3.
TRANSPORTATION IN THE WASHINGTON REGION

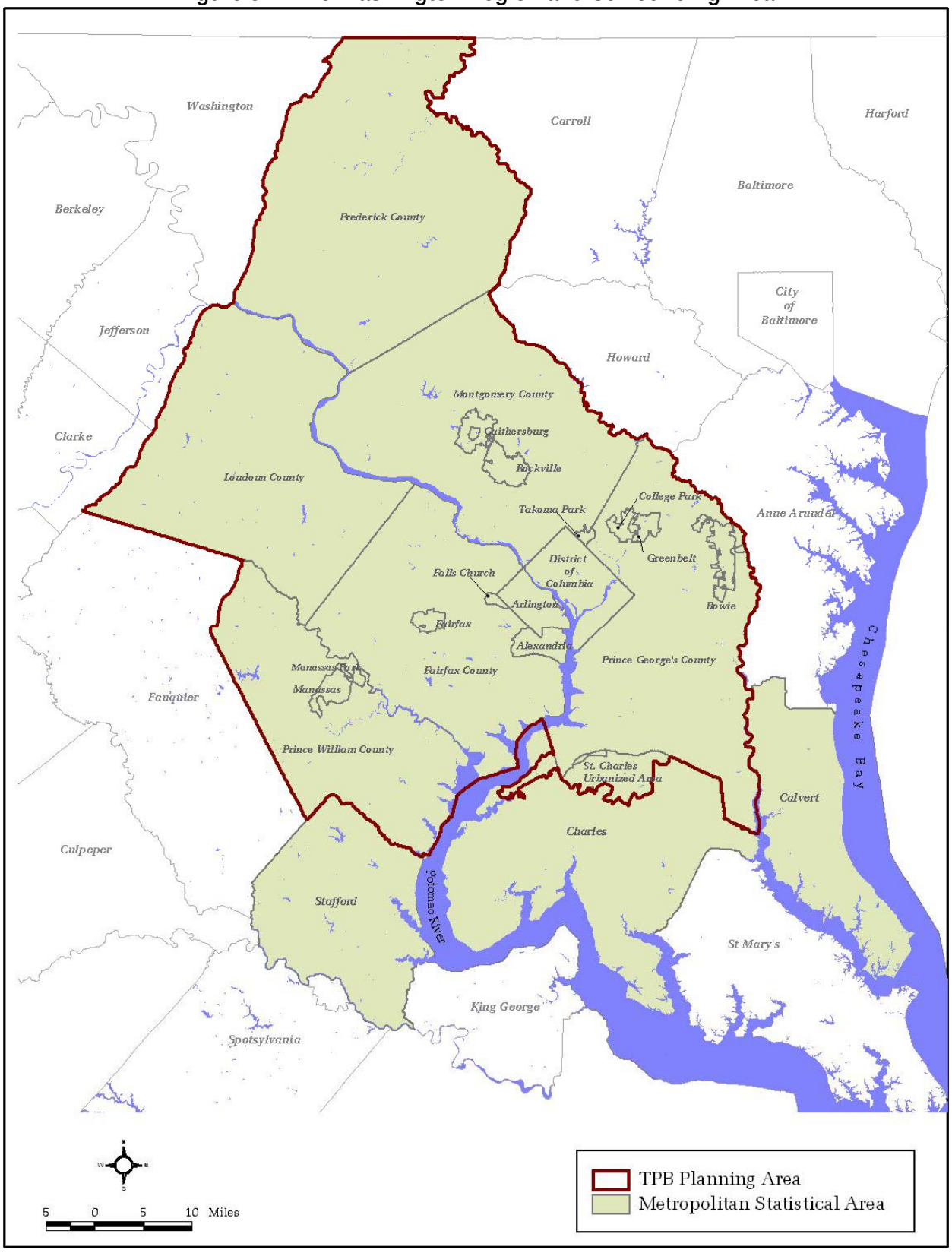
AREA GEOGRAPHY

Flanked by the Blue Ridge Mountains on the west and the Chesapeake Bay on the east, the Washington metropolitan area has grown from a small collection of communities along the Potomac River to a prominent international region of more than four million persons and two million jobs. In the earliest years of this nation's history, settlers sailed up the Potomac River from the lowlands of the Chesapeake Bay estuary to the area where the waters were no longer navigable. This section of the Potomac, known as Little Falls, marks the fall line, the geological feature where the rolling hills of the Piedmont yield to the sprawling flat lands of the tidal waters. It was here that the communities of Georgetown in Maryland (in present-day District of Columbia) and Alexandria in Virginia were established and became ports and trading centers linking the inland settlements with communities along the Bay and other navigable waterways.

In the late 1700s the nation's capital was moved from Philadelphia to this area, thus shaping the destiny of the District of Columbia as a major world capital and, to be sure, the Washington region as a global economic center. Metropolitan Washington is part of the mid-Atlantic region on the eastern seaboard of the nation. It has often been considered the southern terminus of the northeastern "megalopolis," which spans from Washington to Boston and contains other prominent cities including Baltimore, Philadelphia, and New York. The Washington region ranks fourth among all metropolitan areas in the nation in terms of its population.[1]

[1] The Washington-Baltimore Consolidated Metropolitan Statistical Area (CMSA) is ranked the fourth largest metropolitan area. Census 2000 PHC-T-3. Ranking Tables for Metropolitan Areas: 1990 and 2000. Source: U.S. Census Bureau, April 2, 2001.

Figure 3-1: The Washington Region and Surrounding Area



A Multi-State Region

The Washington region consists of the District of Columbia and the jurisdictions of Suburban Maryland and Northern Virginia, and spans the spectrum of regional development: extending from the urbanized central core through the well-established suburbs and ending in the rural fringe. The federal government, based on the results of the 1990 Census, redefined the Washington area to include even more jurisdictions than before, including two counties in West Virginia. In addition, it combined the Washington and Baltimore regions into one "consolidated" metropolitan area. This combined region is the fourth largest in the nation in population terms. The area covered by the long-range plan, as explained in Chapter 1 and shown in Figure 1-2, does not include all of the jurisdictions included in the new definition. Transportation planning in these other jurisdictions occurs almost exclusively at the local and state levels, and in cases where a regional process is already in place, transportation planning is carried out by other regional planning organizations.

The District of Columbia along with the City of Alexandria and Arlington County in Virginia are considered the **regional core** of the Washington area. The **inner suburbs** consist of Montgomery and Prince George's counties in Maryland and Fairfax County and the cities of Fairfax and Falls Church in Virginia. This group of jurisdictions is characterized by heavy growth that has taken place in the past few decades, and it is in this group that the majority of the region's residents live and work. Finally, the **outer suburbs** include Loudoun and Prince William counties, plus the cities of Manassas and Manassas Park in Virginia, and Frederick County in Maryland. (Charles and Calvert counties in Maryland and Stafford County, Virginia, are within the Census-defined Metropolitan Statistical Area (MSA), but are not part of the TPB planning area, with the exception of the St. Charles Urbanized Area of Charles County; See Figure 1-1.)

While officially part of the Baltimore region, Howard and Anne Arundel counties in Maryland act very much like suburbs of the Washington region. A considerable number of the residents of these two counties commute to jobs in the Washington region, and consequently account for a significant level of travel on the area's transportation network.

METROPOLITAN GROWTH AND DEVELOPMENT

Recent Trends

The economy that has evolved in the region is inextricably linked to the role Washington plays as the nation's capital. The federal government is the region's largest employer and, along with the services sector, is the engine that drives the economy of metropolitan Washington. Throughout much of the post-World War II period, the federal government was the single largest employment sector among the major industries. During the 1980s, however, the services sector surpassed the federal government in the number of jobs held in the region, reflecting the tremendous growth in the services sector nationwide. (Although the services sector surpassed the federal government in the number of jobs, it is important to understand that, in the Washington area, the two are closely linked and the growth that occurred was due in large part to federal spending in the region.) In the 1990s the Washington region, along with the rest of the nation, experienced a dynamic economy, finishing the decade with record-low unemployment rates.

Growth during the 1980s and 1990s fueled a surge in commercial construction, and with it came the emergence of suburban employment centers throughout the region. Examples of these centers in the Washington area include Tysons Corner in Virginia and New Carrollton in Maryland. Many of the new jobs that were added in the region were located in these suburban areas, and this resulted in shifting commuting patterns region-wide. In addition to many workers traveling to their jobs in the central core, a significant number of workers now commute to jobs located in the suburbs. In other words, typical commuting is not just radial (suburb-to-core) anymore, but also includes a significant amount of suburb-to-suburb travel.

The dominance of the federal government and the services sector highlights the nature of the regional economy: It is steeped in a long, white collar tradition and, compared to the economies of other major metropolitan areas, has a negligible manufacturing component. While production is not a big component of the regional economy, the distribution and sale of goods account for many jobs in the area. Generally speaking though, the output of the Washington region tends to be intangible items such as services or public policies, not durable goods such as automobiles or widgets.

The composition of jobs in the region (primarily government and services) has resulted in a highly educated labor force with one of the highest participation rates in the nation. Furthermore, the Washington region has one of the highest labor force participation rates among women nationwide. Subsequently, households with more than one member holding a full-time position are very common.

Growth Forecasts

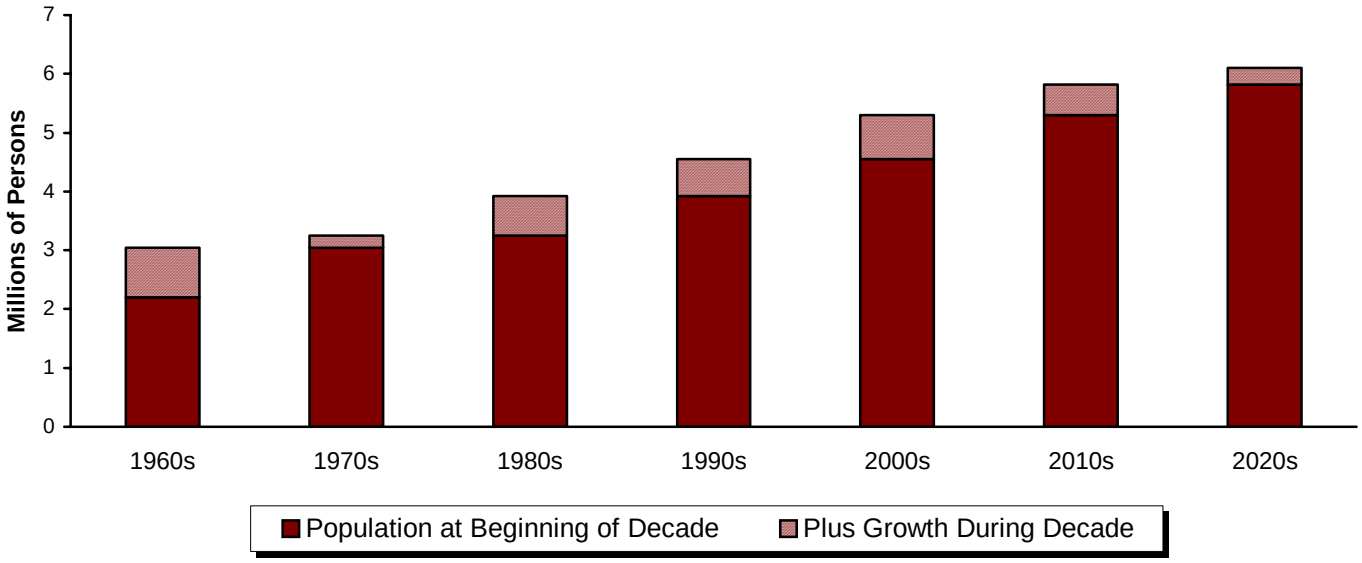
For the most part, the Washington region has enjoyed prosperous times characterized by substantial population and job growth during the second half of the 20th century. The challenge for planners throughout much of this period has been to accommodate the growth that has taken place, and adequately measure and plan for the growth that will occur in the future. COG, through a cooperative process with its local governments, attempts to measure future growth by preparing forecasts of population, households, and employment for the Washington region. These forecasts are both short- and long-term because they cover an approximate 30-year period in five-year increments.

