Analysis of AM Peak Period Inbound Travel in Northern Virginia's Dulles Corridor in the Fall of 2009

A National Capital Region Transportation Planning Board
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Virginia Department of Transportation

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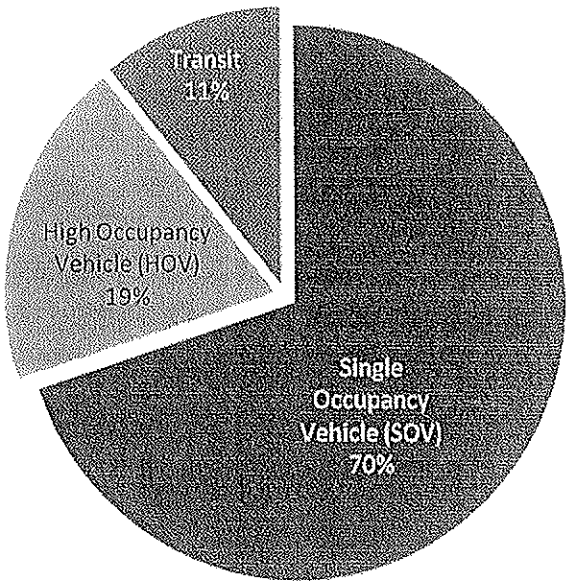
Summary

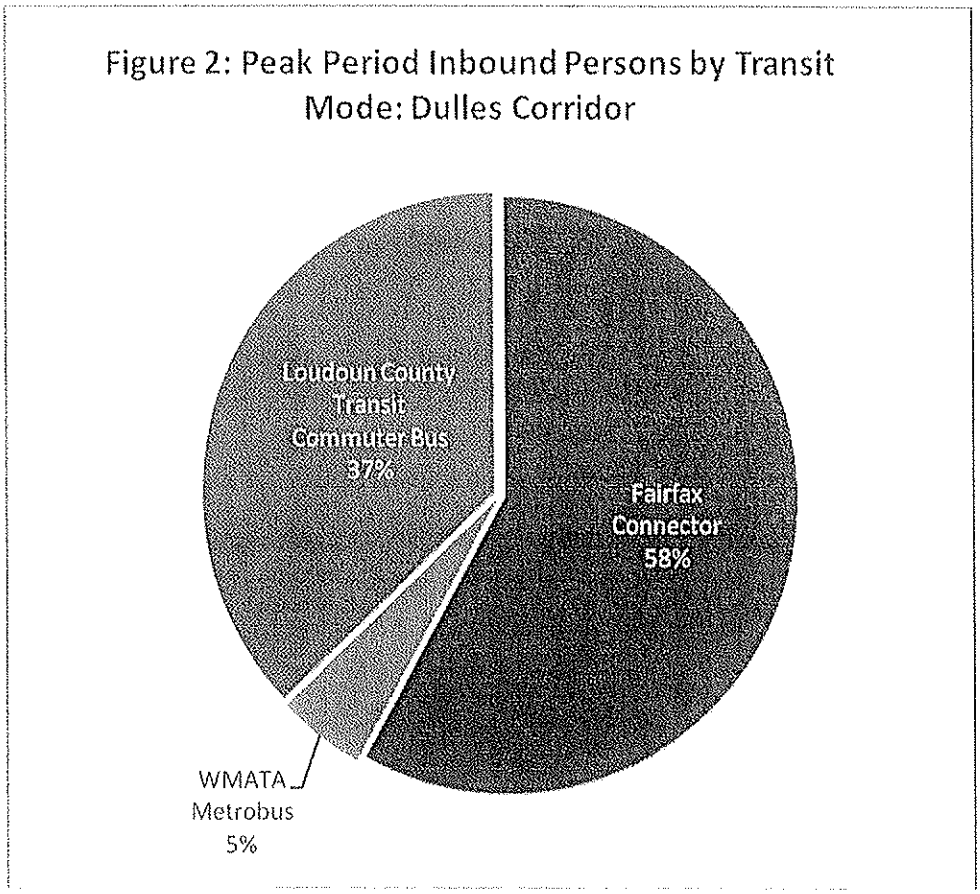
During the morning peak period of 6:15 AM to 9:15 AM, 30% of the nearly 40,350 inbound travelers in Northern Virginia's Dulles corridor use transit or multiple occupant carpools and vanpools with two or more occupants (HOVs) for their travel. The remainder of the AM peak period travelers are in single occupant vehicles and motorcycles (SOVs) (see Figure 1). These statistics are based on multi-day counts taken of traffic crossing a screen line located in the Dulles Corridor outside the Capital Beltway in the fall of 2009.

Figure 1: Peak Period Inbound Persons by Mode: Dulles Corridor



Transit carries 11% of travelers across the screen line during the 6:15 AM to 9:15 AM peak period. Passengers on Fairfax County Connector buses account for 2,600 or 58% of total transit ridership. Loudoun County Transit Commuter Buses carry 1,600 persons traveling inbound across the counting screen line, or more than a third of the total transit observed. The Washington Metropolitan Area Transit Authority (WMATA), which operates a single bus line in the corridor, the 5A, accounts for over 200 persons (see Figure 2). No commuter rail or Metrorail lines serve the corridor at this time; however, the extension of Metrorail to Washington-Dulles International Airports and points west will bring rail transit to this corridor. The first phase of the Metrorail extension to Wiehle Avenue in Reston is scheduled to be completed in 2013. Phase 2 will extend the line

from Wiehle Avenue to Dulles International Airport and into eastern Loudoun County. The construction schedule for this phase has not been set.



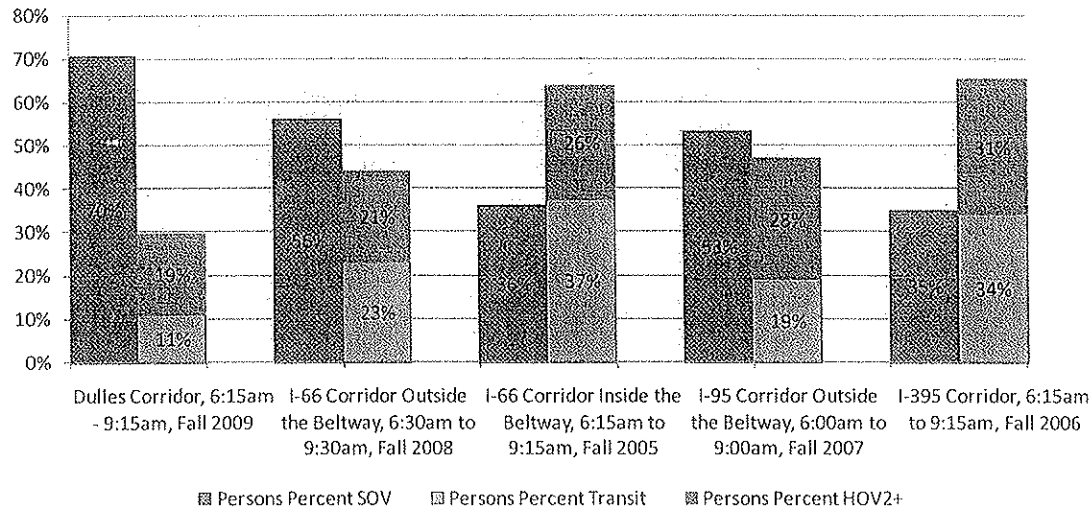
Approximately 19% of travelers crossing the screen line are in carpools or vanpools. Three-quarters of the carpoolers and vanpoolers in the corridor were counted in the Dulles Toll Road (VA-267) HOV lane, which carries 5,800 total persons in HOVs during the AM peak period on a typical weekday (a non-holiday Tuesday, Wednesday, or Thursday). The Dulles Toll Road HOV lane moves 50% more carpoolers and vanpoolers per lane hour than the Dulles Toll Road General Purpose Lanes, and more than twice the number of persons per lane hour than on all other roadway facilities in the corridor during the same three-hour period.

