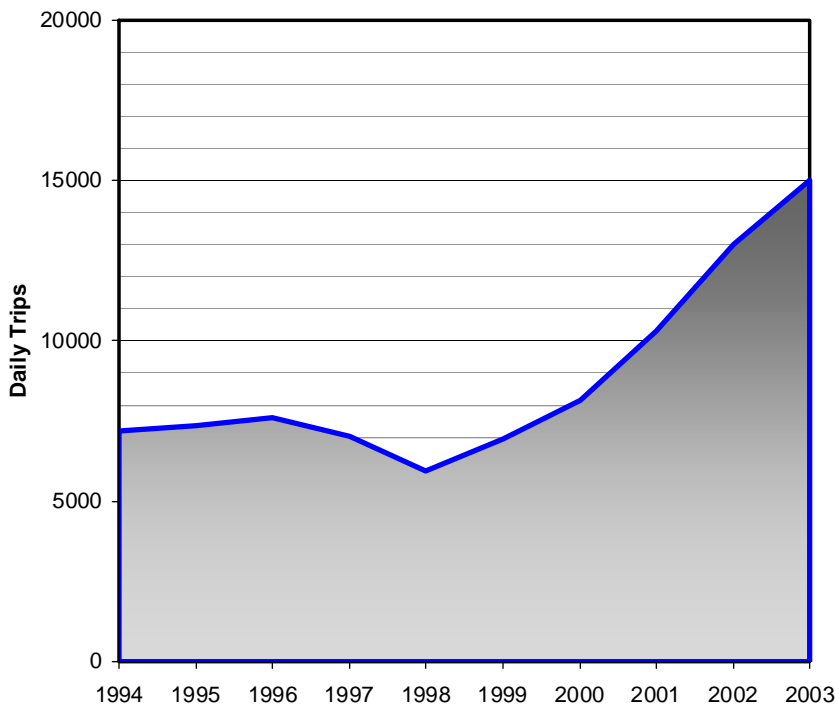


2. THE VRE RIDERSHIP MARKET

Market Overview

VRE daily ridership in the first half of 2003 grew to the record high level approaching 15,000 trips per day (see Figure 1-1). Over the past four years, ridership growth has averaged 16 percent per year, and VRE now carries twice as many riders as it did in 1999. Factors contributing to the recent growth spurt include continued suburban residential development and population growth in the suburban and exurban communities served by VRE, strengthening of the job market in downtown Washington, DC, increasing congestion on the principal highways serving the Washington business district, the lack of convenient and affordable parking downtown, and expansion and more widespread use of the available Federal transit subsidy programs (MetroChek).

**Figure 2-1
Historical VRE Ridership Trend**





Train schedules have remained relatively constant over the past three years. Early afternoon trains returning to the suburbs from Washington have been added on both the Manassas and Fredericksburg Lines, but rush hour service headways have remained at approximately 30 minutes. The recent growth in ridership has been accommodated by the acquisition of bi-level coaches with a higher seating capacity than VRE's original single level cars.

VRE's principal market is journey-to-work or commuter travel from northern Virginia suburbs to the Washington, DC central business district and employment centers in Crystal City and Alexandria, VA. The service provided by VRE is concentrated during weekday rush hours and is strongly focused on the peak direction of travel – inbound towards Washington in the morning and outbound in the afternoon. As a result, other travel markets and trip purposes are not served very well by VRE.

Ridership is relatively evenly split between the two branch lines, with the Fredericksburg Line carrying slightly more riders. VRE ridership tends to peak in the Spring and Fall months (April through June and September-October). Within the workweek, travel tends to be heavier in the middle of the week than on Mondays and Fridays. As a result, typical mid-week, Spring or Fall traffic levels are used as the basis for service, fleet and facility planning.¹

Maps 2 and 3 show the distribution of home origins and workplace destinations of VRE riders, based on survey responses from October 2002. Clusters of demand are evident along the VRE service corridors and in proximity to VRE stations, but there are a significant number of commuters from all across the northern Virginia region who ride the VRE, generally residing south of I-66 and outside the Beltway. Rolling Road and Burke Centre present the highest concentration of VRE riders. Passenger origins tend to be more dispersed along the Fredericksburg Line, where the average rail commuter has to drive a longer distance to reach a VRE station.

Most VRE riders drive to a suburban station, park their car, and take the train to the central business district. Approximately 15 percent use other means to get to the station – they walk, carpool, get dropped off, bike, or take a feeder bus at one of the few stations that offers feeder service.

VRE Patronage Forecasting Methodology

The strategic planning process included an investigation of regional travel patterns and the primary issues that are determining factors for VRE ridership. This includes historical ridership trends, demographic trends and existing and projected future regional travel patterns. The regional travel demand estimates prepared by the Metropolitan Washington Council of Governments (MWCOCG) were formatted into a large database. The resulting set of origin-destination trip tables provides a comprehensive picture of trip making characteristics of commuters in the corridors served by VRE trains. Also, the results of a VRE passenger survey in October 2002 provide specific geographic information about the current origins and destinations of VRE customers (see Maps 2 and 3).