The metropolitan transportation planning process relies on these forecasts as inputs to the regional transportation models, which are technical tools used in the planning process to project the amounts and types of travel by persons and vehicles in the area. The forecasts are updated through an iterative process, and the transportation models are run again to reflect the latest available information. The COG Board of Directors approved the latest forecasts of population, households, and employment in October 2003. This version is known as the Round 6.3 Cooperative Forecasts and covers the period up to 2030, the same period covered by the long-range plan.

Population Growth

The comparatively healthy economy of the Washington region during the past few decades fueled strong population growth in the region. In 1960, the population of the Washington region was 2.2 million, but by 2000, the population had more than doubled, to 4.5 million. This contrasts with what is forecast for the region in 2025. According to the Round 6.3 forecasts, metropolitan Washington is expected to have a population of 6.1 million people by the year 2030, representing a gain of 1.1 million people (23 percent) from the 2005 level. In other words, the population in the Washington region grew at an average annual rate of 1.8 percent between 1960 and 2000, but is expected to increase annually by only 1 percent between 2005 and 2030. Table 3-1 shows the population forecasts for the region and Figure 3-2 shows the growth trends (past and anticipated) for six decades. The rapid growth of the 1960s and the slow growth of the 1970s are clearly shown in Figure 3-2.

Figure 3-2
Population Trends: 1960-2030



Based on Washington, DC-MD-VA MSA data.

Table 3-1
Round 6.3 Cooperative Forecasts of Population by Jurisdiction
(in Thousands)

Jurisdiction	*2005*	*2015*	*2030*	*Absolute Growth 2005-2030*	*Percent Growth 2005-2030*
District of Columbia	607.0	673.7	702.4	95.4	15.7
Arlington County	197.4	209.1	221.9	24.5	12.4
City of Alexandria	136.5	145.9	151.7	15.2	11.1
Central Jurisdictions	**940.9**	**1,028.7**	**1,076.0**	**135.1**	**14.4**
Montgomery County (1)	925.0	1,020.0	1,080.0	155.0	16.8%
Rockville (2)	53.7	62.8	64.4	10.7	19.9%
Prince George's County	856.6	907.7	967.8	111.2	13.0%
Fairfax County (3)	1,045.0	1,149.8	1,197.4	152.4	14.6%
City of Fairfax	23.5	24.4	24.3	0.8	3.4%
City of Falls Church	10.6	11.6	12.2	1.6	15.1%
Inner Suburbs	**2,860.7**	**3,113.5**	**3,281.7**	**421.0**	**14.7%**
Loudoun County	239.3	351.2	441.9	202.6	84.7%
Prince William County	339.9	400.6	433.1	93.2	27.4%
Manassas & Manassas Park	51.0	52.5	53.3	2.3	4.5%
Calvert County (4)	80.6	91.1	104.4	23.8	29.5%
Charles County (4)	134.0	165.2	205.0	71.0	53.0%
Frederick County	216.6	260.0	324.6	108.0	49.9%
Stafford County (5)	107.1	136.4	180.4	73.3	68.4%
Outer Suburbs	**1,168.5**	**1,457.0**	**1,742.7**	**574.2**	**49.1%**
Northern Virginia	**2,150.3**	**2,481.5**	**2,716.2**	**565.9**	**26.3%**
Suburban Maryland	**2,212.8**	**2,444.0**	**2,681.8**	**469.0**	**21.2%**
Washington, DC-MD-VA MSA	**4,970.1**	**5,599.2**	**6,100.4**	**1,130.3**	**22.7%**

Source: Metropolitan Washington Council of Governments

Notes:
(1) Forecasts for years 2005 to 2030 include all of Takoma Park.
(2) Included in Montgomery County total.
(3) Includes Fairfax County group quarters population in the Massey Complex.
(4) Tri-county Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County and Charles County.
(5) Source: Rappahanock Area Development Commission. The estimates for 2030 are control totals provided by the Virginia Employment Commission (VEC) and should only be used for transportation planning purposes. Incremental five-year estimates have been developed for the purpose of transportation modeling and air quality analysis.

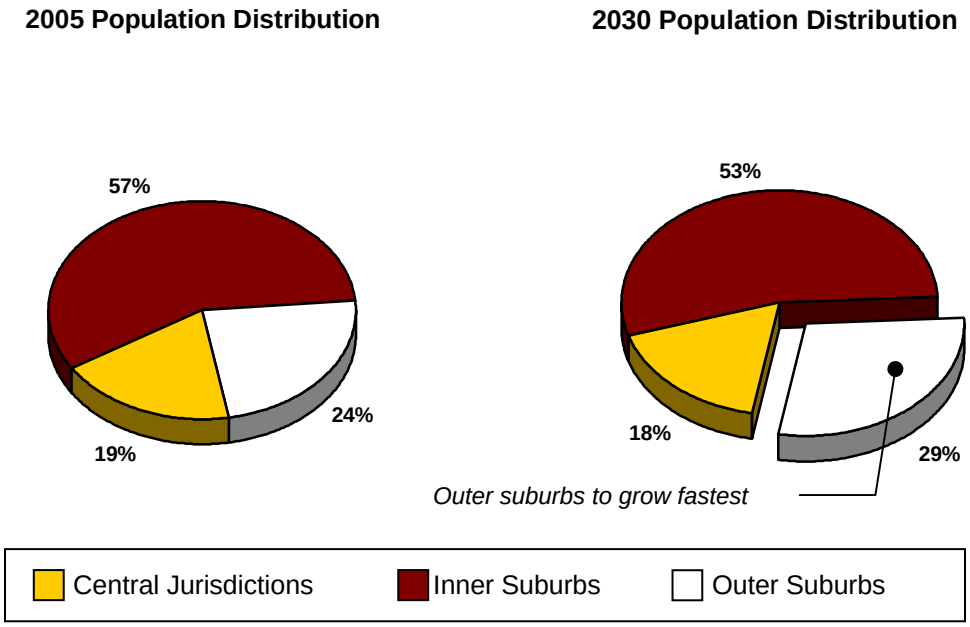
Distribution of Population Growth

The largest increase in population will take place in the region's outer suburbs. Both the absolute growth and percent growth of the outer suburbs will surpass that of the inner suburbs. Loudoun County will grow from approximately 240,000 people in 2005 to approximately 440,000 in 2030, a jump of 85 percent. Prince William County in Virginia and Frederick County in Maryland will grow by 27 percent and 50 percent, respectively.

Although the outer suburbs will bear the largest growth, the inner suburbs will remain the population stronghold. Montgomery, Prince George's and Fairfax counties are projected to grow from a combined total of over 2.8 million residents in 2005 to almost 3.3 million residents in 2030, a 15 percent increase.

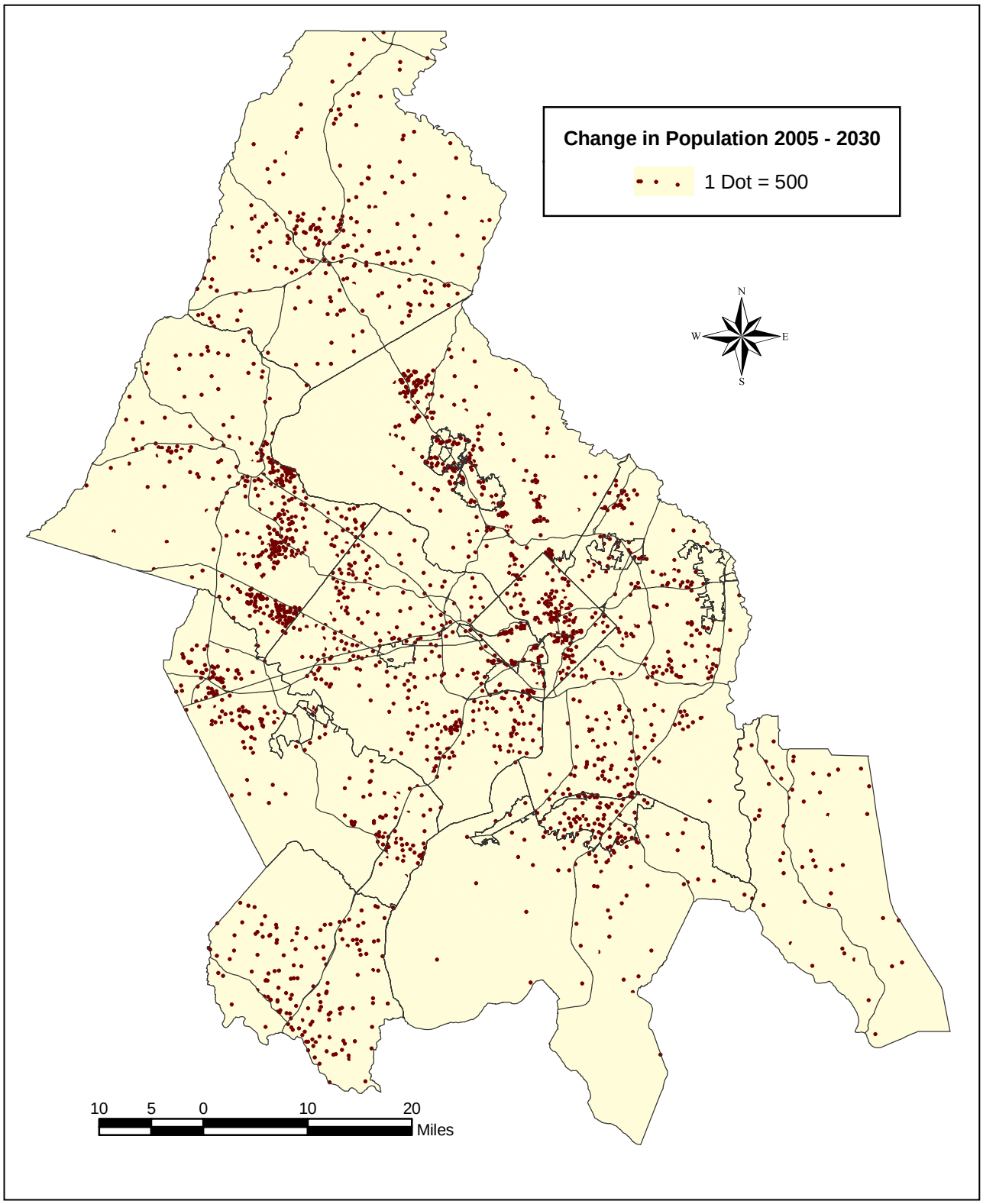
The region's central jurisdictions will grow more slowly. In Arlington County and the City of Alexandria, population will increase by 12 and 11 percent, respectively. The District of Columbia will experience an end of short-term population loss and will grow by 16 percent over the forecast period. Figures 3-3 and 3-4 show how growth between 2005 and 2030 will affect the overall population distribution region wide.