A total of 28,400 persons, or 70%, of the inbound AM peak period travelers cross the screen line northwest of the Tysons Corner area in single occupancy vehicles (including motorcycles) on a typical weekday. The greatest amount of AM peak period SOV travel is on the general purpose lanes of VA 267 (14,950 persons). Leesburg Pike (VA 7) has the next highest number of persons traveling in SOVs with 6,900 persons.

The Dulles Corridor has the smallest number of AM peak period person trips compared to other major transportation corridors. Appendix A provides an overview of all the screen lines examined.

HOV mode share observed in this corridor is slightly less than the FY 2008 I-66 Corridor Outside the Beltway study (21%). Transit mode share is less than half of the I-66 Outside the Beltway corridor ridership in the I-66 Corridor Outside the Beltway study. However, bus transit's total ridership and bus transit as a percent of total passengers is higher in the Dulles Corridor than in all others corridors except the I-395 Inner Area corridor. Single occupancy vehicle use, 70%, is greater than counts recorded in the previous commuter corridor studies. Figure 3 compares the mode shares from the Dulles Corridor with the shares in previous studies.[1]

Figure 3: AM Peak Period Modal Share Comparisons among Major Transportation Corridors in Northern Virginia



Based on the modal shares observed from the five corridor studies conducted for the Northern Virginia Transportation Commission (NVTC), the Dulles Corridor study has the lowest share of transit travel at 11% and the lowest percent of HOV2+ persons at 19%. In comparison, the I-395 corridor has the highest level of HOV2+ use at 31%, followed by I-95 Outside the Beltway corridor with a 28% carpool/vanpool share (Figure 3). Appendix A contains a detailed table comparing the modal shares during the peak period among the five studies.

[1] The counts were taken a distance beyond the Beltway on Route 7 and the Dulles Toll Road (over 3 miles for each). As such, they include commuters to the Tysons Corner area, which is significant employment outside the Beltway. This is different than the situations on the I-95 and I-66 corridors, where it can be assumed that most commuters are destined to locations inside the Beltway.

Study Background

One of NVTC's goals is to monitor and track daily transit ridership relative to peak period auto travel in Northern Virginia's major commuting corridors. In pursuit of this goal, NVTC asked staff from the Metropolitan Washington Council of Governments/National Capital Region Transportation Planning Board (COG/TPB) to include the Dulles Corridor Count project in its Technical Assistance work program.

COG/TPB, the Fairfax County Department of Transportation, and the Loudoun County Department of Transportation conducted these counts in late October 2009 and early November 2009 as part of a project sponsored by the Virginia Department of Transportation (VDOT) in response to a request by NVTC. The project was carried out as a VDOT Technical Assistance project in the TPB's Fiscal Year 2010 Unified Planning Work Program (UPWP).

This study complements four previous corridor count projects requested by NVTC and funded by VDOT over the last four fiscal years to analyze peak period transit ridership and auto travel at screen lines inside the Beltway in the I-66 (FY 2006) and I-395 (FY 2007) corridors, and outside the Beltway in the I-95 corridor (FY 2008) and I-66 corridor (FY 2009). These corridor count projects are designed to provide a snapshot of the overall volume of vehicle, person and passenger movements crossing a screen line at a specific location within major travel corridors in Northern Virginia. This study of the Dulles Corridor represents the final report of the series requested by NVTC and funded by VDOT.

Study Area

COG/TPB staff met with VDOT and NVTC to identify the major commuter roadways in the Dulles corridor and to determine the location of the screen line to perform traffic and transit counts. The screen line was located to the west of the Capital Beltway (I-495). The roads surveyed, from north to south were: Georgetown Pike (VA 193), Old Dominion Drive (VA 738), Leesburg Pike (VA 7), and the Dulles Toll Road (VA 267) (Figure 4). Traffic counts on the Dulles International Airport Access Highway (DIAAH), located in the center median area of the Dulles Toll Road, were not conducted for this report.

The DIAAH provides access to and from Dulles International Airport only for conducting official airport business. Therefore, the DIAAH is not considered a commuter road for passenger vehicle traffic for the purposes of this study. However, bus transit operators in the corridor use the DIAAH through a special agreement with the Metropolitan Washington Airports Authority (MWAA). Transit using the DIAHH was counted for the study.

Transit counts were also performed at this screen line. All transit bus travel except the Fairfax Connector Bus 905 occurs on the DIAAH or the Dulles Toll Road. Rail transit

does not serve the study area. Figure 4 provides an overview of the study area and Appendix B lists the count locations and the days the counts were taken.

Total Person Travel

The traffic and transit passenger counts taken for this study on two "typical weekdays" were averaged to compute a statistically dependable estimate of the three-hour AM peak period for inbound person travel across the Dulles Corridor screen line. A "typical weekday" for the purposes of this study was defined as a non-holiday Tuesday, Wednesday, or Thursday on which there were no special events or major traffic incidents that would have affected typical traffic patterns on these days.

The count data collected in this study, presented in Table 1, show the three-hour peak period for travel in the corridor is 6:15 AM to 9:15 AM when approximately 40,345 persons are traveling inbound on the major roads and transit routes approaching the Capital Beltway. This three-hour AM peak period is 15 minutes earlier than the peak period at the FY 2009 I-66 Corridor Inside the Beltway report's screen line at North Glebe Road, and the same peak period observed in the FY 2006 I-66 Outside the Corridor report's screen line at Gallows Road and the FY 2007 I-395 report's screen line at South Glebe Road. The I-95 Corridor Outside the Beltway report's peak period is 15 minutes earlier than the peak period for the Dulles Corridor.

The tables show all data collected for a five hour period from 5:00 AM to 10:00 AM. This report focuses on the three hour peak period, which represents the greatest number of total travelers crossing the screen line within a three-hour timeframe. The report also identifies the peak hour for total travelers, which is the greatest number of Am travelers within a one-hour time frame. The peak period and peak hour vary across modes.

The peak three-hour period for transit in the Dulles Corridor is 15 minutes earlier than the peak period for overall person trips, with highest ridership between 6:00 AM and 9:00 AM. The peak period for transit ridership is consistent with all of the other corridors except the I-66 Inner Area study, which had a peak period that was 15 minutes later (6:15 AM – 9:15 AM). The peak period for passenger vehicles occurs 15 minutes later than the peak period for overall travel and 30 minutes later than the peak period for transit travel. Between 6:30 AM and 9:30 AM, slightly more than 36,000 people cross the screen line in automobiles.

