

increased slightly from 72 percent to 75 percent. One of every six new commuters travels by transit.

* **Ridesharing has dropped dramatically in every Washington jurisdiction.** Between 1968 and 1988 the proportion of commuters who shared rides dropped from 30 percent to 16 percent in Montgomery County. Similarly the proportion of commuters who ride-share in every Washington area jurisdiction was cut roughly in half. A likely explanation for this is that some people switched from ride-sharing to transit.

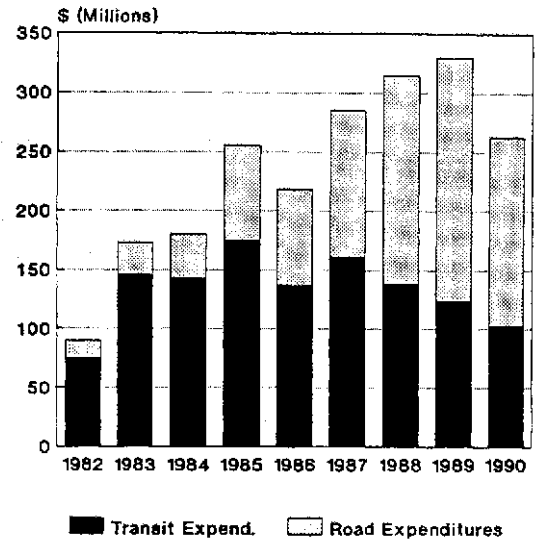
* **Transit is far better suited for commuters than for non-work travelers.** The transit mode share for all trips, both work and non-work originating in Montgomery County, has declined slightly from 5.3 percent to 4.9 percent of all trips. This reduction in total transit usage, at a time when commuter transit use has increased, suggests that transit service has not done as well in meeting the needs of non-work travelers as it has for commuters.

* **A large percentage of Montgomery County residents live and work within walking distance of a rail station or bus stop.** Seventy-five percent of respondents to the Planning Department's 1990 Travel Panel Survey reported that they could get from home to the nearest transit stop within ten minutes. An even larger number, 83 percent, noted that they work within a ten-minute walk of transit.

V. TRANSPORTATION SUPPLY AND DEMAND

Since 1970, it is estimated that over \$3 billion of public funds have been spent on construction and operation of roads, transit, bike trails, and sidewalks in Montgomery County. The single highest expenditure for any one year came in 1989, when over \$330 million were spent. Since 1982, approximately 57 percent of the transportation budget has been spent on developing and operating our transit system, including parking garages.

About 57% of Total Transportation Expenditures Have Been For Transit Between 1982 and 1990