¹ The same principle applies in assessing freight traffic. The line capacity has to accommodate the peaks and not just the weekly or seasonal averages.



Forecasts of future demographic growth in the region through 2025, and the effects of that growth on trip-making patterns, were prepared independently by MWCOG and have been used to estimate the effects of projected population and employment growth on the size of the travel markets in which VRE service competes. MWCOG travel analysis zones (TAZs) were aggregated into VRE origin catchment areas, based on the distribution of home origin locations associated with each VRE station. In the area surrounding and to the west of Manassas, where extension of the VRE network is contemplated, several additional catchment areas were defined to enable travel patterns and existing VRE mode shares to be estimated, and future shares projected. Map 4 shows the boundaries of the various VRE origin catchment areas.

A similar aggregation of TAZs was performed for VRE destinations. Four relatively large destination zones were identified, associated with each of the major VRE destination stations: Union Station, L'Enfant, Crystal City and Alexandria. Together, these zones are defined and classified for purposes of this study as the "VRE Central Business District." Within these zones, smaller aggregations of TAZs also were identified so that the differences in VRE mode share for workplace destinations within walking distance of the four stations could be captured. The destination zone boundaries are shown in Map 5.

The VRE ridership forecasting model, used over the past several years for annual projections of VRE ridership and revenue, was updated and re-calibrated to the most recent available round of regional travel data from MWCOG, (Round 6.2), plus the factored results of the Fall 2002 VRE survey, with respect to trip-making on VRE. This model then was used to predict the future level of ridership under various alternative rail service plans, including changes in service frequency and the geographic extent of rail service.

Future updates of the ridership projections will account for the changes contained in the Round 6.3 regional demographic and travel forecasts, and also will use the results of the 2000 Census journey-to-work data to refine the model. Neither the Round 6.3 MWCOG data nor the 2002 Census data were available in time for use in the Phase 2 VRE strategic planning effort.

The regional projections present one view of future demographic growth and travel patterns within the region. Following several decades of suburbanization and the increasing dispersion of population and jobs – the regional models and projections tend to forecast the general continuation of these historical trends. While useful for general transportation planning and as for the evaluation of a wide array of transportation issues and projects across the entire region, the projections may not capture the full effect on land development and trip-making patterns of making significant improvements in rail access between the city and suburbs. In particular, these data do not fully account for the ability of major transit investments to induce a higher level of overall travel in the corridors they serve, or the complementary effects of relatively intensive, well-designed development in the immediate vicinity of rail stations on both the quantity of travel and the share of those trips using transit.



Analysis of travel patterns and mode choices within the VRE service area at the TAZ level yielded information that shows these effects at work, with respect to the existing VRE system. Based on these observations, a sensitivity analysis was undertaken to develop an estimate of the potential effects on VRE ridership of transit-oriented development (TOD) – providing concentrations of new residential or commercial development in close proximity to rail stations – and the potential effect of the presence of VRE service on regional trip-making patterns within growing portions of the region. The potential change in ridership demand was estimated discretely for each existing and potential new VRE station. The results were checked at the destination end to make sure in the high range forecasts that the proportion of trips into the CBD destination zones from the VRE service area was not out of proportion.

These two sets of potential ridership estimates then were used to define the limits of a range of projected future ridership – with the COG projections on the low end representing the historical trend projection, and the alternative estimates indicating the up-side potential for VRE ridership of proactively engaging local jurisdictions and developers in an aggressive program to plan for and implement TOD projects and other rail-friendly development. Actual future performance should fall somewhere in-between.

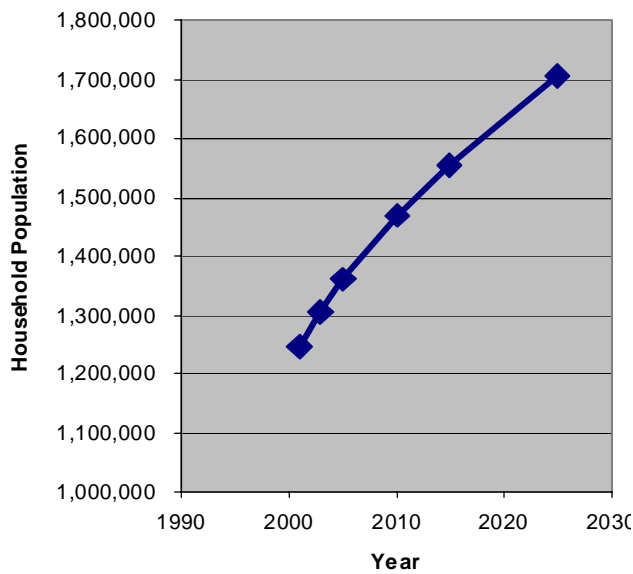
The analysis focused on defining and understanding the work trip market. Other trip purposes are reflected in the estimated daily ridership totals through factoring up of work trips, based on historical experience.