Figure 4: Northern Virginia Dulles Corridor Counting Locations

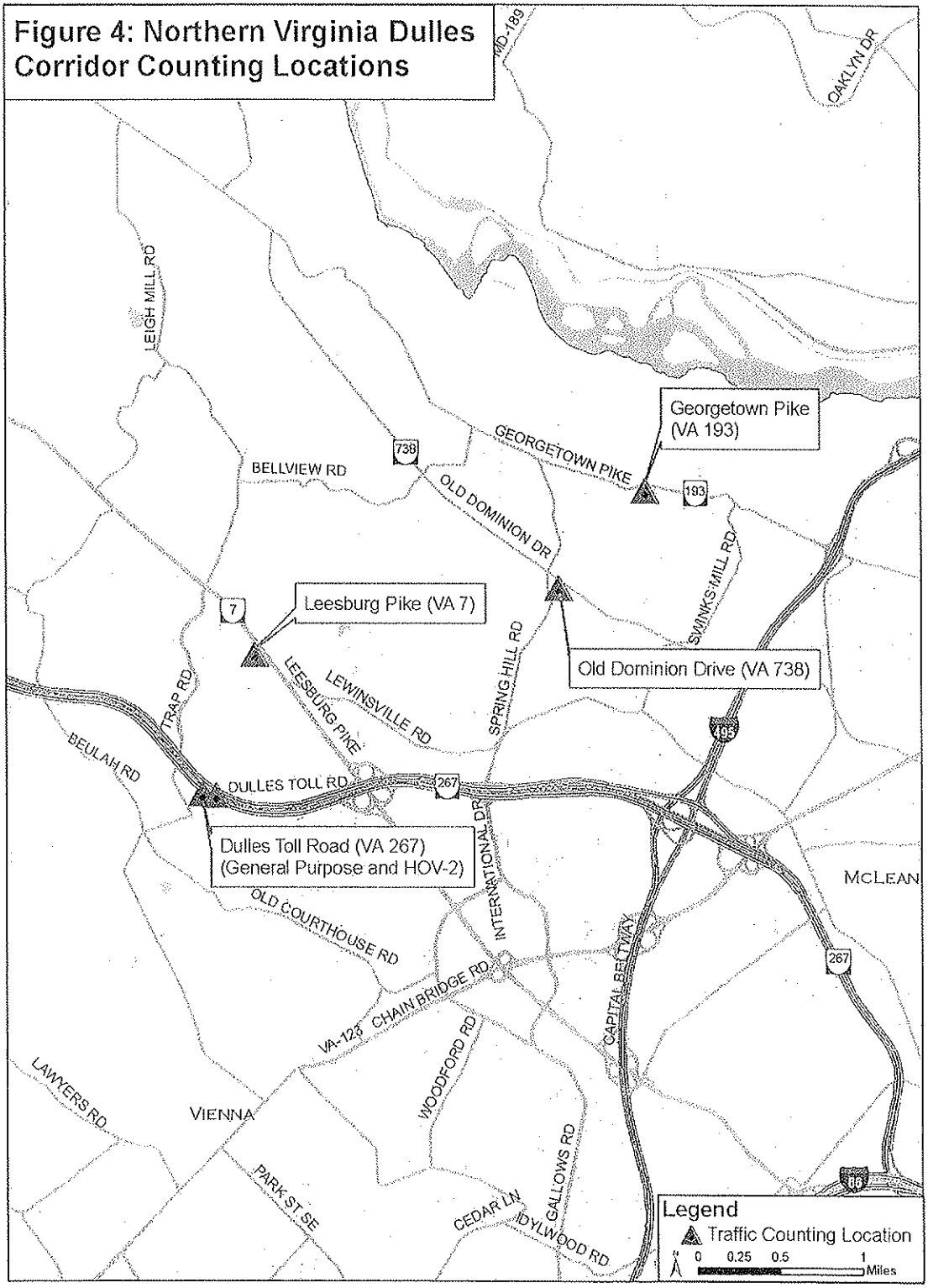


Table 1
AM Peak Period Travel in the Dulles Corridor
Total Inbound Person Trips at the Screen Line

Time Period	Persons Total AVG	Persons Auto AVG	Persons Transit AVG	Persons Transit %	Persons HOV2+ AVG	Persons HOV2+ %	Persons SOV AVG	Persons SOV %
5:00 - 5:15 AM	473	459	15	3%	41	9%	418	88%
5:15 - 5:30 AM	755	718	37	5%	45	6%	673	89%
5:30 - 5:45 AM	1,251	1,063	188	15%	83	7%	980	78%
5:45 - 6:00 AM	1,637	1,529	108	7%	184	11%	1,345	82%
6:00 - 6:15 AM	2,316	2,024	293	13%	365	16%	1,659	72%
6:15 - 6:30 AM	2,928	2,656	272	9%	406	14%	2,251	77%
6:30 - 6:45 AM	3,610	3,266	344	10%	738	20%	2,528	70%
6:45 - 7:00 AM	3,643	3,144	499	14%	770	21%	2,375	65%
7:00 - 7:15 AM	3,250	2,846	404	12%	593	18%	2,253	69%
7:15 - 7:30 AM	3,788	3,197	591	16%	742	20%	2,455	65%
7:30 - 7:45 AM	3,715	3,309	406	11%	848	23%	2,462	66%
7:45 - 8:00 AM	3,631	3,217	414	11%	689	19%	2,528	70%
8:00 - 8:15 AM	3,405	2,908	497	15%	589	17%	2,319	68%
8:15 - 8:30 AM	3,404	3,038	366	11%	604	18%	2,435	72%
8:30 - 8:45 AM	2,895	2,720	175	6%	457	16%	2,263	78%
8:45 - 9:00 AM	3,091	2,797	294	10%	550	18%	2,247	73%
9:00 - 9:15 AM	2,990	2,817	173	6%	535	18%	2,282	76%
9:15 - 9:30 AM	2,924	2,770	154	5%	340	12%	2,430	83%
9:30 - 9:45 AM	2,609	2,555	54	2%	247	9%	2,309	88%
9:45 - 10:00 AM	2,351	2,279	73	3%	275	12%	2,004	85%
Total								
5:00-10:00 AM	54,659	49,307	5,352	10%	9,096	17%	40,211	74%
Standard Weekday Variation (STD)	454	23	431		1,245		1,267	
Percent Variation (CV)	1%	0%	8%		14%		3%	
Peak Period								
6:15-9:15 AM	40,345	35,913	4,432	11%	7,518	19%	28,396	70%
Standard Weekday Variation (STD)	785	348	437		757		1,105	
Percent Variation (CV)	2%	1%	10%		10%		4%	
Peak Hour								
7:15 - 8:15 AM	14,538	12,631	1,908	13%	2,867	20%	9,764	67%
Standard Weekday Variation (STD)	95	1	95		137		136	
Percent Variation (CV)	1%	0%	5%		5%		1%	

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.

Table 1 also indicates that the standard weekday variation for travel during the AM peak period is 785 persons, or approximately 2% of the total inbound AM peak period person travel across the Dulles corridor screen line. This variation was calculated using two days of count data. The standard weekday variation for AM peak period auto travel is 1%. Carpool and vanpool travel and transit travel have a 10% standard weekday variation during this peak time period. The day to day variation on the Dulles Toll Road HOV lane for carpools and vanpool travelers was slightly less, at 8%. The largest variation in HOV travel was seen in the Dulles Toll Road general purpose lanes and Georgetown Pike (see Table 3). This difference indicates a modest amount of day-to-day variation in the timing of HOV2+ travel flows in this corridor during the three-hour AM peak period. These data indicate that carpool usage varies more on a day-to-day basis than general auto use.

The data in Table 1 also show the one-hour morning peak for inbound total person travel across the Dulles corridor screen line is 7:15 AM to 8:15 AM. The 14,500 peak hour travelers represent approximately 36% of persons crossing the screen line during the three-hour 6:15 AM to 9:15 AM morning peak period. Day-to-day variation for AM peak hour person travel is slightly less than for the AM peak period persons total, automobile persons, and transit persons total.