Figure 3-3
Shifts in Population Distribution



Based on Washington, DC-MD-VA MSA data.

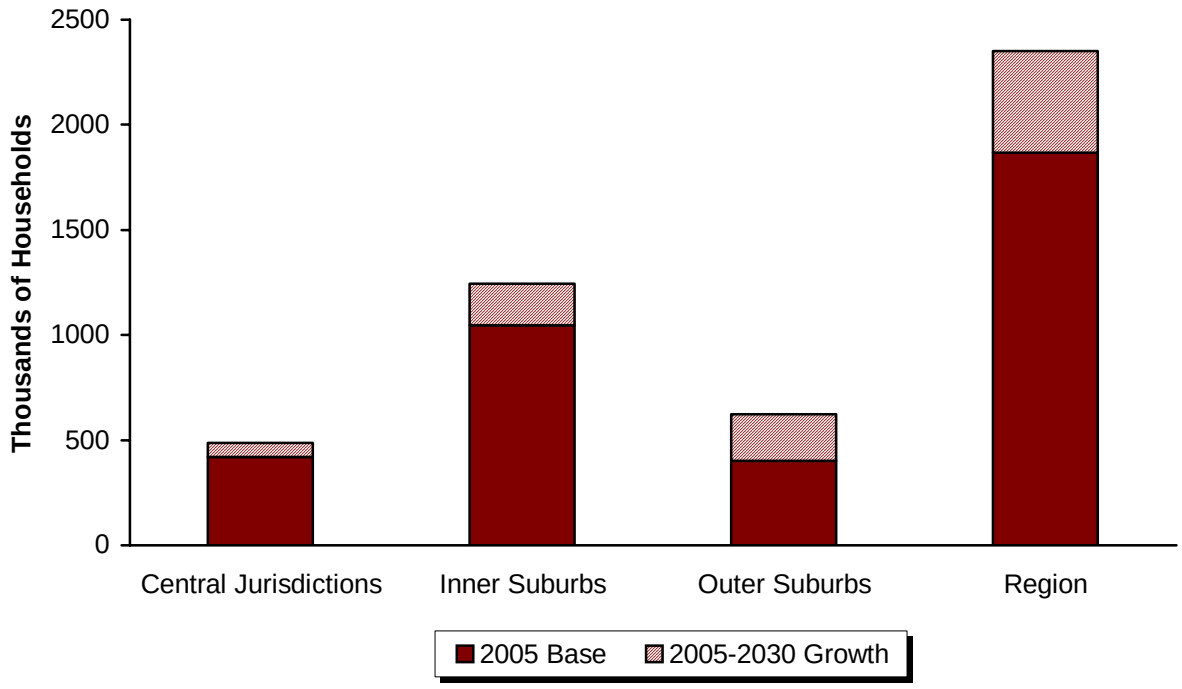
Figure 3-4
Change in Population: 2005 – 2030



Household Growth

The forecast increase of more than 484,000 households during the 2005 to 2030 forecast period reflects the growth in population and in-migration to the region. As shown in table 3-2, the largest number of new households will be in Loudoun, Fairfax, and Montgomery counties, which collectively contribute 46 percent of the household growth during the forecast period. Loudoun County will grow the most rapidly of all jurisdictions, adding nearly 72,000 households to a 2005 base of 85,000 households. Overall, households are forecast to increase at a slightly higher rate than the population, reflecting a continued national and regional trend toward smaller households. Figure 3-5 shows how the household growth is distributed around the region.

Figure 3-5
Distribution of Household Growth



Based on Washington, DC-MD-VA MSA data.

Table 3-2
Round 6.3 Cooperative Forecasts of Households by Jurisdiction
(in Thousands)

Jurisdiction	*2005*	*2015*	*2030*	*Absolute Growth 2005-2030*	*Percent Growth 2005-2030*
District of Columbia	263.9	292.9	304.4	40.5	15.3%
Arlington County	90.9	98.7	106.2	15.3	16.8%
City of Alexandria	66.2	71.8	75.3	9.1	13.7%
Central Jurisdictions	**421.0**	**463.4**	**485.9**	**64.9**	**15.4%**
Montgomery County (1)	346.5	390.0	420.0	73.5	21.2%
Rockville (2)	20.0	24.0	24.7	4.7	23.5%
Prince George's County	304.5	333.6	369.8	65.3	21.4%
Fairfax County (3)	381.2	421.8	438.4	57.2	15.0%
City of Fairfax	9.0	9.4	9.7	0.7	7.8%
City of Falls Church	4.6	5.1	5.4	0.8	17.4%
Inner Suburbs	**1,045.8**	**1,159.9**	**1,243.3**	**197.5**	**18.9%**
Loudoun County	84.9	124.6	156.7	71.8	84.6%
Prince William County	113.4	137.2	152.1	38.7	34.1%
Manassas & Manassas Park	16.5	17.4	17.9	1.4	8.5%
Calvert County (4)	27.3	31.0	36.6	9.3	34.1%
Charles County (4)	46.5	58.9	76.1	29.6	63.7%
Frederick County	76.2	93.2	120.2	44.0	57.7%
Stafford County (5)	36.1	46.9	63.5	27.4	75.9%
Outer Suburbs	**400.9**	**509.2**	**623.1**	**222.2**	**55.4%**
Northern Virginia	**802.8**	**932.9**	**1,025.2**	**222.4**	**27.7%**
Suburban Maryland	**801.0**	**906.7**	**1,022.7**	**221.7**	**27.7%**
Washington, DC-MD-VA MSA	**1,867.7**	**2,132.5**	**2,352.3**	**484.6**	**25.9%**

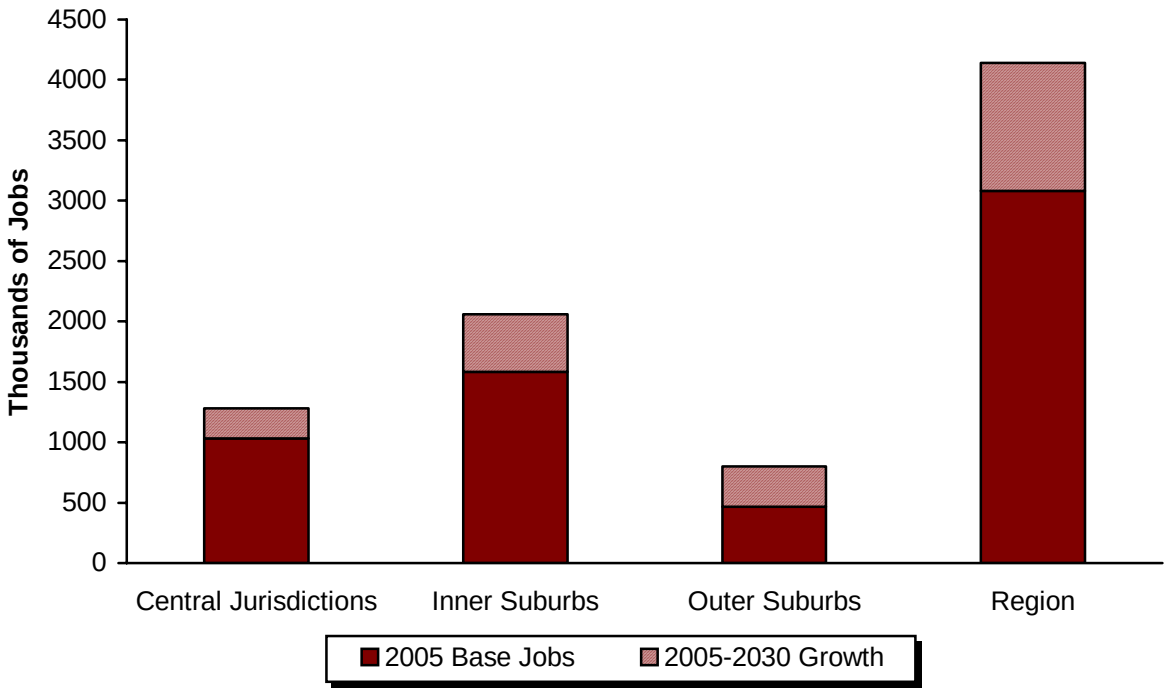
Source: Metropolitan Washington Council of Governments
Notes: (1) Forecasts for years 2005 to 2030 include all of Takoma Park.
(2) Included in Montgomery County total.
(3) Includes Fairfax County group quarters population in the Massey Complex.
(4) Tri-county Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County and Charles County.
(5) Source: Rappahanock Area Development Commission, March 2003.

Employment Growth

Employment in the region is forecast to grow by 34 percent between 2005 and 2030. As shown in Table 3-3, the central jurisdictions will gain 247,000 jobs by the year 2030.

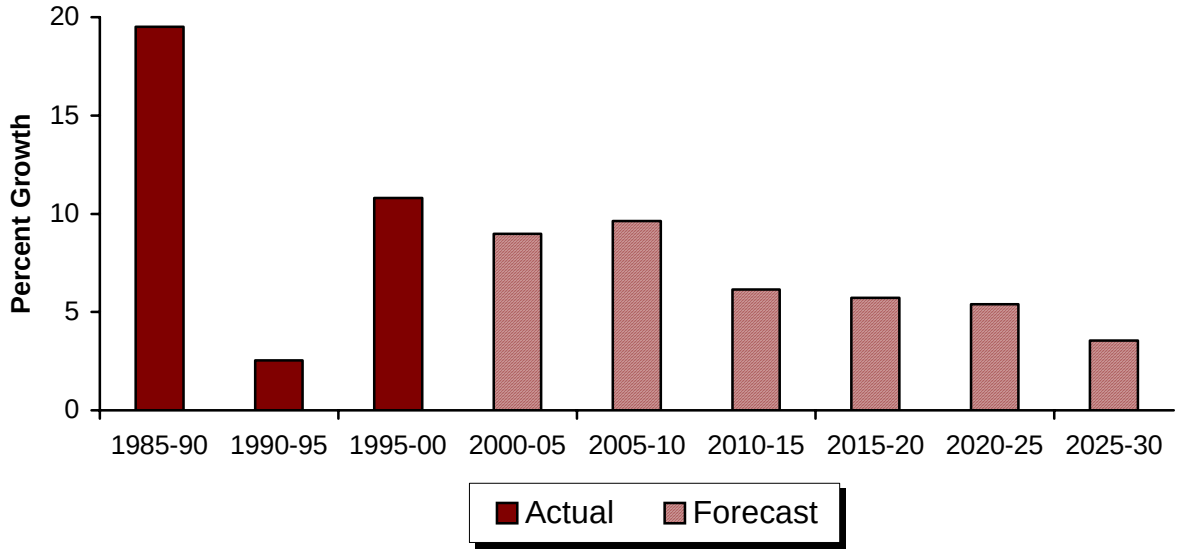
Noteworthy is the fact that while the District of Columbia will maintain the largest number of jobs of any single jurisdiction, collectively the jurisdictions outside the traditional central business core will witness the largest percentage growth and maintain the lion's share of jobs. Employment in the inner suburbs will increase from approximately 1.6 million in 2005 to over two million in 2030, an increase of 30 percent. Figure 3-6 illustrates the distribution of employment growth throughout the region.