Source: MDOT, WSTC Annual Financial Reports, WMATA Budget Office

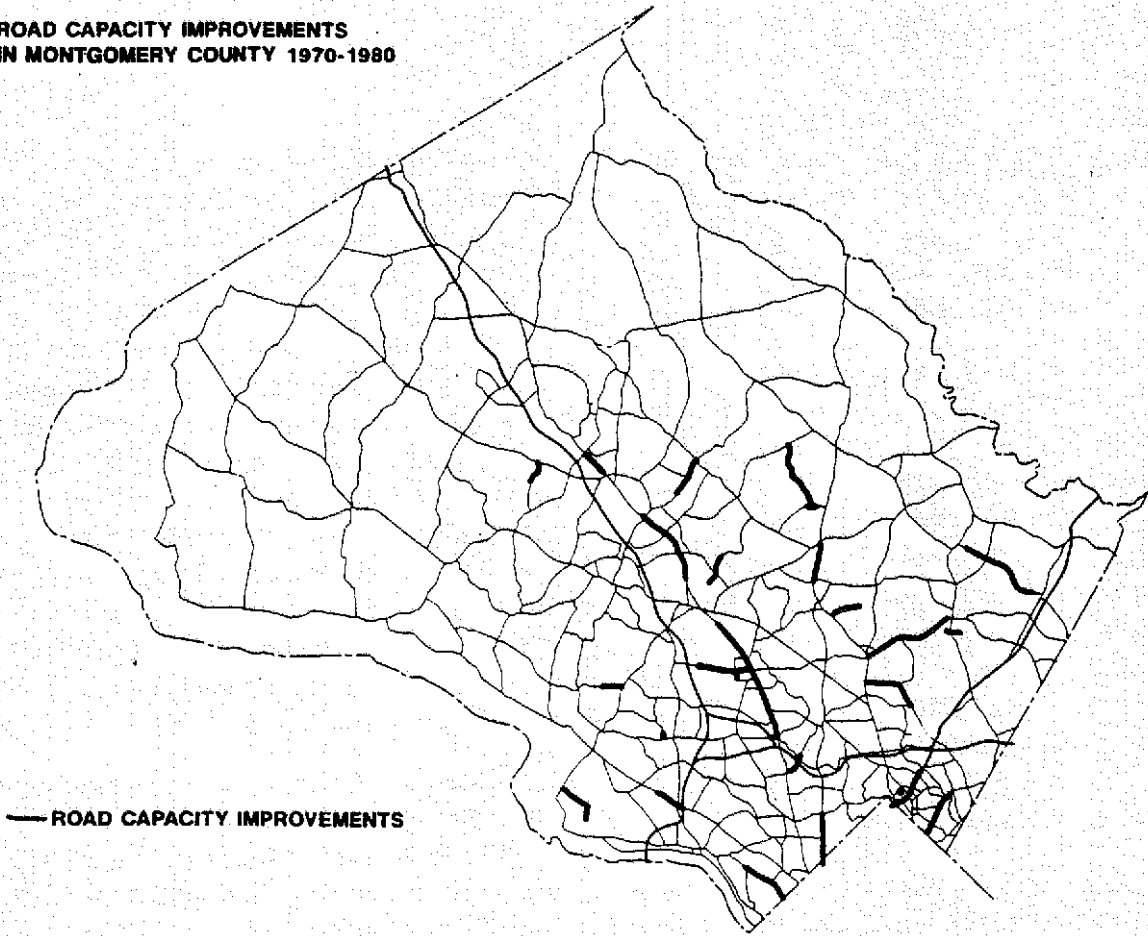
A. ROADS

1) Road Supply

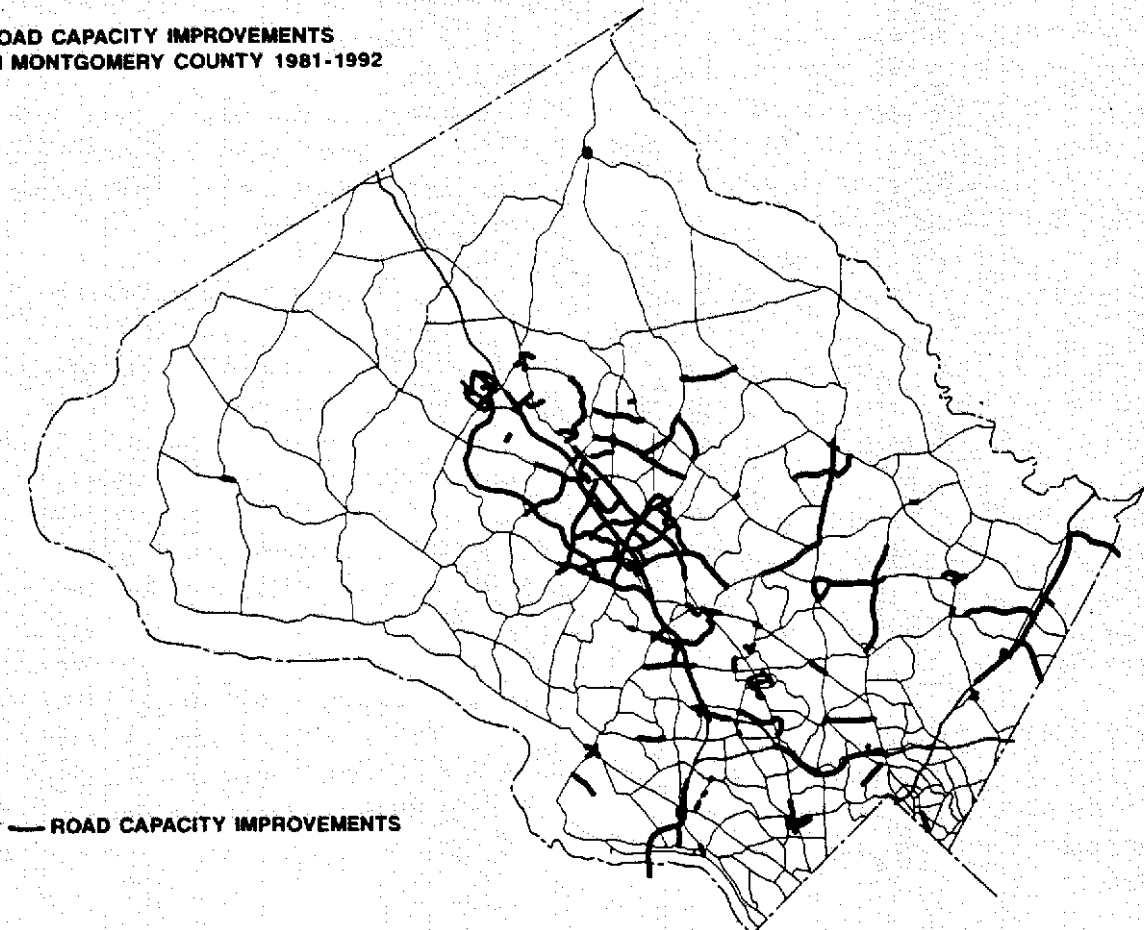
* **New road construction and widenings of existing roads occurred almost exclusively within the urban and suburban rings and the I-270 Corridor during the past two decades.** By 1969, a well developed system of roads had been established in the urban and suburban rings. Old U.S. 240 was upgraded to I-70S, which was subsequently designated I-270. The Capital Beltway, I-495, opened to traffic in the mid-1960s. These freeways created vital links to neighboring jurisdictions. The 1970s, a time during which expenditures on roads remained roughly constant, brought road improvements to the urban ring, especially along roads leading to the District of Columbia. In the late 1970s and early 1980s, improvements were made to provide better vehicular access to the Metrorail stations.

During the middle and late 1980's, there was extensive road construction throughout the corridor between Rockville and Germantown, in coordination with the fastest growing areas of the

**ROAD CAPACITY IMPROVEMENTS
IN MONTGOMERY COUNTY 1970-1980**



**ROAD CAPACITY IMPROVEMENTS
IN MONTGOMERY COUNTY 1981-1992**



County. Circumferential road improvements in the urban and suburban rings and selected radial improvements in the eastern part of the suburban ring were also completed in the late 1980s. Since 1990, the rate of road improvements has slowed.

*** The traffic capacity of the County's roadway network has increased by about 10 percent since 1980.** More than half of the new capacity is associated with major highway projects such as the widening of I-270 and the opening of Great Seneca Highway. With a few notable exceptions such as Great Seneca Highway and Sam Eig Highway, capacity additions have come from the widening of existing roads. In addition, turn bays and signals have been installed at many intersections, increasing their capacity. Approximately 300 traffic signals at intersections have been added to the 400 that were in place in 1980.

*** There are about 3,250 miles of roads in the County and about 45 square miles of right-of-way along existing roads.** This is equivalent to about 9 percent of the County's total land area. Some of these rights-of-way include land that is unpaved. Roads and streets are classified in the *Master Plan of Highways* by their function. Freeways are divided and grade-separated highways that provide the highest speed, through service, with no direct access to local land uses. They account for less than 3 percent of the total land mileage. Major highways are typically divided and provide at-grade access to local roads, yet serve a mostly through-trip purpose and account for about 9 percent of the mileage. Arterials provide more access to local commercial centers and some residences while serving through traffic. They account for about 8 percent of the County's road system. Primary, secondary, and tertiary residential streets provide circulation and access within neighborhoods and make up the bulk of the total 3,250 miles.

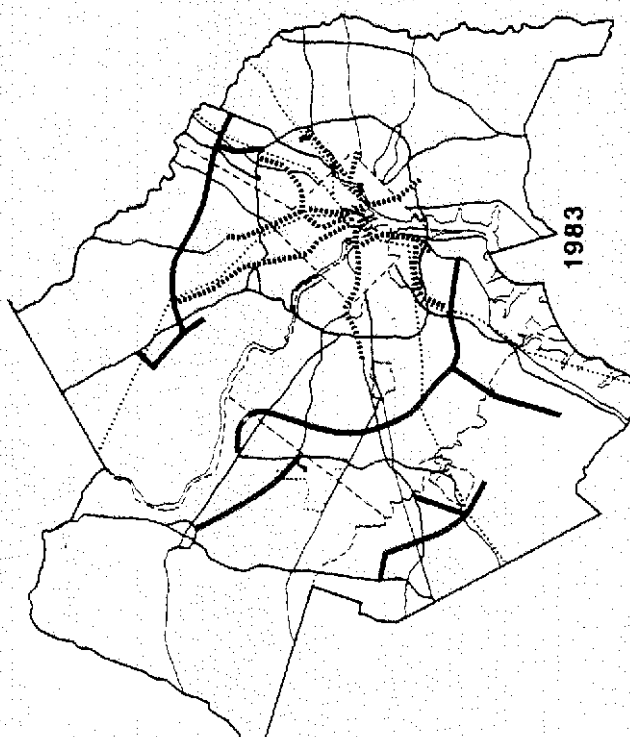
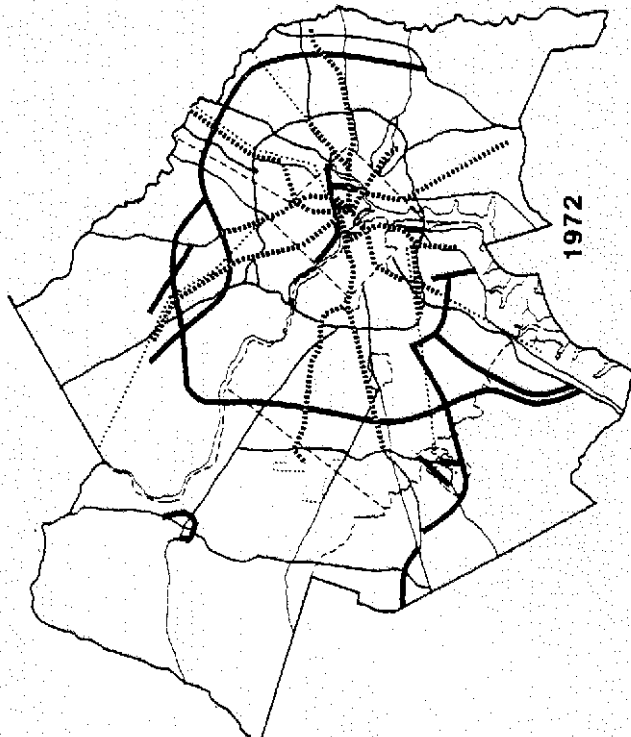
*** Developer participation has been used to fund both off-site roadway projects and streets within subdivisions.** In the 1980s, having adequate transportation capacity became synony-

mous with development capacity as the Adequate Public Facilities Ordinance coordinated the timing of growth with the provision of infrastructure. When public funding was not sufficient to meet the pace of proposed subdivisions, many developers began to build facilities and contribute funds to ensure the timely provision of adequate capacity. This allowed their particular development project to move forward when it fit their private interest. Since 1980, the County has completed 56 roadway projects through its developer-participation programs. To date, the private sector has contributed over \$23 million in the planning and construction of these projects. There are significant developer participation commitments yet to be constructed.

