Occupancy counts were gathered manually during one mid-week day in May 2005. The counts represent AM and PM peak travel periods. AM peak travel period falls between 6:00 AM and 9:00 AM and PM peak travel period falls between 4:00 PM and 7:00 PM. What is displayed here is the number of passengers in vehicles leaving and entering this access point to this development during AM and PM peak travel periods.



Vehicle Volumes by Period and Direction

Vehicle Volumes

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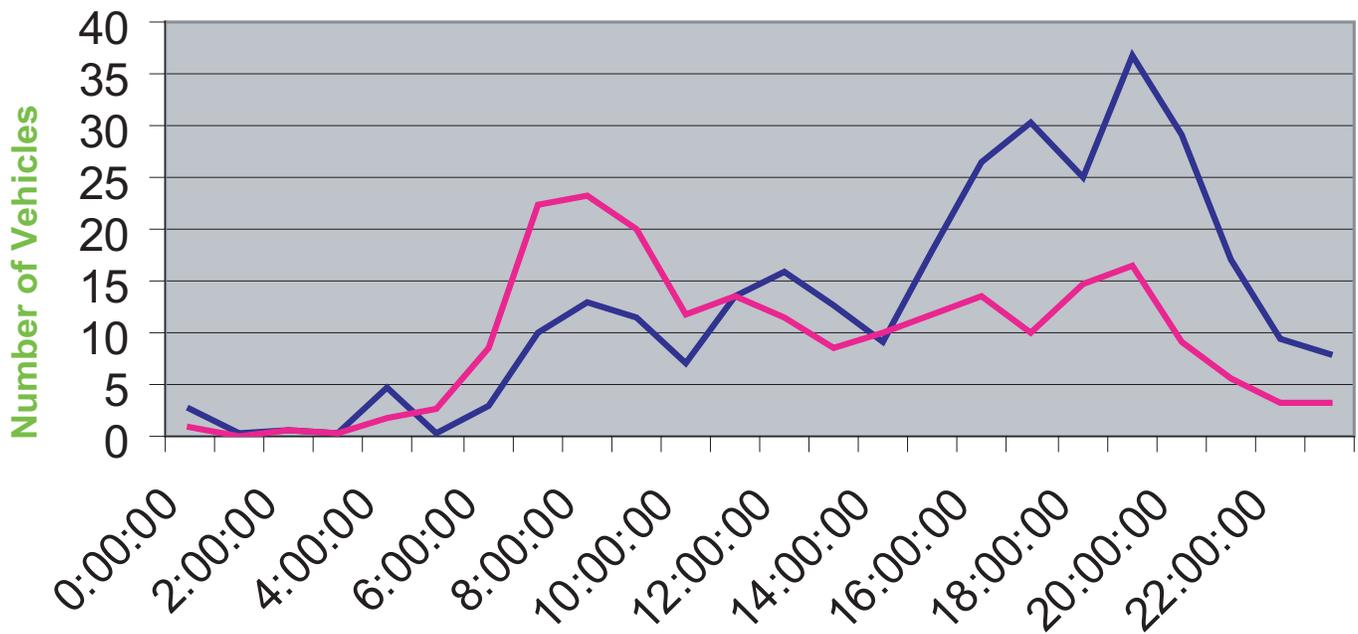
Shawn Leigh Drive at Virginia Center



This is the intersection of Shawn Leigh Drive at Virginia Center Boulevard.

Vehicle Volumes

Vehicle Volumes were gathered from machine counts over a three-day, mid-week period during the month of May 2005. What is displayed here is an average of the vehicle counts captured at this intersection over a three day period.



Vehicle Volumes by Period and Direction

— In
— Out

Appendix 3

2000 Census Analysis

Fairlee / MetroWest TDM Development Program

Mode Split & Demographic Analysis – Vienna Transit Station Area & Fairfax County

UrbanTrans Consultants
May 2005 – DRAFT

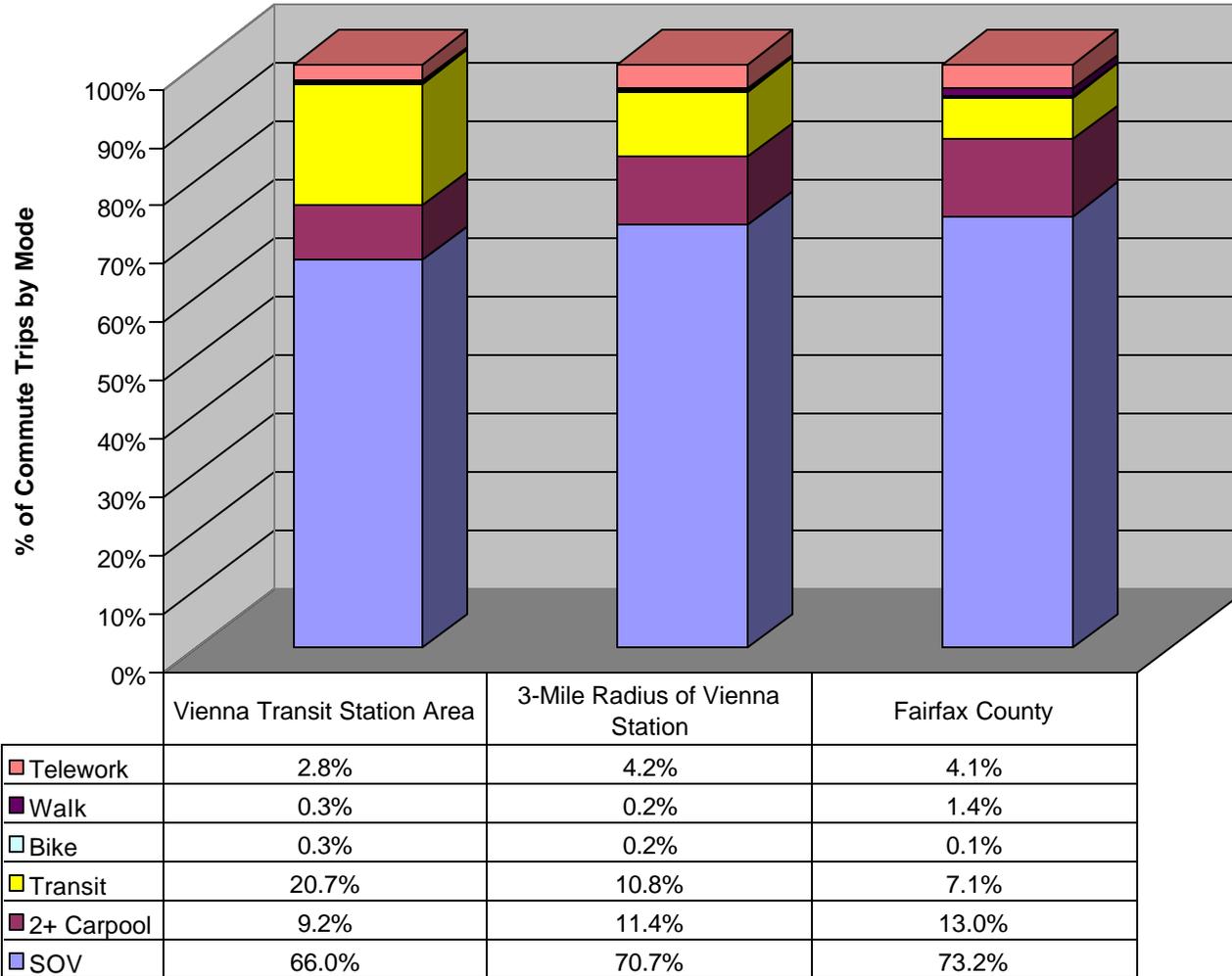
The following charts outline commute mode choice and demographic data for the Vienna Transit Station Area (approximately ½-mile radius from the Vienna Metro Station, as defined by the Fairfax County Comprehensive Plan) alongside data for Fairfax County as a whole. Commute mode split information is also included for the area within a 3-mile radius of the Vienna Metro station. All data is from the 2000 Census, including data from the Census Transportation Planning Package (CTPP), which includes 2000 Census Journey to Work data. All data pertains only to *residents* living within the defined geographies.

All demographic charts provide data summaries regardless of commute mode (depicted as “all trips”), as well as the demographic breakdown specifically for each of three commute to work modes: single-occupant vehicle (SOV), 2 or more person carpools, and transit (which includes all transit modes – rail, bus, shuttle).

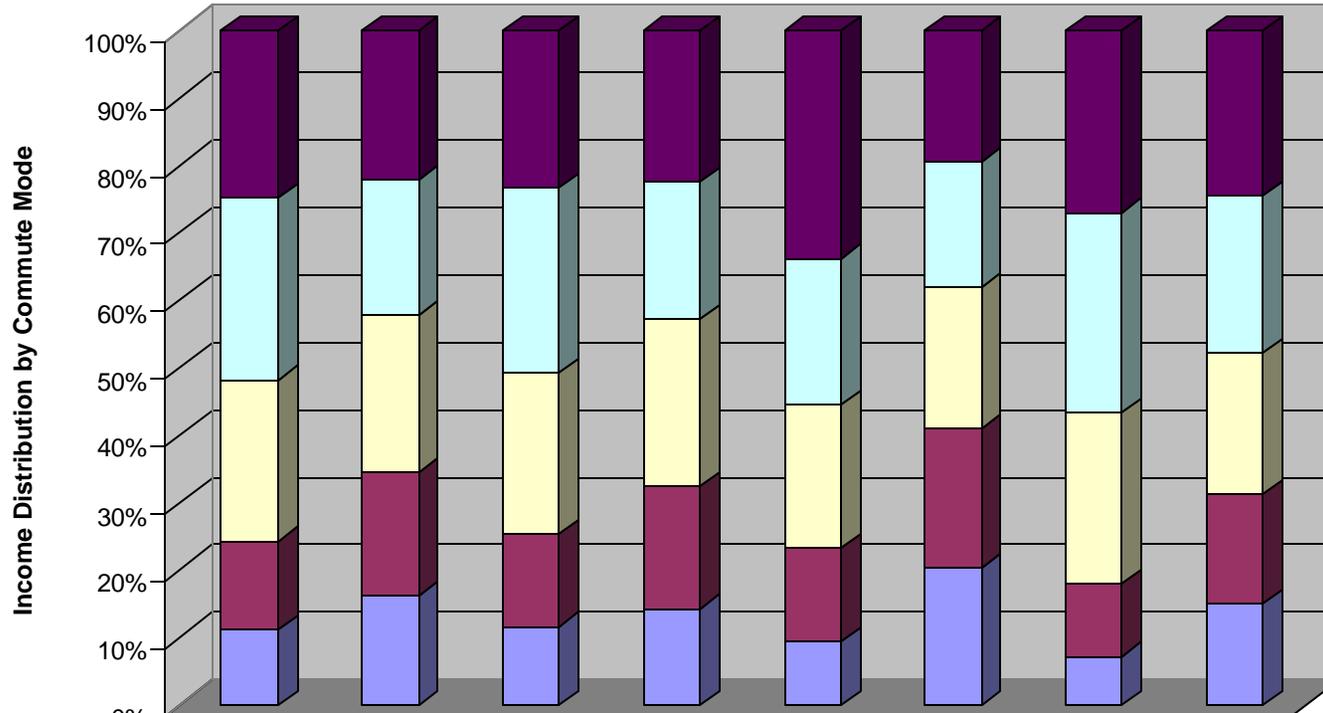
Key findings from the 2000 Census data analysis include:

- Transit mode share approximately three times higher within the Transit Station Area than the County as a whole.
- Higher individual income levels, across all modes, with the Transit Station Area. Particularly high income representation among Transit Station Area carpools. High-income representation for transit users:
 - 56.7% of Transit Station Area transit riders earn >\$50,000 (47.8% County-wide).
- Greater representation of residents aged 25-44 within the Transit Station Area, tracking across modes.
- Race/ethnicity distribution distinct for carpooling only, in the Transit Station Area and County-wide. No significant race/ethnicity distinctions between the Transit Station Area and the County.
- Greater male representation in the Transit Station Area than County-wide across all modes except transit riders.
- Lower levels of vehicle ownership within the Transit Station Area, with the largest number of households owning 1 or fewer vehicles being transit riders (39.5% of transit riders with the Transit Station Area own <1 vehicle in their HH).
- Residents with the Transit Station Area (65.4%) and specifically transit riders within the Transit Station Area (75.3%) live in households with no children under age 18.

Commute Mode Split by Area



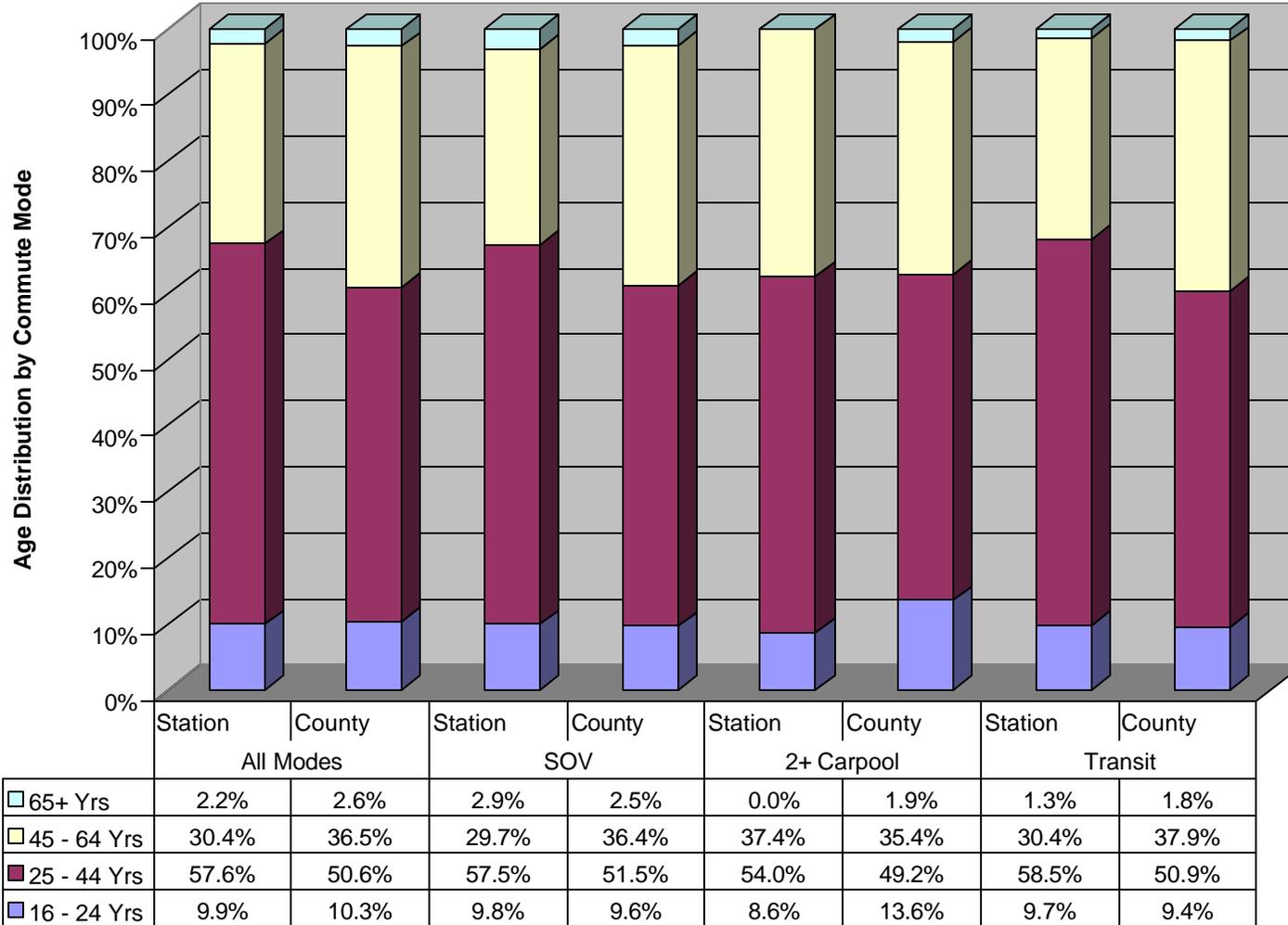
Income Distribution - Vienna Station Area & Fairfax County



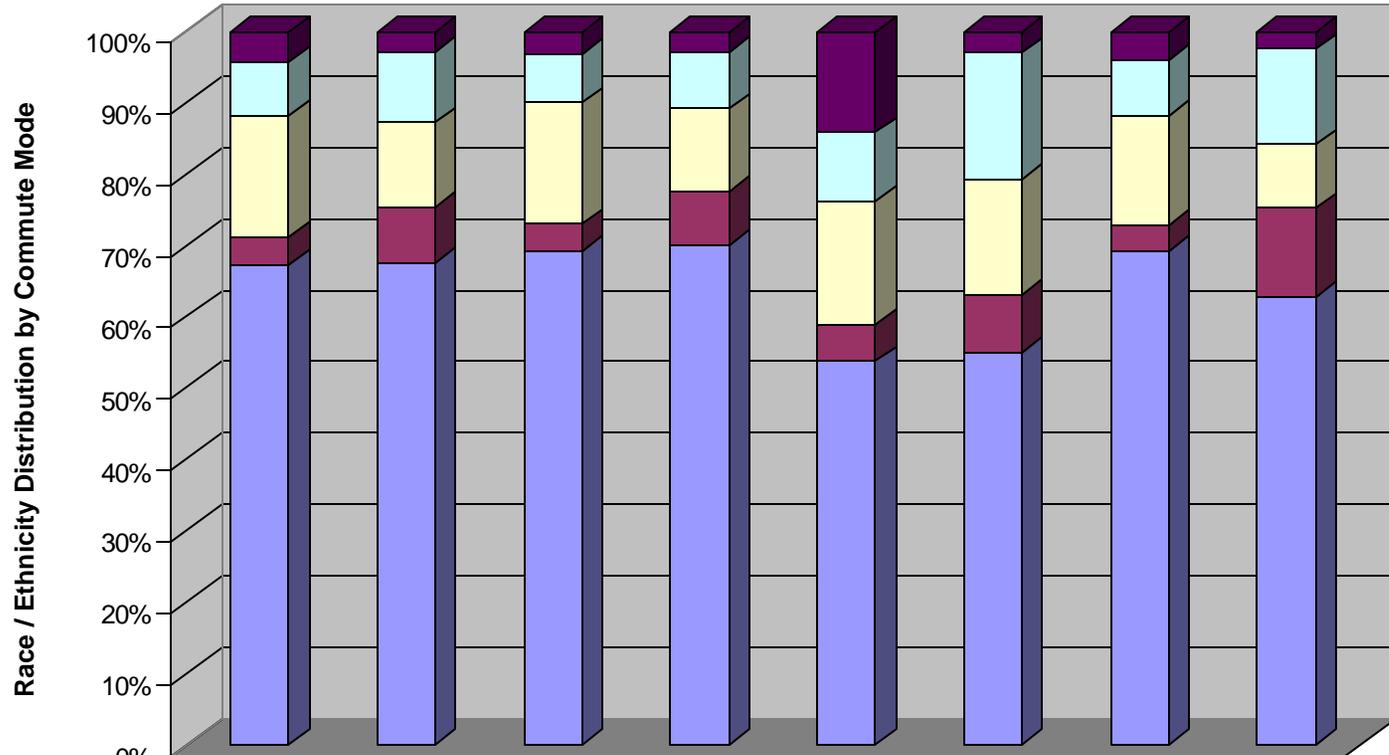
	Station	County	Station	County	Station	County	Station	County
	All Modes		SOV		2+ Carpool		Transit	
■ \$75,000 or more	24.8%	22.1%	23.4%	22.4%	33.8%	19.4%	27.0%	24.5%
■ \$50,000 - \$74,999	27.0%	20.0%	27.3%	20.5%	21.6%	18.5%	29.7%	23.3%
■ \$30,000 - \$49,999	23.9%	23.3%	23.9%	24.8%	21.3%	20.9%	25.3%	20.8%
■ \$15,000 - \$29,999	13.1%	18.3%	13.8%	18.1%	14.0%	20.8%	10.9%	16.4%
■ \$0 - \$14,999	11.3%	16.3%	11.6%	14.3%	9.4%	20.3%	7.2%	15.0%

* Data reflects individual income (not household income).