The one-hour AM peak at the screen line was 7:15 AM to 8:15 AM. The peak hour for transit was the same as the peak hour for total persons. The peak hour for HOV2+ was observed 30 minutes earlier at 6:45 AM to 7:45 AM.

Modal Shares

The data collected in this study indicate that on a typical weekday, travel by SOV accounts for the greatest share of total AM peak period person travel. Approximately 70% of travelers were observed in SOVs during the peak period. Table 1 shows that carpooling/vanpooling account for a 19% share and is followed by transit with an 11% share.

When comparing the peak hour of 7:15 AM to 8:15 AM to the peak period, the mode share of transit increases just over two percentage points to 13% and the mode share of HOV increases to 20% during the morning peak hour, while the SOV share decreases by three percent.

Table 1 also shows that there is less variation in the peak hour HOV counts than in the three-hour peak period HOV. The variation in the HOV travel mode decreases from 10% during the AM peak period to 5% during the AM peak hour. This difference indicates a moderate amount of day-to-day variation in the timing of HOV2+ travel flows in this corridor during the AM peak hour.

Travel by Transit

Approximately 4,400 people travel by transit in the AM peak period across the Dulles corridor screen line outside the Beltway. The study area is not served by rail transit, so bus transit accounts for all transit travel. The data presented in Table 2 show that on a typical weekday Loudoun County Transit commuter buses serve 1,650 inbound AM peak period weekday passengers in 50 buses for their travel across the screen line. Fairfax County Connector buses carry nearly 2,600 persons traveling inbound in 69 buses in the Dulles Corridor during the morning peak period. The one WMATA Metrobus line operating in the corridor, the 5A, carries over 200 passengers in 7 buses in the AM peak period. Appendix B provides a list of lines and routes serving the Dulles corridor.

Although transit ridership as a percentage of overall total inbound person trips is lower in the Dulles Corridor compared to other commuter corridors studies, the share of bus ridership is higher in the Dulles Corridor as a percent share of average total persons than all the other corridors. The Dulles Corridor, with 4,400 persons traveling by bus, or 11% of total persons crossing the screen line during the AM peak period, has greater bus ridership than the I-66 Outer Area (1,360 bus passengers or 2% modal share), the I-66 Inner Area (2,290 passengers or 4% modal share), and the I-95 Corridor (2,730 bus passengers or 3% modal share). The I-395 Corridor has over 9,900 bus passengers, or a 10.6% modal share of total persons traveling in the AM peak period.

Travel by High Occupancy Vehicles

This study also found that approximately 7,500 persons are traveling inbound across the Dulles corridor screen line in passenger vehicles with two or more occupants on a typical weekday morning during the peak period. Table 3 shows that the greatest amount of HOV2+ person travel is on the Dulles Toll Road HOV-2 lane, which carries 5,800 carpoolers/vanpoolers during the peak inbound time period. Table 4 shows that from the total HOVs observed in the corridor, the Dulles Toll Road HOV-2 lane carries the greatest number of HOV3+ commuters during the peak period with 450 persons traveling in vehicles with three or more occupants. Use of the Dulles Toll Road HOV-2 lane outside the Beltway is restricted to HOV2+ persons from 6:30 AM to 9:00 AM. Single occupancy vehicles with special "clean fuel" license tags, motorcycles, and law enforcement vehicles are exempt from the restrictions. HOV2+ vehicles include all vehicles with two or more people, including vanpools and carpools with three or more people (HOV3+). Table 3 (Total Inbound Persons in HOV2+ Vehicles at the Screen Line) includes the HOV3+ totals from Table 4 (Total Inbound Persons in HOV3+ Vehicles at the Screen Line). Table 5 provides totals of SOVs traveling in all travel lanes, including exempted single occupancy vehicles and possible violators in HOV-2 lanes.

The highest volume of HOV2+ commuters on the Dulles Toll Road HOV-2 lane occurs during the second hour (7:15 AM to 8:15 AM) of the peak period. HOV2+ person travel decreases by more than half on the Dulles HOV lane toward the end of the five hour observation period and after Dulles Toll Road HOV restrictions are lifted. HOV2+ person travel increases slightly on Leesburg Pike at the end of the peak period.

The Dulles HOV-2 lane carries more carpools and vanpools than all the other roadways combined, with 5,800 persons crossing the screen line during the AM peak period. The second highest number of inbound AM peak HOV2+ person travel is on Leesburg Pike. These lanes have just over 640 persons in carpools and vanpools during the morning peak period (see Table 3).

The largest number of HOV3+ person travel occurs on the Dulles Toll Road, with more than half of all HOV3+ travelers, or nearly 540 persons, during the peak period. Slightly less than 450 HOV3+ persons travel in the Dulles Toll Road HOV lane. The next highest number of AM peak HOV3+ travel is on Leesburg Pike, with just under 100 persons (see Table 4).

In addition, the Dulles Toll Road HOV-2 lane moves a larger number of persons per lane of roadway per hour during the morning peak period than any of the other facilities at this screen line. During the three-hour AM inbound peak period, the single Dulles Toll Road HOV lane carries an average of 2,500 persons per lane per hour, compared to an average of 1,700 persons per lane per hour on the three Dulles Toll Road non-restricted general purpose lanes (see Table 8).

Table 2
AM Peak Period Travel in the Dulles Corridor
Total Inbound Transit Passengers at the Screen Line

Time Period	TOTAL TRANSIT	FFX BUS	WMATA BUS	LCT BUS
5:00 - 5:15 AM	15	15	0	0
5:15 - 5:30 AM	37	37	0	0
5:30 - 5:45 AM	188	80	0	108
5:45 - 6:00 AM	108	31	0	77
6:00 - 6:15 AM	293	123	36	135
6:15 - 6:30 AM	272	146	0	126
6:30 - 6:45 AM	344	182	29	134
6:45 - 7:00 AM	499	170	23	306
7:00 - 7:15 AM	404	228	0	176
7:15 - 7:30 AM	591	308	57	226
7:30 - 7:45 AM	406	206	0	200
7:45 - 8:00 AM	414	289	25	100
8:00 - 8:15 AM	497	297	21	180
8:15 - 8:30 AM	366	258	30	78
8:30 - 8:45 AM	175	141	0	35
8:45 - 9:00 AM	294	222	0	73
9:00 - 9:15 AM	173	128	30	16
9:15 - 9:30 AM	154	129	26	0
9:30 - 9:45 AM	54	30	24	0
9:45 - 10:00 AM	73	62	0	11
Total				
5:00-10:00 AM	5,352	3,079	299	1,975
Standard Weekday Variation (STD)	431	240	56	136
Percent Variation (CV)	8%	8%	19%	7%
Peak Period				
6:15-9:15 AM	4,432	2,573	214	1,646
Standard Weekday Variation (STD)	437	236	95	105
Percent Variation (CV)	10%	9%	45%	6%
Peak Hour				
7:15 - 8:15 AM	1,908	1,100	103	705
Standard Weekday Variation (STD)	95	55	22	18
Percent Variation (CV)	5%	5%	21%	3%

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.