Regional Demographic and Trip-Making Trends

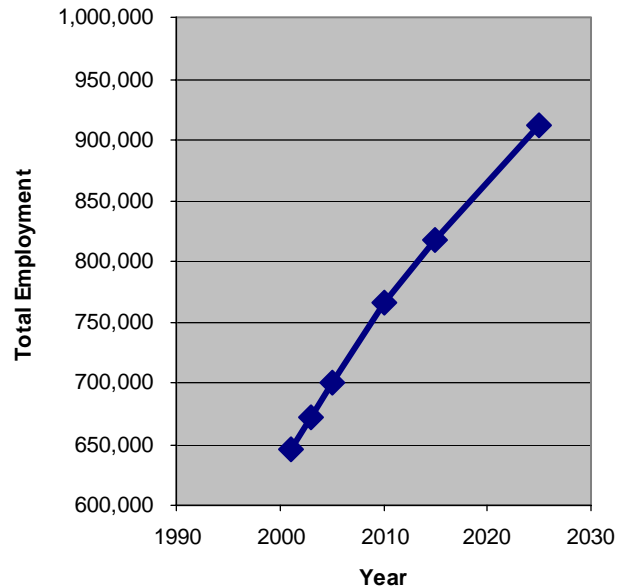
Population and Employment

VRE is situated in a region that is growing at a relatively fast pace – in terms of both population and employment. That growth is projected to continue into the future, with household population within the VRE catchment areas estimated to increase by 36 percent, and total employment projected to increase by 41 percent, between 2001 and 2025. However, the rate of growth will start slowing after 2010 as many of the outlying suburban counties become built-out and the pace of new residential construction slows. Figures 2-2 and 2-3 illustrate these anticipated trends.

**Figure 2-2
Projected Population Growth Within
VRE Origin Catchment Areas**



Source: MWCOG Round 6.2 Projections



**Figure 2-3
Projected Employment Growth Within
VRE Central Business District Destination Zones**

Table 2.1 shows projected population and employment growth by VRE catchment area. There are some interesting differences by area. The highest rates of population growth are projected to occur in the outlying portions of the study area, particularly along the I-66 corridor in Gainesville, Haymarket and Loudoun County. With respect to employment, the projections indicate strong growth in the Fredericksburg area (including Spotsylvania and Stafford Counties), and in the industrial corridor between Manassas and Gainesville.

Overall population within the VRE suburban service area is projected to grow by 400,000 between 2001 and 2025. However, total employment is projected to grow by only 200,000 – in the identical geographic area over the same time period. While not every person is a worker, and other demographic, economic and social factors also affect where people choose to live and work, these data indicate that the VRE service area will likely be a significant net *exporter* of workers to elsewhere in the region over the next 25 years. The central business district will be the recipient of a significant number of these work trips from the suburbs.

**Table 2.1
Projected Population and Employment Growth Within VRE Catchment Areas**

Origin Catchment Area	Household Population				Total Employment			
	2001	2025	Growth	Pct.Change	2001	2025	Growth	Pct.Change
Lorton	56,563	73,813	17,250	30.5%	39,171	51,391	12,220	31.2%
Woodbridge	95,613	104,812	9,199	9.6%	32,504	43,579	11,075	34.1%
Rippon	66,352	82,056	15,704	23.7%	10,665	17,078	6,413	60.1%
Quantico	74,397	111,780	37,383	50.2%	26,887	33,845	6,958	25.9%
Brooke	7,337	9,873	2,536	34.6%	2,369	3,581	1,212	51.2%
Leeland Road	46,883	66,503	19,620	41.8%	16,821	29,422	12,601	74.9%
Fredericksburg	81,675	111,299	29,624	36.3%	47,751	81,112	33,361	69.9%
Backlick Road	98,083	111,983	13,900	14.2%	51,597	57,917	6,320	12.2%
Rolling Road	67,248	73,674	6,426	9.6%	7,278	7,564	286	3.9%
Burke Centre	60,652	72,809	12,157	20.0%	11,192	12,838	1,646	14.7%
Fairfax Station	23,943	29,758	5,815	24.3%	2,402	2,624	222	9.2%
Fairfax City	21,485	24,008	2,523	11.7%	31,029	32,695	1,666	5.4%
Centreville/Chantilly	75,921	101,100	25,179	33.2%	75,375	120,609	45,234	60.0%
Clifton	2,650	3,101	451	17.0%	451	412	(39)	-8.6%
Manassas Park	91,054	111,149	20,095	22.1%	12,233	16,101	3,868	31.6%
Manassas	30,370	33,277	2,907	9.6%	15,878	18,145	2,267	14.3%
Sudley Manor	30,866	41,772	10,906	35.3%	19,512	45,304	25,792	132.2%
Gainesville	12,372	36,787	24,415	197.3%	4,261	11,421	7,160	168.0%
Haymarket	10,910	35,554	24,644	225.9%	1,520	2,917	1,397	91.9%
South Loudoun	12,994	84,966	71,972	553.9%	4,437	9,646	5,209	117.4%
Delaplane/Hume	11,509	18,729	7,220	62.7%	1,613	2,419	806	50.0%
The Plains	2,673	4,346	1,673	62.6%	593	892	299	50.4%
Warrenton/New Baltimore	20,528	32,676	12,148	59.2%	11,987	23,034	11,047	92.2%
Broad Run	21,817	31,468	9,651	44.2%	8,375	12,937	4,562	54.5%
Nokesville	2,332	4,373	2,041	87.5%	905	906	1	0.1%
Calverton/Bealeton	25,033	39,822	14,789	59.1%	3,479	5,813	2,334	67.1%
Total – VRE Service Area	1,051,260	1,451,488	400,228	38.1%	440,285	644,202	203,917	46.3%