Age Distribution - Vienna Station Area & Fairfax County

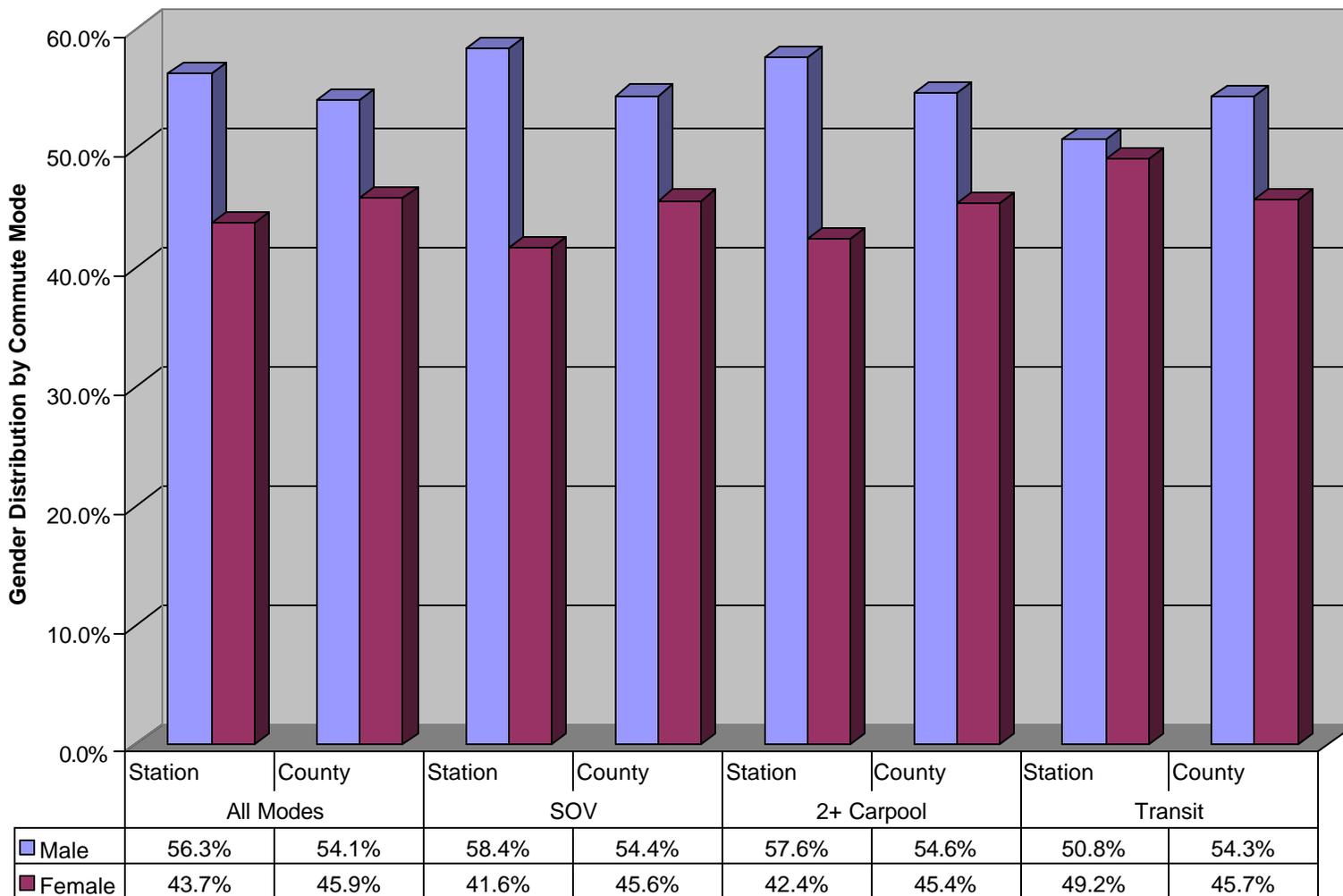


Race / Ethnicity Distribution - Vienna Station Area & Fairfax County

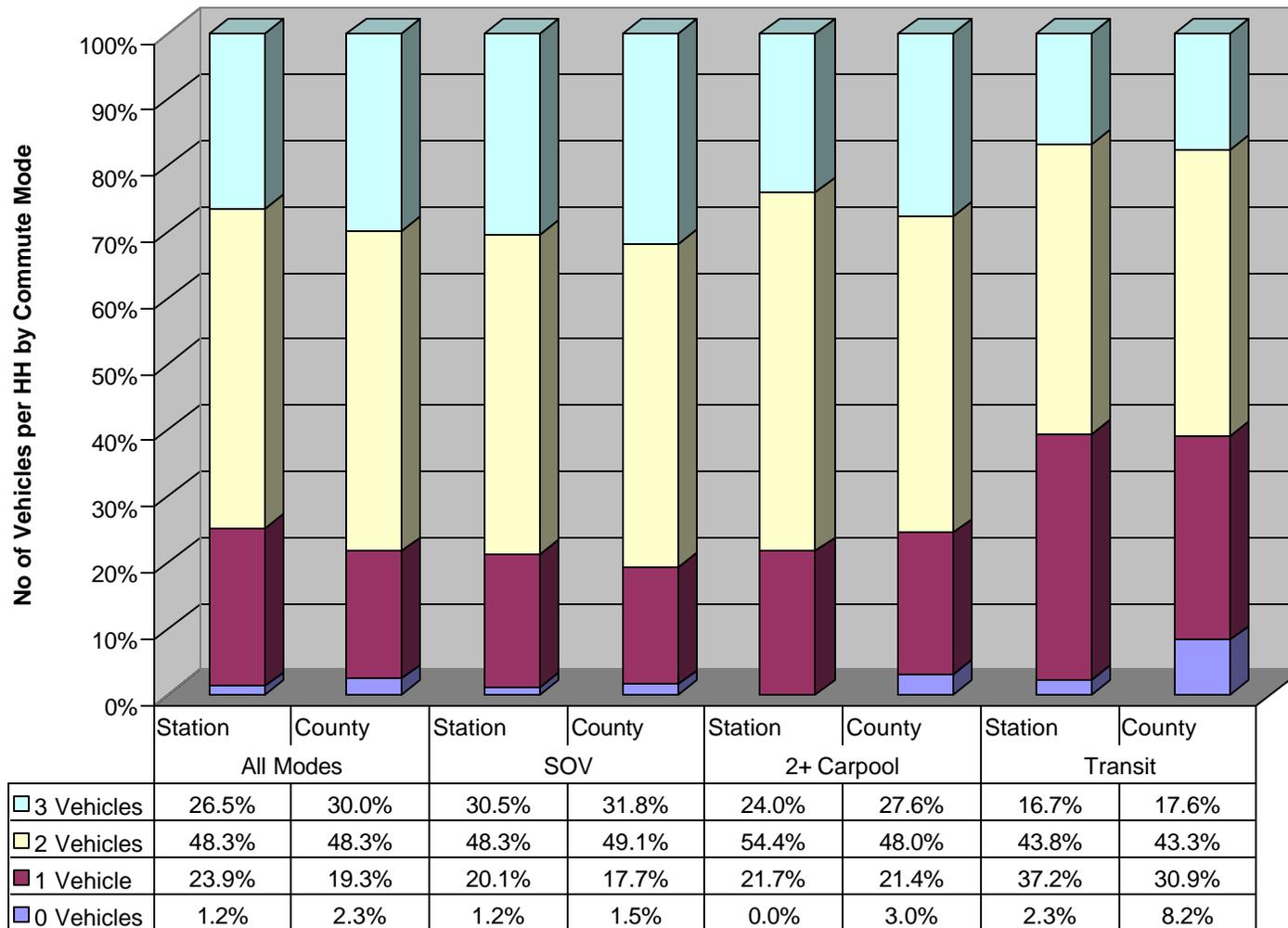


	Station	County	Station	County	Station	County	Station	County
	All Modes		SOV		2+ Carpool		Transit	
■ Other	4.4%	2.9%	3.1%	2.8%	14.2%	3.0%	4.0%	2.5%
■ Hispanic	7.4%	9.9%	6.8%	8.0%	9.7%	17.8%	7.7%	13.3%
■ Asian	17.0%	11.8%	17.0%	11.5%	17.2%	16.2%	15.4%	8.9%
■ African American	3.9%	7.9%	3.8%	7.6%	5.2%	8.0%	3.7%	12.4%
■ White	67.3%	67.5%	69.3%	70.0%	53.7%	55.0%	69.2%	62.9%

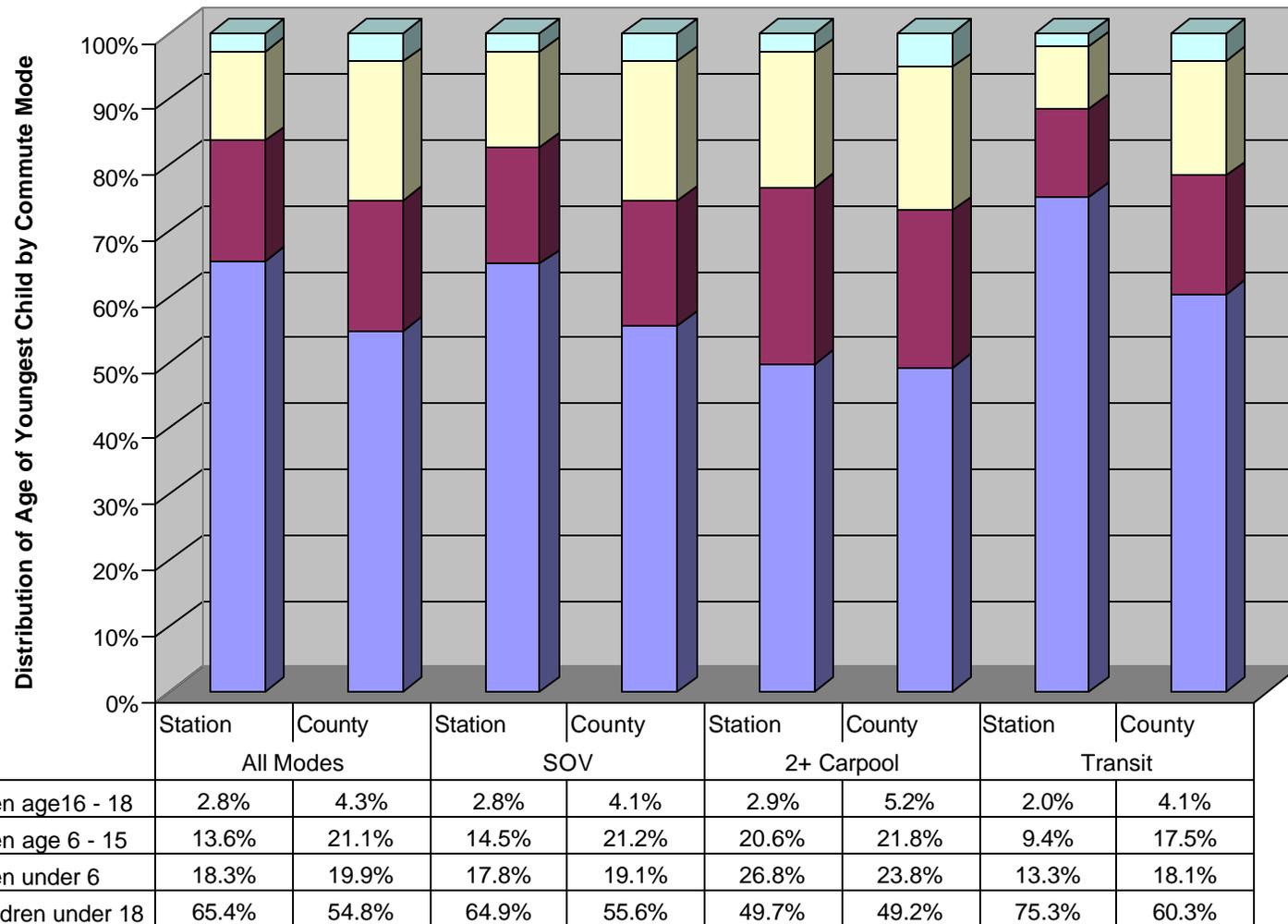
Gender Distribution - Vienna Station Area & Fairfax County



No of Vehicles per HH - Vienna Station Area & Fairfax County



Age of Youngest Child in HH - Vienna Station Area & Fairfax County



Appendix 4

Current TDM Programs, Opportunities, and Barriers

Fairlee / MetroWest TDM Program Development
Current TDM Programs: State / Regional / County
TDM Opportunities & Barriers

May 23, 2005

The following summary is intended to provide an overview of current transportation demand management (TDM) programs currently offered by state, regional, and county TDM providers. The services represent the foundation of TDM programs offered from which the Fairlee / MetroWest TDM program recommendations will build upon.

Metropolitan Washington TDM Services

Commuter Connections was originally created in 1974 as the Commuter Club, providing one of the first computerized carpool matching systems in the nation. The Commuter Club network consisted of the Metropolitan Washington Council of Governments (COG), General Services Administration (GSA), and the Greater Washington Board of Trade. COG provided the direct ridematching services to the public. This service was and still is provided free to anyone who requests ridematching information. In the 1980's, the local government agencies of City of Alexandria, Fairfax County, Montgomery County, Prince William County, and the Northern Virginia Transportation Commission joined the network. The Commuter Club network members used COG's ridematching software and shared one regional database for ridematching. It was in the mid-1980's that the network changed its name to the RideFinders Network.

By 1994 the network had grown in membership to include all Washington D.C. area local governments, a few federal agencies, several Transportation Management Associations, and government agencies from the Baltimore area, southern Maryland, and northern Virginia.

In 1996 and 1997, the services provided by the RideFinders Network had grown beyond just carpool/vanpool matching to include transit route and schedule information, a regional Guaranteed Ride Home program, bicycle to work information, park-and-ride lot and HOV lane information, telecommute/telework program assistance, InfoExpress commuter information kiosks, commuter information services through our Internet site, and employer services. It was in 1996 that the network changed its name to Commuter Connections.

Funding for Commuter Connections is provided to the Metropolitan Washington Council of Governments by the U.S. Department of Transportation, District of Columbia Department of Transportation, Maryland Department of Transportation, and Virginia Department of Transportation. Many of the local Commuter Connections members receive grant funding directly from their respective state government.

Fairfax County TDM Services

Employer Outreach

Fairfax County has an **Employer Services Program** that helps businesses and employees find transportation solutions. The program exists not only to make their company more successful, but to improve the economic vitality and quality of life for the entire region. They have an Employer Services Specialist who works on-site with employers to help them realize bottom-line benefits of commute alternatives.

The **Employer Services Program** provides the following services to employers **free of charge**:

- Development of tax-free commute benefit programs ([Metrochek](#), [Metrochek Match](#))
- On-site transportation assessments
- Confidential employee commute surveys
- Mapping of employee residence patterns
- Computerized [ridematching](#)
- Corporate relocation assistance
- On-site rideshare promotions and displays
- Assistance in implementing alternative commute programs and incentives
- Coordination with nearby companies to establish commuter programs
- Training an on-site Employee Transportation Coordinator (ETC)
- Development of incentive programs
- Program follow-up and evaluation
- Transit schedules, route maps and [park-and-ride](#)
- New employee commute options information
- Assessment of parking options
- Development of a [telework](#) program <http://www.commuterconnections.com/twkva.htm>



Offering these services at the County level, the Fairfax County TDM program mirrors the regional Commuter Connections' TDM programs. However, Commuter Connections does offer some regional services that are not offered at County level (as these are implemented more efficiently at the regional level):

- Guaranteed Ride Home (GRH)
- Ozone Action Days
- Bike to Work Day

Guaranteed Ride Home provides commuters who regularly carpool, vanpool, bike, walk or take transit to work with a reliable ride home when one of life's unexpected emergencies arises. Commuters are able to use GRH to get home for unexpected personal emergencies and unscheduled overtime up to FOUR times per year. The GRH ride home by taxi, rental car, bus or train is free!

Commuter Connections will reimburse costs associated with the use of transit during an authorized GRH trip. They send a GRH Transit Reimbursement Voucher in the mail shortly after a GRH trip. The commuter completes and returns the Voucher to Commuter Connections within thirty days to receive their reimbursement.

The Fairfax County Employer Services Program provides employers with personal assistance with the following:

- Surveying employees to determine transit needs and preferences
- Helping with carpool and vanpool formations
- Providing up-to-date information on local bus schedules
- Helping implement Metrochek program

Fairfax County markets the typical employer benefits of promoting commute alternatives to their employees including:

- Improved employee productivity
- Improved morale
- Easier recruitment and retention
- Reduced parking and office space needs and costs
- Easier access and traffic flow at work site
- Reduced absenteeism and late arrivals
- Public recognition as a good corporate citizen

Commuter Outreach

The RideSources Program is operated by the Fairfax County Department of Transportation. The RideSources program provides commuters with free ridesharing information, including ridematching assistance to form or join carpools or vanpools. Commuters can call or mail in a RideSources application, and will be entered into a regional database which will match them with neighbors who share similar work schedules and travel patterns. This regional database is the Commuter Connections' system.

Fairfax County markets the typical employee benefits of promoting commute alternatives to their employees including:

- Reduced commuting time and expenses/Access to HOV lanes
- Reduced wear-and-tear on personal vehicles
- Less stress
- More productive time while riding to and from work
- Flexible work schedules

They also try to appeal to the people who want to be good citizens and promote the Community Benefits of commute alternatives including:

- Easier travel on streets and highways
- Increased economic vitality
- Economic development benefits
- Cleaner air
- Improved overall quality of life

Fairfax County also offers a reduced personal-property tax rate for 12-15 passenger vans.

Residential Outreach

The Fairfax County Community Residential Program (CRP) partners with residential developments, multi-family complexes and associations to promote use of alternative modes of transportation including public transit. CRP is dedicated to encouraging people who live, work or commute through Fairfax County to use mass transit, carpools, vanpools, walking, biking or teleworking instead of driving alone.

Community Residential Services staff works with developers, property managers, and association leaders to create simple and effective Community Transportation Programs. Currently there are over 600 area residential communities and businesses in the partnership. The following services are provided to CRP members free of charge:

- **Assessment** – During the initial meeting staff completes a needs assessment to determine which transportation programs will be most beneficial to their community and establishes a Community Residential Transportation Coordinator (CRTC).
- **Residential Transportation Survey** – CRP staff survey residents' to assess their transportation patterns and needs.
- **Plan & Implementation** – Staff works with the CRTC to design and facilitate the implementation of a Community Transportation Program.

- **Information Dissemination** – Staff serve as a regional transportation information resource by providing and distributing information to multi-family complexes and associations that request materials.
- **On-Going Support** – Staff offers on-going support by providing follow-up surveys, marketing, and technical support to Commuter Transportation Programs.

CRP compliments Fairfax County’s employer and commuter outreach efforts by reaching commuters where they live and increasing their knowledge of transit and transportation options available in their community.

Community Residential Transportation Coordinators are asked to assist with the residential program by doing the following:

- Serving as a liaison to CRP staff and disseminates transportation information to residents.
- Conducting at least one promotional effort that encourages commuter programs.
- Developing an incentive for residents to use different transportation methods.

Fairfax County and CRP recognize partners that implement a Community Transportation Program with either Bronze, Silver, Gold or Platinum levels depending on the level of assistance they provide their residents. Incentives are available for Platinum Level participants.

Fairfax County HOV Lanes

HOV, or High Occupancy Vehicle lanes are available to ridesharers on Interstate 66 and on Interstates 95 and 395 in Fairfax County. Vehicles must have a minimum number of occupants to travel on these lanes during peak commuting hours.