Table 3
AM Peak Period Travel in the Dulles Corridor
Total Inbound Persons in HOV2+ Vehicles at the Screen Line

Time Period	Total HOV2+ Persons	HOV2+ Persons by Dulles Corridor Roadway Facility				
		VA193	VA267 GP	VA267 HOV	VA7	VA738
5:00 - 5:15 AM	41	0	0	17	22	2
5:15 - 5:30 AM	45	0	6	24	14	1
5:30 - 5:45 AM	83	0	1	47	29	6
5:45 - 6:00 AM	184	0	20	132	28	4
6:00 - 6:15 AM	365	0	29	283	39	14
6:15 - 6:30 AM	406	0	0	370	23	13
6:30 - 6:45 AM	738	10	19	623	20	67
6:45 - 7:00 AM	770	111	27	511	48	73
7:00 - 7:15 AM	593	57	11	404	76	46
7:15 - 7:30 AM	742	16	21	557	62	86
7:30 - 7:45 AM	848	38	21	663	50	76
7:45 - 8:00 AM	689	20	14	544	77	35
8:00 - 8:15 AM	589	39	2	476	47	26
8:15 - 8:30 AM	604	9	3	524	47	21
8:30 - 8:45 AM	457	2	31	354	44	28
8:45 - 9:00 AM	550	1	51	399	78	21
9:00 - 9:15 AM	535	0	65	378	72	20
9:15 - 9:30 AM	340	2	78	161	75	24
9:30 - 9:45 AM	247	4	46	100	75	23
9:45 - 10:00 AM	275	2	30	119	106	18
Total						
5:00-10:00 AM	9,096	310	474	6,683	1,030	600
Weekday Variation (STD)	1,245	160	210	815	217	157
Percent Variation (CV)	14%	52%	44%	12%	21%	26%
Peak Period						
6:15-9:15 AM	7,518	303	264	5,800	642	510
Weekday Variation (STD)	757	163	108	436	194	144
Percent Variation (CV)	10%	54%	41%	8%	30%	28%
Peak Hour						
7:15 - 8:15 AM	2,867	113	58	2,239	236	222
Weekday Variation (STD)	137	40	48	86	56	93
Percent Variation (CV)	5%	36%	83%	4%	24%	42%

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.
Note: HOV2+ vehicles include all vehicles carrying two or more people, including vanpools and other authorized vehicles. Data for vehicles carrying one person are presented in Table 5.

Table 4
AM Peak Period Travel in the Dulles Corridor
Total Inbound Persons in HOV3+ Vehicles at the Screen Line

Time Period	Total HOV3+ Persons	HOV3+ Persons by Dulles Corridor Roadway Facility				
		VA193	VA267 GP	VA267 HOV	VA7	VA738
5:00 - 5:15 AM	19	0	0	7	12	0
5:15 - 5:30 AM	24	0	6	12	6	0
5:30 - 5:45 AM	12	0	0	0	12	0
5:45 - 6:00 AM	12	0	0	6	6	0
6:00 - 6:15 AM	30	0	0	18	12	0
6:15 - 6:30 AM	38	0	0	36	0	2
6:30 - 6:45 AM	126	0	19	100	6	2
6:45 - 7:00 AM	122	12	24	66	12	8
7:00 - 7:15 AM	53	6	2	32	12	2
7:15 - 7:30 AM	53	6	12	11	6	18
7:30 - 7:45 AM	50	0	6	44	0	0
7:45 - 8:00 AM	43	2	6	21	12	3
8:00 - 8:15 AM	32	3	0	26	2	2
8:15 - 8:30 AM	38	6	0	21	8	3
8:30 - 8:45 AM	28	0	2	21	5	2
8:45 - 9:00 AM	65	0	12	29	21	3
9:00 - 9:15 AM	67	0	0	51	16	0
9:15 - 9:30 AM	99	0	24	54	18	3
9:30 - 9:45 AM	47	2	0	30	14	2
9:45 - 10:00 AM	80	0	0	54	24	2
Total						
5:00-10:00 AM	1,033	36	112	636	202	48
Weekday Variation (STD)	236	4	120	41	81	10
Percent Variation (CV)	23%	12%	107%	6%	40%	21%
Peak Period						
6:15-9:15 AM	712	35	82	455	98	43
Weekday Variation (STD)	279	2	77	168	41	9
Percent Variation (CV)	39%	6%	95%	37%	42%	22%
Peak Hour						
7:15 - 8:15 AM	177	11	24	101	20	22
Weekday Variation (STD)	120	11	34	92	11	6
Percent Variation (CV)	68%	101%	141%	91%	54%	26%

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.
HOV 3+ vehicles and persons are also included in the HOV 2+ vehicles and counts in Table 3.

Travel by Single Occupant Vehicles

The results of the two-day traffic counts conducted for this study show that on a typical weekday approximately 28,400 AM peak period travelers cross the Dulles screen line in single occupancy autos and motorcycles (SOVs). The greatest amount of AM period SOV travel is on the Dulles Toll Road general purpose lanes. During the three-hour peak period from 6:15 AM to 9:15 AM, SOV travel on these three general purpose lanes total 14,950 persons, which is slightly more than half of all SOV persons in the corridor. Another 1,900 persons in SOVs travel on the Dulles Toll Road HOV lanes. These SOVs include vehicles with a clean fuel vehicle exemption, motorcycles, as well as law enforcement vehicles and violators.

Table 5 shows that persons in SOVs traveling inbound across the Dulles corridor screen line in the AM peak period total 2,600 on Georgetown Pike, 6,900 on Leesburg Pike, and 2,150 on Old Dominion Drive.

Passenger Vehicle Counts (autos, vans, motorcycles)

Total typical weekday inbound AM peak period passenger vehicle flows across the Dulles corridor screen line on the major roadways in this study averaged 31,900 vehicles, as shown in Table 6. The greatest number of these AM peak period vehicle movements is on the Dulles Toll Road general purpose lanes with an inbound vehicle flow of approximately 15,000 vehicles, or just under half of the total. The Dulles Toll Road HOV lane carries an additional 4,600 vehicles during the same time period resulting in the Dulles Toll Road carrying 62% of all vehicles in the study area during the peak period. Leesburg Pike has the second highest vehicle count in the corridor with an inbound flow of nearly 7,150 cars, followed by Georgetown Pike with 2,700 vehicles, and Old Dominion Drive with 2,400 vehicles.

The largest weekday variation during the peak period was observed on Dulles Toll Road General Purpose lanes with a 5% variation, slightly higher than the 4% for Georgetown Pike and 2% for the Dulles Toll Road HOV lanes. Leesburg Pike had just under a 1% variation and Old Dominion Drive had less than a 1% variation during the weekday peak period.

Table 5
AM Peak Period Travel in the Dulles Corridor
Total Inbound Persons in SOV Vehicles at the Screen Line

Time Period	Total SOV Persons	SOV Persons by Dulles Corridor Roadway Facility				
		VA193	VA267 GP	VA267 HOV	VA7	VA738
5:00 - 5:15 AM	418	40	206	23	136	13
5:15 - 5:30 AM	673	53	290	59	257	14
5:30 - 5:45 AM	980	77	427	103	354	20
5:45 - 6:00 AM	1,345	134	542	149	498	23
6:00 - 6:15 AM	1,659	163	733	162	564	37
6:15 - 6:30 AM	2,251	202	1,072	323	586	69
6:30 - 6:45 AM	2,528	217	1,364	140	632	176
6:45 - 7:00 AM	2,375	205	1,282	116	590	182
7:00 - 7:15 AM	2,253	215	1,120	171	577	171
7:15 - 7:30 AM	2,455	196	1,358	125	583	194
7:30 - 7:45 AM	2,462	217	1,343	91	567	245
7:45 - 8:00 AM	2,528	239	1,334	110	630	217
8:00 - 8:15 AM	2,319	238	1,198	134	546	203
8:15 - 8:30 AM	2,435	222	1,343	102	570	198
8:30 - 8:45 AM	2,263	225	1,168	149	537	185
8:45 - 9:00 AM	2,247	189	1,214	147	538	160
9:00 - 9:15 AM	2,282	206	1,152	261	511	153
9:15 - 9:30 AM	2,430	191	1,201	409	491	140
9:30 - 9:45 AM	2,309	157	1,180	426	432	116
9:45 - 10:00 AM	2,004	127	1,021	390	363	104
Total						
5:00-10:00 AM	40,211	3,508	20,543	3,587	9,959	2,615
Weekday Variation (STD)	1,267	181	561	490	122	88
Percent Variation (CV)	3%	5%	3%	14%	1%	3%
Peak Period						
6:15-9:15 AM	28,396	2,568	14,946	1,868	6,865	2,150
Weekday Variation (STD)	1,105	188	801	42	148	74
Percent Variation (CV)	4%	7%	5%	2%	2%	3%
Peak Hour						
7:15 - 8:15 AM	9,764	889	5,232	460	2,326	858
Weekday Variation (STD)	136	10	235	134	105	61
Percent Variation (CV)	1%	1%	5%	29%	5%	7%

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.