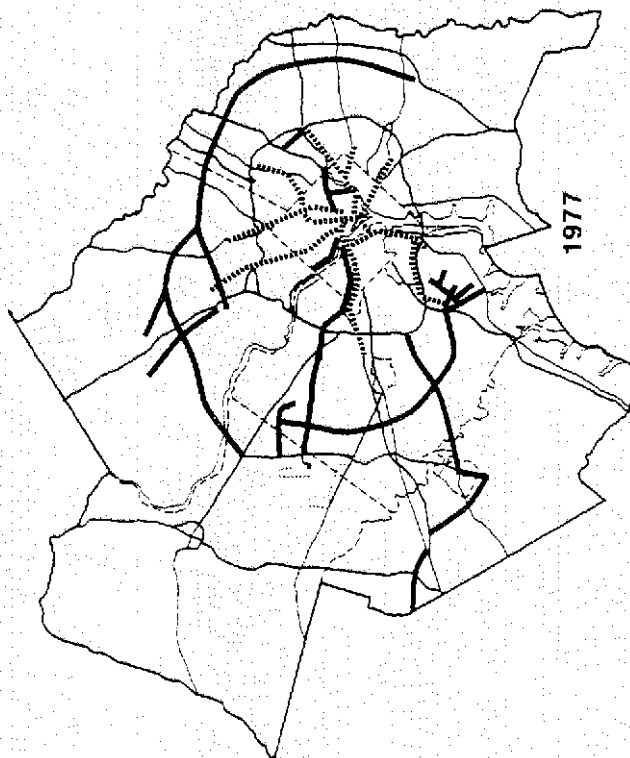
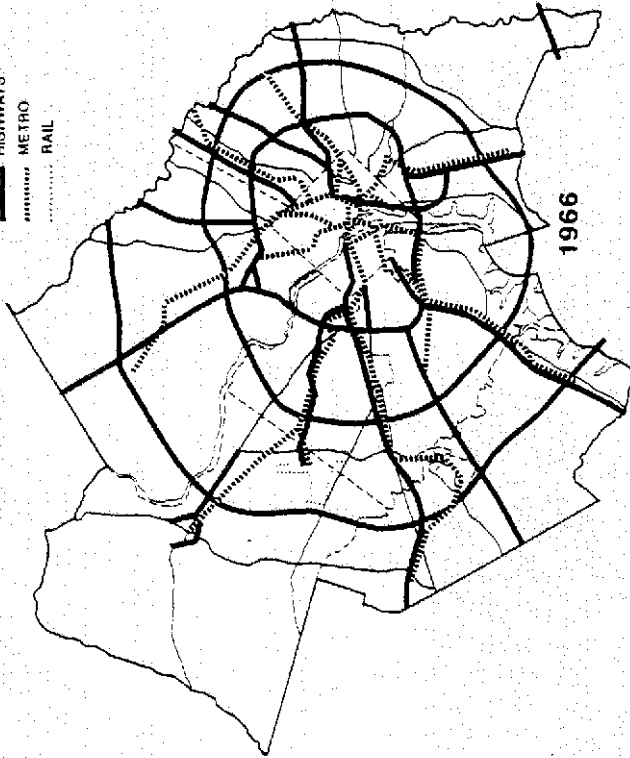
*** There are fewer new roads planned regionally today than there were in 1969.** Past experience would seem to indicate that providing "highway systems to carry the required volume," as called for in the General Plan, will continue to be weighed carefully against fiscal, environmental, and "quality of life" considerations. For example, the 1966 Washington Metropolitan Transportation Planning Board's Long-Range Transportation Plan for the region shows an extensive system of concentric freeways emanating from Washington, D.C. Subsequent updates to that plan show decreasing portions of these facilities.

*** The County's own Master Plan of Highways has fewer high-capacity freeways planned now than 20 years ago.** A 1967 draft update for the plan, which was never adopted, shows a cross-county freeway which traversed the northern reaches of the County and passed through Clarksburg. A later version of this cross-county freeway, which traversed the wedge across the northern part of the County, was under consideration in the late 1980s as part of the Washington Bypass Study conducted by the Virginia and Maryland Departments of Transportation. The Plan also shows a parallel route east of I-270, and the North-Central Freeway, connecting Silver Spring with Howard County between U.S. 29 and Georgia Avenue (which was an adopted element