Fairfax County Current Transit Services

MetroRail (Orange Line and Blue Line) and Metrobus

Fairfax Connector Bus – Intra County Transit Service

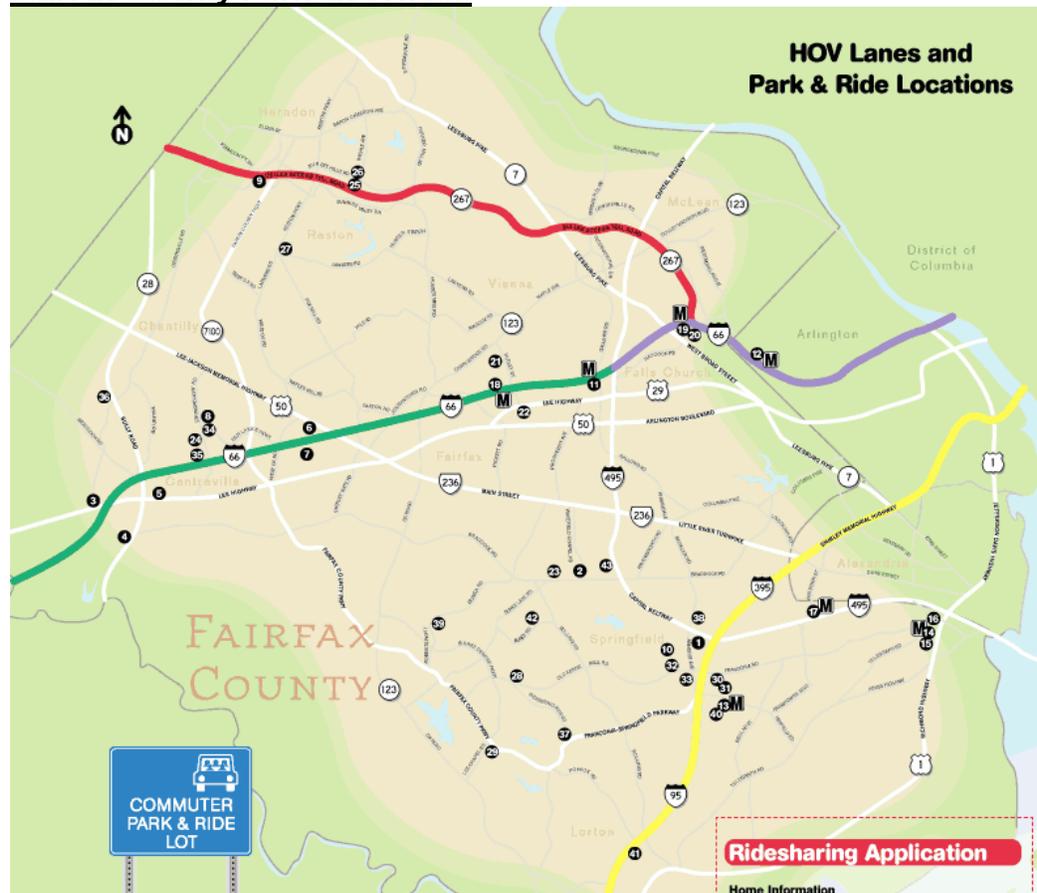
CUE – City of Fairfax Transit

VRE – Regional Rail Service (Alexandria, Burke, Lorton, and Springfield)

FASTRAN – Para-Transit Services

TAGS Bus Service - The TAGS bus is a shuttle service, operated by Metro, that circulates in Springfield's business district.

Fairfax County Park and Rides



HOV Lanes and Park & Ride Locations

Map Legend

	I-95 & I-395 HOV-3 (minimum 3 persons)	Northbound 6:00-9:00 a.m. Southbound 3:30-6:00 p.m.	Reversible, Dedicated Lanes
	I-66 Outside Beltway HOV-2 (minimum 2 persons)	Eastbound 5:30-9:30 a.m. Westbound 3:00-7:00 p.m.	Left Lane Left Lane
	I-66 Inside Beltway HOV-2 (minimum 2 persons)	Eastbound 6:30-9:00 a.m. Westbound 4:00-6:30 p.m.	ALL LANES ALL LANES
	Dulles Toll Road (Rt.267) HOV-2 (minimum 2 persons)	Eastbound 6:30-9:00 a.m. Westbound 4:00-6:30 p.m.	Left Lane Left Lane
	Number corresponds with Park & Ride lot listed on the other side of this brochure		
	Metrorail Station		

Why Rideshare?

RideSources is a free ride-matching service provided by Fairfax County to assist commuters in forming carpools and vanpools. Ridesharing saves you time by enabling you to use the High Occupancy Vehicle (HOV) lanes, which aren't as likely to get congested because they carry twice as many people in only half as many cars. Ridesharing also can save you money because you can share the expense of driving and parking with another person (or persons).

Ridesharers may choose to use one of the Park & Ride lots listed in this brochure to meet carpools and vanpools, or you may choose to meet fellow ridesharers at home or other locations.

Register for the Guaranteed Ride Home (GRH) Program by calling 1-800-745-RIDE, and we'll pay for your taxi ride home if an emergency arises on a day that you rideshare.



Ridesharing Application

Home Information

Name: _____
 Street Address: _____
 City: _____
 County: _____
 State/Zip Code: _____
 Daytime Phone: _____
 Alternate Pick-up Locations/Nearest Intersection: _____

Work Information

Employer: _____
 Street Address: _____
 City: _____
 County: _____
 State/Zip: _____
 Alternate Drop-off Locations: _____

Work Hours

Start: _____ AM _____ PM _____
 End: _____ AM _____ PM _____

Flexibility

Can arrive _____ minutes early Can leave _____ minutes early
 Can arrive _____ minutes late Can leave _____ minutes late

Preference

Rider _____ Driver _____ Either _____
 Carpool _____ Vanpool _____ Either _____

How do you currently get to work?

_____ Drive alone _____ Vanpool
 _____ Bus or Rail _____ Combination
 _____ Carpool _____ Other _____

Clip and mail this application or simply call the RideSources office at (703) 324-1111, TTY (703) 324-1102 and we will send you a list of commuters in your neighborhood who match your schedule.

Fairfax County Vanpool Providers

Fairfax County Department of Transportation RideSources works in tandem with Commuter Connections to help commuters find riders with whom they can vanpool. In addition to many private individuals operating vanpools in Fairfax County and the Metropolitan Washington Region there are several third-party vanpool providers which include:

- VPSI Commuter Vanpools
- ABS Vans-Metro
- Access Transportation Services

Fairfax County TDM Organizations

DATA

The Dulles Area Transportation Association (DATA) is a Transportation Management Association (TMA) that identifies transportation needs; advocates steps to meet those needs; and provides a forum for members and other concerned parties to be informed of opportunities and participate in timely actions that will bring about a more effective transportation system.

DATA's Area of Operations encompasses an approximately 150-square mile area bounded by the Potomac River on the north, Hunter Mill Rd. on the east, by the Route 15 corridor on the west, and the Rt. 66 corridor on the south.

LINK

LINK provides information on alternative transportation methods you may use to get to and from Reston and Herndon.

TAGS

The Transportation Association of Greater Springfield (TAGS) is a non-profit, public-private transportation management association that plays a key role in the transportation improvement plan for the rapidly growing Greater Springfield area.

TYTRAN

The TYTRAN Commuter Program is a voluntary program that provides opportunities for member employees to participate in a variety of ridesharing activities designed to increase employee awareness of transit and transportation options into and around the Tysons Corner area.

Current Commuter program elements include carpool and vanpool matchlist generation; provision of transit schedules and itineraries; general alternative transportation

information; air quality and trip reduction educational program information; a guaranteed ride home program; and a quarterly Commuter News publication for employees.

Virginia Commonwealth Wide TDM Services

There are a number of Virginia funded TDM programs operated through Commuter Connections including:

- TeleworkVA
- The Virginia Vanpool Assistance Program

Telework!VA

Telework!Va offers employers up to \$35,000.00 to start or expand a formal telework program.

Telework!Va is a public / private partnership serving Northern Virginia businesses. Companies can receive as much as \$3,500 per employee (for up to ten employees) to establish a telecommuting link, lease home office equipment or pay for office space at a convenient telework center.

It is a pilot program administered by the Commonwealth of Virginia Department of Rail and Public Transportation (DRPT) through the Metropolitan Washington Council of Governments (MWCOG).

The Telework!Va Program is limited to reimbursement of lease costs and consultant/technical assistance expenses. It reimburses a variable percentage of the lease expense for equipment; telework center space; technical assistance for setting up programs and installing equipment; and provides training for teleworkers and supervisors. No purchases are eligible for reimbursement.

Business applications to participate in the Telework!Va pilot program are now being accepted for review by DRPT and MWCOG. Applicants must demonstrate their willingness to start a long-term program, invest in the planning and staff resources required to sustain a program and commit to an implementation schedule with appropriate milestones of two (2) years or less. Priority is given to new program starts although existing program expansion requests may be considered on a case-by-case basis. Employers are required to sign a contract with the Metropolitan Washington Council of Governments (MWCOG) on behalf of the Virginia Department of Rail and Public Transportation.

The Virginia Vanpool Assistance Program

The Virginia Vanpool Assistance Program, sponsored by the Virginia Department of Rail and Public Transportation, provides temporary funding for vanpools having trouble filling all of their seats. There are two different programs: the VanStart Program, which funds empty seats during the critical start up phase of new vanpools; and the VanSave

Program, which is for existing vanpools that are experiencing problems in their passenger levels due to the loss of riders.

Anyone operating a vanpool that serves residents of the Commonwealth of Virginia can apply for assistance. The vanpool must be a non-profit organization and have a seating capacity of no less than six and no more than fourteen (excluding the driver.) The vanpool operator must certify that the van has PV plates and is appropriately insured under a Commercial Auto Policy or Vanpool Policy and registered with the local jurisdiction's rideshare agency.

The VanStart Program and the VanSave Program have some differences in their eligibility requirements.

Under the VanStart Program, the owner/operator must register the vanpool and apply for assistance within the first three months of operation with the local jurisdiction's rideshare agency. At least 50% of the passenger capacity must be full.

Under the VanSave Program, the vanpool must have been in operation for a minimum of six months and may not have received any state assistance funds in the past 12 months. At least 25% of the paying passenger capacity must have been empty for more than 30 days at time of application.

The amount of funding is based on the average cost per seat of the vanpool and the average cost per seat of similar vanpools traveling the same distance.

Fairlee / MetroWest – TDM Opportunities & Barriers Assessment

The following section highlights opportunities and barriers to successful TDM program implementation at Fairlee / MetroWest. The analysis considers opportunities and barriers that are part of existing conditions within the Vienna Transit Station Area. Opportunities are best understood as elements which aid and facilitate successful TDM applications (things to build upon for success), and barriers can be considered as hurdles to the potential success of TDM measures, if not sufficiently addressed or mitigated with other strategies or recommendations.

Opportunities

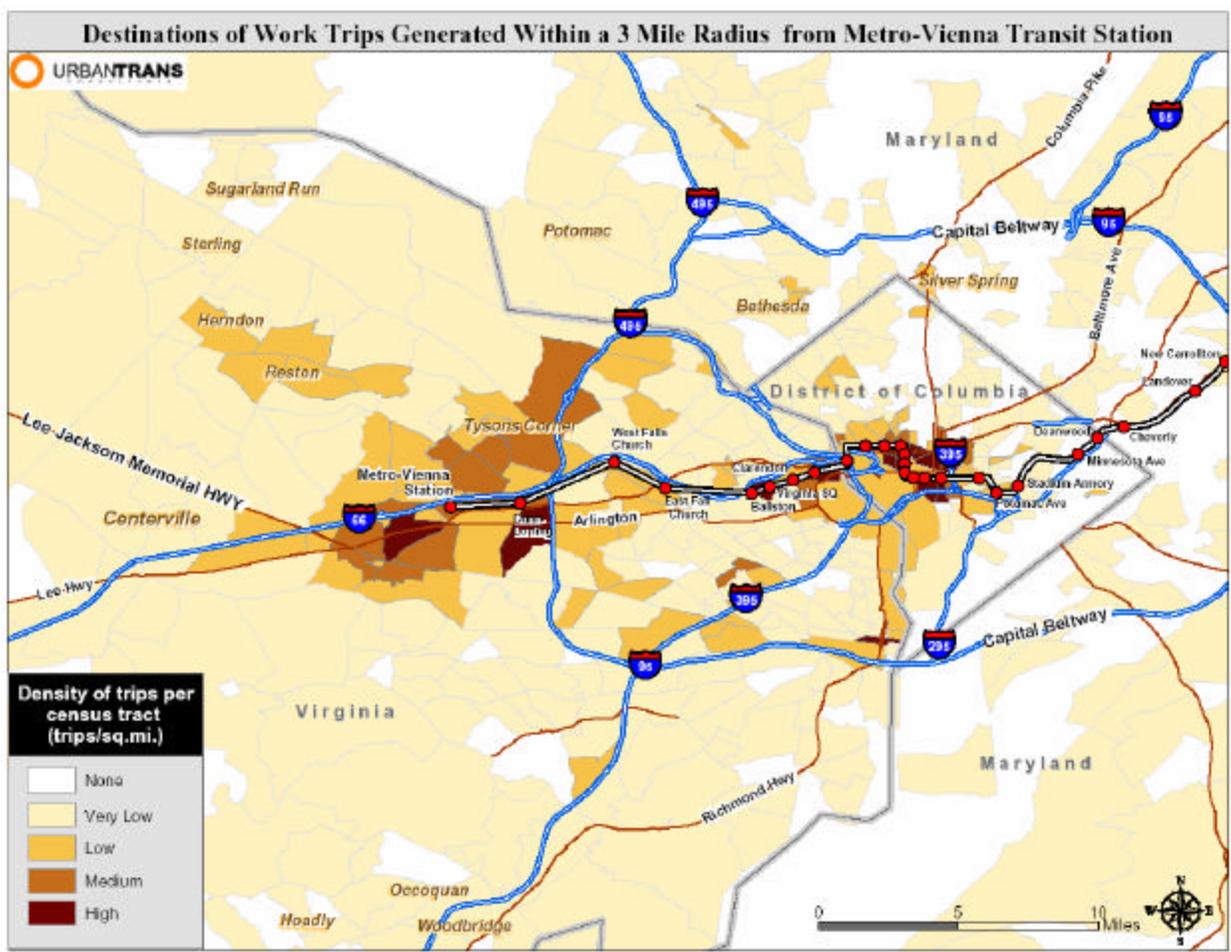
Opportunity #1: Existing Mass Transit Network

The Vienna-Fairfax-GMU Metro station offers rail and/or bus transit services to just many of the major activity centers within the Washington region. In addition to Metro's Orange line to Downtown DC, the CUE Gold and Green lines provide bus service to major destination in the City of Fairfax, the Fairfax Connector provides bus service to the rest of Fairfax County, including the targeted location of Tysons Corner, and OmniRide provides express bus service on the HOV lanes of I-66.

Due to the extremely high frequency of service, Metro Rail timetables for peak hours (weekdays 5-9:30 a.m. and 3-7 p.m.) are not available or needed. Headways on the MetroRail Orange line are 12 minutes for midday service (9:30 am – 2:30 pm). These headways provide convenient service without the need for a schedule.

The Vienna Metro Station is at the western end of the Orange Line. This location provides residents of this area with access to the all other station locations within region. The Orange Line connects with the Blue Line in Rosslyn to go to the Pentagon, Airport and Alexandria. It connects with the Red Line at Metro Center to go to points as far northwest as Rockville and Shady Grove and points as far Northeast as Wheaton and Glenmont as well as to critical connections to Amtrak at Union Station. The Orange Line also has a connection with Yellow and Green Lines at Gallery Place–Chinatown to go to points as far northeast as Greenbelt and as far southeast as Branch Ave in Prince Georges County as well as south as far as Huntington in Fairfax County.

According to analysis of 2000 US Census Journey to Work data, the highest density of trip destinations (work locations) for people living within a 3-mile radius of the Vienna Fairfax Metro Station are all in close proximity to the Orange Line Stations, with notable concentrations of employment locations along Metro Rail station locations in Arlington County and in Downtown DC. These work destinations can all be access with a no-transfer trip from the Vienna Fairfax Metro Station. A map of employment locations for residents living within a 3-mile radius of the Vienna station is shown below. The darker the area, the higher the concentration of employment locations.



Opportunity #2: HOV Lanes on I-66

There are High Occupancy Vehicle (HOV) Lanes on I-66 for two or more people from Route 234 in Manassas past the Capital Beltway (I-495) to the Theodore Roosevelt Bridge. Outside of the Beltway one lane (the far-left lane) is reserved Monday through Friday for HOV eastbound in the morning (5:30 am to 9:30 am) and westbound in the afternoon (3:00 pm to 7:00 pm). Inside the Beltway, both lanes are reserved Monday through Friday for HOV eastbound in the morning (6:30 a.m. to 9:00 a.m.) and westbound in the afternoon (4:00 p.m. to 6:30 p.m.).

“The I-66 HOV lanes carried a total of 20,940 people in 9,825 vehicles in 2002 between 6:30 and 9:30 a.m. from Virginia to the core areas. Comparably, the Orange line of the MetroRail carried 24,600 people from Virginia to the core areas of Arlington and DC and beyond.” Avoiding congestion and saving time are two top incentives for using the HOV lanes. Users of the Northern Virginia HOV lanes save a substantial amount of time over the same trip in the conventional lanes. Travel times from the fall of 2003 along I-66 from Route 234 to 23rd & Constitution were 63 minutes in HOV lanes versus 94 minutes

in non-HOV lanes. (“Second Report of the High-Occupancy Vehicle Enforcement Task Force” by Dennis Morrison VDOT and Captain Mike Counts Virginia Department of State Police, January 4, 2005.)

Opportunity #3: Neighborhood Retail

The Pan Am Shopping Center is just over ½ mile from the Vienna Metro Station, however, much of the proposed development site that is closer to Lee Highway is less than ½ mile from this shopping center, where there is currently a grocery store, café, fast food, and other neighborhood retail. This is a reasonable and realistic walking distance for people to run many of their quick and short daily errands that are normally completed by car in areas where land uses are more segregated and further apart.

Opportunity #4: Existing Bicycle and Pedestrian Trail Networks & Infrastructure

The bike and pedestrian trails surrounding the Vienna Transit Station Area already provide the potential for residents to connect with other destinations in the area by bicycle or walking. Connecting the Vienna Transit Station Area with trails in neighboring East Blake Lane Park opens up bike and pedestrian connections to area destinations that include: Downtown and Historic Old Town Fairfax and George Mason University, as well as a number of area parks including Lake Accotink, Thaiss Memorial, Draper, Kutner, Daniels Run, Van Dyck, and Providence Parks.

Additionally, there are currently bike racks and bike lockers at the Vienna Fairfax Station that enable biking to transit.

Opportunity #6: FlexCar Fleet at Vienna-Fairfax Metro Station

Currently there are a number of FlexCar shared cars available for use at the Vienna Metro Station. A personal Flexcar membership costs only \$40 a year. Rates are \$7-\$10 per hour and \$35 - \$90 per day. These rates include full insurance, gas, maintenance, cleaning, parking and 24-hour emergency service. FlexCar and ZipCar are the two major shared cars companies operating in the U.S., and Washington, DC, is currently the only market served by both companies. The fact that these companies already operate in the area offered an opportunity for building on current shared car experience and market awareness.

Barriers

Barrier #1: Infrequent Headways on Local Bus Services

Although there is bus service from Vienna Metro Station connecting to most major destinations in Fairfax County, service frequencies are relatively low, reducing user convenience and increasing total travel times. Examples include:

- Local Metro bus service on routes 2B & 2G have hourly headways during off-peak and only 30 minute headways during peak.

- Local Fairfax County Connector bus service on routes 402 & 403 is not available during off-peak hours and only available at 35 minute headways during peak hours.
- Local CUE bus service on Green & Gold routes have only 30-35 minute headways all day long on weekdays.