Table 6
AM Peak Period Travel in the Dulles Corridor
Total Inbound Passenger Vehicles at the Screen Line

Time Period	Total Vehicles	Passenger Vehicles by Dulles Corridor Roadway Facility				
		VA193	VA267 GP	VA267 HOV	VA7	VA738
5:00 - 5:15 AM	432	40	206	30	142	14
5:15 - 5:30 AM	688	53	291	69	262	14
5:30 - 5:45 AM	1,016	77	427	126	364	23
5:45 - 6:00 AM	1,432	134	552	212	510	25
6:00 - 6:15 AM	1,829	163	748	296	579	44
6:15 - 6:30 AM	2,438	202	1,072	493	597	75
6:30 - 6:45 AM	2,847	222	1,366	412	640	209
6:45 - 7:00 AM	2,715	257	1,286	347	609	217
7:00 - 7:15 AM	2,530	242	1,125	360	610	194
7:15 - 7:30 AM	2,807	202	1,363	400	612	231
7:30 - 7:45 AM	2,865	236	1,351	405	592	283
7:45 - 8:00 AM	2,858	248	1,340	374	664	233
8:00 - 8:15 AM	2,602	257	1,199	362	569	216
8:15 - 8:30 AM	2,724	224	1,345	358	590	208
8:30 - 8:45 AM	2,485	226	1,183	321	558	198
8:45 - 9:00 AM	2,502	189	1,235	340	569	170
9:00 - 9:15 AM	2,523	206	1,185	429	541	163
9:15 - 9:30 AM	2,559	192	1,230	467	521	151
9:30 - 9:45 AM	2,414	158	1,203	463	464	127
9:45 - 10:00 AM	2,109	128	1,036	427	406	112
Total	0					
5:00-10:00 AM	44,372	3,653	20,736	6,687	10,393	2,903
Weekday Variation (STD)	745	100	503	106	47	11
Percent Variation (CV)	2%	3%	2%	2%	0%	0%
Peak Period						
6:15-9:15 AM	31,895	2,709	15,046	4,598	7,148	2,394
Weekday Variation (STD)	844	105	776	100	66	4
Percent Variation (CV)	3%	4%	5%	2%	0.9%	0.2%
Peak Hour						
7:15 - 8:15 AM	11,131	942	5,252	1,540	2,436	962
Weekday Variation (STD)	117	34	223	138	81	16
Percent Variation (CV)	1%	4%	4%	9%	3%	2%

Note: The traffic count data presented in this table are the average of two "typical weekday" counts taken in late October and early November, 2009. The standard weekday variation is the standard deviation (STD) of these two counts. The percent variation is the coefficient of variation (CV) expressed as the ratio of the count standard deviation to the count average times 100%.

Average Vehicle Occupancies

A total of 36,000 persons in 31,900 passenger vehicles were observed traveling inbound across the Dulles corridor screen line during the three-hour AM peak period. Table 7 shows that the average occupancy rate for passenger vehicles for the study peak period is 1.13 passengers per vehicle. The passenger vehicle totals and the average vehicle totals include autos, vans and motorcycles.

The data in Table 7 also show that the total number of inbound AM peak period passenger flows on the single Dulles Toll Road HOV lane is half the person volume of the three Dulles Toll Road general purpose lanes. The Dulles Toll Road HOV lane, with an average vehicle occupancy of 1.67, carries 50% more passengers per lane than the Dulles Toll Road General Purpose lanes and more than twice the passenger volume per lane than all other roadways in this study (see Tables 7 and 8).

Other comparable typical weekday AM peak period vehicle occupancies in the Dulles corridor are 1.06 persons per vehicle on Georgetown Pike, 1.02 persons per vehicle on the Dulles Toll Road General Purpose Lanes, 1.05 persons per vehicle on Leesburg Pike, and 1.11 persons per vehicle on Old Dominion Drive (see Table 7).

The data in Tables 9 and 10 present the number and percentage distribution of vehicle occupancies classified by the number of persons in the vehicle for AM peak period passenger vehicle flows across the Dulles corridor screen line. The tables show that 90% or more of the passenger vehicles on all the roadways, except the Dulles Toll Road HOV lane, are carrying a single occupant. On the Dulles HOV facility during the same time period approximately 58% of the passenger vehicles (including vans) are carrying two or more occupants. During the HOV-2 restrictions from 6:30 AM to 9:00 AM the percentage of passenger vehicles carrying two or more occupants increases to 64%.

Average bus occupancy for all buses counted during the five-hour counting period was 42.5 passengers per bus. The highest occupancies were on Fairfax Connector buses, which had an average occupancy of 44.6 passengers. WMATA had an average occupancy of 42.6 and Loudoun County Transit had an average occupancy of 39.5.

Table 7

AM Peak Period Travel in the Dulles Corridor

Average Inbound Passenger Vehicle Occupancies at the Beltway Screen Line

3-Hour AM Peak Period - (6:15 AM to 9:15 AM)

Roadway Facility	Number of Inbound Lanes	Passenger Vehicles		
		Person Count	Vehicle Count	Average Occupancy
VA 193 (Georgetown Pike)	1	2,871	2,709	1.06
VA 267 (General Purpose Lanes)	3	15,209	15,046	1.01
VA 267 (HOV)	1	7,668	4,598	1.67
VA 7 (Leesburg Pike)	2	7,507	7,148	1.05
VA 738 (Old Dominion Drive)	1	2,660	2,394	1.11
TOTAL	**8**	**35,913**	**31,895**	**1.13**

Table 8

AM Peak Period Travel in the Dulles Corridor

Passenger Volume per Lane and Passenger Volume per Lane Hour at the Beltway Screen Line

3-Hour AM Peak Period – (6:15 AM to 9:15 AM)

Roadway Facility	Number of Inbound Lanes	Vol/Lane	Vol/Lane/Hr
VA 193 (Georgetown Pike)	1	2,871	957
VA 267 (General Purpose Lanes)	3	5,107	1,702
VA 267 (HOV)	1	7,668	2,556
VA 7 (Leesburg Pike)	2	3,753	1,251
VA 738 (Old Dominion Drive)	1	2,660	887

Table 9

AM Peak Period Travel in the Dulles Corridor

Inbound Passenger Vehicle Counts Classified by Number of Persons in Vehicle at the Beltway Screen Line

3-Hour AM Peak Period - (6:15 AM to 9:15 AM)