Figure 3-6
Distribution of Employment Growth



Based on Washington, DC-MD-VA MSA data.

Figure 3-7
Employment Growth Rates



Based on Washington, DC-MD-VA MSA data.

Although employment in the outer suburbs will remain below that of the central jurisdictions and inner suburbs, it will increase 70 percent, from 468,000 jobs in 2005 to almost 800,000 jobs in 2030. Figure 3-7 compares past employment growth rates to those that are anticipated in the future and Figure 3-8 illustrates the changes in employment across the region by 2030.

Figure 3-8
Change in Employment: 2005 – 2030

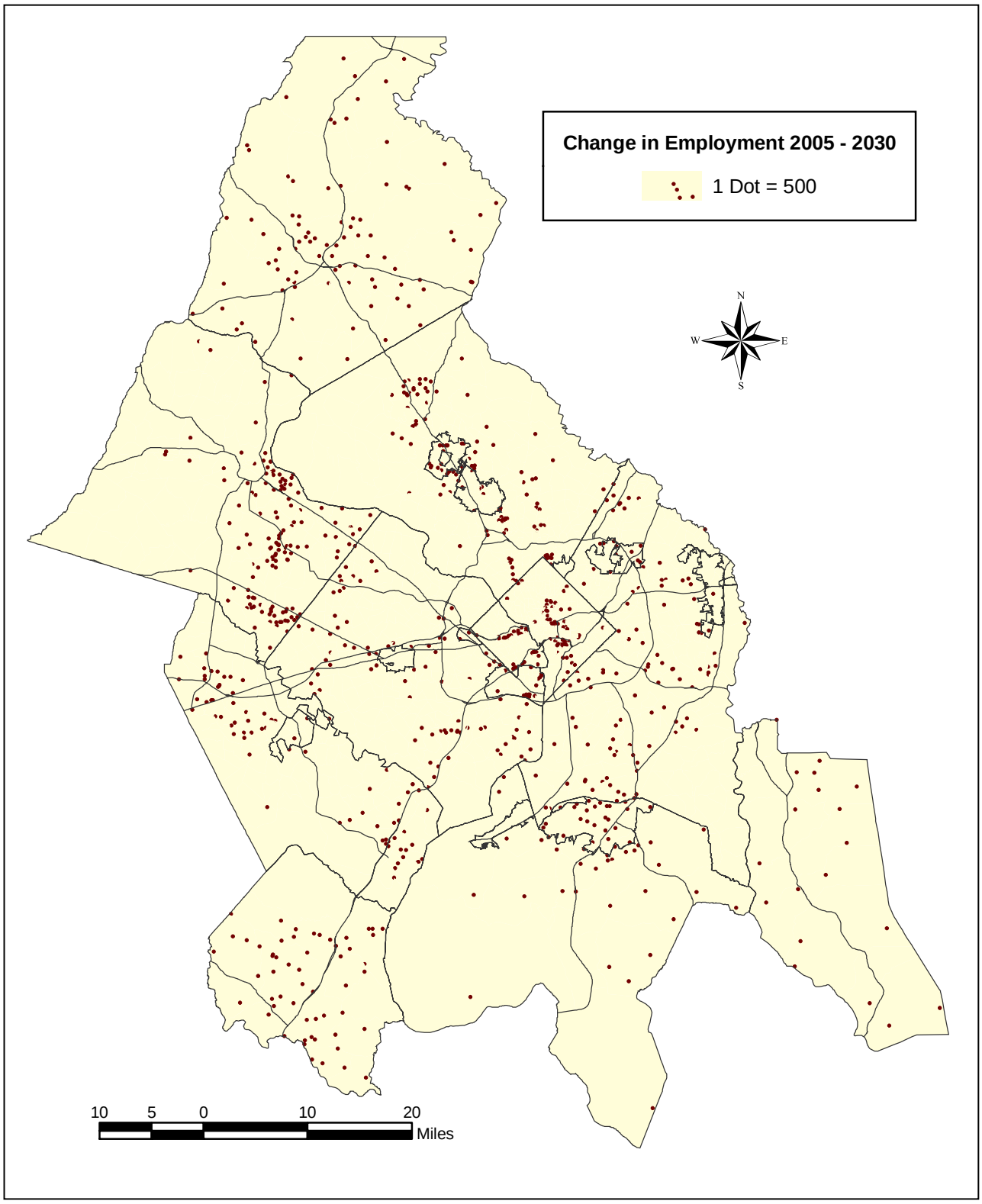


Table 3-3
Round 6.3 Cooperative Forecasts of Employment by Jurisdiction
(in Thousands)

Jurisdiction	*2005*	*2015*	*2030*	*Absolute Growth 2005-2030*	*Percent Growth 2005-2030*
District of Columbia	720.4	783.7	831.2	110.8	15.4%
Arlington County	209.7	255.0	301.9	92.2	44.0%
City of Alexandria	104.1	128.3	148.1	44.0	42.3%
Central Jurisdictions	**1,034.2**	**1,167.0**	**1,281.2**	**247.0**	**23.9%**
Montgomery County (1)	585.0	660.0	705.0	120.0	20.5%
Rockville (2)	80.6	98.3	103.5	22.9	28.4%
Prince George's County	357.9	426.4	550.0	192.1	53.7%
Fairfax County (3)	595.0	678.4	758.9	163.9	27.5%
City of Fairfax	33.1	33.9	33.8	0.7	2.1%
City of Falls Church	9.5	10.3	10.7	1.2	12.6%
Inner Suburbs	**1,580.5**	**1,809.0**	**2,058.4**	**477.9**	**30.2%**
Loudoun County	109.9	166.2	253.6	143.7	130.8%
Prince William County	106.3	139.4	173.5	67.2	63.2%
Manassas & Manassas Park	24.5	28.6	5.2	2.2	73.3%
Calvert County (4)	29.4	33.7	29.4	4.9	20.0%
Charles County (4)	56.5	64.8	35.6	6.2	21.1%
Frederick County	109.2	134.6	69.1	12.6	22.3%
Stafford County (5)	31.8	43.8	177.8	68.6	62.8%
Outer Suburbs	**467.6**	**611.1**	**798.7**	**331.1**	**70.8%**
Northern Virginia	**1,223.9**	**1,483.9**	**1,769.6**	**545.7**	**44.6%**
Suburban Maryland	**1,138.0**	**1,319.5**	**1,537.5**	**399.5**	**35.1%**
Washington, DC-MD-VA MSA	**3,082.3**	**3,587.1**	**4,138.3**	**1056.0**	**34.3%**

Source: Metropolitan Washington Council of Governments
Notes: (1) Forecasts for years 2005 to 2030 include all of Takoma Park.
(2) Included in Montgomery County total.
(3) Includes Fairfax County group quarters population in the Massey Complex.
(4) Tri-county Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County and Charles County.
(5) Source: Rappahanock Area Development Commission, March 2003.

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TRAVEL OPTIONS

The Washington region offers a rich array of options for both personal travel and goods movement. The major types of transportation facilities and transportation services in the area are described briefly in the sections that follow.

Highways

The road network is the foundation of the transportation system in the Washington region. This network consists of freeways, principal arterials, minor arterials, collectors, and local streets, each designed to provide a specific type of service. A large portion of the monies available for the transportation system are used to maintain and utilize this infrastructure as efficiently as possible.

The region has a designated portion of the National Highway System (NHS), illustrated in Figures 3-9 and 3-10. This system includes all of the interstate highways and other major roads in the region. The region's NHS is part of a nationwide system approved by Congress and the Federal Highway Administration (FHWA). The roadways designated on this system are eligible for NHS funds and transit facilities in NHS corridors may also be eligible for NHS funds.

HOV Facilities

The region's highway system includes a number of facilities that are reserved for high-occupancy vehicles (HOVs). The exclusive bus and carpool lanes on I-395 opened in the early 1970s and are among the most effective people moving facilities in the country. HOV lanes also can be found on I-66, I-270, US 1 and Washington Street in Alexandria, the Dulles Toll Road (VA 267), and I-95. HOV lanes increase the capacity of the highway network, moving more people in fewer cars. The HOV facilities currently operating in the region are presented in Figure 3-11.

Metrobus/Metrorail

The Washington Metropolitan Area Transit Authority (WMATA) operates the Metrorail and Metrobus service in the region. The Metrorail system radiates out from the downtown core, and Metrobuses feed into the Metrorail stations, creating a comprehensive mass transit network covering more than 1,500 square miles. About one million trips were made on Metrorail and Metrobus, collectively, on an average weekday in 2000.

Figure 3-9
National Highway System
Inside the Beltway

Legend

- Airports
- Eisenhower Interstate System
- Other NHS Routes
- STRAHNET Route
- Intermodal Connector
- Unbuilt NHS Routes

1 0 1 2 3 4 5 Miles

N
W E
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Figure 3-10
National Highway System
Washington Region