The nature of the local bus service reduces the viability of transit use for larger market segments traveling between the Vienna Transit Station Area and points not along the Metro Rail system. As the 2000 Census map on page 11 illustrates, a moderate number of residents within the 3-mile radius of the transit station area travel to work at points north within Fairfax County, such as Tysons Corner, Reston, and Herndon.

Barrier #2: HOV Lanes on I-66 nearing capacity

Several factors contribute to I-66 HOV lanes nearing capacity levels during peak periods, including an increase in ridesharing, an increase in usage by low-emission vehicles, and lane violations by ineligible users. This combination of non-HOV use of the HOV lanes during peak hours has increased demand on those lanes and impacted the time savings realized by use of these Lanes on I-66.

Barrier #3: MetroRail Orange Line faces capacity limitations during peak periods

MetroRail transit users currently experience challenges with railcar crowding during peak periods, in particular related to boarding Orange Line trains from Downtown DC in the peak of the afternoon peak hour to return to the Vienna station. Peak hour train crowding challenges can degrade the transit user experience, and increase overall travel times. The Metro Capacity Improvement Plan (CIP) is designed to address capacity issues and meet customer demand throughout the system. Enhancements primarily include an increase in the number of 8-car trains by FY 2006, as well as additional enhancements in future years.

Barrier #4: Poor pedestrian / bicycle connectivity between Vienna Transit Station Area and surrounding neighborhoods and neighborhood retail

Many of the neighborhoods that surround the Vienna Transit Station Area are within walking distance of the Metro Station but do not have safe pedestrian access to it. Some examples are those neighborhoods east of Nutley Road that need to cross several lanes of traffic to get to the station. Other examples are those neighborhoods east of Blake Road who do not have pedestrian access from the side of their development closest to the Metro Station. If they were to enjoy a safe walk on a sidewalk or path to the Metro Station they would have a circuitous walk that was much further than ½ mile.

The Pan Am Shopping Center (At the southeast corner of Nutley Road and Lee Highway) has a grocery store, café, fast food, and other neighborhood retail and is within walking distance of most of the proposed development site, but is not friendly to pedestrians. Employees at ICF Consulting that are less than ¼ mile from the

restaurants in Pan Am Shopping Center often drive because they don't feel safe crossing Lee Highway.

The extensive network of regional bike trails is not currently well connected to the Vienna Metro Station. The current network of bicycle routes will go underutilized if they cannot be accessed by travelers looking to connect to the Transit Station Area.

Appendix 5

TOD Peer Research

This appendix includes TOD / Development Case Studies, including:

- Pleasant Hill, Contra Costa County, CA (San Francisco)
- Redmond Ridge PUD, King County, WA
- Lloyd District, Portland, OR
- Metropolitan Place, Renton WA

Also included is a summary table highlighting demographic and commute to work mode share percentages for four areas:

- Vienna Transit Station Area (MetroRail) vs. Fairfax County
- Roslyn-Ballston Corridor (MetroRail) vs. Arlington County
- San Francisco: Pleasant Hill (BART) vs. City of Walnut Creek
- San Francisco: South Alameda County (4 BART Stations) vs. the South Alameda Counties of Hayward, Union City, and Fremont

Pleasant Hill

Contra Costa County, CA (S.Fran.)

Transit: Heavy Rail & Bus

7 regular-service & 3 express bus routes

TOD Characteristics

The Pleasant Hill station area currently consists of four residential buildings and one retail site. The residential site ranges from high-intensity market rate condos to affordable apartment housing. Each site is located within ¼ mile of the transit station, with pedestrian connectivity considered fair to good. Parking ratios range from 1 space per unit to 1.9 spaces per unit among the four sites. Densities in the surrounding areas are relatively low (about 9 residents and about 5 employees per acre). The area today has significant surface park-n-ride parking capacity. The area is currently undergoing a second phase of planning and development, which promises to improve the station's connections to the surrounding community by structuring park-and-ride facilities to make room for a walkable mixed-use development. Depending on market conditions and public approvals, the pending development will add between 290,000-456,000 square feet of office space and either 274 or 446 apartments and for-sale townhouses to the station area. It will also add a child care facility and about 42,000 square feet of ground floor retail and restaurants. At completion, the additional redevelopment is expected to cost approximately \$235 million, including \$40 million of public money. (CA Department of Transportation, 2005)



CA Department of Transportation

Mobility Programs

Pleasant Hill is not served by a site-specific TDM program. TDM services for the area are provided by Contra Costa County and by the regional metropolitan planning organization (MTC). A recent survey of residents found that about 60% of residents worked for employers that allowed them flexible arrival / departure times, and 20% provided some form of transit subsidy assistance.

Results

Data from recent surveys of residents at all four residential locations found that nearly 45% of residents utilize transit for the commute to work, and about 49% drive alone to work. For non-work trips, surveys show about 71% of trips completed by single-occupant vehicle, yet higher levels of "trip chaining" for these trips (25% of non-work trips were linked to other trip purposes, versus only 15% of work trips linked to other trip purposes). Higher levels of SOV use for non-work trips are likely associated with poor availability of nearby retail services.

Redmond Ridge PUD King County, WA

Transit: Bus (minimal service, 1 route / 4 trips)

Redmond Ridge is a Planned Urban Development in the unincorporated area of King County, WA, outside of the region's Urban Growth Boundary (UGB). At full build out, it will include approximately 8,200 residents, 450 retail jobs and 3,700 office employees, in a predominantly rural environment.

Transit Oriented Development Characteristics

The site is designed with walking trails, community centers, retail, schools, recreation, et al. The concept is a self-contained island of suburban life within a rural setting. With the challenges of a tight UGB and only limited housing coming on line in the region, this community is functioning as a bedroom community to Cities west including Redmond, Bellevue and Seattle.



Photos compliments of
<http://www.redmondridge.com/home>.

Access to the site is via local roads with very limited capacity. The majority of the trip connecting the site with the surrounding jurisdictions is via 2 lane roadways. The overall site contains multiple Park and Pool facilities to encourage carpooling. During design, communications infrastructure (telephone and cable television) were sized to include broadband internet access and allow for wireless connectivity. Homes within the site are wired with internal network connections in most rooms to provide for ease of internet accessibility.

Mobility Programs

The site is subject to a County-administered Transportation Management Plan (TMP), which requires the implementation of various travel choice programs and services. The community has elected to join a local Transportation Management Association (TMA) to assist with implementation and monitoring of their TMP. Some of their programs and services include, incorporating transportation into new resident orientations and owner's association meetings, providing trained transportation coordinators via telephone or email, conducting promotional events and campaigns to increase awareness of travel choices, subsidizing first month transit, coordinating and promoting new program demonstrations and a transit feeder shuttle service.

Results

The Redmond Ridge project, even with virtually no transit service available, has achieved a drive alone rate of 70% for peak hour travel (Greater Redmond TMA, 2004). This has been made possible by a spreading of travel times, increases in both carpool and vanpool travel, as well as a growing number of home-based workers. Furthermore, transportation has been inserted as an element of the community's evolving culture.

Lloyd District Portland, Oregon

Transit: LRT and Bus

Portland's Lloyd District is bounded by NE Broadway Boulevard on the north, NE 15th Avenue on the east, I-84 on the south and I-5 on the west. Lloyd District is across the Willamette River from the Portland Central Business District, and is home to the Oregon Convention Center and adjacent to the Portland Trailblazers Rose Garden arena.



Photo compliments of Adam Benjamin

TOD Characteristics

The Lloyd District is comprised of approximately 650 businesses and 17,000 employees with 2020 employment growth forecasts of 34,000 employees. Residential is evolving with condominium towers throughout the district, though is at a lesser rate than employment. The district has evolved from a retail mall and commercial district with average transit service to a TOD through the inclusion of fixed guideway transit, pedestrian supportive infrastructure, and parking policies, coupled with aggressive planning and partnership programs.

Mobility Programs

The District has a Partnership Plan, which specifically highlights the need for travel choice programs in concert with parking management. Due in large part to the economic drivers of the district and the pre-TOD existence of the Lloyd District Transportation Management Association (LDTMA), this TOD and district has more focused TDM programs and policies than other Portland-area TODs.

Parking availability is limited at growth and actively managed by LDTMA in exchange for managing other travel choice outreach programs. All commercial and commuter parking is fee-based, with residents participating in a residential parking program. Many employers in the district participate in regional transit subsidy program.

Results

According to LDTMA's Annual Report 2005, driving alone represents only 41.1% of all commute trips, bus/light rail representing an equally strong 40.8% of commute trips, and Carpool, Bike, Walk, Telecommute and Compressed Work Week making up the remaining 18.1%.

Metropolitan Place Renton, WA

Transit: Bus (10 bus bays / local and regional service)

The Renton TOD, Metropolitan Place, is located across the street from the Renton Transit Center in the downtown of Renton, WA within a suburban community south of Seattle, WA.

TOD Characteristics

Metropolitan Place, includes 4,000 square feet of ground-level retail space and 90 apartments above a two-story garage with 240 parking stalls. 150 of the stalls are dedicated to Park & Ride uses during the day, with the remaining available for shared parking amongst the commercial and residential uses. Residential parking was built at 1 stall per unit. Parking around the site is fee based with nominal charges (maximum of \$6.00 per day).



King County Metro, the local transit agency, collaterally invested in pedestrian amenities and gathering places at the newly expanded transit center across the street. These investments included a plaza, fountain and other street furniture. Coffee/espresso service and bike lockers are supplemental features adding to the pedestrian and bicycle environment.

Mobility Programs

No site-specific TDM programs were initiated beyond the TDM programs provided regional by King County Metro. When the project opened, FlexCar provided shared-car vehicles on site.

Results

Residential occupancy is high, and one third of residents use transit, which local staff notes is approximately three times the transit mode share of similar, suburban multi-family residential projects in the area (FHWA, 2004). Site managers have measured residential parking stall usage at .6 stalls per apartment unit, suggesting a degree of self-selection to reside at a TOD location and reduce auto ownership requirements. The FlexCar program no longer operates at the site, due to low usage levels. Areas experts note that shared-car programs regionally have been less successful when connected to bus transit station areas (as opposed to rail transit station areas).

Transit Oriented Development (October, 19, 004), Metropolitan Place, Renton TOD, Metro Transportation Transit Oriented Development Department, Retrieved from <http://www.metrokc.gov/kcdot/transit/tod/renton.stm>

Federal Highway Administration (October, 2004), Mitigating Traffic Congestion: The Role of Demand Side Strategies

Fairlee / MetroWest TDM Development Program
 UrbanTrans Consultants
 May 2005

DEMOGRAPHIC & COMMUTE MODE SHARE CHART

	Vienna Transit Station Area (MetroRail)		Roslyn-Ballston Corridor (MetroRail)		San Francisco: Pleasant Hill (BART)		San Francisco: South Alameda County (4 BART Stations)	
	Station Area	Fairfax County	R-B Corridor	Arlington County	Station Area	City	Station Area	City
Gender								
Male	56.3%	54.1%			43.2%	46.2%	47.3%	50.0%
Female	43.7%	45.9%			56.8%	53.8%	52.7%	50.0%
Age*								
65+	2.2%	2.6%			17.1%	35.6%	10.4%	16.4%
45-64	30.4%	36.5%			28.8%	29.3%	28.1%	30.9%
25-44	57.6%	50.6%			54.1%	16.0%	61.5%	23.8%
16-24	9.9%	10.3%				19.0%		29.0%
Race / Ethnicity								
African American	3.9%	7.9%			2.4%	1.1%	6.5%	6.8%
White	67.3%	67.5%			71.8%	86.7%	45.4%	46.2%
Asian	17.0%	11.8%			13.7%	9.7%	38.0%	34.1%
Other	4.4%	2.9%			8.1%	2.5%	7.3%	12.8%
Hispanic Origin	7.4%	9.9%			4.0%	6.0%	2.8%	22.2%
Income**								
\$75,000+	24.8%	22.1%			14.3%	27.0%	10.5%	29.3%
\$50,000 - 74,999	27.0%	20.0%			26.9%	26.2%	37.2%	30.1%
\$30,000 - 49,999	23.9%	23.3%			27.8%	26.2%	40.0%	25.7%
\$15,000 - 29,999	13.1%	18.3%			22.7%	12.9%	4.8%	10.3%
\$14,999 or less	11.3%	16.3%			8.4%	7.5%	7.6%	7.5%
Vehicle per Household								
3 Vehicles	26.5%	30.0%	6.0%					
2 Vehicles	48.3%	48.3%	21.0%					
1 Vehicle	23.9%	19.3%	56.0%					
0 Vehicles	1.2%	2.3%	17.0%					
Vehicles per Household			1.11	1.38				
Ratio of Drivers to Vehicles								
<1 driver / vehicle					24.0%		30.6%	
1 driver / vehicle					64.0%		56.8%	
>1 driver / vehicle					12.0%		12.6%	
Primary Commute Mode								
	Residents		Employees		Residents		Residents	
Drove Alone	66.0%	73.2%	41.7%	54.9%	48.9%	77.1%	56.5%	89.0%
2+ Carpool	9.2%	13.0%	8.2%	11.5%	4.0%		5.1%	
Transit	20.7%	7.1%	38.0%	23.3%	44.8%	13.8%	37.8%	5.8%
Bicycle	0.3%	0.1%	1.2%	1.4%	0.0%	n/a	0.6%	n/a
Walk	0.3%	1.4%	8.0%	5.6%	2.3%	n/a	0.0%	n/a
Telework	2.8%	4.1%	1.9%	3.5%	n/a	n/a	n/a	n/a

* Age categories for CA examples: Over 50, 36-50, 18-35, Under 18

** Fairfax income based on Individual Income. CA examples based on Household income (categories \$100k+, \$60-100k, \$30-60k, 15-30k, <\$15k)

Sources:

Vienna / Fairfax, UrbanTrans, Census 2000 Data, 2005
 R-B / Arlington, Leach, Reconnecting America Presentation, 2003
 CA Examples, "Travel Characteristics of TOD in California," 2004

Appendix 6

Community Involvement

This appendix includes the following Community Involvement summaries:

- Providence District Land Use Seminar Overview
- Vienna Township Meeting Overview
- Online Open House Overview
- Open House Overview

Providence District Land Use Seminar Overview

Providence District Land Use Seminar #1 was held May 2, 2005 from 7:30 to 9:00 p.m. The meeting was held at the Fairhill Elementary School located at 3001 Chichester Lane, Fairfax. Over 100 residents were in attendance, not including staff or consultants.

Meeting Notification and Format

This Fairfax County sponsored event was coordinated and promoted through the offices of Providence District Supervisor Smyth's office to give Providence District residents the opportunity to learn more about land use issues. The Fairlee-Metro West TDM Development project process was one of four topics that were presented at the seminar. The format of these presentations was part informational and part discussion, with time available for questions on each topic. More than half the attendees used one of the two break-out sessions to ask as more specific questions about and provide suggestions for the TDM Development project process.

Land Use Seminar Comment Summary

Meeting participants provided comments verbally and were recorded by the consultant team. The following is a summary of all comments received.

Existing Conditions Comments

- The intersection of Nutley Road and Lee Highway is dangerous for pedestrians.
- Can Metro handle the new riders that will be generated by this project?
- Why doesn't this project take into consideration off peak travel generated by the proposed TOD?
- Are a 47% reduction in peak period residential trips and 25% reduction in peak period employee trips achievable?
- Will you be able to provide empirical data with very precise strategies for achieving trip reduction goals?
- Sidewalks/pedestrian access in and around the Metro Site is inadequate.



COMMONWEALTH OF VIRGINIA
FAIRFAX COUNTY

BOARD OF SUPERVISORS
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Providence District Land Use Seminars

Interested in demystifying the land use and planning process in Fairfax County? This spring my office, in conjunction with a variety of citizen groups, will sponsor a series of meetings to give Providence residents the opportunity to learn more about land use issues. County staff will facilitate the meetings and cover a wide range of the topics that are integral parts of the planning and zoning process. These topics include legal and state requirements, the County Zoning Ordinance, by right development, the Comprehensive Plan, rezonings, proffers, transportation and transit planning, traffic demand management, public facility and environmental planning, storm water management, and tree preservation, among others. As soon as the schedule is set a complete listing of dates, time, and location will be posted on my web site.

Land Use Seminar #1
May 2, 2005 from 7:30pm to 9pm at
Fairhill Elementary School Cafeteria: 3001Chichester Lane

- Introduction to State of Virginia Legal and Legislative relationships to land use including discussion of the separation of powers and the Dillon rule. Karen Harwood, County Attorney's office.
- By-Right Development. What is it, who's right is it and who says it is right? Bruce Nassimbeni, Department of Public Works and Environmental Services.
- Overview of the Zoning Administration Division including Zoning Enforcement. Bill Shoup, Division Director Zoning Administration.

The format of the sessions described above will be part informational and part discussion, with time available for questions on each of the evening's subjects. Agendas and other background materials will also be provided there.



- In addition to the three educational/discussion sessions described above *UrbanTrans Consultants*, the transportation demand management (TDM)

- Will sidewalk access be included in the resident survey?
- Vienna Metro is not well connected by bus to other destinations. How will this be improved?

Vienna Township Meeting Overview

The consultant team met with the Vienna Township Mayor, Council Members and staff on May 19, 2005 from 4:00 to 5:00 p.m. The meeting was held at the Vienna Town Hall at 127 Center Street South, Vienna.

Meeting Notification and Format

This meeting was called at the request of Town Council Member Laurie Genevro Cole, who had met the consulting team at the Providence District Land Use Seminar #1. The meeting was intended to provide Vienna Township elected officials and staff with an overview of the TDM Development project process as well as allow them to ask more specific questions about and provide suggestions for the TDM Development project process.

Vienna Township Comment Summary

Meeting participants provided comments verbally and were recorded by the consultant team. The following is a summary of all comments received.

Existing Conditions Comments

- Weekend trips are equal to that of peak hour rush.
- Many Metro riders park on Vienna Township residential streets and walk to the Metro station. Vienna Township issued street parking permits and followed up with ticketing to enforce it. This may be something Fairfax County wishes to do too.
- Other than during peak hours, there is no bus service to/from Vienna to the Metro Station.
- There needs to be better coordination between bus and MetroRail schedules.
- The biggest issue is capacity of the Orange Line back to Fairfax in the evening.
- Is the county travel survey being coordinated with the Fairlee-Metro West TDM Development project survey?
- Will there be household counts as part of the study?
- Can we get a list of areas surveyed, organized by HOA?
- Can we get a copy of the survey and survey results?

Online Open House Overview

The consultant team provided an ongoing opportunity for residents in the community to provide their input on the TDM project through the project website at www.fairleemetrowest-tdm.com. Comments were accepted on the website from May 6th through June 3rd.

Online Open House Notification and Format

The project web address (www.fairleemetrowest-tdm.com) was promoted on every flyer distributed to HOAs to promote the resident survey as well as the open house. The web address was also promoted on over 7,400 surveys that the consultant team distributed to households in the survey area. The Online Open House was intended to provide a private and open ended forum with no timeframes to ask more specific questions about and provide suggestions for the TDM Development project process.

Online Open House Comment Summary

Online Open House participants provided written comments on the web page which were downloaded into a database and recorded by the consultant team. Each comment submitted was asked to record their zip code for reference purposes. The following is a summary of all comments received.