**WASHINGTON METROPOLITAN COUNCIL OF GOVERNMENTS
LONG RANGE REGIONAL TRANSPORTATION PLAN 1966-1991**

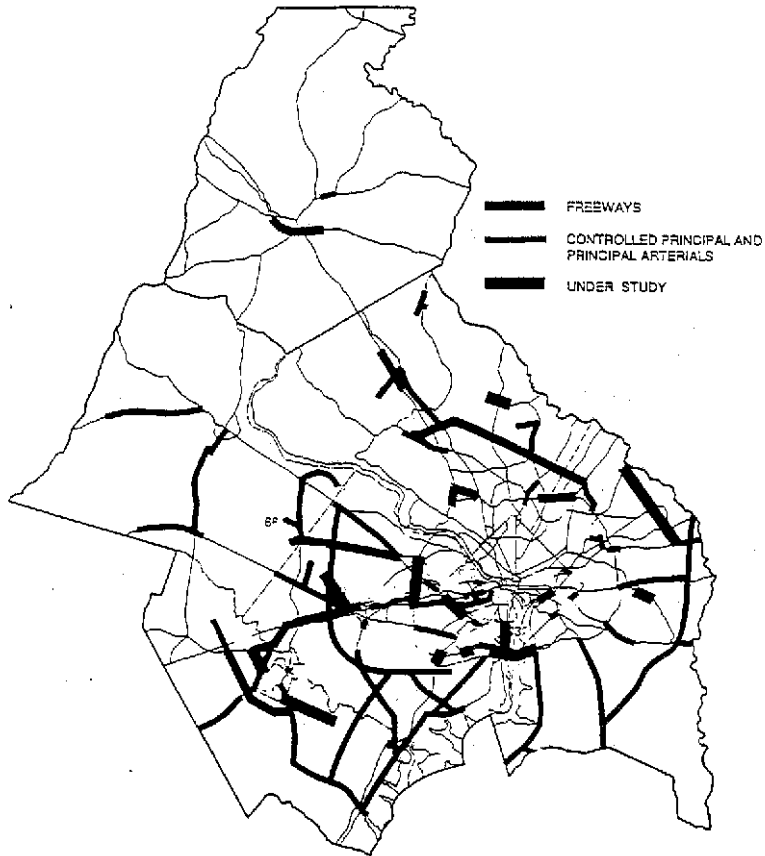


— HIGHWAYS
..... METRO
..... RAIL



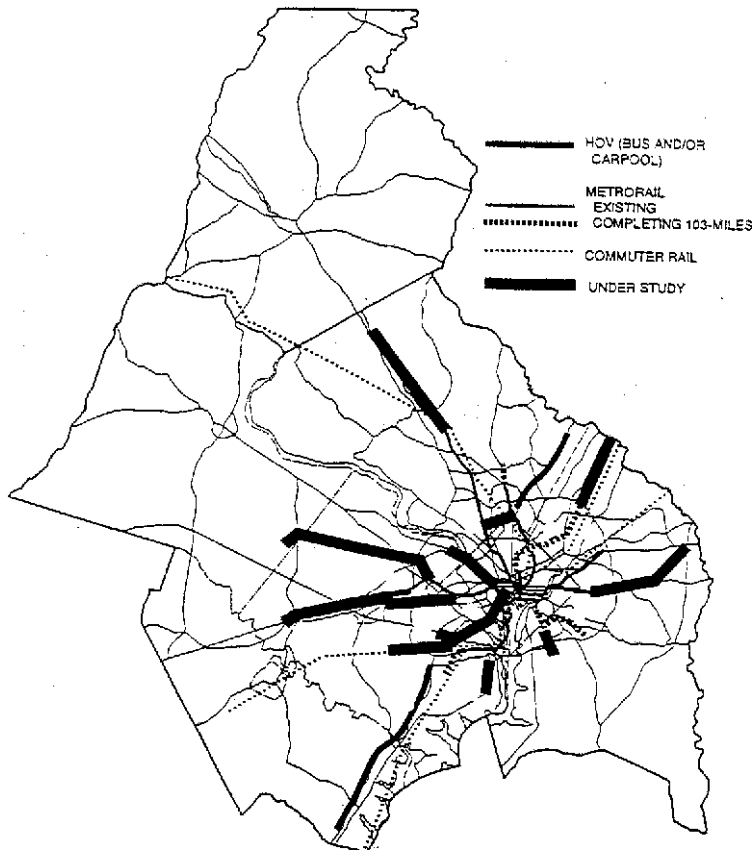
WASHINGTON METROPOLITAN COUNCIL OF GOVERNMENTS
LONG RANGE REGIONAL TRANSPORTATION PLAN 1991

(As updated by the TPB on 9/18/91)

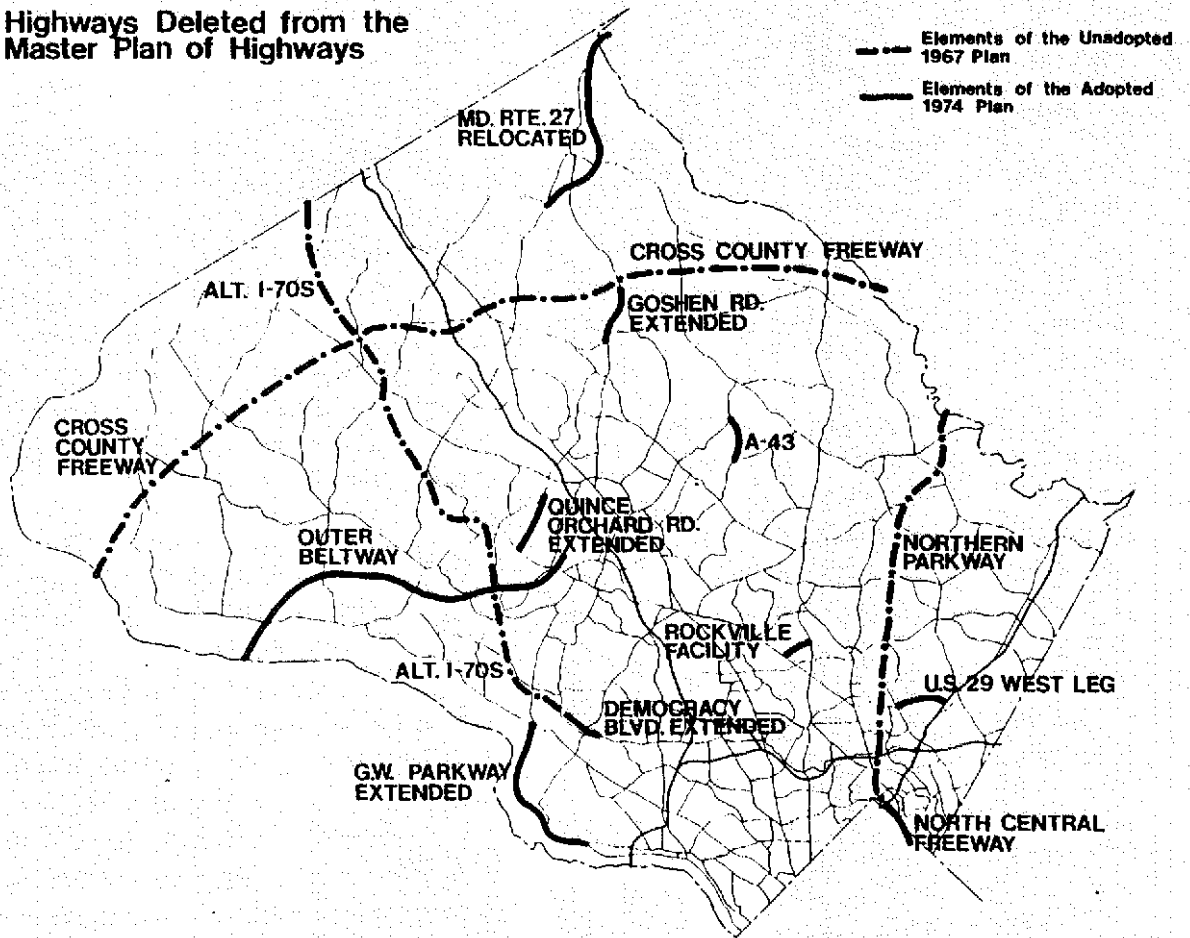


TRANSIT FACILITIES
OF THE LONG RANGE PLAN

(As updated by the TPB on 9/18/91)