Roadway Facility	1-Person Autos	2-Person Autos	3+-Person Autos	Passenger Vans	Motorcycles	Total Passenger Vehicles
VA 193 (Georgetown Pike)	2,563	134	6	2	5	2,709
VA 267 (General Purpose Lanes)	14,933	91	4	6	13	15,046
VA 267 (HOV)	1,830	2,673	27	31	38	4,598
VA 7 (Leesburg Pike)	6,845	272	5	7	20	7,148
VA 738 (Old Dominion Drive)	2,144	234	10	1	6	2,394
Corridor Total	**28,315**	**3,403**	**50**	**46**	**81**	**31,895**

Table 10

AM Peak Period Travel in the Dulles Corridor

Distribution of Inbound Passenger Vehicle Counts Classified by Number of Persons in Vehicle

at the Beltway Screen Line

3-Hour AM Peak Period - (6:15 AM to 9:15 AM)

Roadway Facility	1-Person Autos	2-Person Autos	3+-Person Autos	Passenger Vans	Motorcycles	Total Passenger Vehicles
VA 193 (Georgetown Pike)	95%	5%	0%	0%	0%	100%
VA 267 (General Purpose Lanes)	99%	1%	0%	0%	0%	100%
VA 267 (HOV)	40%	58%	1%	1%	1%	100%
VA 7 (Leesburg Pike)	96%	4%	0%	0%	0%	100%
VA 738 (Old Dominion Drive)	90%	10%	0%	0%	0%	100%
Corridor Total	89%	11%	0%	0%	0%	100%

Statistical Confidence Levels for AM Peak Period Modal Share Estimates

One of the intended purposes of this study is to develop a statistically reliable estimate of the transit mode share of inbound AM peak period travel in Northern Virginia's Dulles corridor screen line. Based on the statistical analysis of the two-day auto occupancy and transit passenger counts conducted, transit's share of inbound AM peak period travel on a typical weekday is estimated to be 10.9% plus or minus 1.1 percentage points at the 90% confidence level. This share at this confidence level means that, statistically, one can be 90% confident that the actual share of AM peak period travel in the Dulles corridor by transit would be found in the range from 9.8% to 12% if these counts had been taken on every typical weekday between Tuesday, October 13, 2009 and Wednesday, November 4, 2009.

The carpool/vanpool person share of inbound AM peak period travel on a typical weekday at the screen line is estimated to be 18.7% plus or minus 1.9 percentage points at the 90% confidence level. The share of SOV travel at this same screen line is estimated to be 70.3% plus or minus 3.0 percentage points at the 90% confidence level.

Major Findings and Conclusions

- Analysis of two-day auto occupancy and transit passenger counts conducted on typical weekdays in mid-October and early-November 2009 show that 30% of inbound AM peak period travelers in Northern Virginia's Dulles corridor at a traffic counting screen line area are using transit or carpools or vanpools.

- Approximately 4,400 persons were counted traveling across the Dulles corridor screen line on a Metrobus, Fairfax Connector, or Loudoun County Transit bus. Total transit travel during the 6:15 AM to 9:15 AM peak period accounts for a 11% share of the total inbound AM peak period person travel across the screen line. In comparison, the I-66 Outside the Beltway corridor report's (FY 2008) screen line had 1,350 inbound travelers on public transportation buses during the AM peak period. The I-66 corridor outside the Beltway is served by both Metrorail and commuter rail, while the Dulles Corridor currently does not have rail service.

- A total of 2,600 AM peak period transit travelers at the screen line in the Dulles Corridor are on a Fairfax Connector bus. This figure accounts for more than half of the total transit passengers in the corridor.

- Over 7,500, or 19%, of the inbound AM peak period travelers in the Dulles corridor are in carpools or vanpools. More than three-quarters of these HOV2+ persons (5,800) travel on the Dulles Toll Road HOV-2 lane.

- As seen on HOV lanes that were studied in previous reports, the effectiveness of the Dulles Toll Road HOV-2 lane in its efficiency in moving large numbers of people per lane of roadway is apparent in the count data collected. During the time period the Dulles Toll Road HOV-2 lane restrictions are in effect, the single HOV lane carries an average of 2,500 persons per lane hour compared to an average of 1,700 persons per lane hour on the Dulles Toll Road general purpose lanes.

- On a typical weekday during the peak period, approximately 28,300 persons, or 70% of all travelers, cross the Dulles corridor screen line in single occupant vehicles (SOVs). The greatest amount of AM peak period SOV travel is on the general purpose lanes of the Dulles Toll Road (14,900 persons), followed by Leesburg Pike (6,900 persons).

- Vehicle occupancies for inbound vehicles on the Dulles Toll Road HOV-2 lane at the screen line during the 6:30 AM to 9:30 AM peak period average 1.7 persons per vehicle. Average vehicle occupancies for inbound vehicles on other roadway facilities in the corridor range from 1.02 on the Dulles Toll Road general purpose lanes to 1.11 on Old Dominion Drive.

Summary of Commuter Corridor Studies

At the request of NVTC, staff from COG/TPB studied five of Northern Virginia's major commuting corridors from 2005 to 2009 through its technical Assistance work program. This study of the Dulles Corridor represents the final report requested by NVTC and funded by VDOT. The following section and Appendix A and Appendix C highlight the major findings from the studies. All findings represent the respective AM peak period in each corridor.

HOV Efficiency:

- The HOV lanes move significantly larger numbers of people per lane hour than general purpose lanes. The highest volume (passengers) per lane per hour during the respective AM peak periods ranged from 3,870 passengers per lane per hour on the HOV-3 lanes of I-395 Inner Area at S. Glebe Road to 2,500 passengers per lane hour on the Dulles Toll Road HOV-2 lane. In comparison, the volume per lane hour of the general purpose lanes for I-395 was less than half (1,480) than the volume on the I-395 HOV-3 lanes. On the Dulles Toll Road, the number of passengers per lane per hour in the general purpose lanes was 1,700.

Vehicle Occupancies:

- The I-395 Inner Area corridor had the highest overall vehicle occupancy with an average of 1.44 persons per vehicle. The highest vehicle occupancy by roadway was 2.73 persons per vehicle counted on the I-95 HOV-3 lanes at the Beltway screen line.
- Among the three corridors with HOV-2 facilities, I-66 Inner Area corridor report recorded an average vehicle occupancy of 1.3 persons per vehicle. The HOV-2 roadway with the highest vehicle occupancy was the I-66 Outside the Beltway HOV2+ lane, with 1.91 passengers per vehicle. The Dulles Toll Road HOV-2 lane and the I-66 Inside Area HOV-2 lanes each reported 1.67 person per vehicle.

Carpools and Vanpools:

- The I-395 Corridor has the highest percent (31%) of travelers using carpools or vanpools. The barrier separated facility and HOV-3 restrictions during the AM peak period contribute to the high modal share.

Transit Use:

- The I-66 Inside the Beltway corridor has the highest percentage (37%) of persons traveling by transit during the AM peak period. Approximately 80% of these transit riders are traveling on WMATA's Metrorail Orange Line. The Dulles Corridor, which is not served by rail, has the lowest percentage of transit travel (11%). However, it is noteworthy that he Dulles Corridor has the highest share of bus transit travel in the study areas.

- The highest percentage of commuters using Metrorail occurred in the I-66 Inside the Beltway corridor, where approximately 30% of all commuters in the corridor traveled on Metrorail.

- Over 4% of all travelers in the I-395 corridor inside the Beltway rode VRE Commuter Rail, which represents the highest share of commuter rail ridership among the studies. This corridor is served by both the Manassas Line and the Fredericksburg Line.

- The highest percentage of bus transit shares in the AM peak period in all corridors examined was observed for WMATA buses in the I-395 corridor, at 8%.