Online Open House Comments

Comment	Home Zipcode Of Person Entering Comment
<ul style="list-style-type: none"> There's already too much development -- and congestion -- around the metro in the form of outsized townhomes, condo complexes etc, and some single family luxury housing. Leave it alone now! 	22031
<ul style="list-style-type: none"> 1) Eliminate stop sign for pedestrian walkway South of Vienna Metro - this stop sign backs up car traffic significantly!!! I would estimate, on an average morning, removing this sign would cut 10 minutes off my and thousands of other commuters! 2) Re-open the cut thru access to apartments / condos / ICF consulting to residents / workers. There used to be a card activated gate there. This would speed up the time that the ICF shuttle bus needs to shuttle workers to / from metro. 	20120
<ul style="list-style-type: none"> Your survey fails to inquire about day care, or to/from work travel west of the Vienna Metro Stop. Taking the bus is much too time consuming to & from, you have to wait in the rain or snow without cover, and you must cross streets with fast-approaching cars to get even get to the bus stop. 	22033
<ul style="list-style-type: none"> 1) Bicycle access across I-66 and through the Town of Vienna can be improved. 2) At present, Nutley St. is too dangerous to ride over I-66...traffic entering and exiting I-66 is heedless of other vehicles, much less bicycles. It would be helpful if a separate bicycle lane could be developed on Virginia Center Drive, Vaden Rd. and Saintsbury Rd, 	22182

<p>which would permit bicyclists to get over I-66 at lower risk. And if Vaden is going to be accepting heavier traffic as a result of Fairlee, a dedicated bicycle lane will be essential if you want people to get out of their cars and bike instead.</p> <ul style="list-style-type: none"> • 3) Similarly, the Fairfax Connector Trail should be completed from Fairfax City to the W&OD, which will offer additional transportation capacity on top of car, bus, and rail. My understanding is that the Town of Vienna blocked signage of the trail through the town because residents were concerned about bicycle traffic. Now that the same people are tearing their hair out over the potential for massively increased car traffic due to Fairlee, maybe they'll look more kindly on bicycles as an alternative to some of those cars? Or is the Town's strategy to build a wall around itself? • 4) What will happen to the Trail in Nottaway Park as a result of the recently-announced expansion of Park facilities?" 	
<ul style="list-style-type: none"> • Add a beltway/loop metro line and/or bus. 	20817
<ul style="list-style-type: none"> • Online survey says answers would be confidential AND that one is enrolled for chance at \$400 gift card. But the only way to get latter is to make former impossible because you have to give your name to get the gift chance. What's up? 	n/a
<ul style="list-style-type: none"> • Any new development should have its own exit to/from I-66 to discourage new traffic in the residential areas. 	22180
<ul style="list-style-type: none"> • I work there occasionally and think this new development is great. I would love to see a more walkable area - right now it combines residential, business, and shopping but it's very car-oriented. Some people from our office actually drive across the street to have lunch. I would like to see an area more conducive to walking and maybe some stores useful to commuters (coffee shops, dry cleaning) near the Metro station. Also, everybody should get Metrochek. 	20008
<ul style="list-style-type: none"> • More development would cause more traffic congestion. Already too much congestion around Nutley Street/Lee Highway/Vienna Metro area. 	20850
<ul style="list-style-type: none"> • 1) It takes 5 minutes to walk from my front door to the platform of the Vienna Metro Station. Yet I never take metro to work because of the inconvenience. I freelance and my two main clients are in Silver Spring and McLean. It would take about an hour to take metro to Silver Spring, when it takes about 45 minutes to drive. Also, I can park for \$30/ month, which is much less than the approx. \$7/ day metro fare. (Has anyone ever considered a metro line connecting Fairfax to Montgomery without taking us into DC? I would take it in a heartbeat! It certainly would alleviate traffic on the beltway.) • 2) There is no metro station in McLean, so I have to drive - nine miles takes 30 minutes. Public transportation just doesn't work for me. • 3) Until recently, my roommate worked downtown. For years he took metro, but it became too crowded so he started to drive. Between 6:30 and 9:30 AM during the work week, EVERY SEAT is taken 	22031

<p>before the train leaves Vienna - the beginning of the line. The trains quickly become overcrowded, which slows them down. There is NO WAY the metro system can accommodate all of the people the planned MetroWest community is going to bring in. It is already overcrowded.</p> <ul style="list-style-type: none"> 4) And you are naive to think that everyone who moves into MetroWest is going to take the metro instead of drive simply because you wish it to be. Even though there is a grocery store within walking distance, you can't walk there because the traffic is too bad. Crossing the Nutley/Lee Highway intersection is dangerous. The cars don't stop at the light. (And the police never ticket them, even when it happens right in front of them). They speed up when a pedestrian is in the crosswalk. It is scary. If you add more pedestrians to the equation, people are going to start getting killed. This is never going to be a pedestrian friendly community because the surrounding roads are just too big. 5) Please don't force your plan on us because it is nice in theory. It honestly won't work. 	
<ul style="list-style-type: none"> Safer cross walks in the immediate area of the Vienna metro station. 	22031
<ul style="list-style-type: none"> Hi, I took your survey and the part that interested me the most was the section on what would most likely make me use the metro. A subsidy would be great but the biggest draw for me would be to have a free covered bicycle port where I board the metro for work. I don't want it to rain on my bike while I'm at work, so I don't bike to the metro. I'll pay retail metro rides if I can get a free sheltered place to put my bike. Improved bicycle infrastructure isn't an option in your survey. 	22207
<ul style="list-style-type: none"> 1) Take the Metro Train out to the Fairfax Government Center or better yet to the Gainesville area. People will move to the places the trains are easy to get to. 2) Or put a ""Rush Hour only"" exit off of 66 to the Prosperity Ave. This four lane road is under used in the mornings. This would allow for people riding the Dunn Loring metro easier access AND those people wishing to get to 29 and 50 a better exit then the Vienna Exit, which is over loaded with cars which are not even going to the Vienna metro. " 	20109
<ul style="list-style-type: none"> Please bring metro from Vienna out to Dulles corridor! 	20120
<ul style="list-style-type: none"> Never a set schedule. You need schedule @ train stops. You never know when train is arriving or leaving. You need to better monitor single drives of HOV 	22031
<ul style="list-style-type: none"> Justin, I told you I would not be able to answer how many miles it was to my work location and you said you would reword that question. I answered 1000 miles because I could not submit the survey with a blank field. I'm irked. Julia Hutchins 	22181
<ul style="list-style-type: none"> This only deals with rush hour/work travel, but the traffic is at least as 	22031

congested at the weekends, does this not need to be taken into account to get an accurate picture???	
• I'm 100% in favor of Metro West.	22031
• I do use the Metro when its going where I'm going like the theatre, ball games, etc in DC	22031
• Wish metro went cross-county	22031

Open House Overview

The Fairlee-Metro West TDM Development Project Open House was held June 1, 2005 from 7:00 to 9:00 p.m. The meeting was held at the Marshall Road Elementary School located at 730 Marshall Road, Fairfax. Thirty one meeting participants signed in, not including staff or consultants.

Meeting Notification

Fairfax County staff for Providence District Supervisor Smyth provided the consultant team with list of more than 70 contacts at Homeowners Association and Civic Organizations with an interest in the Vienna Metro Study area. A meeting flyer was developed and distributed via email to approximately 50 HOA contacts in the study area with an email address. It was also placed on the project website. The consultant team followed up by phone with as many of them as possible to make sure they received the email. Follow up phone calls were also placed to approximately 15 HOA contacts that did not have email addresses.

Meeting Format

Meeting attendees were encouraged to arrive anytime between 7:00 and 9:00 p.m. An introduction to the meeting was held at approximately 7:30 by Kevin Luten, UrbanTrans Consultants. Mr. Luten also provided concluding comments at 8:45 and



Fairlee-MetroWest Transportation Demand Management (TDM) Development Project

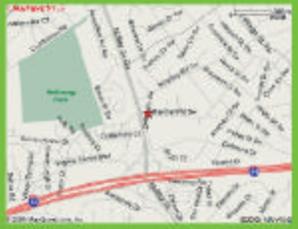


Come find out about the TDM study process, existing travel conditions and offer comments on TDM recommendations for the Vienna Metro Station Area at a community open house.

Help guide the direction of transportation options in the Fairlee-MetroWest Station Area.

when: Wednesday, June 1st, 2005
Come anytime between 7:00 and 9:00 p.m.
Welcome and Opening Remarks @ 7:30 p.m.

where: Marshall Road Elementary
730 Marshall Road
Fairfax, Virginia 22180



For more information, please visit:



www.fairleemetrowest-tdm.com

answered remaining questions.

A sign in table was set up at the entrance to the open house and each meeting attendee was provided with a project overview handout (see below) and a general comment form. Three stations, described below, were set up around the room. Members of the Advisory Team were present at each station to answer questions about the project.

**Fairlee-Metro West
Transportation Demand Management (TDM) Development Project
Project Overview Handout**

Study Process

The goal of the project is to reduce traffic congestion throughout the Vienna Metro Station Area using Transportation Demand Management (TDM) measures. TDM can best be described as policies and strategies that maximize the use of the supply of transportation infrastructure.

To accomplish this, four primary tasks are being conducted:

- 1) Determining the existing peak hour commuting/travel patterns and how many people drive alone or do not drive alone within the Vienna Metro Station Area. The study process included:
 - a. Predicting traffic volumes generated by the proposed development through the Institute for Transportation Engineers (ITE) and Fairfax County Trip Generation Models
 - b. Sampling how many vehicles come in and out of neighborhoods surrounding the Vienna Metro Station and how many people are in those vehicles.
 - c. Surveying residents and employees in the study area to assess their attitudes and opinions about travel choices and compare them to trends observed through travel behavior in census analysis.
- 2) Investigating "best practices" throughout the region and across the country
- 3) Identifying opportunities and barriers to successful TDM strategy implementation.
- 4) Meeting with and receiving input from a number of neighborhood groups in the study area.

Upon completion of the study, specific TDM, including TDM friendly site design and parking strategies will be developed to help achieve peak hour drive alone trip reductions for both the residential and office portions of the Vienna Station Area. The study will also include ongoing TDM evaluation strategies to ensure that the success of the aforementioned strategies can be measured.

Timeline

The study began in April 2005 and will be completed by the end of June 2005.

Next Steps

We will take your comments and incorporate them into a final report that will be presented to the Project Advisory Committee in mid-June. Information presented tonight and the draft report will be available at www.fairleemetrowest-tdm.com.

Station 1: Existing Conditions

The first station included numerous display boards and project team members answered questions and wrote down comments. The display boards included:

- Map with Traffic Count Locations
- Traffic Count Results
- Key Employer and Residential Survey Results
- Census Information

Station 2: Existing TDM Programs

Fairfax County staffed the second station and provided information on regional and local TDM programs.

Station 3: TDM Opportunities and Barriers

The third station included a general map of the station area and information on TDM opportunities and barriers. Project team members provided attendees with post it notes in two colors: one color representing opportunities and the other representing barriers. Meeting attendees were asked to identify 1) specific locations of TDM opportunities and barriers on the map and 2) general TDM opportunities and barriers, regardless of location.

Display boards included:

- General TDM Overview
- TOD and TDM Success Factors
- Map of Station Area
- Example TDM Opportunities and Barriers

Open House Comment Summary

Meeting participants provided comments both directly at the stations and on comment forms. The following is a summary of all comments received.



Existing Conditions Comments

- Vienna line/border includes Marshall Road School (*comment was provided on traffic count map*).
- Are there site specific TOD/TDM programs in Fairfax County?
- Need to show potential benefit of TDM. What can TDM do to reduce trips? How much is possible/reasonable?
- Pedestrian safety at Virginia Center Boulevard.
- The junction of I-66 and the Beltway is a major bottleneck. The traffic on I-66 East is often backed up at all hours and even weekends.
- Vienna Metro is not well connected by bus to other destinations. How will this be improved?
- Lack of sidewalks.
- Unsafe pedestrian crossing at Metro (Virginia Center Boulevard).

- Orange Line is crowded. Trains stops constantly to wait for train ahead.
- Bus Service: Inadequate coverage (geographic and time), buses always late.
- Lack of bicycle trail connections.
- Surprised by amount of information disseminated at this preliminary meeting.

Current TDM Program Comments

- Hard to tell from the display boards how programs are working in residential areas, and how they would work here.

Opportunities and Barriers Comments

Opportunities:

- Enhance bike connection between station and the town of Vienna and the W & OD path.
 - Can use Virginia Center Boulevard for bike path to southwest Vienna then use residential streets to reach town commercial area and trail.
- Direct traffic on Vaden/Country Creek that is looking for Nutley through appropriate directional signage. Discourage traffic from searching for Nutley through Vaden north of Country Creek/UCB.
- Vienna Station may not always be a terminus. Extension of line will reduce traffic.
- Demographics in Fairfax County lend support for this type of housing. There is a shortage.
- Current residents will gain opportunities to walk and bike to a pleasant area and services.
- Improve bike and pedestrian connections to Pan Am. A pedestrian crossing at Vaden Extension at Lee Highway and new sidewalk on south side of Lee would help.
- Need left turn phase for eastbound Country Creek at Vaden. Poor sight distance.

Barriers:

- Employment places not on transit line.
- I-66 at/above capacity in both directions.
- Poor bus service to local areas from station. Not just frequency, but very limited routes. Can't get to Town of Vienna commercial area.
- New road (Vaden Drive extended) and the widening of Saintsbury Drive will greatly impede the access for Circle Woods and all the neighborhoods south and west of the metro station to the station.
- Poor pedestrian connectivity at Virginia Center.
- Poor connectivity along Vaden Drive for pedestrians coming from the north.
- Vehicular traffic on Virginia Center is moving too fast to allow safe pedestrian crossing.
- Sidewalk gap on north side of Virginia Center Boulevard between north east Metro lot entrance and Barrenhurst.
- Parking at Sweeny surface lot is removed.
- Please consider that:
 - Vienna Metro Station is at the end of the line.
 - Highway I-66 is just as close as the Metro so the proximity of I-66 makes it more attractive to use.
 - Developer may not require homeowners to continue TDMs.

- What is the tolerance of Metro users for crowding? At what point are current (or potential) Metro users driven away by crowding? A recent speaker on the proposed Silver Line stated that the number of trains serving the Orange Line will be cut by more than half (from 20 to 8 or 9, in a given time period) to create tunnel capacity for Silver Line trains into DC. How will this affect Metro use by Metro West and other Orange Line users?

Meeting Comments

- Informative as to what TDM is and what options area, not informative about the impacts of TDM. Would be helpful to give a realistic assessment of what TDM would do under the best of circumstances. Start from existing mode shares and revise upward or downward depending on TDM measures. The meeting was not informative in terms of potential impact on the neighborhoods, positive or negative.
- Too much presentation and too little time to see the materials. Where can we get copies?

Additional Comments

- At station 1, it is unfortunate that only a.m. non-work trips were identified. Staff said numbers for p.m. were available, and they were much higher than in a.m.
- Need to measure non rush hour traffic and weekends. Need community meeting to present final report. Need to measure pedestrian traffic and improve safety/connectivity.
- Need to have a community meeting following dissemination of final report.

Appendix 7

MetroWest Vehicle Trip Reduction Analysis

Land Use	Land Use Type (ITE)	Size	Units	ADT	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
					IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	(222) High Rise Apartment	900	DU	3780	68	203	271	192	123	315
	(232) High Rise Condo / Townhouse	848	DU	3545	55	234	289	200	122	322
	(230) Residential Condo / Townhouse	122	DU	669	9	45	54	43	21	64
	(232) High Rise Condo / Townhouse	160	DU	1025	10	44	54	38	23	61
	Townhouse*	218	DU	1831	24	94	118	92	50	142
Residential Totals		2,248	DU	10850	166	620	786	565	339	904
Office	(710) General Office	300,000	Sq. Ft.	3109	398	54	452	71	344	415

Using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 7th version, Land Use categories and rates, base trip generation for the site were established.

Based on these calculations, the AM Peak Hour was determined to be the largest peak for the Office land use, and the PM Peak Hour was determined to be the peak for the Residential land uses.

Base Trips	Office Peak (AM)	Trips-In	Trips-Out	Residential Peak (PM)	Trips-In	Trips-Out
		398	54		565	339

Peak Hour trips carried forward from ITE Trip Generation

Original ITE Calculations assumed general High Rise Condominiums for the majority of the land uses within the Residential Categories. In fact, as a demand management measure, 368 of these units will be developed as Age-Restricted residences (55 years old and older). To account for this change in use, ITE rates were re-calculated for one segment of the Residential land Uses.

TABLE 2.1	DU	Rate	Office Peak (AM)	Trips-In	Trips-Out	Residential Peak (PM)	Trips-In	Trips-Out	
Land Use Modification						% Dist	Trips	% Dist	Trips
(232) High Rise Condo / Townhouse	848	0.38				62%	200	38%	122
Trip Modification for 368 - 55+ (age restricted) units									
(232) High Rise Condo / Townhouse	480	0.38				62%	113	38%	69
(250) Retirement Community	368	0.27				62%	62	38%	38
Trip Generation Modification							-25		-15

Calculated by splitting out the age restricted units and then subtracting the new trip generation from the base trip generation. $200 - (113 + 62) = 25$ less trips in and $122 - (69 + 38) = 15$ less trips out

Our research, including Transportation Research Board work and ITE, point to the fact that mixed-use developments have trips that will be taken that are internal to the site. In fact, ITE suggests that these trips could be as much as 24% of all trips. Using the research (Cervero et al 2004; Edwards 2003; Hedges 2005; ITE 2004; Nelson et al 2000; US DOT nd), our understanding of potential internal synergies, and a very conservative approach, we calculated the number of trips that will be taken with both internal origins and destinations. Furthermore, our modification Factors are varied by In's and Out's based on Residential and Office origins only. Specific rates were developed though research results (cited above) and blended with professional judgment per accepted ITE practice.

TABLE 2.2	Origin	Destination	Office Peak (AM)	Trips-In	Trips-Out	Residential Peak (PM)	Trips-In	Trips-Out	
			Factor	Trips	Factor	Trips	Factor	Trips	
Residence	Retail					7.5%	42	15.0%	51
Office	Retail		1.0%	4	10.0%	5			

Availability of resources (grocer, restaurant, convenience retail/service, banking, recreation/exercise, mail/copy services) within the site.

565 trips x 7.5% = 42 fewer trips in and 339 trips out x 15% = 51 fewer trips
 398 trips x 1% = 4 fewer trips in and 54 trips out x 10% = 5 fewer trips

site), that will divert for site related uses. These are referred to by ITE as pass-by and diverted linked trips. Again, while research pointed to a more significant number of trips that will not be new to the system, we opted for a more conservative approach based on individual In's and Out's related to specific uses with either an external origin or destination. Specific rates were developed though research results (cited above) and blended with professional judgment per accepted ITE practice.

TABLE 2.3	Origin	Destination	Office Peak (AM)	Trips-In	Trips-Out	Residential Peak (PM)	Trips-In	Trips-Out	
			Factor	Trips	Factor	Trips	Factor	Trips	
Residence	External					4.0%	23	10.0%	34
Office	External		1.0%	4	5.0%	3			
External	Residence					2.0%	11	5.0%	17
External	Office		1.0%	4	10.0%	5			

565 trips x 4% = 23 fewer trips in and 339 trips out x 10% = 34 fewer trips
 398 trips x 1% = 4 fewer trips in and 54 trips out x 5% = 3 fewer trips
 565 trips x 2% = 11 fewer trips in and 339 trips out x 5% = 17 fewer trips
 398 trips x 1% = 4 fewer trips in and 54 trips out x 10% = 5 fewer trips

TABLE 2.5	Office Peak (AM)	Trips-In	Trips-Out	Residential Peak (PM)	Trips-In	Trips-Out
Total Trip Generation Modification from Design, Diversity and Intensity of Uses		-12	-13		-101	-117

				Residential Peak (PM)		
Base Trips				In	Out	Total
				565	339	904

The next step in the process was to identify the trip reductions related to further specifics of the TOD such availability of transit and moreover reductions affiliated with Travel Choice programs and services (TDM). Using national research (Cervero et al 2004; Chrisholm 2002; ITE 2004; Kuzmyak et al 2005; USDOT nd; Vaca et al 2003) and local survey results (Claritas 2005; LDA 2005), produced ranges of reductions even greater than identified below (Cervero found that TOD's relative proximity to transit with good pedestrian amenities can increase transit usage by up to 30% and local survey results found that 35% of residents within 1/2 mile use transit for commuting). In all cases, we opted for the most conservative approach in order to not overstate planned trip reductions. Furthermore, potential trips by carpool were identified and minimize by an occupancy of 2.25 people per vehicle (not providing for a 1 reduced trip to 1 person ratio). In all cases, trips are not eliminated, just taken in modes other than pure auto trips.