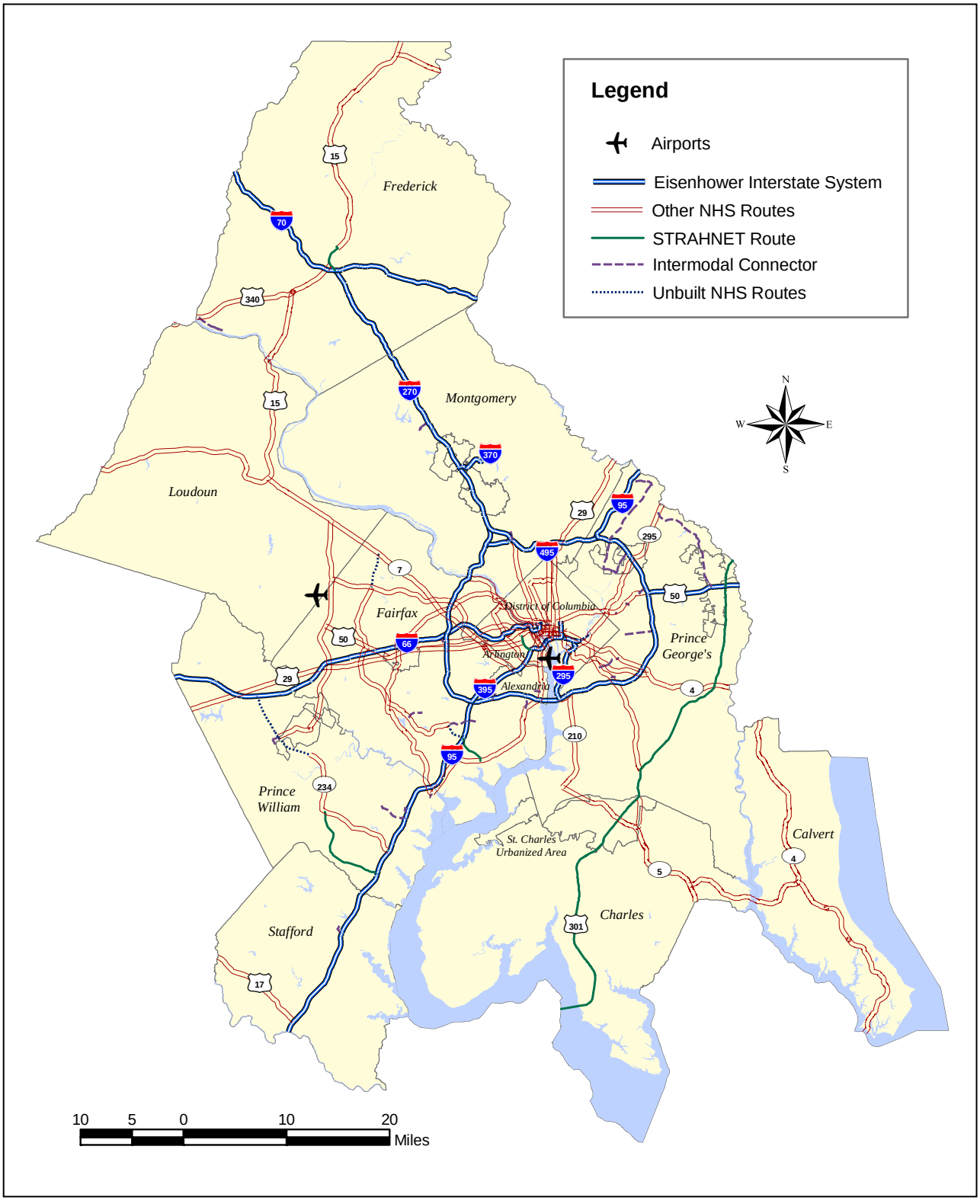
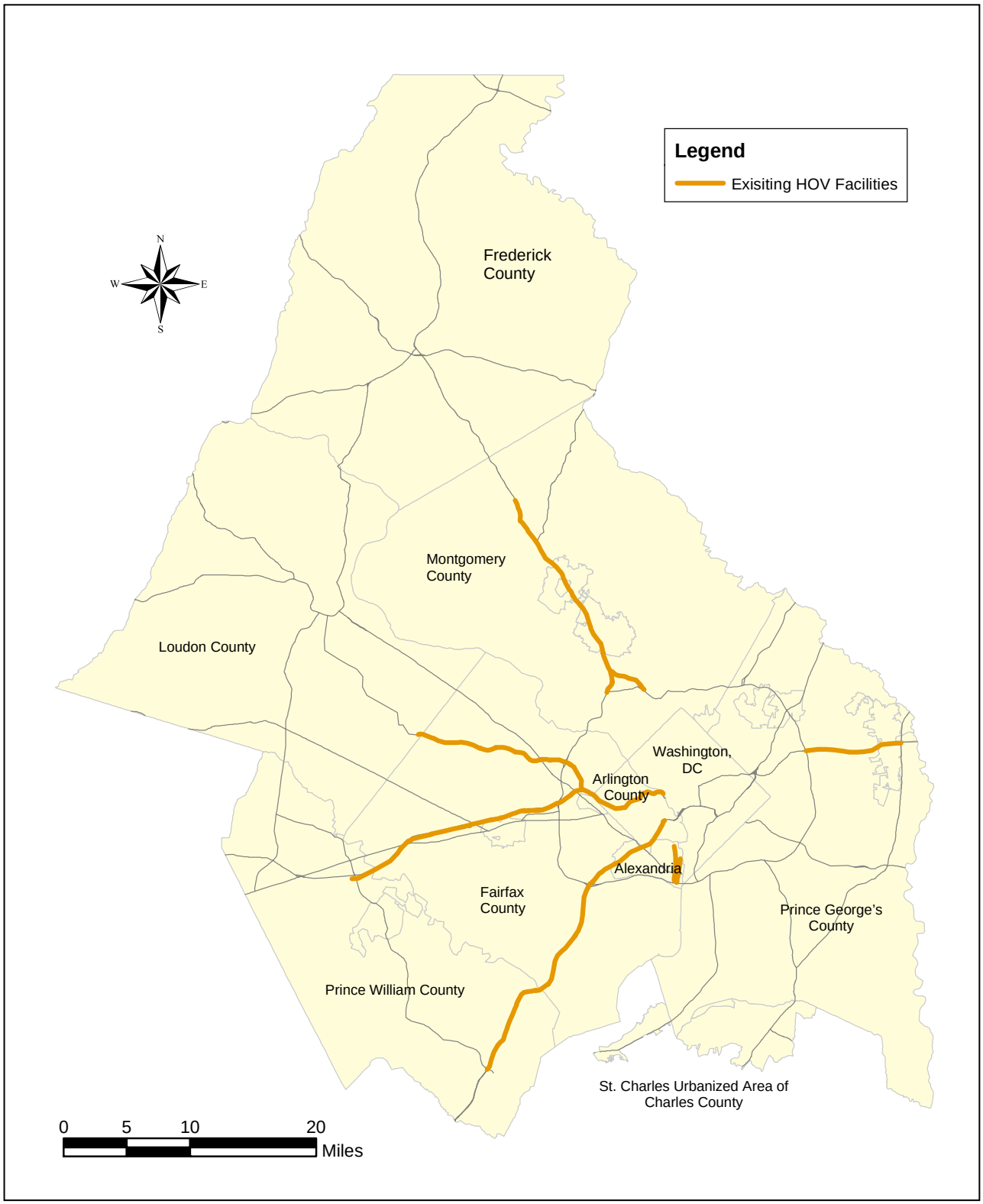


Figure 3-11
Existing High-Occupancy Vehicle (HOV) Facilities in the Washington Region



The originally planned 103-mile Metrorail with a total of 83 stations, shown in Figure 3-12, was completed in 2001. Metrorail's 764 heavy-rail trains operate with three- to six-minute intervals between trains during peak periods and with six- to sixteen-minute intervals during off-peak periods. In 2000, an average of 620,000 trips per weekday were made on Metrorail. The number of commuting trips on Metrorail is increasing, but Metrorail's overall share of the total work travel is expected to remain relatively flat as more jobs are located outside of the central core.

WMATA operates approximately 1,400 Metrobuses with routes in the District of Columbia, Alexandria, and Arlington, Fairfax, Montgomery, and Prince George's counties. Since 1975, the Metrobus system has been transformed from a predominantly radial system serving the District of Columbia to a feeder network serving the Metrorail system. Metrobus also provides regional route service for trips not served by the rail system. Each time a new segment of the rail system has been opened, bus routes in the affected corridor or corridors have been modified either to serve or to turn back at the new stations. In 2000, an average of 510,000 trips per weekday were made on Metrobus.

Other Bus Services

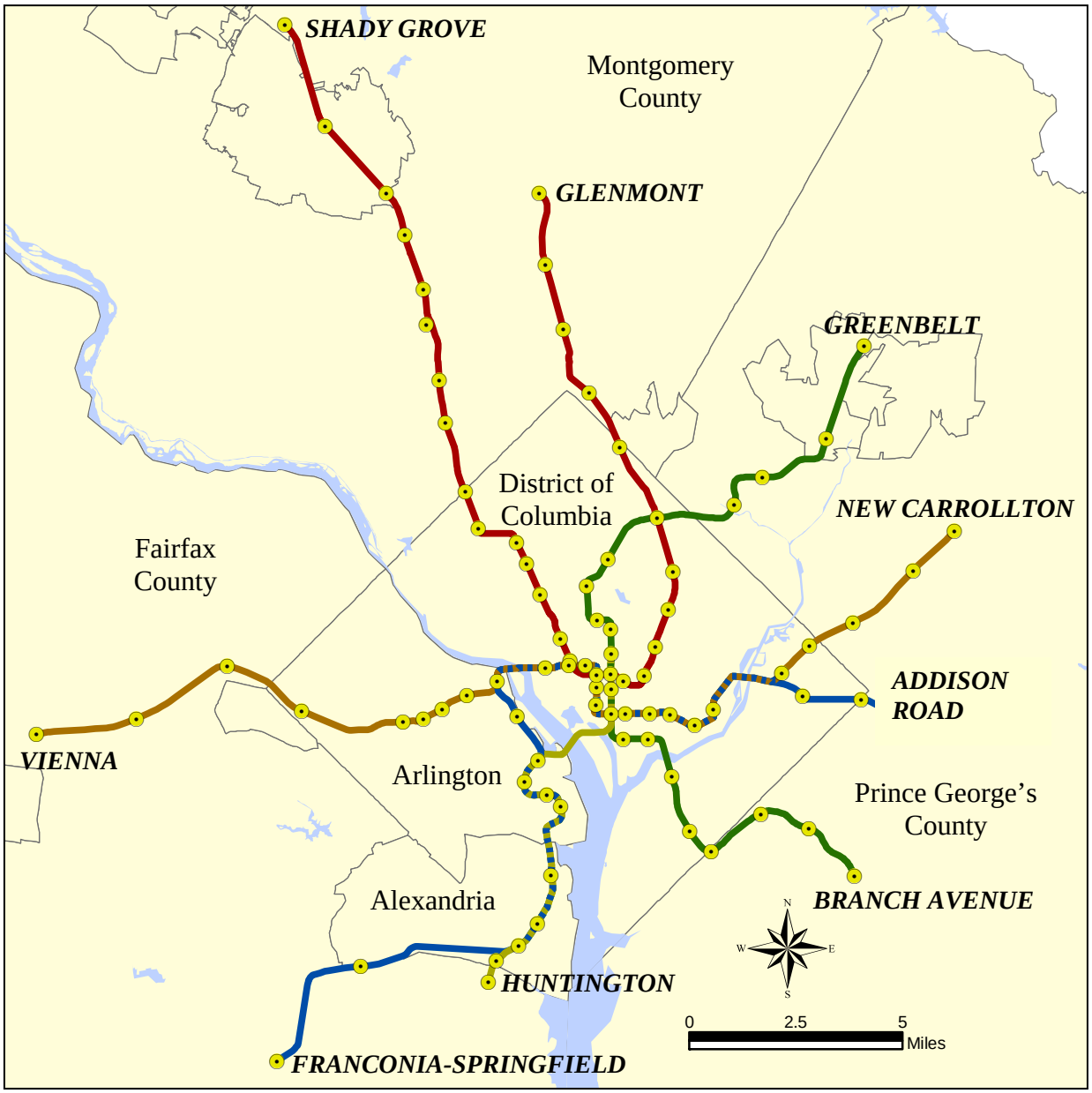
In addition to Metrobus service, several jurisdictions have their own local bus service. These include Montgomery County's Ride-On, Alexandria's DASH, Prince George's County's The Bus, Fairfax County's Connector, Loudoun Transit, and the City of Fairfax's CUE systems. In addition, the CommuteRide system operates within Prince William County, Manassas, and Manassas Park. Several private commuter bus companies exist as well.

Commuter Rail

Two commuter rail services operate in the region, Virginia Railway Express (VRE) and Maryland Rail Commuter (MARC). The Virginia Railway Express provides commuter rail service to Union Station in Washington, D.C. on two routes, the Manassas and Fredericksburg lines. VRE runs 9 trains each way every weekday on the Manassas Line, and 6 trains each way every weekday on the Fredericksburg Line. VRE provides about 9,300 trips per day.