Appendix A

AM Peak Period Travel in Major Transportation Corridors in Northern Virginia

Total Inbound Person Trips

Study and Peak Time Period	Persons Total AVG	Persons Auto AVG	Persons Transit AVG	Persons Percent Transit	Persons HOV2+ AVG	Persons Percent HOV2+	Persons SOV AVG	Persons Percent SOV
I-66 Corridor Outside the Beltway, AM Peak Period (6:30-9:30AM), Fall 2008	68,287	52,764	15,523	23%	14,276	21%	38,488	56%
Standard Weekday Variation (STD)	1,291	1,228	63		1,102		126	
Percent Variation (CV)	2%	2%	0%		8%		0%	
I-66 Corridor Inside the Beltway, AM Peak Period (6:15-9:15AM), Fall 2005	63,283	39,593	23,690	37%	16,694	26%	22,899	36%
Standard Weekday Variation (STD)	1,299	223	1,076		697			
Percent Variation (CV)	2%	1%	5%		4%			
I-395 Corridor, AM Peak Period (6:15-9:15AM), Fall 2006	94,276	62,349	31,928	34%	29,451	31%	32,898	35%
Standard Weekday Variation (STD)	756	3,627	2,871		4,794		1,167	
Percent Variation (CV)	1%	6%	9%		16%		4%	
I-95 Corridor Outside the Beltway, AM Peak Period (6:00-9:00AM), Fall 2007	101,008	81,822	19,186	19%	28,057	28%	53,765	53%
Standard Weekday Variation	1,462	1,223	239		3,793		2,570	
Percent Variation (CV)	1%	1%	1%		14%		5%	
Dulles Corridor, AM Peak Period (6:15-9:15AM), Fall 2009	40,345	35,913	4,432	11%	7,518	19%	28,396	70%
Standard Weekday Variation	785	348	437		757		1,105	
Percent Variation (CV)	1%	0%	5%		5%		1%	

Appendix B
Dulles Corridor Screen Line
Counting Stations / Locations

Dulles Corridor Facility/Service	Counting Location	Counting Dates
Roadway		
VA 193 (Georgetown Pike)	Between Spring Hill Road and Swinks Mill Road	Oct 6, 2009 and Oct 8, 2009
VA 267 (General Purpose Lanes)	Between Trap Road and Va. 7 (Leesburg Pike)	Oct 22, 2009 and Nov 4, 2009
VA 267 (HOV)	Between Trap Road and Va. 7 (Leesburg Pike)	Oct 22, 2009 and Nov 4, 2009
VA 7 (Leesburg Pike)	Between Towlston Road and Lewinsville Road	Oct 6, 2009 and Oct 8, 2009
VA 738 (Old Dominion Drive)	Between Spring Hill Road and Swinks Mill Road	Oct 6, 2009 and Oct 8, 2009
Metrobus Routes		
5A (DC – Dulles Line)	Passengers counted at Herndon-Monroe Park and Ride; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from counting locations.	Oct 15, 2009 and Oct 20, 2009
Fairfax Connector Routes		
551, 553, 557 (South Reston Line)	Passengers counted at Reston East Park & Ride and West Falls Church Station; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from or arrival times from counting locations.	Oct 22, 2009 and Oct 27, 2009
552, 554 (North Reston Line)	Passengers counted at Reston East Park & Ride; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from counting location.	Oct 22, 2009 and Oct 27, 2009
574 (Tysons Corner-Reston Town Center Line)	Passengers counted at Tysons West Park Transit Station; arrival time at VA 7 screen line between Towlston Road and Lewinsville Road based on departure times from counting location.	Oct 27, 2009 and Oct 29, 2009
585 (Reston South Express Line)	Passengers counted at West Falls Church Station; arrival time at VA 267 screen line between Trap Road and VA 7 based on arrival times at counting location.	Oct 22, 2009 and Oct 27, 2009
595 (Pentagon Express Route)	Passengers counted at Reston East Park & Ride; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from counting location.	Oct 22, 2009 and Oct 27, 2009
597 (Crystal City Express)	Passengers counted at Reston East Park & Ride; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from counting location.	Oct 22, 2009 and Oct 27, 2009

950, 980 (Herndon/Reston Town Center Line)	Passengers counted at Herndon-Monroe Park and Ride; arrival time at VA 267 screen line between Trap Road and VA 7 based on departure times from counting locations.	Oct 15, 2009 and Oct 20, 2009
Loudoun County Transit Routes DC1W, DC2E, DC5E, DC6W, DC7, DC11, DC17E, DC19, DC20, DC21, DC26, DC36 (Purcellville to Rosslyn, Crystal City, The Pentagon and Washington, DC); DC10W, DC12, DC29E, DC30W, DC35W, M1, M2, M3 (Leesburg to Rosslyn, Crystal City, The Pentagon, Washington, DC and West Falls Church Metro Station); DS3E, DS4W, DS13W, DS24, DS31, DS37W (Dulles South/Stone Ridge to Rosslyn, Crystal City, The Pentagon and Washington DC) DS8E, DS9E, DC14E, DC15W, DC22, DC25, DC27, DC28, DC33, DC34E (Dulles North Transit Center to Rosslyn, Crystal City, The Pentagon, Washington, DC and West Falls Church Metro Station) CF1W, CF2E (Ashburn North to Rosslyn and Washington DC) DC16W, DC18W, DC23W, DC32W (Christian Fellowship Church (Ashburn, VA) to The Pentagon, Crystal City and Washington DC) C1A, C2A, C3A, C4A, C5A, C6A, C7A, C8A (Potomac Falls to West Falls Church Metro Station)	Passenger counts based on Loudoun County Transit ridership data; arrival time at VA 267 screen line between Trap Road and VA 7 based on scheduled departure times from Park and Ride lots.	Oct 22, 2009 and Nov 4, 2009

Note: The arrival time at the screen line was determined based on the distance from the counting location to the screen line. The travel times were based on a combination of Google Maps travel times, speed limits, and distances to the cordon line.

Appendix C

AM Peak Period Travel in Major Transportation Corridors in Northern Virginia

Overview and Findings of Commuter Corridor Studies

Corridor / Roadway and Peak Time Period	HOV Efficiency (passengers per lane per hour)	Vehicle Occupancies (persons per vehicle)	Carpools & Vanpools (% of travelers using carpools or vanpools)	Transit Use (% persons traveling by transit)	Metrorail Ridership (% persons traveling by Metrorail)	Commuter Rail Ridership (% persons traveling by VRE Commuter Rail)	Bus Ridership (% persons traveling by bus transit)
I-66 Corridor Outside the Beltway, AM Peak Period (6:30-9:30AM), Fall 2008		1.18	21%	23%	16%	4%	2%
I-66 HOV-2 lane	2,626	1.91					
I-66 Corridor Inside the Beltway, AM Peak Period (6:15-9:15AM), Fall 2005		1.3	26%	37%	30%	4%	4%
I-66 HOV-2 lanes	2,815	1.67					
I-395 Corridor, AM Peak Period (6:15-9:15AM), Fall 2006		1.44	31%	34%	19%	4%	11%
I-395 HOV-3 lanes	3,870	2.73					
I-95 Corridor Outside the Beltway, AM Peak Period (6:00-9:00AM), Fall 2007		1.29	28%	19%	13%	3%	3%
I-95 HOV-3 lanes	3,106	2.73					
Dulles Corridor, AM Peak Period (6:15-9:15AM), Fall 2009			19%	11%	N/A	N/A	11%
Dulles Toll Road HOV-2 lane	2,500	1.67					