Residential Single Occupancy Vehicle Modifications for TOD Characteristics

TABLE 3.1	Potential range of supplemental reductions	Factor Used	Auto Occupancy	In	Out	Total	
Transit Proximity*	10%-20%	10%	0	-57	-34	-91	565 trips x 10% = 57 fewer trips in and 339 trips out x 10% = 34 fewer trips
Onsite Transportation Programs	5%-10%						
Carpool		2%	2.25	-5	-3	-8	(565 trips x 2%) / 2.25 people = 5 fewer trips in and (339 trips out x 2%) / 2.25 people = 3 fewer trips
Other Non-SOV		3%	0	-17	-10	-27	565 trips x 3% = 17 fewer trips in and 339 trips out x 3% = 10 fewer trips
Active Parking Management	5%-30%						
Carpool		3%	2.25	-8	-5	-13	(565 trips x 3%) / 2.25 people = 8 fewer trips in and (339 trips out x 3%) / 2.25 people = 5 fewer trips
Other Non-SOV		7%	0	-40	-24	-64	565 trips x 7% = 40 fewer trips in and 339 trips out x 7% = 24 fewer trips
Residents that Live and Work within the site (5%-8% of Population)							Note: These trips were NOT accounted for in Step 4 Trip Generation Modifiers
	5%-8%	5%	0	-32	-5	-37	3652 Residents 16+ x 5% (live/work within site (non-telecommute)) X 20% who would travel in the PM Peak Hour distributed 87% In / 13% out

* Transit Proximity is mix of factors. Most important are the pedestrian environment and amenities combined with the close distance from Residences/Offices to Transit (almost all are contained within a 1/4 mile radius). As found in all research references these factors are attributable to TOD's, though somewhat difficult to isolate to just one singular factor. Furthermore, the Onsite Transportation programs are more effective because of the physical characteristics (you can market and educate with better results because of the higher quality facilities).

Overall Trip Reductions affiliated with transit travel mode are 18.5% (10% Transit Proximity + 3% Onsite Programs + 7% Active Parking Management less 1.5% for Telework and Bike/Pedestrian Trip Reductions).

	In	Out	Total
Reduction in PM Peak Hour Trip Generation based on TOD Characteristics	-159	-81	-240

Establishing the Number of Commute Trips

Initially, the projected population needs to be established for the site's Residential land uses. This was established through a series of steps based on US Census, current Demographics, and national studies of Transit Oriented Developments.

US Census - Correlates to ITE National Standards

ITE trip generation is based on a combination of real world experiences throughout the country. These experiences are combined to produce expected results at a national level. As such these ITE calculations can readily be correlated with US Census data, which takes individual data and identifies local through national demographic detail.

US Census 2000 Data		Vienna	Fairfax County	VA	US
GENERAL					
Population		14453	969749	7078515	
Workers 16 and over		7696	527,464		281421906
Population per square mile		3253.8	2454.78	178.78	79.56
HOUSING					
Total units		5445		2904192	115904641
Rental occupied		13.40%	28.30%	29.70%	30.80%
Owner occupied		84.60%	69.20%	63.30%	60.20%
Other (not) occupied		2.00%	2.50%	7.00%	9.00%
Household Size-Rental		2.69	2.59	2.33	2.36
Household Size-Owner		2.73	2.8	2.63	2.71
COMMUTING TIME					
Average travel time to work (minutes)		28	31	27	26
Average travel time to work using public transportation		49	50	44	48
Average travel time to work using other transportation		25	29	26	24

[Sources: U.S. Census Bureau](#)

These data were then used to establish an estimated number of occupied units. Census data shows very high occupancy rates with only 2% of units not occupied.

	Ttl DU	# DU Occupied	# DU from Rental Stock	# DU from Ownership Stock	Ttl Residences
Dwelling Units-Rental	900	882	882	72	954
Dwelling Units-Ownership	1470	1441	0	1369	1369

After assuming 5% of the townhouse units will not be owner occupied, the total number of occupied units is calculated to be:

2,323 Units

2005 Demographic data was obtained from Claritas, Inc., a market research corporation. Using the current occupants per household data for all residences within the transit station area (1/2 mile radius), the projected number of residents was established. Furthermore, the Claritas data also provided an number of residents that are sixteen years old or older, which correlates to potential drivers and workforce. This number versus the total population established a rate of 79.75% of all residents will fall within the category of sixteen years old or older.

TABLE 3.2

Number of people in Household Per Claritas Report .5 Mile Radius	Category Dist	Relative Dist	% of HH	# of HH	# of Residents	Workers 16+ (79.75%)
1	56.6%	0.35	19.8%	461	461	
2		0.65	36.7%	853	1,706	
3	35.5%	0.61	21.8%	505	1,515	
4		0.39	13.7%	319	1,276	
5	8.0%	0.64	5.1%	119	595	
6		0.20	1.6%	36	216	
7		0.16	1.3%	30	210	
			100.0%	2,323	5,979	4,768

Using these general data, it is calculated that 4,768 residents will be in the category of sixteen years old or older.

Using national and local research to calibrate household size for specifics of TOD's

Using both the national research and the survey conducted of local residents, is established that TOD's tend to have a household size that is smaller and has fewer children. To ensure the most conservative approach, however, we chose to use the higher percentage of residents that are sixteen or older rather than the range of 53%-62% that found in our research. This conservative approach will translate into a higher potential number of trips for calculation purposes.

TABLE 3.3

Number of people in Household Per Cervero Study	Category Dist	Relative Dist	% of HH	# of HH	# of Residents	Workers 16+ (79.75%)
1		0.40	33.3%	773	773	
2	83.20%	0.60	49.9%	1,160	2,320	
3		0.55	7.6%	176	528	
4	13.80%	0.45	6.2%	144	576	
5		0.60	1.8%	42	210	
6		0.25	0.8%	17	102	
7	3.00%	0.15	0.5%	10	70	
			100.0%	2,322	4,579	3,652

Ultimately, these calculations found that our number of occupied households will translate into **3,652** residents sixteen or older.

	Residential Peak (PM)		
	In	Out	Total
Base Trips	398	54	452

After identifying the residential trip reductions related to further specifics of the TOD (and identified with Step 4), these factors then needed to be applied to the Office land uses. Our research suggested that these programs could 25% to 100% more effective than residential based programs due to similar commute patterns and employee culture issues. This is further validated by our own experiences throughout the country managing these types of programs. Even with these facts, we opted for the more conservative factors applied to the Residential land uses. All other logic and formula remained the same as in Step 3.

Modify Office SOV Travel Distribution for TOD Characteristics
TABLE 4.1

Characteristics or Programs	Potential range of supplemental reductions	Factor Used	Auto Occupancy	In	Out	Total	
Transit Proximity	10%-20%	10%	0	-40	-5	-45	398 trips x 10% = 40 fewer trips in and 54 trips out x 10% = 5 fewer trips
Onsite Transportation Programs	5%-10%						
Carpool		2%	2.25	-4	0	-4	(398 trips x 2%) / 2.25 people = 4 fewer trips in and (54 trips out x 2%) / 2.25 people = 0 fewer trips
Other Non-SOV		3%	0	-12	-2	-14	398 trips x 3% = 12 fewer trips in and 54 trips out x 3% = 2 fewer trips
Active Parking Management	5%-30%		0				
Carpool		3%	2.25	-5	-1	-6	(398 trips x 3%) / 2.25 people = 5 fewer trips in and (54 trips out x 3%) / 2.25 people = 1 fewer trips
Other Non-SOV		7%	0	-28	-4	-32	398 trips x 7% = 28 fewer trips in and 54 trips out x 7% = 4 fewer trips
Residents that Live and Work within the site (5%-8% of Population)							Note: These trips were NOT accounted for in Step 4 Trip Generation Modifiers
	5%-8%	5%	0	-26	-0.8	-27	3652 Residents 16+ x 5% (live/work within site (non-telecommute)) X 15% who would travel in the AM Peak Hour distributed 97% In / 3% out

* Transit Proximity is mix of factors. Most important are the pedestrian environment and amenities combined with the close distance from Residences/Offices to Transit (almost all are contained within a 1/4 mile radius). As found in all research references these factors are attributable to TOD's, though somewhat difficult to isolate to just one singular factor. Furthermore, the Onsite Transportation programs are more effective because of the physical characteristics (you can market and educate with better results because of the higher quality facilities). When factored with Onsite Transportation Programs and Active Parking Management, contributions from TOD / TDM Characteristics total approximately 18.5%.

	In	Out	Total
Reduction in AM Peak Hour Trip Generation based on TOD Characteristics	-115	-13	-128

Number Of employees 1500 (5 employees per 1,000 sq ft for 300,000 sq ft)

Table 5.1

Claritas Data-Travel Distribution	Base Travel Distribution	Step 6 Modifiers	Travel Distribution	Trips	Auto Occupancy	Auto Trips
SOV	71.14%		46.14%	692	1	692
CP	11.23%	5.0%	16.23%	244	2.25	108
Transit (bus/ferry/rail)	10.53%	18.5%	29.03%	435		
Bike/Walk	2.03%	1.0%	3.03%	45		
Telecommute	4.48%	0.5%	4.98%	75		
Other	0.59%		0.59%	9		
	100.0%					800

Using the Claritas data and the trip reductions calculated in Step 4, only 800 Auto Trips would be generated by 1500 employees at the site.

Table 5.2

Employee Survey-Travel Distribution	Base Travel Distribution	Step 6 Modifiers	Travel Distribution	Trips	Auto Occupancy	Auto Trips
SOV	73%		48.00%	720	1	720
CP	1%	5.0%	6.00%	90	2.25	40
Transit (bus/ferry/rail)	19%	18.5%	37.50%	563		
Bike/Walk	2%	1.0%	3.00%	45		
Telecommute	5%	0.5%	5.50%	83		
Other	0%		0.00%	0		
						760

Using the Area Employee Survey data (collected with the project) and the trip reductions calculated in Step 4, only 760 Auto Trips would be generated by 1500 employees at the site.

As we moved to validate trip generation through an established model, we chose to use the higher trip generation numbers of the Claritas data to balance against the greatest potential trip generation situation.

Using an Average Vehicle Ridership Model produced by the Center for Urban Transportation Research, we found that at a normal site, with the inclusion of a subsidy, nominal parking charges, a guaranteed ride home, access to a marketed ridematching system, and knowledge of compressed work weeks, the number of vehicles calculated is comparable to our conservative calculations

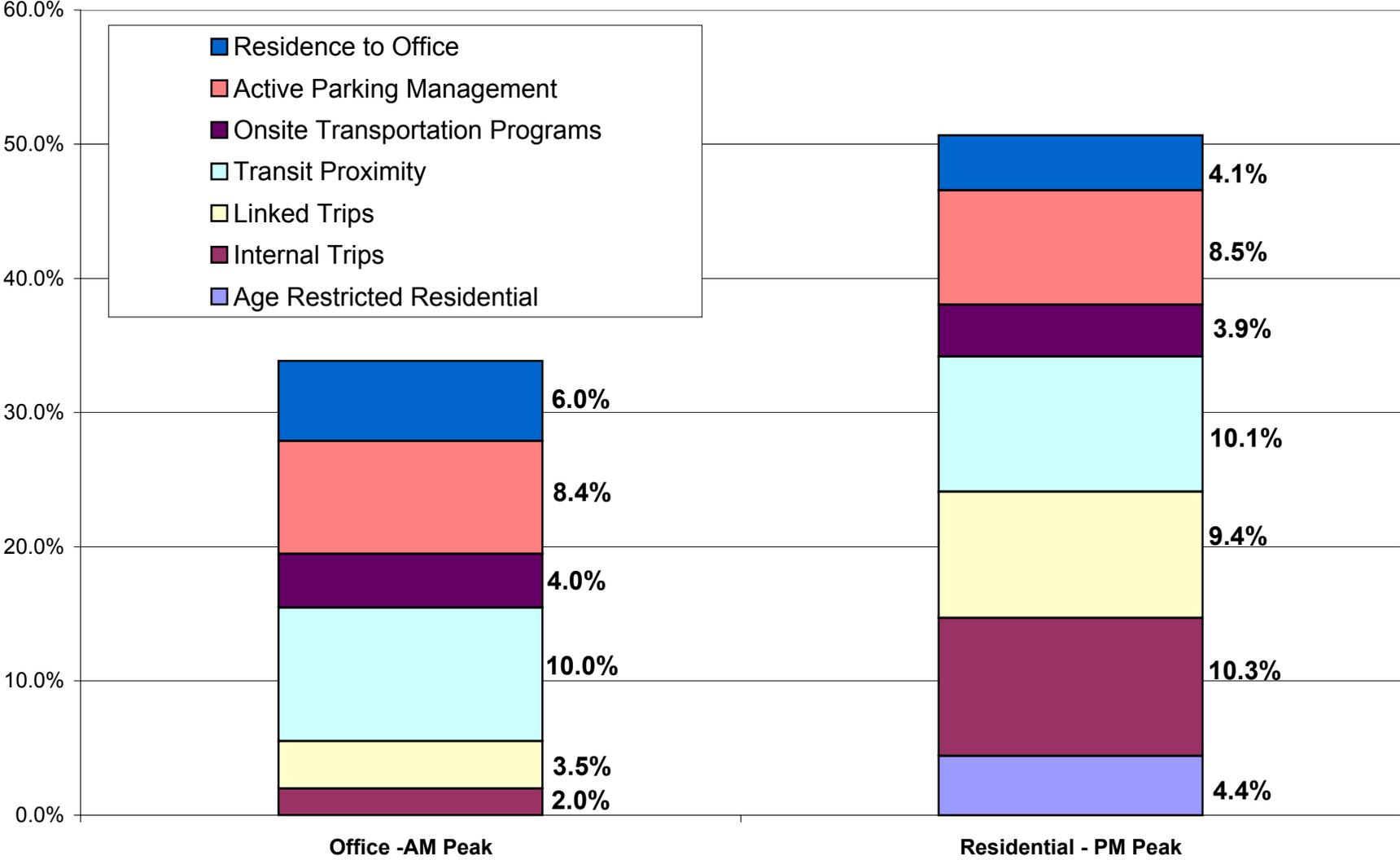
	Vehicles per 100 Ee's	Auto Trips
Per CUTR Model Without Programs	83.7	1255.5
With Programs	56.3	844.5

We also found that this difference of 44.5 trips equated to 3% of our employee population. As such we added back trips related to this model.

It is important to note that this model DOES NOT account for any of the benefits related to TOD, and as such is an overly conservative modeling estimate. Even with this note, we felt it important to continue with our conservative approach to programmatic trip reductions.

		AM Peak Hour - Office Uses			PM Peak Hour - Residential Uses		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Trips Generated Related to the Office Peak Hour	Per ITE Calculation	398	54	452	-	-	-
Trips Generated Related to the Residential Peak Hour	Per ITE Calculation	-	-	-	565	339	904
Target Trip Generation Reduction as a % ITE Rates for Peak Hour Land Use				-25%			-47%
Target Trip Generation Reduction		-99	-14	-113	-266	-159	-425
Target Peak Hour Trip Generation	<i>(Trip Generation less Trip Reduction Targets)</i>	299	40	339	299	180	479
Modifiers from Physical Attributes - Step 2							
	Age Restricted Residential	0	0	0	-25	-15	-40
	Internal Trips	-4	-5	-9	-42	-51	-93
	Linked Trips	-8	-8	-16	-34	-51	-85
	Total Adjustments - Step 2	-12	-13	-25	-101	-117	-218
Modifiers from TDM Attributes - Step 3 & 4							
	Transit Proximity	-40	-5	-45	-57	-34	-91
	Onsite Transportation Programs	-16	-2	-18	-22	-13	-35
	Active Parking Management	-33	-5	-38	-48	-29	-77
	Residence to Office (5% of Population)	-26	-1	-27	-32	-5	-37
	Total Adjustments - Steps 3 & 4	-115	-13	-128	-159	-81	-240
Adjustments to Trip Generation - Steps 2-4							
	<i>(Removes Trips from system)</i>	-127	-26	-153	-260	-198	-458
Adjustment of Trips based on CUTR Model - Step 5							
	<i>(Adds Trips back into system)</i>	12	2	14	-	-	-
Net Adjusted Peak Hour Trip Generation							
		283	30	313	305	141	446

Figure 3: Trip Modification Summary
by Percentage of Peak Hour Trips Reduced



APPENDIX 8: CLARITAS SITEREPORT, 2005

Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
Population						
2010 Projection	1,384		3,880		5,264	
2005 Estimate	1,211		3,386		4,597	
2000 Census	1,027		2,863		3,890	
1990 Census	715		2,026		2,741	
Growth 2005-2010	14.29%		14.59%		14.51%	
Growth 2000-2005	17.92%		18.27%		18.17%	
Growth 1990-2000	43.64%		41.31%		41.92%	
2005 Est. Population by Single Race Classification						
	1,211		3,386		4,597	
White Alone	801	66.14	2,155	63.64	2,957	64.32
Black or African American Alone	72	5.95	226	6.67	298	6.48
American Indian and Alaska Native Alone	3	0.25	7	0.21	10	0.22
Asian Alone	278	22.96	801	23.66	1,080	23.49
Native Hawaiian and Other Pacific Islander Alone	3	0.25	7	0.21	10	0.22
Some Other Race Alone	22	1.82	86	2.54	108	2.35
Two or More Races	31	2.56	103	3.04	134	2.91
2005 Est. Population Hispanic or Latino by Origin*						
	1,211		3,386		4,597	
Not Hispanic or Latino	1,121	92.57	3,090	91.26	4,211	91.60
Hispanic or Latino:	89	7.35	296	8.74	386	8.40
Mexican	13	14.61	39	13.18	51	13.21
Puerto Rican	6	6.74	20	6.76	26	6.74
Cuban	4	4.49	15	5.07	19	4.92
All Other Hispanic or Latino	67	75.28	222	75.00	289	74.87
2005 Est. Hispanic or Latino by Single Race Class.						
	89		296		386	
White Alone	63	70.79	192	64.86	254	65.80
Black or African American Alone	1	1.12	6	2.03	7	1.81
American Indian and Alaska Native Alone	1	1.12	2	0.68	3	0.78
Asian Alone	2	2.25	6	2.03	8	2.07
Native Hawaiian and Other Pacific Islander Alone	0	0.00	0	0.00	0	0.00
Some Other Race Alone	19	21.35	78	26.35	97	25.13
Two or More Races	3	3.37	13	4.39	17	4.40