Source: MWCOG Round 6.2 Forecasts



Work Trips to Central Business District

Table 2.2 looks at the work trip characteristics of the VRE catchment areas, as well as the destination zones surrounding the four innermost VRE stations – Union Station, L'Enfant, Crystal City and Alexandria. VRE's principal travel market comprises journey-to-work trips from the origin catchment areas to the downtown central business district destination zones. The table illustrates the current magnitude of these trips and the extent to which they are projected to change through 2025.

In 2001, about 20 percent of all workers in the VRE catchment areas commuted to jobs in the central business district. MWCOG projects that the VRE catchment areas will generate an additional 40,000 daily work trips to the central business district by 2025. However, the percentage of all workers commuting to the business district is projected to decline, from 20 percent to 17 percent, reflecting the expected continuation of strong suburban employment generation in the region.

Looking at the same data from the point of view of the CBD destination zones highlights the same general trend. In 2001, the northern Virginia communities and areas served by VRE furnished 12.6 percent of all workers within the central business district as defined for this study. By 2025, the VRE areas' share of all work trips into the CBD is projected to decline slightly, to 12.2 percent, as a higher percentage of downtown jobs are assumed to be filled by residents of the inner urban areas and from other suburban regions such as Loudoun County.

Overall, the work trip market from the VRE service area to the central business district is projected by MWCOG to grow by 28 percent. The rate of growth is projected to be greatest in the outer portion of the VRE service area.

**Table 2.2
Work Trips from VRE Origin Catchment Areas to Central Business District
Destinations**

Origin Catchment Area	2001			2025			Percent Growth	
	Total to 4 CBD Zones	Total to All Dests	Pct. to 4 CBD Zones	Total to 4 CBD Zones	Total to All Dests	Pct. to 4 CBD Zones	To 4 CBD Zones	To All Dests
4 Lorton	10,089	37,743	26.7%	12,849	50,459	25.5%	27.4%	33.7%
5 Woodbridge	11,611	64,473	18.0%	12,616	77,545	16.3%	8.7%	20.3%
6 Rippon	6,931	43,960	15.8%	8,656	59,974	14.4%	24.9%	36.4%
7 Quantico	8,629	55,806	15.5%	12,246	89,133	13.7%	41.9%	59.7%
8 Brooke	650	5,625	11.6%	746	7,982	9.3%	14.8%	41.9%
9 Leeland Road	1,967	34,856	5.6%	2,379	52,839	4.5%	20.9%	51.6%
10 Fredericksburg	3,559	58,821	6.1%	3,818	85,424	4.5%	7.3%	45.2%
11 Backlick Road	21,776	74,912	29.1%	25,110	88,818	28.3%	15.3%	18.6%
12 Rolling Road	12,392	49,141	25.2%	13,062	54,401	24.0%	5.4%	10.7%
13 Burke Centre	8,682	44,596	19.5%	9,982	52,954	18.9%	15.0%	18.7%
14 Fairfax Station	2,660	17,083	15.6%	2,922	19,956	14.6%	9.8%	16.8%
15 Fairfax City	3,508	16,725	21.0%	3,957	18,777	21.1%	12.8%	12.3%
17 Centreville/Chantilly	8,974	60,941	14.7%	10,961	81,594	13.4%	22.1%	33.9%
18 Clifton	239	1,943	12.3%	247	2,003	12.3%	3.3%	3.1%
19 Manassas Park	7,747	67,764	11.4%	9,119	86,352	10.6%	17.7%	27.4%
20 Manassas	1,517	21,269	7.1%	1,905	26,190	7.3%	25.6%	23.1%
21 Sudley Manor	2,072	18,978	10.9%	2,906	30,331	9.6%	40.3%	59.8%
22 Gainesville	761	8,716	8.7%	1,903	26,023	7.3%	150.1%	198.6%
23 Haymarket	650	7,345	8.8%	1,848	24,905	7.4%	184.3%	239.1%
24 South Loudoun	249	5,305	4.7%	3,500	66,892	5.2%	1305.6%	1160.9%
25 Delaplane/Hume	342	9,220	3.7%	545	16,387	3.3%	59.4%	77.7%
26 The Plains	106	1,989	5.3%	166	3,537	4.7%	56.6%	77.8%
27 Warrenton/New Baltimore	723	15,300	4.7%	1,144	27,685	4.1%	58.2%	80.9%
28 Broad Run	976	13,722	7.1%	1,502	21,932	6.8%	53.9%	59.8%
29 Nokesville	111	1,612	6.9%	196	3,161	6.2%	76.6%	96.1%
30 Calverton/Beaeton	623	20,441	3.0%	1,048	36,366	2.9%	68.2%	77.9%
Total from VRE Svc. Area	117,544	758,286	15.5%	145,333	1,111,620	13.1%	23.6%	46.6%
Total from All Origins	929,748			1,190,497			28.0%	
% from VRE Svc. Area	12.6%			12.2%				