MARC also provides commuter rail service to Union Station. Its service operates three routes, the Brunswick, Camden, and Penn lines. A total of 81 trains on these three lines provide morning, midday, and evening service. On an average weekday, about 20,000 persons board MARC trains, the majority of these trips being commuting trips to or from downtown Washington.

Figure 3-12
The Metrorail System



Ridesharing

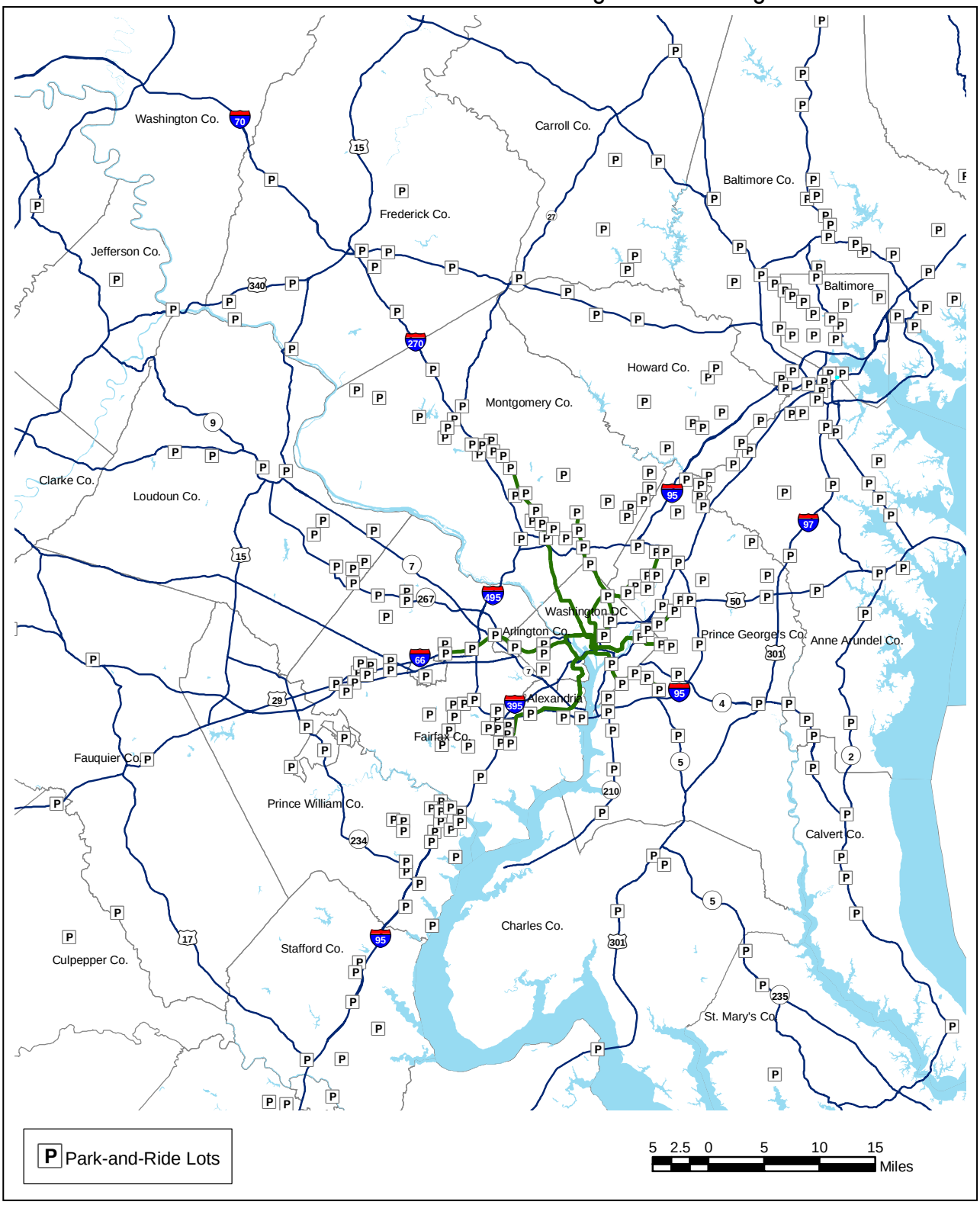
The Washington region is the carpool capital of the nation. According to the 2000 Census, 13 percent of Washington commuters used car or van pools to get to work. The high rate of ridesharing is encouraged by a number of factors, including the area's successful HOV lanes and an abundance of park-and-ride lots, which enable commuters to access a car or van pool or bus or rail service for their commute to work. The locations of park-and-ride lots within the Washington commuting area are illustrated in Figure 3-13.

Another resource that has helped the region attain such a high rate of carpooling is the Commuter Connections Program. Commuter Connections is a network of Washington metropolitan commuter transportation organizations coordinated by COG and TPB. It was known for more than 20 years as Ride Finders. As Commuter Connections, it has expanded its services to help businesses find transportation solutions vital to not only their own success, but to the economic development and quality of life of the entire region.

Commuter Connections assists businesses by identifying many opportunities for voluntarily complying with the Clean Air Act guidelines to reduce vehicle emissions. It promotes and facilitates telecommuting programs and other pollution reduction activities. Using a Geographic Information System software program, Commuter Connections matches commuters for ridesharing. Through its Commuter Operations Center, Commuter Connections provides support to 31 federal, state, and local government agencies and large employers.

In January 1997, Commuter Connections launched a regional Guaranteed Ride Home (GRH) program to "take the worries out of ridesharing." COG works with area businesses to guarantee that employees registered in their company rideshare program or with Commuter Connections have a ride home in case of an unexpected personal or family emergency, personal or family illness, or when required to work unscheduled overtime (a supervisor’s verification is required). GRH cannot be used for weather emergencies or acts of God. Eligible commuters may use the GRH program a maximum of four times per year. The GRH program is designed specifically for unexpected emergencies. It may not be used for personal errands, scheduled appointments, business-related travel, or working late without a supervisor's request. Such programs are proven inducements for commuters to use alternatives to driving alone. Employees eligible for the GRH program include ridesharers (carpoolers, vanpoolers), mass transit users (bus, train), bicyclists, and those who walk to work.

Figure 3-13
Locations of Park-and-Ride Lots in the Washington Commuting Area



Additionally, Commuter Connections is currently planning a regional system of Traveler Information kiosks, and coordinates regional programs for teleworking as further encouragement to alternatives to the single-occupant vehicle. With teleworking, also known as telecommuting, employees work at home or perhaps at a satellite teleport center one or more days per week. Communications to their office is accomplished by phone, fax, modem, and teleconferencing, saving many hours of time, congestion, and energy consumption on the region's highways.

Overall, Commuter Connections provides one-stop shopping for commuters and businesses as a primary commuter information resource for Maryland, Virginia, and the District of Columbia.

Bicycle and Pedestrian Facilities

The Bicycle Plan for the National Capital Region is a component of the CLRP. A separate document outlines in greater detail the region's plan for building and improving bicycle facilities, summarized in Chapter 4 of the CLRP.

Both for the benefit of the environment and for the people they serve, bicycle and pedestrian facilities are important components of the region's transportation system. The Washington region currently enjoys more than 900 miles of on-street and off-street bikeways. Most jurisdictions in the area have developed bicycle transportation plans and have planners on staff to coordinate the bicycle/trail programs of the particular locality.

A trend in recent years has been to establish bicycle routes or multi-use trails along the rights-of-way of abandoned railroad corridors. An example of this type of design is the 45-mile long Washington & Old Dominion trail, which is now used by more than one million people annually. The recently completed Capital Crescent Trail from Georgetown to Bethesda is already very popular. In the District of Columbia, another rail-trail, the Metropolitan Branch Trail, is planned. When finished, it will go from Union Station to Silver Spring, Maryland.

Action has also been taken to encourage bicycling to Metrorail stations. Improved bicycle access, bicycle storage facilities, installation of bike racks on buses, and policies allowing bikes on Metrorail trains during low ridership periods are current policies linking transit use with bicycling. As part of transportation air pollution controls, two new bicycling initiatives have been authorized. The first will provide 2,000 new bicycle racks in Maryland and Virginia. The second will develop materials on bicycle commuting for use in the Commuter Connections Employer Outreach program.

Transit for Persons with Disabilities

Great strides have been made to make the Metrorail system accessible to people with disabilities. Metrorail stations have elevators for riders who are unable to use the escalators. When an elevator is not working, Metrorail has a van service to transport patrons to the next closest station. Metrorail runs a telephone information line that details the stations without operating elevators so passengers with disabilities may plan their route in advance.

WMATA also provides an on-call bus service as part of its Metrobus system. Currently, about 90 percent of the Metrobus fleet is equipped with wheelchair lifts. If riders require a lift-equipped bus, they may call ahead with their itinerary and WMATA will ensure that a lift-equipped bus will be on the route at the requested time. As Metrobuses are retired from the fleet, they are replaced with lift-equipped vehicles. WMATA expects to have a 100 percent wheelchair-accessible fleet by 2006. In addition, WMATA operates a paratransit system exclusively for persons with disabilities; over 14,000 persons are registered and use the system. Those who qualify are issued an identification card and are able to schedule curb-to-curb travel service.

Airports

Residents of the region have an abundance of airport capacity to meet their travel demands. Three major commercial airports are located in the Washington region. Washington National Airport, located in the central core of the region, serves domestic travel needs, while Washington Dulles International Airport, located in Loudoun County, Virginia, serves both domestic and international routes. Baltimore/Washington International Airport, located in northern Anne Arundel County, Maryland, near the city of Baltimore, is also accessible to many area residents and provides access to domestic and international destinations. In 2000, these three airports served 55.6 million arriving and departing air passengers. In addition to the major commercial airports, the region features a number of general aviation airports to serve non-commercial air activity such as corporate travel. The three major commercial airports also include general aviation facilities.

Intercity Rail

Amtrak offers intercity passenger service for the Washington region with approximately 60 trains per day. Washington, D.C., is the southern anchor of Amtrak's Northeast Corridor, which extends north to Boston. High-speed trains run between Washington's Union Station and New York's Pennsylvania Station in this corridor. Amtrak is the largest passenger carrier between New York and Washington.

Movement of Goods

Most of the Washington region's economy consists of government agencies and service and tourism industries. Freight movement in the region is therefore oriented towards delivery of office supplies, equipment, and retail goods rather than heavy manufacturing materials. The freight sector plays an important part in the area's economy and is dominated by four modes: trucking, shipping, air cargo, and freight rail. Package express and postal services are also important to the region's economy.

Trucking is the backbone of the freight sector. On a tonnage basis, trucks carry about 71 percent of the inbound freight and 96 percent of the outbound freight in the region. Even when materials initially arrive by rail or water, trucks are often used to transport them to their final destinations.

Trucks represent between 3 percent and 8 percent of the traffic on most of the major routes in the Washington area. On the southern portion of I-495/I-95, however, between 12 and 15 percent of the traffic is comprised of trucks. Because trucks move in the general traffic stream, the region's trucking industry is vitally concerned with issues of congestion and access.