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Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Pop. Asian Alone Race by Category*	278		801		1,080	
Chinese, except Taiwanese	69	24.82	186	23.22	255	23.61
Filipino	13	4.68	40	4.99	53	4.91
Japanese	10	3.60	22	2.75	32	2.96
Asian Indian	65	23.38	206	25.72	271	25.09
Korean	68	24.46	183	22.85	251	23.24
Vietnamese	25	8.99	83	10.36	107	9.91
Cambodian	1	0.36	4	0.50	5	0.46
Hmong	0	0.00	0	0.00	0	0.00
Laotian	1	0.36	4	0.50	5	0.46
Thai	6	2.16	15	1.87	21	1.94
Other Asian	17	6.12	50	6.24	67	6.20
Two or more Asian categories	3	1.08	8	1.00	12	1.11
2005 Est. Population by Ancestry	1,211		3,386		4,597	
Pop, Arab	39	3.22	110	3.25	150	3.26
Pop, Czech	5	0.41	16	0.47	21	0.46
Pop, Danish	0	0.00	0	0.00	0	0.00
Pop, Dutch	6	0.50	16	0.47	22	0.48
Pop, English	102	8.42	286	8.45	388	8.44
Pop, French (except Basque)	20	1.65	46	1.36	66	1.44
Pop, French Canadian	9	0.74	27	0.80	36	0.78
Pop, German	111	9.17	314	9.27	426	9.27
Pop, Greek	10	0.83	27	0.80	37	0.80
Pop, Hungarian	8	0.66	17	0.50	25	0.54
Pop, Irish	84	6.94	240	7.09	323	7.03
Pop, Italian	75	6.19	197	5.82	272	5.92
Pop, Lithuanian	2	0.17	7	0.21	8	0.17
Pop, United States or American	39	3.22	101	2.98	140	3.05
Pop, Norwedian	11	0.91	29	0.86	40	0.87
Pop, Polish	21	1.73	60	1.77	81	1.76
Pop, Portuguese	1	0.08	4	0.12	5	0.11
Pop, Russian	23	1.90	60	1.77	83	1.81
Pop, Scottish	15	1.24	37	1.09	52	1.13
Pop, Scotch-Irish	30	2.48	72	2.13	102	2.22
Pop, Slovak	5	0.41	15	0.44	20	0.44
Pop, Sub-Saharan African	13	1.07	35	1.03	48	1.04
Pop, Swedish	12	0.99	30	0.89	42	0.91
Pop, Swiss	3	0.25	6	0.18	9	0.20
Pop, Ukrainian	1	0.08	1	0.03	2	0.04
Pop, Welsh	8	0.66	15	0.44	23	0.50
Pop, West Indian (exc Hisp groups)	2	0.17	11	0.32	13	0.28



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Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Population by Ancestry						
Pop, Other ancestries	434	35.84	1,293	38.19	1,727	37.57
Pop, Ancestry Unclassified	121	9.99	314	9.27	436	9.48
2005 Est. Pop Age 5+ by Language Spoken At Home	1,123		3,151		4,274	
Speak Only English at Home	784	69.81	2,091	66.36	2,875	67.27
Speak Asian/Pacific Islander Language at Home	141	12.56	465	14.76	605	14.16
Speak IndoEuropean Language at Home	106	9.44	278	8.82	384	8.98
Speak Spanish at Home	46	4.10	152	4.82	198	4.63
Speak Other Language at Home	45	4.01	165	5.24	211	4.94
2005 Est. Population by Sex	1,211		3,386		4,597	
Male	608	50.21	1,702	50.27	2,311	50.27
Female	603	49.79	1,684	49.73	2,286	49.73
Male/Female Ratio	1.01		1.01		1.01	
2005 Est. Population by Age	1,211		3,386		4,597	
Age 0 - 4	88	7.27	235	6.94	323	7.03
Age 5 - 9	89	7.35	240	7.09	329	7.16
Age 10 - 14	59	4.87	175	5.17	235	5.11
Age 15 - 17	34	2.81	95	2.81	129	2.81
Age 18 - 20	21	1.73	61	1.80	82	1.78
Age 21 - 24	44	3.63	121	3.57	165	3.59
Age 25 - 34	191	15.77	583	17.22	774	16.84
Age 35 - 44	249	20.56	670	19.79	919	19.99
Age 45 - 49	108	8.92	296	8.74	404	8.79
Age 50 - 54	100	8.26	263	7.77	363	7.90
Age 55 - 59	87	7.18	240	7.09	327	7.11
Age 60 - 64	63	5.20	172	5.08	236	5.13
Age 65 - 74	59	4.87	172	5.08	231	5.03
Age 75 - 84	16	1.32	53	1.57	69	1.50
Age 85 and over	3	0.25	9	0.27	11	0.24
Age 16 and over	963	79.52	2,704	79.86	3,666	79.75
Age 18 and over	940	77.62	2,640	77.97	3,581	77.90
Age 21 and over	920	75.97	2,579	76.17	3,498	76.09
Age 65 and over	77	6.36	234	6.91	312	6.79
2005 Est. Median Age	38.20		37.73		37.85	
2005 Est. Average Age	36.57		36.60		36.59	



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Male Population by Age	608		1,702		2,311	
Age 0 - 4	45	7.40	121	7.11	167	7.23
Age 5 - 9	47	7.73	128	7.52	175	7.57
Age 10 - 14	28	4.61	81	4.76	108	4.67
Age 15 - 17	15	2.47	43	2.53	58	2.51
Age 18 - 20	11	1.81	33	1.94	44	1.90
Age 21 - 24	22	3.62	64	3.76	86	3.72
Age 25 - 34	99	16.28	302	17.74	401	17.35
Age 35 - 44	124	20.39	333	19.57	456	19.73
Age 45 - 49	53	8.72	147	8.64	199	8.61
Age 50 - 54	47	7.73	122	7.17	169	7.31
Age 55 - 59	44	7.24	121	7.11	165	7.14
Age 60 - 64	32	5.26	88	5.17	120	5.19
Age 65 - 74	33	5.43	95	5.58	128	5.54
Age 75 - 84	7	1.15	22	1.29	29	1.25
Age 85 and over	1	0.16	4	0.24	5	0.22
2005 Est. Median Age, Male	38.00		37.41		37.55	
2005 Est. Average Age, Male	36.51		36.45		36.46	
2005 Est. Female Population by Age	603		1,684		2,286	
Age 0 - 4	43	7.13	114	6.77	157	6.87
Age 5 - 9	42	6.97	112	6.65	154	6.74
Age 10 - 14	32	5.31	95	5.64	126	5.51
Age 15 - 17	19	3.15	52	3.09	71	3.11
Age 18 - 20	10	1.66	28	1.66	38	1.66
Age 21 - 24	22	3.65	57	3.38	79	3.46
Age 25 - 34	92	15.26	281	16.69	373	16.32
Age 35 - 44	125	20.73	338	20.07	463	20.25
Age 45 - 49	55	9.12	149	8.85	204	8.92
Age 50 - 54	53	8.79	141	8.37	194	8.49
Age 55 - 59	43	7.13	118	7.01	161	7.04
Age 60 - 64	31	5.14	85	5.05	116	5.07
Age 65 - 74	26	4.31	77	4.57	103	4.51
Age 75 - 84	9	1.49	31	1.84	40	1.75
Age 85 and over	1	0.17	5	0.30	6	0.26
2005 Est. Median Age, Female	38.33		38.04		38.12	
2005 Est. Average Age, Female	36.62		36.75		36.72	



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Population Age 15+ by Marital Status*	975		2,736		3,710	
Total, Never Married	297	30.46	922	33.70	1,219	32.86
Married, Spouse present	548	56.21	1,440	52.63	1,988	53.58
Married, Spouse absent	33	3.38	97	3.55	130	3.50
Widowed	28	2.87	66	2.41	94	2.53
Divorced	69	7.08	211	7.71	279	7.52
Males, Never Married	169	17.33	516	18.86	685	18.46
Previously Married	46	4.72	131	4.79	177	4.77
Females, Never Married	128	13.13	406	14.84	534	14.39
Previously Married	69	7.08	204	7.46	273	7.36
2005 Est. Pop. Age 25+ by Educational Attainment*	876		2,458		3,334	
Less than 9th grade	17	1.94	59	2.40	76	2.28
Some High School, no diploma	21	2.40	72	2.93	92	2.76
High School Graduate (or GED)	79	9.02	220	8.95	299	8.97
Some College, no degree	103	11.76	355	14.44	458	13.74
Associate Degree	43	4.91	131	5.33	174	5.22
Bachelor's Degree	341	38.93	926	37.67	1,267	38.00
Master's Degree	209	23.86	522	21.24	731	21.93
Professional School Degree	39	4.45	104	4.23	143	4.29
Doctorate Degree	24	2.74	69	2.81	93	2.79
Households						
2010 Projection	545		1,518		2,063	
2005 Estimate	471		1,309		1,779	
2000 Census	394		1,094		1,488	
1990 Census	249		711		960	
Growth 2005-2010	15.71%		15.97%		15.96%	
Growth 2000-2005	19.54%		19.65%		19.56%	
Growth 1990-2000	58.23%		53.87%		55.00%	
2005 Est. Households by Household Type	471		1,309		1,779	
Family Households	325	69.00	880	67.23	1,205	67.73
Nonfamily Households	146	31.00	429	32.77	575	32.32
2005 Est. Group Quarters Population	0		0		0	
2005 Households by Ethnicity, Hispanic/Latino	27	5.73	80	6.11	106	5.96



Pop-Facts: Demographic Snapshot Report

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Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Households by Household Income	471		1,309		1,779	
Income Less than \$15,000	5	1.06	20	1.53	25	1.41
Income \$15,000 - \$24,999	6	1.27	21	1.60	27	1.52
Income \$25,000 - \$34,999	9	1.91	29	2.22	38	2.14
Income \$35,000 - \$49,999	27	5.73	78	5.96	105	5.90
Income \$50,000 - \$74,999	72	15.29	229	17.49	301	16.92
Income \$75,000 - \$99,999	70	14.86	236	18.03	306	17.20
Income \$100,000 - \$149,999	142	30.15	373	28.50	515	28.95
Income \$150,000 - \$249,999	113	23.99	265	20.24	379	21.30
Income \$250,000 - \$499,999	21	4.46	47	3.59	68	3.82
Income \$500,000 and more	4	0.85	10	0.76	15	0.84
2005 Est. Average Household Income	\$131,202		\$121,678		\$124,197	
2005 Est. Median Household Income	\$116,084		\$105,548		\$108,527	
2005 Est. Per Capita Income	\$50,992		\$47,034		\$48,077	
2005 Est. Household Type, Presence Own Children*	471		1,309		1,779	
Single Male Householder	41	8.70	122	9.32	164	9.22
Single Female Householder	48	10.19	141	10.77	189	10.62
Married-Couple Family, own children	122	25.90	332	25.36	454	25.52
Married-Couple Family, no own children	157	33.33	414	31.63	571	32.10
Male Householder, own children	4	0.85	13	0.99	17	0.96
Male Householder, no own children	11	2.34	36	2.75	48	2.70
Female Householder, own children	15	3.18	43	3.28	59	3.32
Female Householder, no own children	14	2.97	42	3.21	56	3.15
Nonfamily, Male Householder	34	7.22	101	7.72	135	7.59
Nonfamily, Female Householder	22	4.67	64	4.89	86	4.83
2005 Est. Households by Household Size*	471		1,309		1,779	
1-person household	89	18.90	263	20.09	353	19.84
2-person household	177	37.58	476	36.36	653	36.71
3-person household	104	22.08	283	21.62	387	21.75
4-person household	66	14.01	178	13.60	244	13.72
5-person household	24	5.10	68	5.19	91	5.12
6-person household	6	1.27	22	1.68	28	1.57
7 or more person household	5	1.06	18	1.38	23	1.29
2005 Est. Average Household Size	2.57		2.59		2.58	



Pop-Facts: Demographic Snapshot Report

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Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Households by Presence of People*	471		1,309		1,779	
Households with 1 or more People Age 18 or under:						
Married-Couple Family	126	26.75	342	26.13	468	26.31
Other Family, Male Householder	6	1.27	17	1.30	23	1.29
Other Family, Female Householder	17	3.61	48	3.67	65	3.65
Nonfamily, Male Householder	1	0.21	2	0.15	3	0.17
Nonfamily, Female Householder	0	0.00	1	0.08	1	0.06
Households no People Age 18 or under:						
Married-Couple Family	154	32.70	404	30.86	557	31.31
Other Family, Male Householder	10	2.12	32	2.44	42	2.36
Other Family, Female Householder	13	2.76	37	2.83	50	2.81
Nonfamily, Male Householder	75	15.92	221	16.88	296	16.64
Nonfamily, Female Householder	70	14.86	204	15.58	274	15.40
2005 Est. Households by Number of Vehicles*	471		1,309		1,779	
No Vehicles	5	1.06	15	1.15	20	1.12
1 Vehicle	150	31.85	440	33.61	590	33.16
2 Vehicles	239	50.74	607	46.37	847	47.61
3 Vehicles	53	11.25	157	11.99	211	11.86
4 Vehicles	18	3.82	73	5.58	91	5.12
5 or more Vehicles	4	0.85	17	1.30	21	1.18
2005 Est. Average Number of Vehicles*	1.89		1.92		1.91	
Family Households						
2010 Projection	376		1,022		1,398	
2005 Estimate	325		880		1,205	
2000 Census	271		733		1,004	
1990 Census	174		485		659	
Growth 2005-2010	15.69%		16.14%		16.02%	
Growth 2000-2005	19.93%		20.05%		20.02%	
Growth 1990-2000	55.75%		51.13%		52.35%	



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Family Households by Household Income	325		880		1,205	
Income Less than \$15,000	1	0.31	6	0.68	7	0.58
Income \$15,000 - \$24,999	5	1.54	18	2.05	23	1.91
Income \$25,000 - \$34,999	5	1.54	16	1.82	22	1.83
Income \$35,000 - \$49,999	19	5.85	55	6.25	74	6.14
Income \$50,000 - \$74,999	43	13.23	143	16.25	185	15.35
Income \$75,000 - \$99,999	52	16.00	177	20.11	229	19.00
Income \$100,000 - \$149,999	93	28.62	228	25.91	321	26.64
Income \$150,000 - \$249,999	84	25.85	187	21.25	271	22.49
Income \$250,000 - \$499,999	18	5.54	41	4.66	60	4.98
Income \$500,000 and more	4	1.23	9	1.02	13	1.08
2005 Est. Average Family Household Income	\$139,084		\$127,168		\$130,381	
2005 Est. Median Family Household Income	\$119,947		\$105,568		\$109,783	
2005 Est. Families by Poverty Status*	325		880		1,205	
Income At or Above Poverty Level:						
Married-Couple Family, own children	138	42.46	363	41.25	501	41.58
Married-Couple Family, no own children	142	43.69	382	43.41	524	43.49
Male Householder, own children	6	1.85	14	1.59	20	1.66
Male Householder, no own children	9	2.77	30	3.41	39	3.24
Female Householder, own children	13	4.00	33	3.75	46	3.82
Female Householder, no own children	16	4.92	52	5.91	69	5.73
Income Below Poverty Level:						
Married-Couple Family, own children	0	0.00	0	0.00	0	0.00
Married-Couple Family, no own children	0	0.00	0	0.00	0	0.00
Male Householder, own children	0	0.00	0	0.00	0	0.00
Male Householder, no own children	1	0.31	5	0.57	6	0.50
Female Householder, own children	0	0.00	0	0.00	0	0.00
Female Householder, no own children	0	0.00	0	0.00	0	0.00
2005 Est. Pop Age 16+ by Employment Status*	963		2,704		3,666	
In Armed Forces	27	2.80	57	2.11	84	2.29
Civilian - Employed	738	76.64	2,117	78.29	2,855	77.88
Civilian - Unemployed	10	1.04	27	1.00	37	1.01
Not in Labor Force	188	19.52	503	18.60	691	18.85



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Civ Employed Pop 16+ Class of Worker*	738		2,117		2,855	
For-Profit Private Workers	495	67.07	1,407	66.46	1,902	66.62
Non-Profit Private Workers	33	4.47	107	5.05	140	4.90
Local Government Workers	27	3.66	85	4.02	111	3.89
State Government Workers	12	1.63	29	1.37	41	1.44
Federal Government Workers	151	20.46	432	20.41	583	20.42
Self-Emp Workers	21	2.85	58	2.74	78	2.73
Unpaid Family Workers	0	0.00	0	0.00	0	0.00
2005 Est. Civ Employed Pop 16+ by Occupation*	738		2,117		2,855	
Management, Business, and Financial Operations	241	32.66	620	29.29	861	30.16
Professional and Related Occupations	256	34.69	711	33.59	967	33.87
Service	49	6.64	163	7.70	212	7.43
Sales and Office	154	20.87	483	22.82	636	22.28
Farming, Fishing, and Forestry	0	0.00	0	0.00	0	0.00
Construction, Extraction and Maintenance	22	2.98	79	3.73	101	3.54
Production, Transportation and Material Moving	16	2.17	61	2.88	77	2.70
2005 Est. Pop 16+ by Occupation Classification*	738		2,117		2,855	
Blue Collar	38	5.15	140	6.61	178	6.23
White Collar	651	88.21	1,814	85.69	2,465	86.34
Service and Farm	49	6.64	163	7.70	212	7.43
2005 Est. Workers Age 16+, Transportation To Work*	756		2,154		2,910	
Drove Alone	481	63.62	1,397	64.86	1,878	64.54
Car Pooled	82	10.85	227	10.54	309	10.62
Public Transportation	183	24.21	496	23.03	679	23.33
Walked	2	0.26	5	0.23	7	0.24
Motorcycle	0	0.00	0	0.00	0	0.00
Bicycle	1	0.13	4	0.19	5	0.17
Other Means	0	0.00	0	0.00	0	0.00
Worked at Home	7	0.93	26	1.21	33	1.13
2005 Est. Workers Age 16+ by Travel Time to Work*	749		2,129		2,878	
Less than 15 Minutes	49	6.54	146	6.86	195	6.78
15 - 29 Minutes	242	32.31	705	33.11	947	32.90
30 - 44 Minutes	234	31.24	646	30.34	880	30.58
45 - 59 Minutes	157	20.96	430	20.20	587	20.40
60 or more Minutes	66	8.81	202	9.49	268	9.31
2005 Est. Average Travel Time to Work in Minutes*	36.70		36.66		36.67	



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Tenure of Occupied Housing Units	471		1,309		1,779	
Owner Occupied	325	69.00	867	66.23	1,192	67.00
Renter Occupied	145	30.79	442	33.77	587	33.00
2005 Occ Housing Units, Avg Length of Residence	8		8		8	
2005 Est. All Owner-Occupied Housing Values	325		867		1,192	
Value Less than \$20,000	0	0.00	0	0.00	0	0.00
Value \$20,000 - \$39,999	0	0.00	0	0.00	0	0.00
Value \$40,000 - \$59,999	0	0.00	0	0.00	0	0.00
Value \$60,000 - \$79,999	0	0.00	0	0.00	0	0.00
Value \$80,000 - \$99,999	0	0.00	0	0.00	0	0.00
Value \$100,000 - \$149,999	1	0.31	5	0.58	6	0.50
Value \$150,000 - \$199,999	0	0.00	1	0.12	1	0.08
Value \$200,000 - \$299,999	79	24.31	308	35.52	387	32.47
Value \$300,000 - \$399,999	134	41.23	318	36.68	451	37.84
Value \$400,000 - \$499,999	60	18.46	136	15.69	196	16.44
Value \$500,000 - \$749,999	51	15.69	99	11.42	150	12.58
Value \$750,000 - \$999,999	0	0.00	0	0.00	0	0.00
Value \$1,000,000 or more	0	0.00	0	0.00	0	0.00
2005 Est. Median All Owner-Occupied Housing Value	\$361,481		\$337,618		\$344,690	
2005 Est. Housing Units by Units in Structure*	479		1,341		1,820	
1 Unit Attached	351	73.28	885	66.00	1,236	67.91
1 Unit Detached	67	13.99	220	16.41	287	15.77
2 Units	0	0.00	0	0.00	0	0.00
3 to 19 Units	27	5.64	92	6.86	118	6.48
20 to 49 Units	19	3.97	80	5.97	99	5.44
50 or More Units	15	3.13	64	4.77	80	4.40
Mobile Home or Trailer	0	0.00	0	0.00	0	0.00
Boat, RV, Van, etc.	0	0.00	0	0.00	0	0.00



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Trade Area: 9500 LAGERSFIELD CIR, VIENNA, VA 22181-6173, Total

Description	0.00 - 0.25 Miles		0.25 - 0.50 Miles		0.00 - 0.50 Miles	
	Radius	%	Radius	%	Radius	%
2005 Est. Housing Units by Year Structure Built	479		1,341		1,820	
Housing Unit Built 1999 to present	97	20.25	276	20.58	374	20.55
Housing Unit Built 1995 to 1998	83	17.33	245	18.27	328	18.02
Housing Unit Built 1990 to 1994	64	13.36	137	10.22	201	11.04
Housing Unit Built 1980 to 1989	115	24.01	283	21.10	398	21.87
Housing Unit Built 1970 to 1979	64	13.36	206	15.36	270	14.84
Housing Unit Built 1960 to 1969	27	5.64	84	6.26	111	6.10
Housing Unit Built 1950 to 1959	20	4.18	72	5.37	92	5.05
Housing Unit Built 1940 to 1949	6	1.25	24	1.79	30	1.65
Housing Unit Built 1939 or Earlier	4	0.84	12	0.89	16	0.88
2005 Est. Median Year Structure Built**	1990		1990		1990	

*In contrast to Claritas Demographic Estimates, "smoothed" data items are Census 2000 tables made consistent with current year estimated and 5 year projected base counts.