VRE Share of the Work Trip Market to CBD Destination Zones

Table 2.3 presents the proportion of all work trips from the VRE origin catchment areas to the central business district destination zones that used VRE in the year 2000, the last year of available detailed data. These percentages represent VRE's "mode split" in the corridors and travel markets that VRE serves. From VRE's overall northern Virginia service area, excluding the zones close to Washington, DC where convenient Metrorail and bus service to the core is offered, the railroad in 2000 captured only 9.3 percent of all work trips to and from the central business district. With continued rapid growth in VRE ridership, the current (2004) VRE mode share is considerably higher, estimated to be close to 14 percent.

Were that volume of people to attempt to drive to their workplaces during rush hours, the region's highways – including I-95, I-667 and the Capital Beltway – would experience a marked increase in traffic congestion. Similarly, were they to all attempt to take the Metro, they would significantly worsen already crowded conditions.

The year 2000 data show that VRE share tends to increase with distance from the CBD. In the areas with the greatest concentration of VRE riders, such as in the vicinity of the Woodbridge or Burke Centre stations, VRE captured 8-to-9 percent of all CBD work trips. Closer in (say, around Lorton or Backlick Road), VRE captured a much smaller share, on the order of 1-to-3 percent.

As one moves further outward, though, VRE's mode shares increase significantly. In Fredericksburg and the surrounding areas of Stafford and Spotsylvania Counties, VRE's mode share in 2000 was in the 35-to-41 percent range. In the Manassas and Broad Run area, VRE captured in 2000 was over 30 and 50 percent, respectively, of all CBD work trips.

The VRE share also was significantly higher for trips to workplaces in the vicinity of Washington Union Station (approximately 17 percent), which is a difficult location to reach by car and requires an intermediate transfer to reach on the Metrorail Red Line. VRE shares dropped to the 9 percent range for trips to workplaces near L'Enfant and Crystal City, which are reachable directly by Metro for many northern Virginia residents. VRE captured only about 5 to 6 percent of all trips to Alexandria, reflecting that driving to Alexandria is relatively easier than driving into Washington, DC.

The relationship of increasing VRE share to increasing distance from the CBD is assumed to have remained similar to that experienced in 2000, even though overall VRE shares of work trips have increased across-the-board, because commuter rail service tends to be more time and cost-competitive with other transportation modes for longer-distance work trips.



**Table 2.3
VRE Share of Work Trips from VRE Origin Catchment Areas to Central Business District Destinations – Year 2000**

Destination Zone:

Origin Catchment Area	Union Station	L'Enfant	Crystal City	Alexandria	Total to 4 CBD Zones
4 Lorton	7.6%	3.7%	1.3%	0.3%	2.6%
5 Woodbridge	14.9%	6.1%	9.2%	6.0%	8.1%
6 Rippon	8.2%	5.2%	6.5%	7.2%	6.2%
7 Quantico	16.3%	7.9%	12.3%	10.2%	10.6%
8 Brooke	31.9%	19.1%	17.7%	8.3%	18.1%
9 Leeland Road	70.3%	48.1%	39.8%	17.0%	41.4%
10 Fredericksburg	90.0%	4.7%	39.3%	39.5%	35.1%
11 Backlick Road	7.8%	3.3%	1.4%	0.0%	2.7%
12 Rolling Road	0.9%	5.8%	2.1%	0.6%	3.0%
13 Burke Centre	21.9%	15.2%	1.7%	1.0%	8.7%
14 Fairfax Station	20.6%	15.0%	0.4%	0.0%	8.2%
15 Fairfax City	3.5%	1.7%	0.0%	8.8%	2.0%
16 Oakton	0.0%	0.0%	0.0%	0.0%	0.0%
17 Centreville/Chantilly	2.4%	1.1%	1.1%	0.0%	1.2%
18 Clifton	96.0%	32.2%	3.0%	0.0%	22.2%
19 Manassas Park	12.5%	8.7%	8.7%	3.4%	8.7%
20 Manassas	42.7%	33.2%	30.5%	11.7%	31.7%
21 Sudley Manor	12.6%	5.8%	12.8%	15.0%	9.4%
22 Gainesville	17.0%	15.9%	25.7%	26.1%	19.6%
23 Haymarket	18.8%	8.8%	25.7%	14.5%	15.6%
24 South Loudoun	5.2%	1.8%	2.9%	0.0%	2.6%
25 Delaplane/Hume	7.2%	6.3%	1.3%	5.4%	4.2%
26 The Plains	0.0%	5.0%	0.0%	19.5%	3.2%
27 Warrenton/New Balt	15.4%	13.8%	6.5%	0.0%	10.1%
28 Broad Run	51.0%	54.9%	68.1%	42.4%	57.0%
29 Nokesville	90.0%	25.7%	31.4%	0.0%	36.6%
30 Calverton/Beaeton	38.1%	14.8%	13.6%	8.5%	16.3%
Total from VRE Svc. Area	16.8%	8.9%	8.8%	5.6%	9.3%