Water cargo accounts for 24 percent of the inbound freight and less than 1 percent of the outbound freight in the region. An additional 1 percent of the inbound freight and 4 percent of the outbound freight are transported by air. Trains carry about 4 percent of the inbound freight and less than 1 percent of the outbound freight.

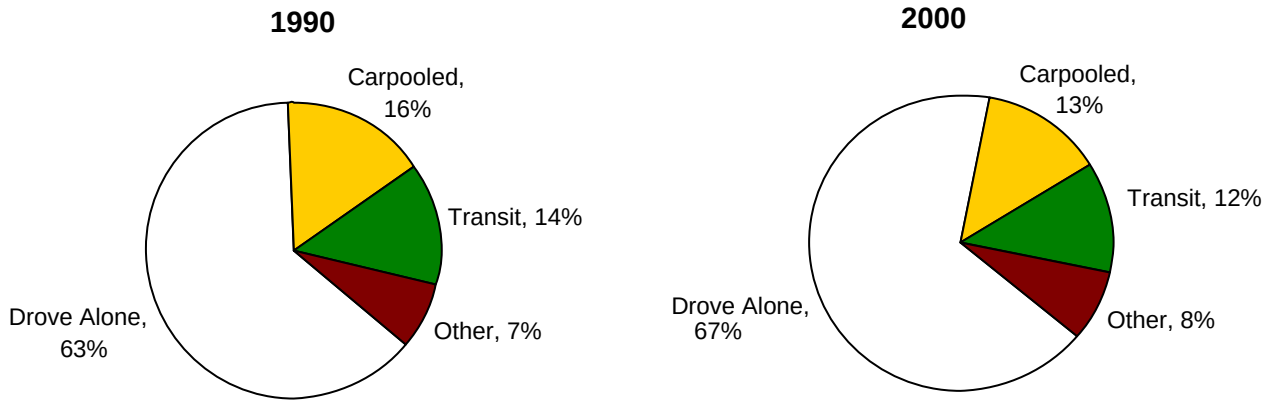
TRAVEL PATTERNS

The tremendous growth experienced by the Washington region since 1960, coupled with the increasing suburbanization of both people and jobs as discussed earlier, has had profound implications for travel. Not only has there been an explosion in the overall number of trips made on the region's highways and transit facilities, but travel has shifted away from a predominantly suburbs-to-downtown orientation as trip-making between the suburbs has surged.

Travel to Work

Approximately one quarter of all person trips involve travel to and from work. According to the 2000 Census, nearly 2.4 million workers live in the Washington region, up from 2.2 million in 1990. Figure 3-14 shows the different transportation options that residents used to get to work in 1990 and 2000. Driving alone was the predominant commuting mode, and the percent of workers who drove alone increased from 63 percent in 1990 to 67 percent in 2000. Carpooling decreased during the same time period, from 16 percent to 13 percent. Similarly, public transit use decreased from 14 percent to 12 percent. Other forms of commuting, which include walking, biking, and working from home, remained relatively constant. Average commute time increased from approximately 30 minutes in 1990 to approximately 33 minutes in 2000.

Figure 3-14
Commuting in the Washington Region
by Transportation Mode



Source: 2000 U.S. Census; numbers are for the Washington DC-MD-VA MSA

Measures of Congestion

The latest travel estimates for the highway system indicate that, for the region as a whole, the volume of traffic on the area's roadways outstripped the available highway capacity.

The amount of travel on the region's highways is typically measured in vehicle miles of travel (VMT). VMT is sometimes thought of as the "demand" for highway travel and is often compared to a similar measure, lane miles of roadway, which is used to indicate the

highway "supply," or the ability of the road system to accommodate potential travel. As the imbalance between travel demand and capacity increases, certain roadways or travel corridors will experience greater levels of congestion. Between 2005 and 2030, VMT is forecast to increase 32 percent and lane miles only 12 percent.

Some "real-world" data collected in aerial surveys of the region's freeways illustrate where highway congestion is occurring. The survey, sponsored by the TPB in spring 2002, used density—the number of passenger cars per lane, per mile, at a given time—to measure congestion. Figures 3-15 and 3-16 show the sections of the highway system that are congested during the morning and evening rush hours.

Figure 3-15
Locations of Peak-Period Congestion on Washington Region
Limited-Access Highways, Weekday Mornings, Spring 2002

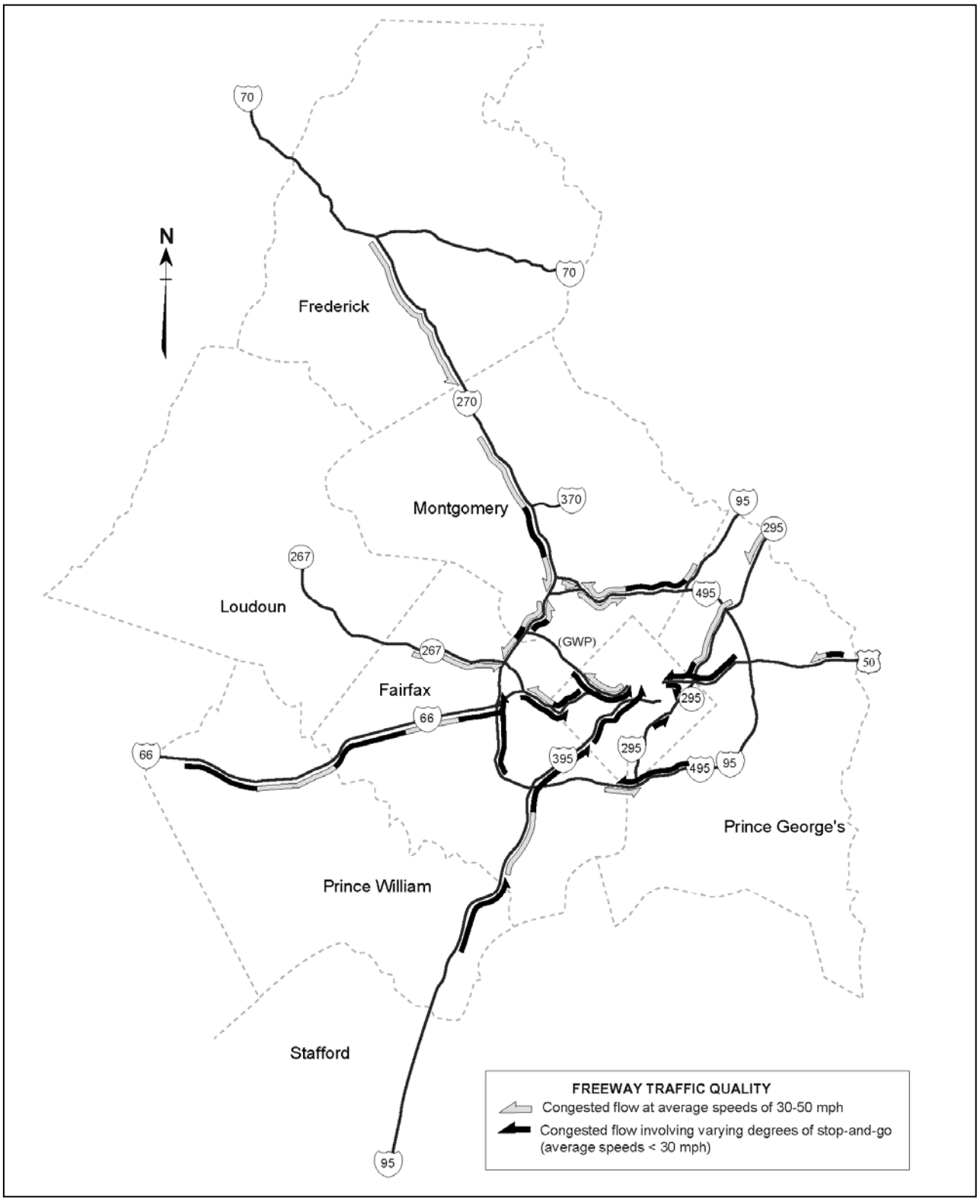
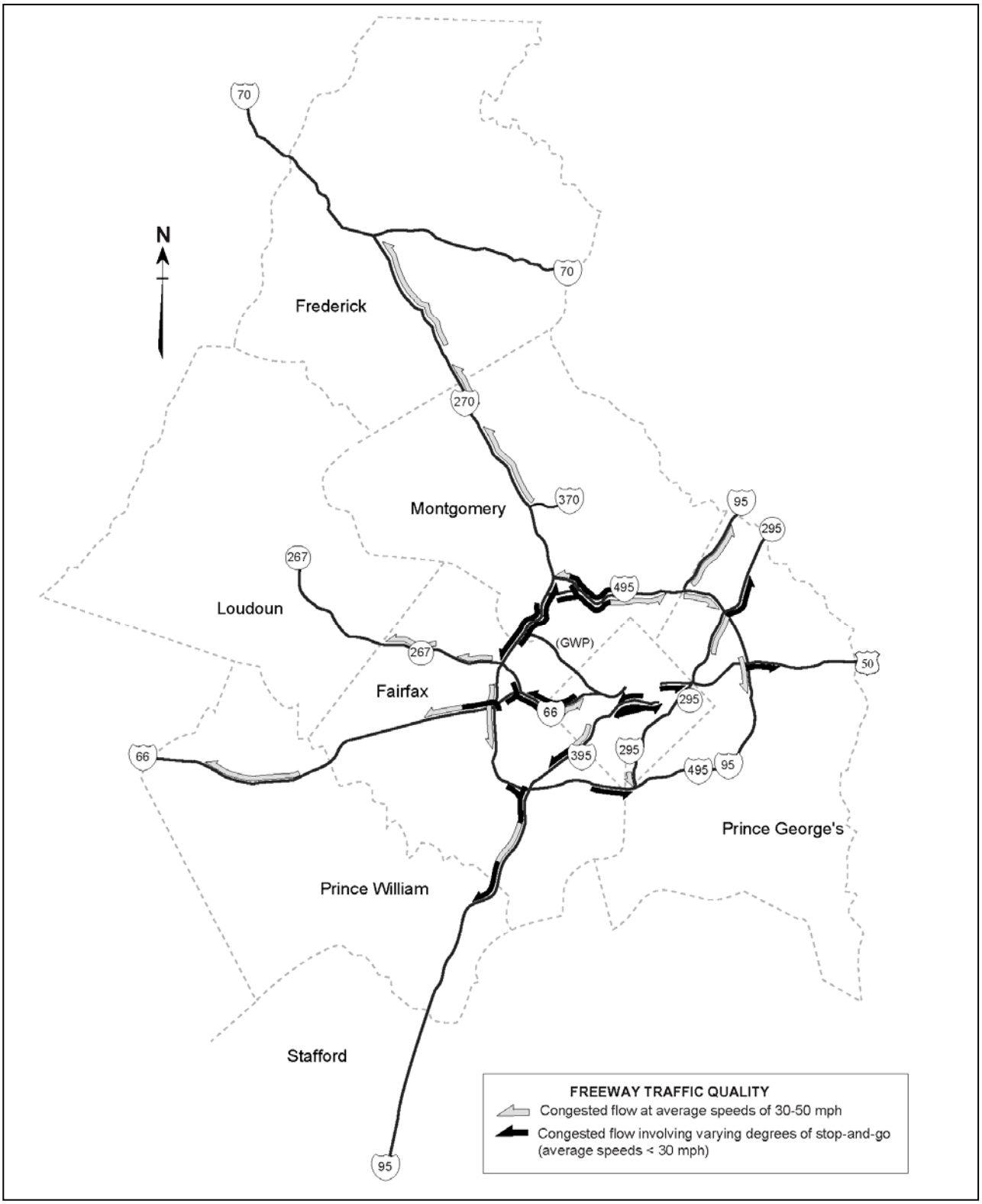


Figure 3-16
Locations of Peak-Period Congestion on Washington Region
Limited-Access Highways, Weekday Evenings, Spring 2002



KEY ISSUES FACING THE REGION

What transportation policies and investments will best serve the region through the year 2030 and beyond? This challenging question has now been posed by state and local officials, by the TPB and other regional agencies, and by numerous citizen organizations. Many thoughtful suggestions have been put forward by individual residents, private associations, and citizens' groups.