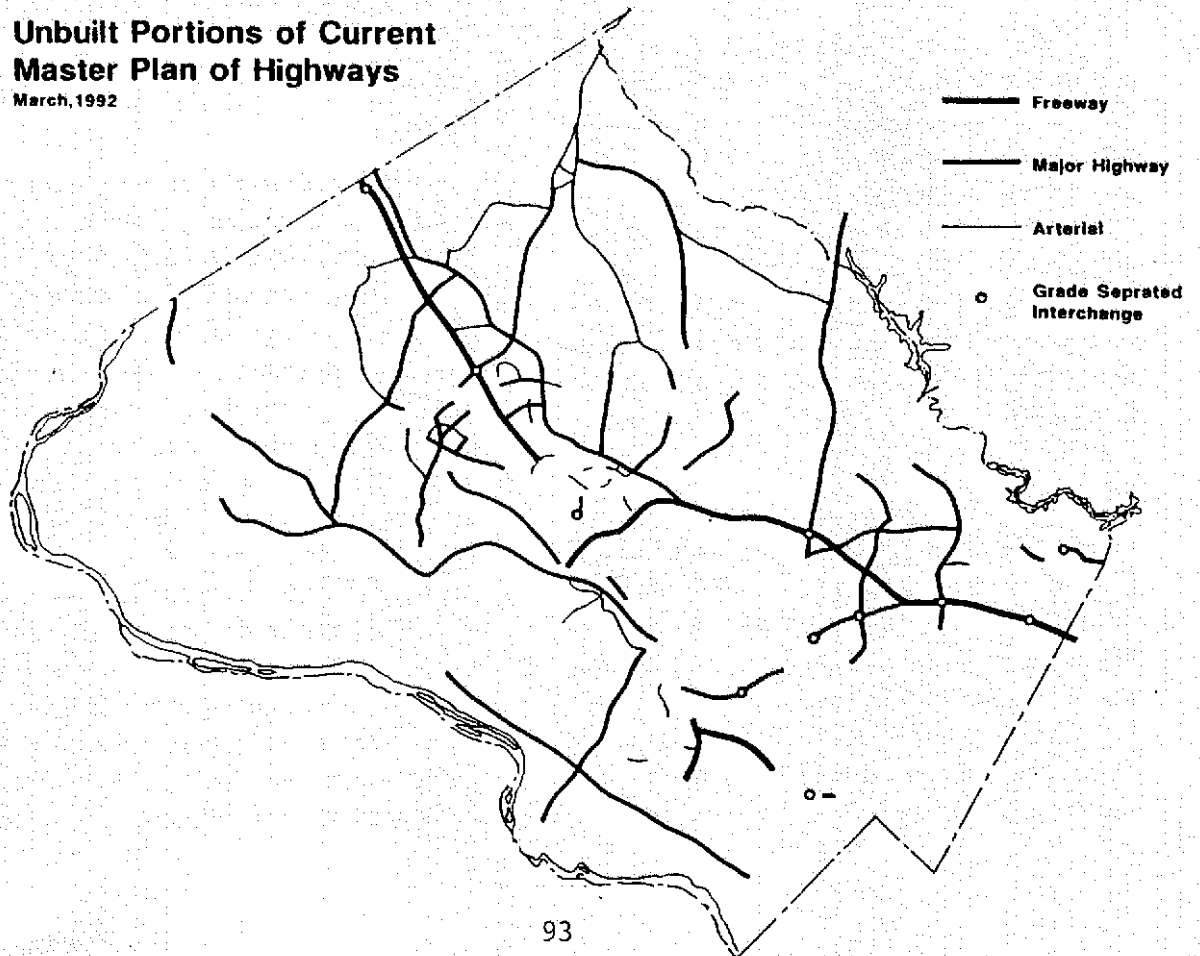


Highways Deleted from the Master Plan of Highways



Unbuilt Portions of Current Master Plan of Highways

March, 1992



of the 1955 Master Plan of Highways). Elements of the *Master Plan of Highways* and the General Plan not yet implemented include portions of the Intercounty Connector (ICC) and Midcounty Highway, as well as the widening of many major and arterial roadways in the upper half of the County.

*** Changes in design standards have resulted in major roads that tend to be wider, flatter, and straighter.** Modern standards for major roads include 12-foot lanes with a median and sidewalks separated from the road by a grassy area. In contrast to some older arterial and major roads in the urban ring, direct access from residential and commercial areas is strictly limited. In some cases, parallel access roads provide connections to separated land uses.

With the objective of introducing greater variety and flexibility in neighborhood design, standards for neighborhood streets are currently under review. One possible outgrowth of this is that neighborhoods will be better connected to transit service.

*** Neighborhood protection programs limit cut-through traffic.** Since the 1970s, traffic controls such as "No left turn" signs, traffic circles, speed bumps, and barriers have been installed in many locales throughout the urban ring where through traffic intrudes upon residential neighborhoods. These measures tend to be effective, but sometimes have the unintended effect of directing traffic into other neighborhoods. By limiting the relief alternative routes afford, these measures can also exacerbate congested conditions along arterial roads.

*** The Rural Roads Task Force has studied ways to protect rustic and scenic roads located primarily in the wedge areas.** In 1989, the County Council initiated a process directed towards preserving some of the roads in the rural and wedge areas of the County that have important scenic and historic qualities. The Rural Roads Task Force, appointed by the Council, produced a report which recommended that the County

adopt a program to preserve as much as 140 miles of roads. The County Executive has prepared legislation to establish a rustic roads program that would implement many of the recommendations of the Task Force Report. If such a program is adopted, any modifications to the roads will be made only in accordance with specially established guidelines whose purpose is to retain some low volume County roads in a condition reminiscent of the County's past.

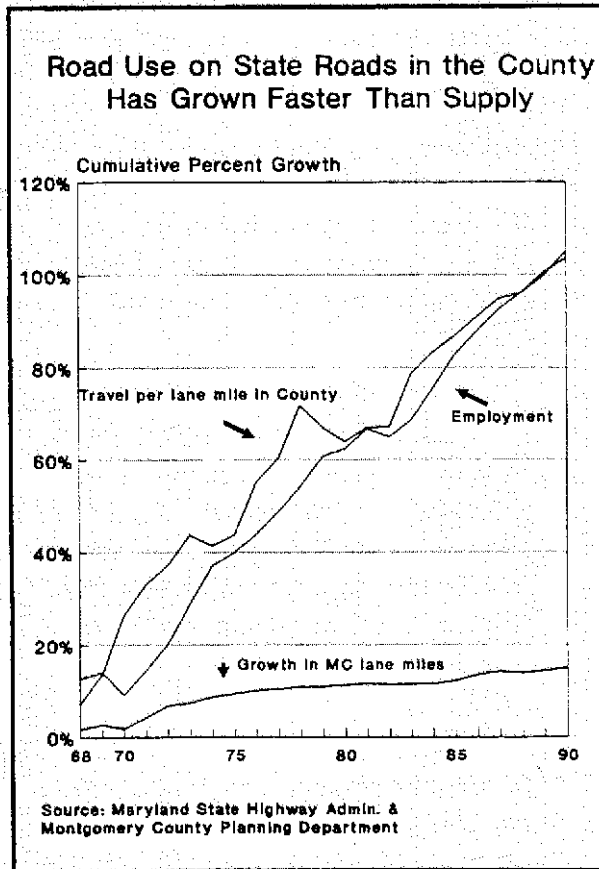
*** Environmental considerations have become a more important element of road planning, design, and construction.** Since 1969, a number of federal, state and local laws and/or regulations to improve environmental protection have been developed. Today, for each planned transportation project that is eligible to receive federal funds, an environmental impact statement spelling out the community impact, the potential for damage to the environment, and the measures proposed to mitigate them must be submitted. Under the provisions of the Clean Air Act of 1990, a transportation project must be an element of a capital program and a regional long-range plan that conforms to federal standards for air quality in order to be eligible for federal funding assistance.

*** Recent federal transportation legislation will encourage greater regional cooperation and provide more flexibility in the use of federal funds.** The *Intermodal Surface Transportation Efficiency Act of 1991* gives more discretion to state and local governments to direct transportation funds to various roadway, transit, high occupancy vehicle, ride-sharing, bicycle, and pedestrian projects. For the first time, the federal share for most transit capital projects is increased to 80 percent, making it equal to the share for most highway projects. Maryland is expected to receive \$2.8 billion over the next six years for transportation as a whole, about twice the amount made available in the past five years. Increased cooperation, coordination, and arrangements for intergovernmental sharing of transportation costs at the regional level will continue to be critical to

the successful implementation of Montgomery County's General Plan.

2) Road Demand

* **The growth of road use has risen faster than the growth in lane miles.** Vehicle miles traveled on State roads in the County increased by over 100 percent in the past twenty years, while total lane miles increased by about only 16 percent. This implies an increase in congestion has occurred. It also suggests that drivers have used available road capacity in the non-peak direction and during off-peak times of the day. Forecasts indicate that an additional doubling in vehicle miles traveled will occur over the next twenty years.



* **Changes in average daily traffic reflect the growing importance of suburb to suburb travel.** * In general, between 1972 and 1989, the amount of traffic crossing roadways at the Washington, D.C. line grew far less than that near other

neighboring jurisdictions. Daily traffic along major streets between Montgomery County and Prince George's County doubled in many cases. Beltway traffic at the Virginia state line increased 78 percent, to 157,000 vehicles per day. Inbound traffic on US 29 near the Howard County line doubled, and tripled on I-270 north of Germantown to more than 105,000 vehicles per day.

* **Traffic congestion has increased in many areas along specific roadways and at numerous intersections in the County.** According to traffic count information, between the early 1970s and the mid-1980s, the number of congested intersections increased from 16 to 72. Area-wide congestion increased on freeways and major and arterial roads in most areas of the County. County-wide, average congestion increased 35 percent on freeways and 22 percent on major and arterial roads between 1980 and 1989, prior to the completion of the I-270 widening. Congestion grew in all areas of the County, with wedge areas registering the largest proportional increase.