Projected Ridership Growth Through 2025

In VRE's principal travel market – work trips from the northern Virginia VRE service to the destination zones surrounding the four innermost stations – future increases in ridership will be a function of the combination of two factors:

- Increasing market size, fueled by population growth in the outlying catchment areas and employment growth in the central business district – and also influenced by the level and convenience of rail service offered to the CBD and the specific patterns of land development that occur in the vicinity of rail stations
- Increasing VRE market share, driven by improvements in the level of service offered by VRE, relative to those provided by alternative modes of transportation.

The historical data on trip-making and modal choice patterns for the VRE service area, including small sub-zones within the service area, indicate two ways in which the presence of commuter rail service affects travel patterns. First, those zones that are situated in close proximity to rail stations have a higher-than-average percentage of total work trips going to work destinations within the central business district. Second, VRE's share of total work trips to the central business district is higher for zones in proximity to VRE stations, compared with zones located further away from the station.

Figure 2-4 illustrates the extent to which the number of work trips from VRE catchment areas to CBD destination zones might increase as a result of VRE service being extended to new stations or significantly improved at existing stations where future transit-oriented station area development is proposed or possible.

Reasonable estimates were made of the percentage of workers commuting to downtown jobs and the share of those commuters who would potentially take the train – for selected zones in close proximity to existing or new VRE stations where new or additional future development is possible. These estimates adjust upwards the average percentages that are applied to wider geographic areas in the MWCOG projections and provide an indication of the up-side ridership potential for VRE associated with transit oriented development and the induced demand for travel to the CBD that the presence of a commuter rail link can generate.

These effects represent the high end of the range of possible increased demand and would only be realized at those locations where VRE service is provided or extended, and where a proactive partnership with developers and local jurisdictions results in the development of transit-friendly land uses and densities.

VRE market share – the percentage of work trips attracted to the VRE mode – is a function of the relative convenience and attractiveness of VRE relative to other transportation modes. Several underlying factors will tend to favor VRE over time, including:

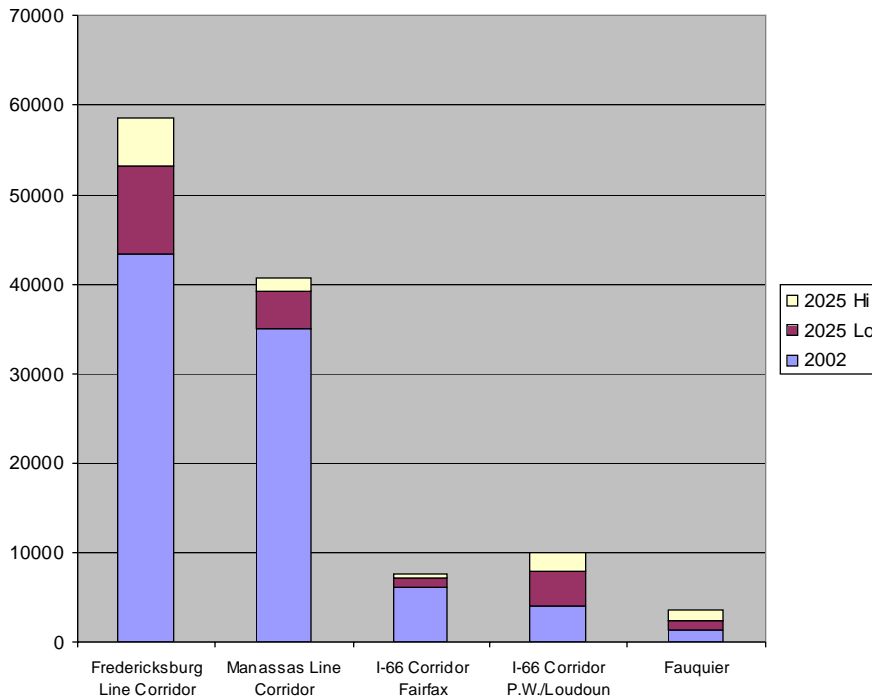
- Increasing highway congestion and limited or no investment in more capacity once the Springfield interchange project is completed, in routes to and from the CBD
- Limited capacity of Metrorail service out of Vienna without major new investment



- Limited anticipated future growth in inventory of parking, downtown and at Vienna Metro

Some factors go the other way, such as the capacity boost that the completion of the Springfield interchange will provide, CLRP projects such as I-66 widening, and HOV lane extensions in I-66 corridor and along the Capital Beltway. Most important for VRE's mode share, however, will be the VRE level of service – peak frequency of service and running time – as well as the reliability and predictability of that service for commuters.