A variety of complex issues are involved in planning a regional transportation system for the 21st Century. These include financing, land use and transportation relationships, congestion, air quality, coordination of transportation modes, and strategies to manage the overall demand for travel. To the extent possible, these issues have been considered in developing this plan.

This section will briefly describe some of the key issues that were identified in developing this plan and that will need to be more fully considered in future updates to the long-range plan.

Maintaining, Operating, and Managing Our Transportation System

At or near the top of the transportation agenda for every jurisdiction in the region is the challenge of maintaining the extensive transportation system in place today. During the next two decades, the operation and maintenance of the current highway and transit systems will consume about 77 percent of the available transportation revenues for Suburban Maryland and Northern Virginia, and almost all of the District's transportation revenues.

Once relatively minor issues in discussions of long-range planning, maintenance and operations costs are now central. They limit the region's ability to finance facility expansions. Indeed, unless major new funding sources are developed, it must be assumed that most of our future transportation system is in place today. The challenge then becomes how to manage that system—and modify it where necessary—for the greatest future benefit.

Actions to better manage existing highway facilities can take many forms, ranging from relatively simple capital investments such as traffic signal improvements, to regulatory approaches such as carpool lane restrictions or congestion pricing, which involves the use of fees to discourage unnecessary travel on congested facilities. This plan includes several new HOV facilities to encourage ridesharing, as well as promotional measures described in Chapter 4. It also includes a substantial investment in intersection and traffic signal improvements. The region’s Congestion Management Systems (CMSs), as well as the states’ pavement and bridge management systems, provide the region's implementing agencies with comprehensive information to better manage and operate these systems in the future. To encourage greater use of existing transit services, the plan includes park-and-ride lots at selected commuter rail stations, transit information and marketing initiatives, and bicycle connections at several Metrorail stations. Other measures with the potential to increase transit use are pedestrian improvements in areas served by bus or rail and financial incentives.

Limiting Traffic Growth and Reducing Automobile Emissions

It is well understood that automobile traffic has been increasing throughout the region, with negative effects on air quality, on travel time in many corridors, and in some instances, on the safety of both vehicle users and pedestrians. Beyond these impacts, many residents consider high volumes of automobile traffic generally detrimental to the quality of life in their communities.

Faced with large population and job growth forecasts, the challenge of limiting traffic growth, or mitigating its effects, is an enormous one. Not only will the region house more families and individuals than at present, but on average, their activities will be spread over a larger radius as both housing and employment centers become more decentralized.

Meanwhile, as travel demand grows, it is no longer possible (nor, would many argue, desirable) to increase the supply of roadway capacity to commensurate levels. Many factors tend to constrain new road construction to a minimal level, as evidenced by the modest construction program in this plan. First, most state and local governments cannot afford to build major new roads. Second, environmental and community concerns about new road construction and regulatory restrictions have reduced the political viability of large-scale road building as a way of "solving" traffic congestion problems.

In place of infrastructure solutions, it will be necessary to consider a larger range of demand management options that reduce the need for vehicular use in the first place. These include travel reduction methods such as telecommuting (working in or near the home), transit and ridesharing incentives, improved transit services, innovative land development and site planning techniques, and more controversial regulatory methods such as increased parking charges, employer-based controls on solo commuting, or direct pricing of road use. Some studies suggest that public subsidies for automobile use be removed. These and other approaches—including technological improvements to automobiles and fuels—can also help to reduce automobile emissions levels as required by the Clean Air Act Amendments of 1990 discussed in Chapter 4.

This plan features demand management through the inclusion of a telecommuting initiative, new HOV lanes, and ridesharing incentives. These measures are described in more detail in Chapter 4.

A question for future plans is to what extent should more ambitious demand management strategies be pursued? Direct strategies to curb automobile use, such as user charges or restrictive parking taxes, though potentially the most effective tools available to reduce congestion and automobile emissions, may not be acceptable to the public in the near term. Any policies involving user charges for driving would need to be carefully developed, with special attention given to their potential impacts on low-income residents.

Serving Diverse Markets

The Washington region is a diverse international community that includes persons of numerous ethnic backgrounds and occupations. Table 3-4 shows the distribution of various population groups across the region. Over 40 percent of the region's population is non-

white, a figure which includes many recent immigrants to the region.[2] Individuals with limited English proficiency make up 5 percent of the population. African Americans are the region's largest minority group, representing 27 percent of the population. Despite the region's overall affluence, over 328,000 residents in 2000 were below the poverty level. In 2000, an estimated 320,000 persons had physical or sensory disabilities that may make them eligible for specialized transportation services (paratransit).

Table 3-4
Demographic Profile of the Washington Region
(in Thousands)

Population Group	*Central Jurisdictions*	*Inner Suburbs*	*Outer Suburbs*	*Washington Region*	*Percent of Region* (8)
African American	389.9	719.3	134.9	1,244.1	27%
Asian (1)	39.4	260.6	29.8	329.7	7%
Two or More Races (2)	27.1	87.4	24.4	139.0	3%
Hispanic/Latino (3)	99.1	268.4	56.2	423.7	9%
Below the Poverty Level (4)	135.1	152.3	40.9	328.3	7%
Low Income (5)	258.1	393.6	123.7	775.3	17%
Limited English Proficiency (6)	46.0	129.3	18.3	193.6	5%
Disabled Persons (7)	81.4	177.3	61.4	320.0	8%
Total Population	889.8	2,676.5	978.7	4,544.9	100%

Source: 2000 U.S. Census; numbers are for the Washington DC-MD-VA MSA

Notes:
(1) Includes Native Hawaiian and Pacific Islander.
(2) For the first time in the 2000 Census, respondents could identify themselves as belonging to more than one race.
(3) Hispanic/Latino is considered an ethnicity, not a race, and therefore a Hispanic/Latino person can be of any race and included in the counts for other categories.
(4) Official poverty level depends on family size. For a family of four, the poverty level is an annual income of $17,000.
(5) "Low income" is defined as twice the poverty level. For example, for a family of four an annual income of $34,000 is considered low income.
(6) Limited English Proficiency includes individuals who speak English "not well" or "not at all."
(7) Disabled persons include individuals with physical and/or sensory disabilities.
(8) Population groups do not total to 100% because groups are not discrete.

Given the diversity of the region's households and their travel needs, how can future transportation systems best serve all of the region's residents? A number of issues deserve consideration, such as how to ensure that funds will be available to sustain adequate bus and paratransit service for those who depend on them; how best to provide services for the region's working parents, many of whom "commute" to day care centers before and after work; and what enhancements in highway design and automobiles will be needed to ensure the safety of elderly drivers, who represent a growing segment of the population. Another issue is identifying what transportation policies and investments can best serve the increasing number of non-work and weekend trips and multiple purpose trip "chains" (for example, a person routinely picking up a child and some groceries on the way home from work).

[2] Our Changing Region. Census 2000. Metropolitan Washington Council of Governments. Volume 1, Number 1. Figures provided are for the TPB Planning Area.

The movement of goods within and through the region also presents special issues to consider, including how to ensure efficient delivery to businesses, reduce truck accidents, and minimize the risks involved in the transportation of hazardous materials.

Serving Dispersed Population and Employment Centers

The decentralization or "suburbanization" of travel mentioned earlier and the emergence of "edge cities" are phenomena seen throughout the United States, and pose long-term challenges from every angle.

Serving such a far flung set of activities will be increasingly difficult without the ability either to expand the road system or to concentrate the trip ends into workable passenger loads for transit service. Will suburban growth continue unabated as congestion increases, or will transportation conditions inhibit housing and commercial real estate markets in the affected areas? Could local governments encourage alternative forms of residential and commercial development that might allow more trips to be made on foot, bicycle, or public transit? Will extending rail service toward the edges of the region encourage more population dispersion? What type of circumferential (suburb-to-suburb) transportation services should be incorporated into future plans?

Moving Towards Intermodalism

Throughout the United States, each mode of transportation has historically been viewed in isolation from the others. The planning, construction, and operation of each mode was often conducted by separate agencies with little communication or cooperation among them. A similar situation prevailed in the private sector, in which rail and motor freight carriers and airlines guarded their own niches in the market and were also restricted from many possible forms of collaboration by federal regulations. This situation has been changing very gradually during the past 20 years into one in which multi-modal planning of public facilities, and some forms of intermodal cooperation in the private sector, could begin to take place. Federal laws explicitly acknowledge the value of a more coordinated approach to the planning and operation of the various modes through several of its planning and management provisions.

This plan is multi-modal in its approach to developing a future transportation system. Highway, transit, bicycle, and pedestrian improvements are included to improve transportation within the region; several ground access improvements have also been identified for the region's airports. An example of a multi-modal improvement is Metro’s recently implemented program that allows bikes on Metrorail and the installation of bike racks on transit buses. A multi-modal approach will also be used to implement the studies included in the plan. As discussed in Chapter 4, each such study must consider the role alternative modes could play in solving the problems for which the study has been developed.

Of particular interest to many in the region are opportunities to expand the region's rail transit system, either by extensions to Metrorail or initiatives using other technologies such as light rail. Rail transit provides new people-moving capacity, generally with fewer environmental impacts than new highways, and in the right circumstances it can attract sufficient patronage to mitigate traffic growth on area roads. Rail transit is understood to work best in locations of relatively high density development. A problem in implementing effective rail service is obtaining the needed density soon enough—ideally, before or in

tandem with facility construction—to justify the large public expenditures that are involved in both construction and operation. Coordinated development approaches can overcome this problem but are often difficult to arrange.

Financing New Facilities

As mentioned earlier, one of the key issues that will need to be addressed in future plans is how to finance proposed facilities that go beyond those included in this plan. There are proposed major projects in the region that have been identified or desired in the past, but exceed the financial constraints on the plan required by federal regulations. Many of these projects are in the plan under a "study" category.

Depending on the specific modal configuration and design chosen, the cost of these proposed projects could be more than twice that of implementing this plan. To implement many of these projects would involve billions of dollars, requiring the region to identify major new sources of funding. This could mean substantial increases in transportation user fees, such as tolls, gas taxes, and parking charges. An effort to develop major new revenues would require substantial cooperation among the states and local jurisdictions in the region, and much greater public commitment to transportation improvements.