* **In the late 1980s, capacity improvements allowed increased speeds on freeways and arterials in some areas.** The opening of Great Seneca Highway and the widening of I-270 in the late 1980s improved speeds on County freeways so that 20 percent of the mileage was operating at congested speeds of 30 miles an hour or less, compared to 40 percent prior to the improvement. The mid-county area registered the sharpest improvement, while in the down-county area, the percentage of road miles traveled at 30 mph or less declined from 40 percent to 30 percent. In 1990, about 7 percent of the arterial road lane miles operated at congested speeds compared with 18 percent in 1987. However, these improvements may diminish as development continues in the corridor.

* **Under current trends, traffic along existing facilities and the I-270 Corridor will experience the most traffic increase between now and 2010.** By 2010, the total number of work trips made to County jobs is expected to increase by 50

percent. Most of these new trips will begin and end in the County. In relative terms, however, commuter trips from Howard and Frederick Counties to Montgomery County are expected to increase more than those from other jurisdictions in the region. The great majority of these trips are likely to be made by automobile, accounting for some of the projected traffic increases in the I-270 Corridor.

*** A long-term imbalance between land use and transportation has been identified in county-wide transportation studies conducted since the 1969 General Plan. A *Transportation Study for Montgomery and Prince George's Counties, Maryland* (1970) was the first transportation study completed after the 1969 General Plan. The study employed newly-developed analytic techniques in predicting that, by 1990, congestion in many areas of the County would approach that experienced in Washington, D.C. at that time. More recently, the *General Plan Assessment* (1987) and the *Comprehensive Growth Policy Study* (1989) have forecast significant increases in congestion in many areas of the County as a result of demands placed upon the future transportation system from expected local and regional growth in households and employment. Although the specific findings of these studies differ, they all touch upon the general need to modify land use patterns, influence travel behavior, and increase the supply of transportation in order to serve the full zoning potential of land in the County.**

*** Transportation Demand Management (TDM) has grown in importance. Such transportation demand management efforts, or "trip mitigation" activities as they are known in Montgomery County, are an outgrowth of the Adequate Public Facilities Ordinance. Since the early 1980s, 55 traffic mitigation agreements have been made or are pending which specify that the developer must eliminate as many trips as will be generated by a new development. Developers have been using a variety of means such as selling bus passes or starting ride-sharing programs to uphold the agreements. These agreements usu-**

ally remain in effect for ten years. Such TDM programs are most successful in areas where parking management is combined with attractive alternatives to driving alone.

Flexible work schedules and telecommuting are two additional transportation demand management measures which are not widely in practice currently but may grow in importance over time. Telecommuting may be especially attractive for this County because its increasing high-tech employment is well suited for home based work with a modem and a computer.

*** The Transportation Management District (TMD) in Silver Spring expanded the transportation demand management concept to an entire area. The first, and so far only, TMD in the County was created in Silver Spring in 1987. Its goal is to reduce single-occupant auto travel in order to accommodate new development in an area where opportunities for road capacity improvements are limited. In order to meet its 46 to 50 percent non-auto driver mode share goal, the County has offered transit subsidies, ride-share matching services, and reduced-rate car pool parking.**

In 1986, the Montgomery County Department of Transportation, City of Rockville, employers, and property owners in the North Bethesda/Rockville areas established the "Transportation Action Partnership", a transportation management organization which works towards reducing travel demands in that area.

3) Parking

*** The number of public parking spaces in the County's four parking lot districts has grown 85 percent since 1970 from over 10,000 to nearly 19,000 spaces. Four parking lot districts within Montgomery County were created during the late 1940s in areas where public parking was thought to be necessary in order to encourage compact and orderly commercial development. The four districts are: Silver Spring, Bethesda, Wheaton and Montgomery Hills. Each of the**

parking districts, which maintains on-street and off-street surface and/or garage parking facilities, charges hourly and daily parking fees. The parking districts rely solely on parking fees, fines, and taxes assessed to properties that do not provide their own parking, in order to maintain and expand their operations. In the late 1980s, the fee structure in the Silver Spring district was modified to help achieve the non-auto driver goal.

*** Parking is free in most of Montgomery County and the rest of the region as well, although fees for parking are becoming more widespread. According to a 1991 Washington Metropolitan Council of Governments study, most employers in the region provide free parking for their employees. In addition to the parking districts, where charges are pervasive, parking is charged in scattered areas of Rockville, North Bethesda, and Wheaton. In 1990, daily charges in commercial lots in Silver Spring and Bethesda were \$3.50 to \$4.50. Average daily commercial parking fees in Washington D.C. were \$8.50, in Alexandria and Arlington \$9.50, and in Prince George's County \$6.00 to \$10.00. More commercial and retail establishments near Metro stations are beginning to charge fees for parking.**

*** The Montgomery County Zoning Ordinance specifies minimum parking requirements for various land uses including office, commercial, and industrial zones. The minimum number of parking spaces varies from 1.6 spaces per 1,000 square feet for office nearest Metrorail to 5 spaces per 1,000 square feet at retail establishments. The requirement varies, depending on the land use and distance from Metrorail.**

B. TRANSIT

1) Transit Supply

*** Our Transit system has been greatly expanded since 1973. Until 1972, bus service in Montgomery County was provided primarily by a private company, D.C. Transit, which operated in the urban ring connecting Washington D.C. to Gaithersburg, Olney, and White Oak. Commuter**

rail (MARC) served commuters from distant residential development as far as West Virginia to the down-county area and Washington, D.C. Then, as now, the system served best those traveling along radial lines towards the Washington, D.C. area. Today, the 17.4 miles and 12 stations of the Metrorail Red Line form the backbone of a much improved transit system in the County.