Figure 2-4
Total Daily Work Trips to CBD from the VRE Service Area –
Current, Projected 2025 Baseline, and 2025 with Transit-Oriented
Development and VRE Induced Demand



Potential future ridership in the year 2025 was estimated for several alternative service scenarios, including:

- Baseline – existing service
- Improved service within core network
- Shorter headways and extended peak operating window
- Zone express service
- Service extension options





- Gainesville–Haymarket, Start-up service to Gainesville
 - Three round trips to Gainesville each day in addition to service to Broad Run. One Broad Run round trip would be diverted to Gainesville and two new trains added.
- Gainesville–Haymarket, Full Gainesville service
 - Six Round trips to Gainesville, three from Broad Run, 15 minute headways from Manassas, some skip-stop trains.
- Gainesville–Haymarket, Full Haymarket service
 - Extend the Gainesville Service described above to Haymarket
- Fauquier County (extension to Bealeton-Remington area)
 - Gainesville/Haymarket Service as above. Extend the three Broad Run round trips to Bealeton or Remington
- Spotsylvania County (new station at Crossroads site)
 - to provide some relief to Fredericksburg parking and attract more riders from south of Fredericksburg.

Interim year ridership was derived based on selected ridership model runs using the MWCOG interim year trip tables for 2005 and 2015, with results Interpolated for other years and for all other scenarios.

The incremental daily ridership associated with expanding off-peak service also was estimated, including mid-day service (with either bi-hourly or hourly service frequencies) and additional evening trains leaving Washington between 7:30 and 10:30 pm. Potential ridership associated with service on weekends was not explicitly analyzed.

A separate analysis was undertaken to estimate the potential ridership associated with extending selected VRE trains through Washington, DC to destinations in Maryland, which concluded that up to 3,000 daily trips could be added to VRE's ridership totals if run-through service were instituted.

Assessing the potential size of the travel market for VRE service extended to Richmond and Charlottesville was outside the scope of this study, and data on the magnitude of existing and potential future trip-making in these long-distance corridors were unavailable.

The analysis to date has not included estimates of potential reverse commute ridership on VRE to workplaces in the northern Virginia suburbs. On commuter rail systems that provide reasonable reverse commute service, commuter rail shares of the reverse-peak trip market fall in the 1 to 2 percent range. Volumes of riders are small relative the size of the peak direction market and do not drive the level of required investment in rolling stock, although serving this market may require significant additional rail infrastructure and on VRE would most likely trigger the installation of additional station platforms so that trains could serve both directions of travel simultaneously.

The analysis to date has also excluded explicit estimates of ridership associated with trip purposes other than work trips, although the factors in the ridership model that estimate the increases in ridership associated with adding off-peak service are based