**1939 will appear when at least half of the Housing Units in this reports area were built in 1939 or earlier.



Pop-Facts: Demographic Snapshot Report

Prepared For:

Order #: 963526601

Project Code:

Site: 01

Appendix: Area Listing

Area Name:

Type: Radius

Reporting Detail: Aggregate

Reporting Level: Block Group

Radius Definition:

9500 LAGERSFIELD CIR
VIENNA, VA 22181-6173

Center Point: 38.877691 -77.272174
Circle/Band: 0.00 - 0.25

Area Name:

Type: Radius

Reporting Detail: Aggregate

Reporting Level: Block Group

Radius Definition:

9500 LAGERSFIELD CIR
VIENNA, VA 22181-6173

Center Point: 38.877691 -77.272174
Circle/Band: 0.25 - 0.50

Area Name:

Type: Radius

Reporting Detail: Aggregate

Reporting Level: Block Group

Radius Definition:

9500 LAGERSFIELD CIR
VIENNA, VA 22181-6173

Center Point: 38.877691 -77.272174
Circle/Band: 0.00 - 0.50

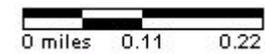
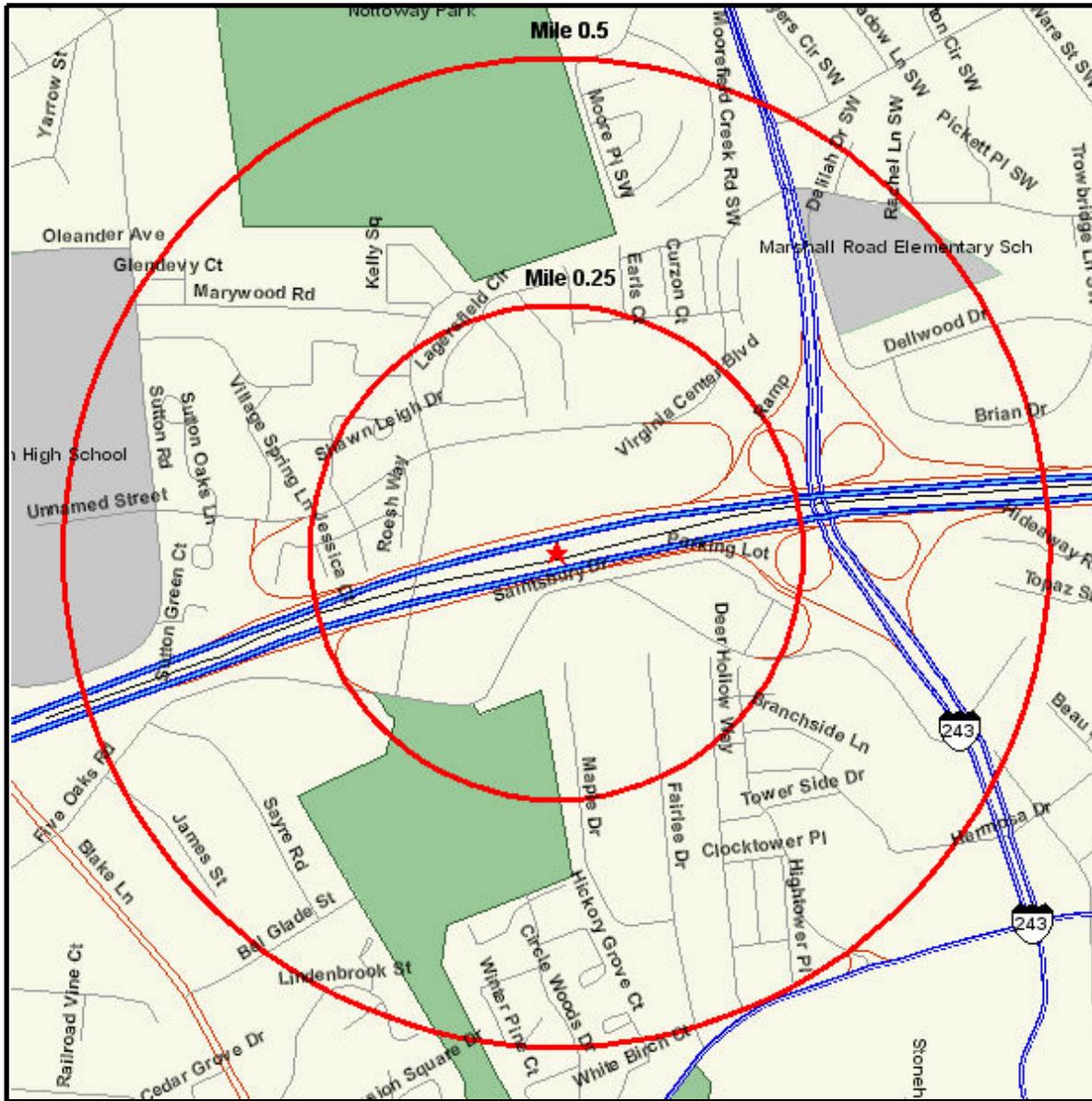


Area Map

Prepared For:
Project Code:

Order #: 963526601
Site: 01

9500 LAGERSFIELD CIR
VIENNA, VA 22181-6173
Coord: 38.877691, -77.272174
Radius - See Appendix for Details



Area Map

Prepared For:
Project Code:

Order #: 963526601
Site: 01

Appendix: Area Listing

Area Name:

Type: Radius

Radius Definition:

9500 LAGERSFIELD CIR	Center Point:	38.877691	-77.272174
VIENNA, VA 22181-6173	Circle/Band:	0.00 -	0.25

Area Name:

Type: Radius

Radius Definition:

9500 LAGERSFIELD CIR	Center Point:	38.877691	-77.272174
VIENNA, VA 22181-6173	Circle/Band:	0.25 -	0.50

Area Name:

Type: Radius

Radius Definition:

9500 LAGERSFIELD CIR	Center Point:	38.877691	-77.272174
VIENNA, VA 22181-6173	Circle/Band:	0.00 -	0.50



APPENDIX 9: TDM PROGRAM DEVELOPMENT RFP

1. BACKGROUND

THE COUNTY OF FAIRFAX, VIRGINIA, Department of Transportation, through Pulte Home Corporation, is soliciting Requests for Proposals from qualified applicants and/or firms to develop a program to benchmark mode splits and travel patterns in the vicinity of the Vienna-Fairfax-GMU Metro Station, in addition to providing a menu of transportation demand management strategies to be employed in the immediate area.

*"Transportation Demand Management (TDM) is a general term for strategies that result in more efficient use of transportation resources. There are many different TDM strategies with a variety of impacts. Some improve the transportation options available to consumers, while others provide an incentive to choose more efficient travel patterns. Some reduce the need for physical travel through mobility substitutes or more efficient land use. TDM strategies can change travel timing, route, destination, or mode."*¹

According to the Northern Virginia 2020 Transportation Plan, by the year 2020 congestion in the vicinity of the Vienna-Fairfax-GMU Station, specifically along I-66, will worsen significantly with stop-n-go conditions throughout the peak period, making the need for these improvement strategies even more critical. Accordingly a variety of transportation strategies are needed to meet these challenges now and in the future. Some of the major issues confronting us are:

- Funding needed to meet system improvement demands;
- Increased construction costs for new roadway and transit facilities;
- Increased need to improve operational efficiency;
- Changes in travel patterns;
- Lower densities making traditional transit an inefficient option in many areas; and
- Need to reduce transportation related air pollution.

As recommended by Fairfax County's Comprehensive Plan, transportation management strategies have been, and will continue to be, critical to addressing these issues. To that end, the Board of Supervisors established a Countywide goal of balancing land use with supporting transportation infrastructure, including the regional network. Regional and local efforts to achieve a balanced transportation system through the development of rapid rail, commuter rail, expanded bus service and the reduction of excessive reliance upon the automobile should be the keystone policy for future planning and facilities. To that end, the Board established 14 Countywide objectives and policies, including but not limited to the following:

¹ On-Line TDM Encyclopedia from the Victoria Policy Institute

- Provide for a multi-modal transportation system that places the primary emphasis on alternatives to the single occupant vehicle
- Increase the number of commuters using non-motorized and public transportation so that by the year 2000, 60% of County trips to the metropolitan core (D.C), 20% of the commuters to Tysons, 15% of the commuters to the suburban or transit station areas and 5% of all other commuting work trips will be made by public transportation.
- Provide a road system that provides adequate local access and capacity for through movements.
- Provide complementary land use and transportation policies.

In furtherance of the goals and objectives stated above, the Board of Supervisors recently approved a change to the County's Comprehensive Plan for certain land units within the Vienna Transit Station Area; specifically land units C and I. The proposed plan change was necessary in order to facilitate the development of a true "Transit Oriented Community" at the Vienna-Fairfax-GMU Metro station. A copy of the adopted Plan text is provided as Exhibit A.

The Metro-oriented mixed-use option for the station area represents "a highly integrated vision, whose synergy lessens the impacts of development on this site by creating conditions that minimize the need for automobile use. This density/intensity will be successful only if several core components – retail, commercial, and transportation demand management – succeed individually and collectively, and are also designed to serve the needs of the surrounding neighborhoods."² To that end, the Plan recommends that a TDM program be provided in conjunction with any development approvals for the Metro-oriented mixed-use option in order to encourage the use of transit (Metrorail and bus) and high occupant vehicle commuting modes thereby reducing the demand for single occupant vehicle ("SOV") trips.

In general, at build out, it is expected that for the residential portion of the project, a reduction in peak hour SOV trips of 47% should be achieved through the use of transit and other means; for the office portion of the development, a peak hour SOV trip reduction of 25% is expected to be achieved through similar means. The TDM program will be evaluated at three milestones; first at the time of rezoning, second before and during construction and third after build out. During the first stage, at rezoning, an application for rezoning should demonstrate that TDMs would be provided to achieve the peak hour SOV trip reduction goals stated above. Throughout the process, periodic surveys, traffic counts and reports based on empirical measurements will be conducted under the County's auspices to document the success of the program in reaching the target reductions.

² OTPA S02-II-V2, Board Motion, December 6, 2004, Page 6 of 20

The purpose of this RFP is to first determine the current state of peak hour commuting/travel patterns and mode splits within the Vienna-Fairfax-GMU Metro Station Area; second to investigate “best practices” throughout the region, across the country and/or comparable international programs; and third to develop a menu of successful TDM strategies and benchmarking opportunities to be considered for implementation at any transit-oriented mixed-use development planned for the Vienna-Fairfax-GMU Station Area (“Vienna TOD”). This effort will result in the compilation of empirical and quantitative measurements of mode splits and transit and HOV usage in the areas proximate to the transit station. During the review of the recently approved changes to the Comprehensive Plan extensive research and data collection had been completed by the Fairfax County Department of Transportation (“FCDOT”) and others. At this time, FCDOT now seeks a Consultant to build on prior work and complete a comprehensive and independent evaluation of existing mode splits, transit and HOV usage and travel patterns in the vicinity of the station, as well as strategies for increasing future mode splits.

Representatives of FCDOT and others will participate in the project as “Project Members”. Day-to-day oversight of this project will be provided by Angela Rodeheaver, Engineer IV, Fairfax County Department of Transportation (the “Project Manager”).

2. SCOPE OF WORK

The following activities and deliverables are expected from this project:

Project Kickoff Meeting(s): The selected Consultant will meet with Project Members to develop a clear understanding of the project’s goals, objectives and concerns. The Consultant should provide Project Members with suggested TDM programs/measures within the region and across the country that may be included for evaluation within the draft program, as well as how best to benchmark program performance.

Develop a Project Timeline: Based on the results of the kickoff meeting(s), the Consultant shall develop a timeline, defining in detail the steps necessary to complete the survey of existing conditions and make recommendations for TDM elements that may be appropriate for the Vienna-Fairfax-GMU TOD. The project must be completed within 45 to 60 days after notice to proceed.

Potential TDM Recommendations for the Vienna TOD: This document will include the following elements:

Literature Search:

- Review and summarize the state of TDM programs in Fairfax County. (County staff will provide the Consultant with copies of programs proffered throughout the County.)
- Identify barriers to TDM implementation in Fairfax County including a discussion of all relevant issues, pro and con, with appropriate responses to each. Include a description of the role education, outreach, and support can play in local TDM's.
- Identify the state of TDM programs in neighboring jurisdictions, throughout the Country and those comparable or relevant international programs at similarly sized TODs. Include a discussion best practices, successes and failures, as well as relevant issues, pro and con. Provide empirical information on program performance.

Benchmarking:

- Identify quantifiable measurements to establish existing conditions and evaluate TDM program progress/success in communities surrounding and proximate to the Vienna-Fairfax-GMU Metro Station. Such measurements may include surveys, traffic counts, etc. The Consultant should identify those communities deemed relevant to the projects goals and objectives.
- Provide a review of benchmarking practices at other similarly sized and successful TOD's either within the region or nationally.
- Recommend a sequence of events required for successful TDM program implementation through build out, including recommendations for implementation, timing and benchmarking progress.
- Summarize the results of the data collected.

Recommendations:

- Using information provided by accepted sources and/or Project Members, as well as other accepted sources, develop a set of TDM recommendations specific to the Vienna-Fairfax-GMU TOD, to include

strategies appropriate to the types and levels of development planned for the TOD, as well as interim and ultimate TDM goals.

- Identify how funding and/or technical assistance might be provided to establish the TDM program and identify the levels of effort/costs of implementing each step of the program throughout the Comprehensive Plan's recommended stages.

The Consultant is free to present the TDM program document in a sequence and format of their choosing as long as each element is addressed.

Project Review Meeting(s): The Consultant will meet with the Project Members on a regular basis at key points during the project.. The Consultant will incrementally present the results respectively of the literature survey, benchmarking and recommendation phase to the Project Members for review and comment. Draft documents will be distributed at least two weeks prior to any review meetings.

Final TDM Program Document: Following the final project review meeting, the Consultant shall present the final results of the survey and TDM recommendations to a meeting of the Project Members, and others.

The anticipated outcomes of the final document should include:

- A complete understanding of current peak hour travel patterns for the existing communities and developments proximate to the Transit Station Area.
- A summary of best practices locally, nationally and at comparable international locations along with empirical data supporting similar types of TODs.
- Assessment and recommendations of best TDM practices for the Vienna-Fairfax-GMU TOD.
- Identification, development, and quantification of specific empirical benchmarks to meet the Comprehensive Plan recommended SOV reduction goals.
- Identification of program elements and monitoring strategies.
- Cost estimates for implementing and sustaining on-going TDM efforts.

3. STANDARDS AND DELIVERABLES

All documents should be provided in both hard copy (paper) and digital format (MS Word). Data should be provided in MS compatible formats (Excel or Access).

All data, databases, reports and materials, in digital and hard copy format created under this project shall be transferred to FCDOT and Project Members upon completion of the project and remain the sole property of the Funding Entity with use by FCDOT permitted and approved in accordance with the contract to be executed with the Consultant.

The Consultant will provide ten (10) copies of the draft and twenty-five (25) copies of the final document. Interim reports must be submitted one to two weeks prior to meetings at which they will be discussed. In addition, one unbound copy of both the draft and final report will be provided to the Project Manager and Funding Entity. Original copies of the draft and final reports must be submitted to the FCDOT Project Manager for distribution to Project Members unless otherwise directed.

The Consultant will provide written bi-weekly progress reports to the Project Manager.

4. PROPOSAL REQUIREMENTS

Consultants will be evaluated on technical expertise and past performance. To assist with the evaluation please provide the following:

- A description of the Consultant's qualifications, which should demonstrate:
 - a. Expertise in the full range of TDM strategies and their evaluation.
 - b. Experience in benchmarking TDM effectiveness, including development of surveys, statistical analyses, etc.
 - c. An understanding of Transit Oriented Development.
- A description of how the team would accomplish the work outlined in the Scope of Work including an explanation of any proposed changes to the scope of work based on insights/expertise related to the topic.
- Include the names, titles and experience of key personnel, including day-to-day project manager.
- Describe the skills and services your firm offers

- Describe relevant experience of the firm and of personnel assigned to this task on similar types of TODs.
- Provide at least three relevant references and samples of completed work.
- Provide hourly and overtime rates for all classifications of personnel who may be utilized under this contract. These rates shall be presented and broken down by direct labor costs per class of labor and overhead cost.
- In order to be responsive to this RFP, each proposal shall conform to the following requirements. The Consultant shall:
 - a. Submit ten (10) copies of the technical proposal in one sealed envelope. Number all pages consecutively.
 - b. Submit one (1) copy of the cost proposal in a sealed envelope separate from the technical proposal.
 - c. Provide a copy of the firm's Standard Form 254.
- Clearly indicate the following on the outside of each of the sealed envelopes or packages containing the technical and cost proposals:
 - a. Name and address of the Prime Consultant.
 - b. Due date and time.
 - c. Envelope contents (i.e., technical proposal, cost proposal.)
 - d. Program Name – Vienna-Fairfax-GMU Station Area TDM Benchmarking & Strategies.

5. CONSULTANT EVALUATION AND SELECTION

The technical proposal will be evaluated by the Project Members and ranked first. The technical proposal evaluation criteria are the following:

- Qualifications of the firm and personnel to be assigned to the project and their experience working as a team to complete similarly relevant projects.
- Demonstration of overall project understanding, insights into local conditions and potential issues and knowledge of the project area and region.
- Clarity of proposal and creativity and thoughtfulness in addressing the scope of work.

- Completeness of submitted proposal with all elements required by the RFP.

The cost proposal will be reviewed for consistency with the technical proposal.

The Project Members reserve the right to seek clarification of any proposal submitted.

The Project Members reserve the right to engage in discussion with one or more Consultants, deemed fully qualified as a result of the review of the technical and cost proposals. Repetitive informal interviews shall be permitted. Consultants shall be encouraged to elaborate on their proposal and performance data, staff expertise, as well as alternative concepts. Proprietary information from Consultants shall not be disclosed to the public or competitors. At the conclusion of the interviews, and on the basis of the technical/ cost proposals and interviews, the Project Members shall select one Consultant.

The Project Members reserve the right to reject any and all proposals received as a result of this solicitation, to negotiate with any qualified source, to waive any formality and any technicalities or to cancel in any part or in its entirety this RFP if it is in the best interests of the Project Members. This solicitation of proposals in no way obligates the Fairfax County DOT, Project Members, and/or the Funding Entity to award a contract.

6. ADDITIONAL INFORMATION

The contract shall be awarded to the most qualified bidder based on the quality of proposal response and Consultant interviews. This solicitation in no way obligates the Project Members to award a contract.

The Consultant will submit monthly invoices to the County's Project Manager accompanied by brief, written progress reports.

Ten percent of the total contract cost will be withheld pending successful project completion.

All proposals become the property of the Project Members upon submission. The cost of preparing, submitting and presenting a proposal lies solely with the proposer.

Work must be completed and a final report submitted by the Consultant within 45 to 60 days after notice to proceed or as set forth in the contract.

Technical and cost proposals in two separate sealed envelopes should be submitted no later than 4:30 PM on Monday, February 14, 2005 to:

Angela K. Rodeheaver, Engineer IV
Fairfax County Department of Transportation
12055 Government Center Parkway
Suite 1034
Fairfax, Virginia 22035

Proposals submitted after the deadline will **not** be accepted. Questions regarding this RFP should be directed to Angela K. Rodeheaver at 703/324-1100.