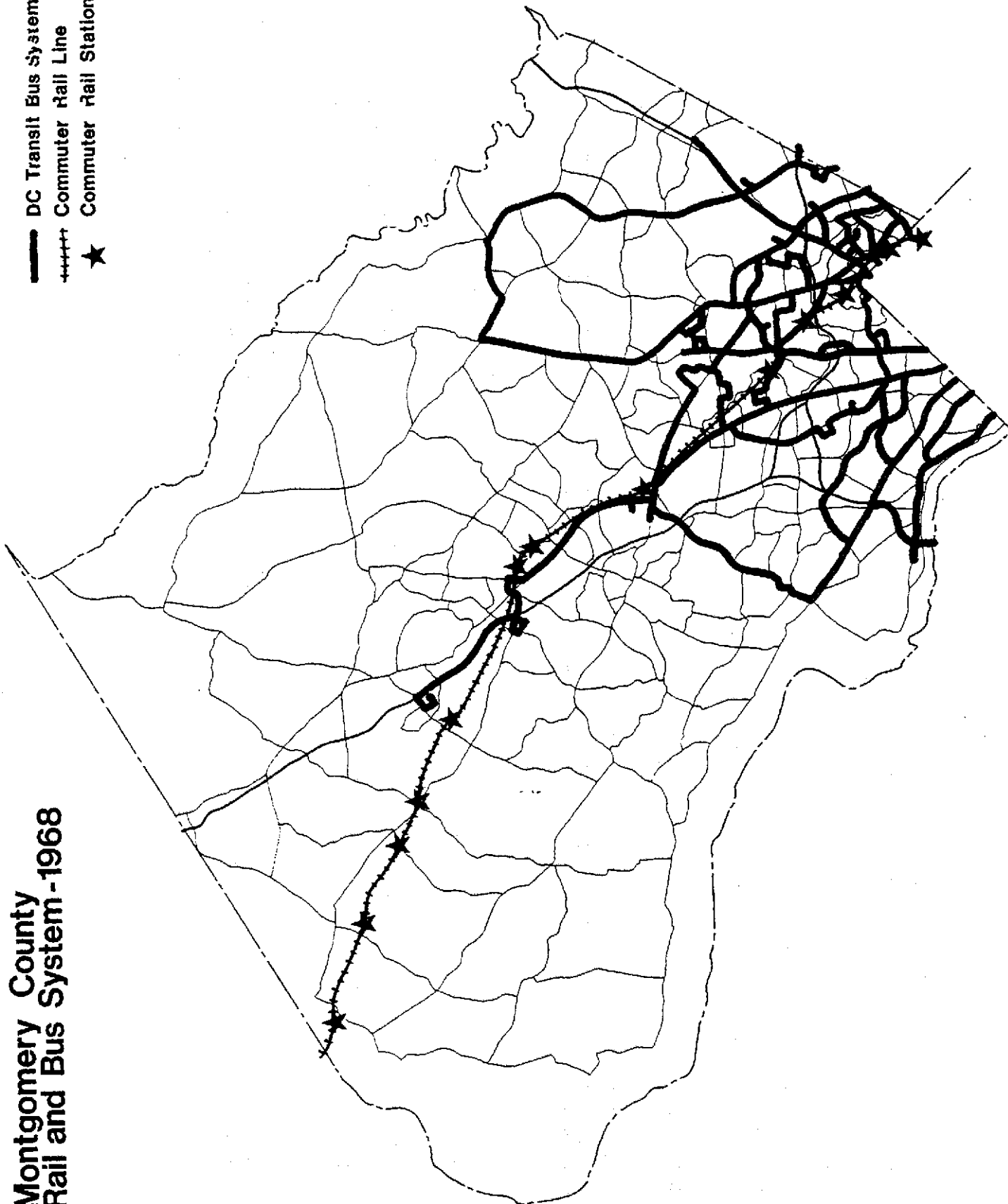
*** Bus service and automobile access have been designed to complement the rail system, providing the "ease of transfer" to it called for in the General Plan. The County's Ride-On system, which began bus service in 1975, now operates over 70 routes with about 200 buses and concentrates service to neighborhoods in the urban ring and along the I-270 corridor, making frequent connections with Metrorail and commuter rail stations. Less frequent service is provided to the communities outside the Corridor such as Olney and Damascus. The Washington Metropolitan Area Transit Authority (WMATA) took over service from D.C. Transit in 1972 and now offers bus service in the lower half and eastern portions of the County. Metrobus makes connections with the rail system, Prince George's County, and the District of Columbia. Express bus service, complemented by over 3,500 commuter parking spaces, is available along areas not served by rail. One of the remaining private bus operators, Eyre Bus company, takes commuters from Howard County to Silver Spring on US 29, along one of the few dedicated bus lanes in the County. That service is supported by the Maryland Department of Transportation along with service to the Shady Grove Metro Station from Frederick and Hagerstown.**

Automobile access to rail stations is facilitated by the provision of over 13,000 parking spaces, and numerous road improvements carried out around the time of station construction.

*** Expanded commuter rail service will serve a greater share of the County's demand for travel. State-wide, commuter rail service (MARC) will benefit from an infusion of over \$350 million of federal funds during the next six years, to im-**

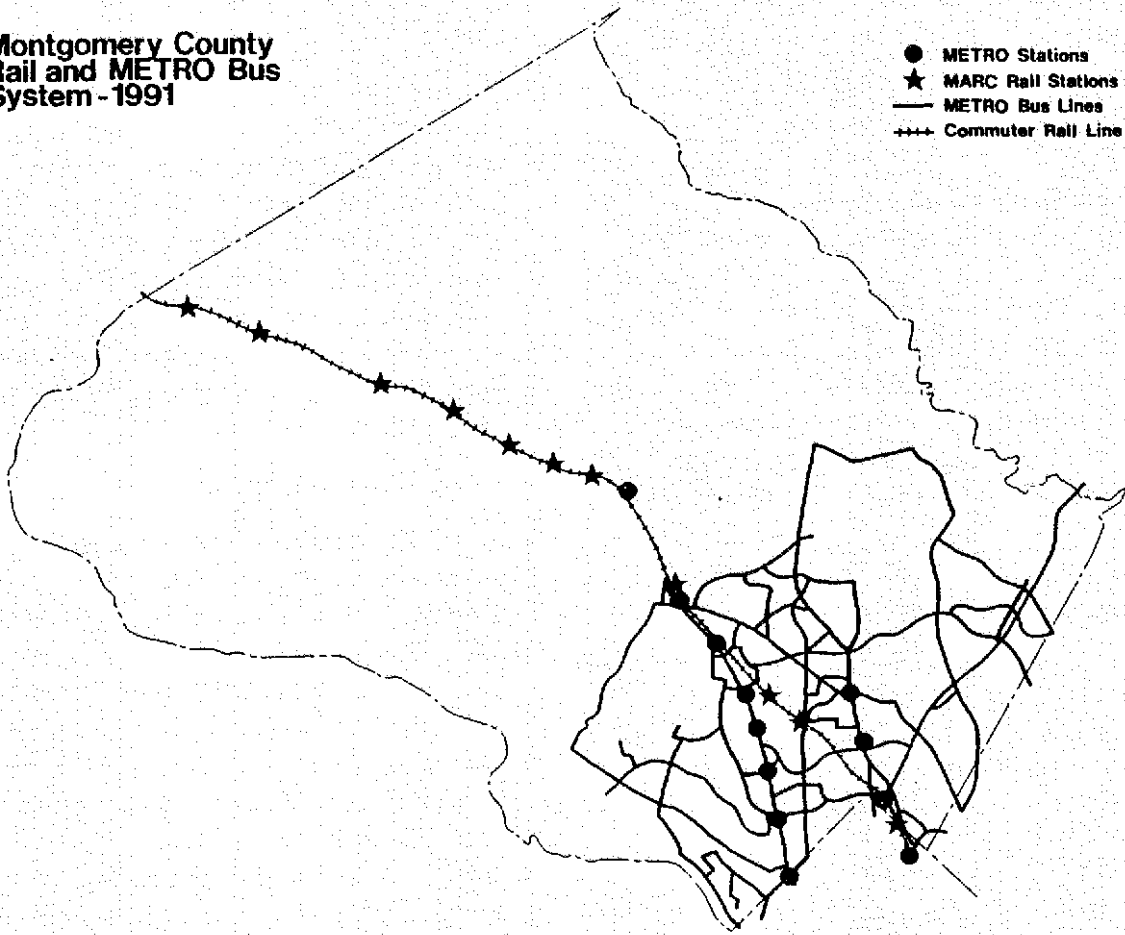
Montgomery County Rail and Bus System - 1968