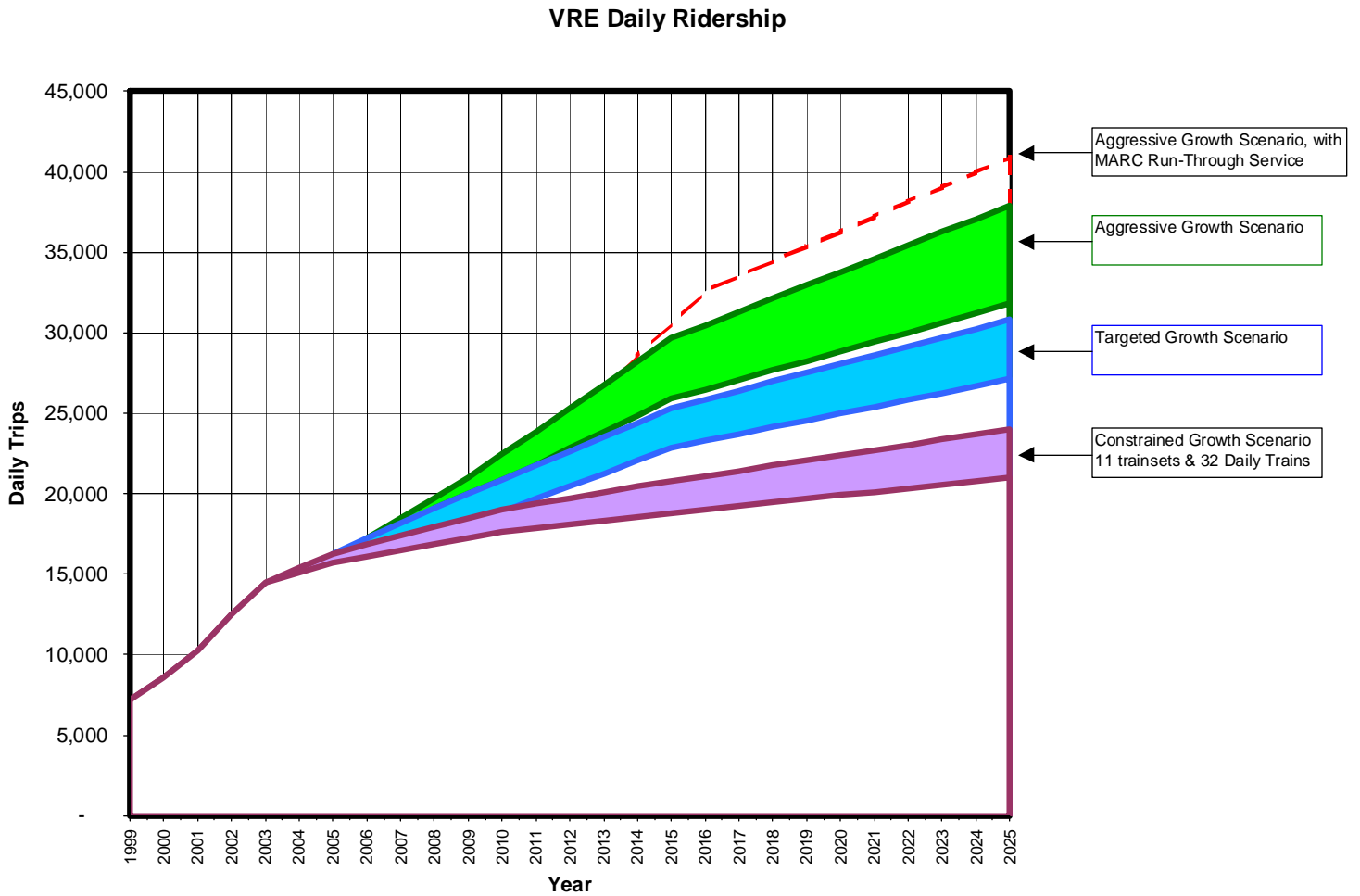
on data from the MARC Penn Line and elsewhere-- data that include trips other than work trips.

Airport trips are another potential market that commuter rail can serve. Though VRE will not have a station within convenient walking distance of the terminals at Ronald Reagan National Airport, a relatively convenient transfer to Metrorail at Alexandria could be provided to facilitate airport-related trips, and extension of VRE operations to a bi-directional, all-day long service would make the railroad a more attractive option for air travelers. Subsequent studies will need to quantify the potential magnitude of VRE's share of non-work travel markets such as airport access or travel to special cultural or sporting events in Washington, DC.

Figure 2-5 and Table 2.4 present an amalgamation of these forecasts, organized according to the three scenarios for future VRE growth and investment, which are described later in this report. The three scenarios – targeted growth, aggressive growth and constrained growth – represent the range of potential future strategies that VRE could pursue. Within each scenario, a range of potential future demand is shown. The constrained scenario retains the current train schedule and service territory, although investment in station parking and rolling stock capacity is assumed to be provided at sufficient levels to sustain growth. The targeted and aggressive scenarios increase the level of VRE service over time and extend VRE service in phases – initially in the Gainesville-Haymarket corridor and ultimately to Spotsylvania and Fauquier Counties. Capital investment and service expansion is assumed to occur more rapidly in the aggressive scenario than in the targeted scenario.

Table 2.5 presents the year 2025 market size and VRE share estimates for the work trip market from VRE station catchment areas to central business district destination zones, for each of the three scenarios.

**Figure 2-5
Projected VRE Ridership Growth Through 2025**



**Table 2.4
Estimated Daily VRE Ridership by Scenario**

Strategic Plan Scenario		1999	2000	2003	2010	2015	2025
Constrained Growth	Low	7,200	8,600	14,500	17,600	18,800	21,000
	High				19,000	20,800	24,000
Targeted Growth	Low				18,900	22,900	27,100
	High				20,900	25,300	30,800
Aggressive Growth	Low				20,900	25,900	31,800
	High				22,400	29,700	37,900
	High w/ MD Run-Through				-	30,600	40,900



**Table 2.5
CBD Commute Market Size and Estimated VRE Shares in 2025,
by Strategic Plan Scenario**

		Home-Based Work Trips to CBD	VRE Share of CBD Work Trips	Daily Work Trips via VRE	Daily Total Trips via VRE
Existing Condition*		93,700	15.2%	14,200	14,500
2025 Constrained Growth	Low	117,900	17.5%	20,600	21,000
	High	118,800	19.6%	23,300	24,000
2025 Targeted Growth	Low	119,700	22.1%	26,400	27,100
	High	124,000	23.6%	29,300	30,800
2025 Aggressive Growth	Low	120,800	24.5%	29,600	30,500
	High	127,500	27.8%	35,400	37,900

*Based on 2003 VRE daily ridership and 2001 estimate of CBD work trips.