- DC Transit Bus System
- +++++ Commuter Rail Line
- ★ Commuter Rail Stations



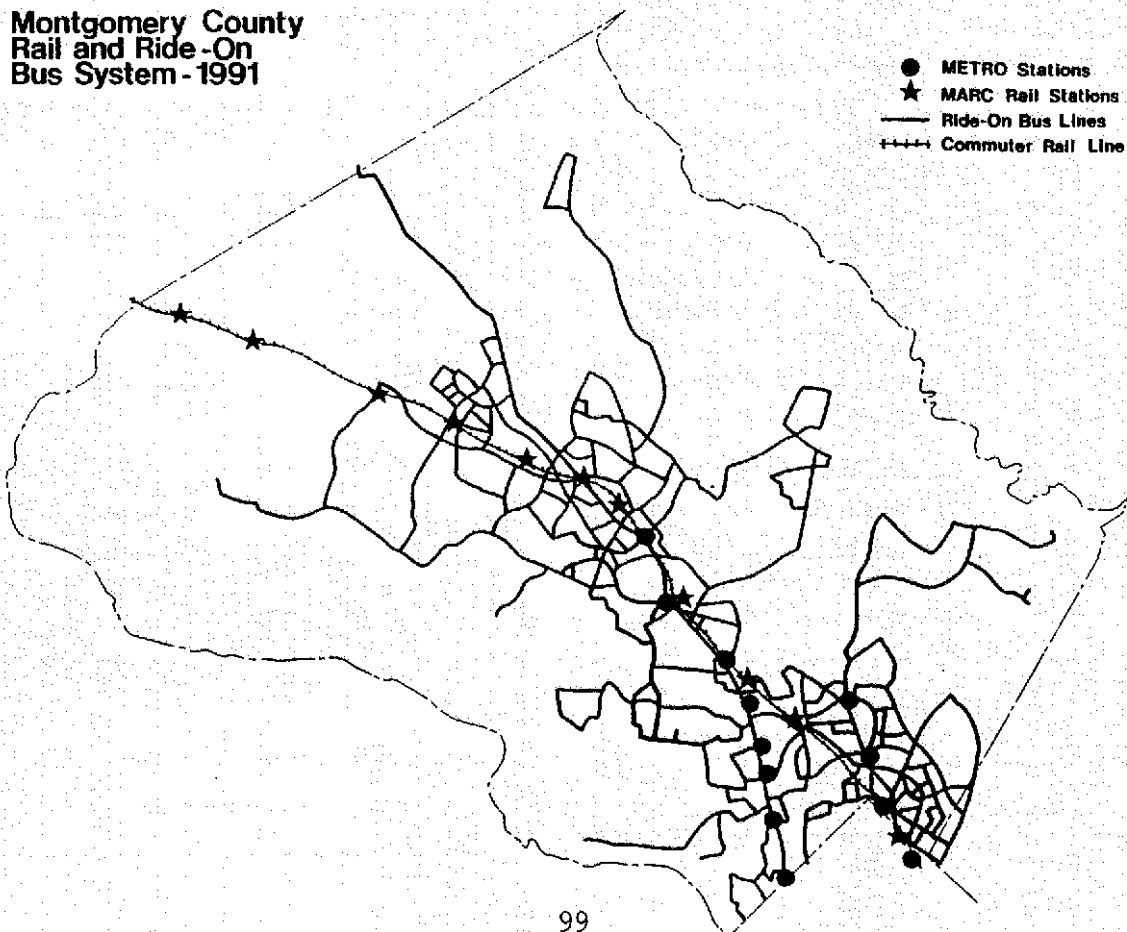
**Montgomery County
Rail and METRO Bus
System - 1991**

- METRO Stations
- ★ MARC Rail Stations
- METRO Bus Lines
- +++ Commuter Rail Line



**Montgomery County
Rail and Ride-On
Bus System - 1991**

- METRO Stations
- ★ MARC Rail Stations
- Ride-On Bus Lines
- +++ Commuter Rail Line



prove and expand stations, and extend service to Frederick, Maryland from Point of Rocks, West Virginia. In the longer term, there are expectations for extending service to Cumberland, Maryland, and doubling the frequency of morning and afternoon service in the County to six trains per hour from the current three trains per hour. Frequent service in the reverse direction is expected as well. These improvements are expected to attract more commuters and non-commuters traveling shorter distances to complement the long-distance commuters who now comprise the bulk of the system's riders.

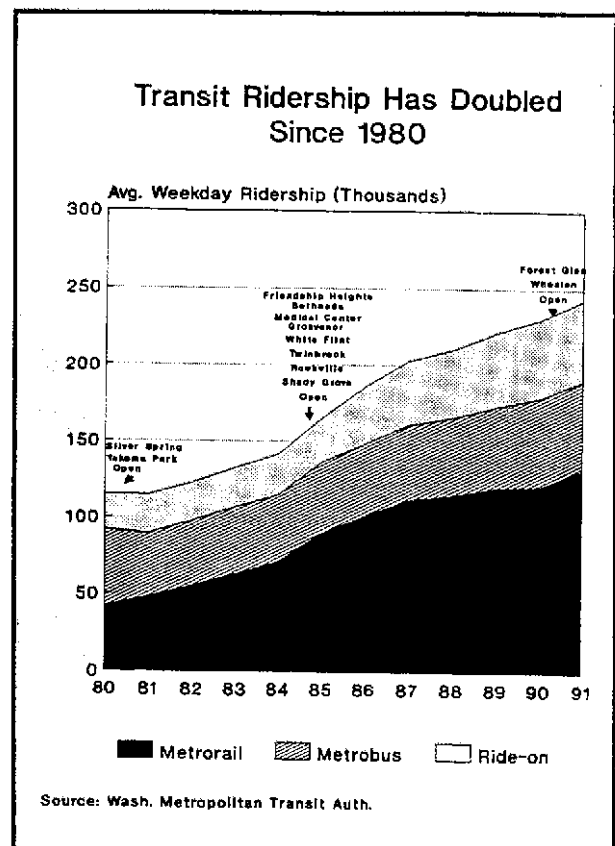
* Standards for acceptable levels of congestion in the County are influenced by the quality and quantity of transit service and access. The County's *Adequate Public Facilities Ordinance* coordinates the timing of development with the provision of public facilities needed to serve the development. Each of the County's policy areas is categorized as being in one of six groups that are defined by their degree of transit availability and uses. Associated with each of these six groups is a standard of acceptable area-wide average congestion on the roadway network. The assignment of these standards is based upon a policy of permitting greater roadway congestion to occur in those policy areas that provide greater opportunities for the use of transit, car-pooling, walking, and biking. Thus, higher levels of roadway congestion are deemed more acceptable in Silver Spring or Bethesda/Chevy Chase than in areas such as Damascus, Cloverly and Olney, where transit availability and use is limited. The combined effect is to have an equivalent level of transportation service in each area of the County.

* Recent studies and master plans are a prelude to the County's first Master Plan of Transitways and High Occupancy Vehicle (HOV) Facilities. The Georgetown Branch Trolley, Corridor Cities Transit Easement, and the Grosvenor Transitway are identified in their respective master plans as logical extensions of current transit service. *The Transportation Network Studies* has identified potential transitway or HOV corridors along US 29, I-270, I-495, and the Intercounty Connector. The Master Plan of Transitways and HOV

will locate and reserve rights-of-way in the same fashion as the *Master Plan of Highways* has for roads since its initial adoption in 1932. With the exception of the Georgetown Branch Trolley, these potential transitways have not been evaluated for environmental or fiscal feasibility, nor have their designs or mode of operation been determined.

2) Transit Demand

* The number of transit passengers doubled between 1980 and 1990 in Montgomery County. Excluding commuter rail (MARC), about 230,000 passengers used the transit system on an average weekday in 1990, double the approximately 115,000 week-day riders during 1980. The Metrorail, Metrobus, and Ride-On Systems all increased in ridership as new stations opened along the Red Line in the 1980s. Ridership on the commuter rail line has also increased to approximately 5,400 passengers a day, up from 400 a day in 1968.



* The two busiest Metrorail stations in the County, at Silver Spring and Shady Grove, illustrate different approaches to "...serving present population and employment centers." The Silver Spring station, one of the first to open in the County, has the most passengers boarding of any station in the County. Bus is the primary mode of access to the station at 55 percent of the Metrorail riders, followed by walk and auto, at 16 and 14 percent respectively. The station is centrally located and development around it is compact. There are three times as many households and jobs within a quarter mile of the Silver Spring station as at the Shady Grove station. Commuters using the station are able to reach about five times as many of the region's jobs within 60 minutes as at the Shady Grove Station. It is also a transfer point for many of the area's buses.

Shady Grove, growing faster than any other station, now ranks second overall in number of boardings in the County. It is accessible by transit to a small proportion of the region's households and jobs, and relatively few household and jobs are within walking distance of the station. Currently the outermost station on the Red Line, its riders come from a dispersed area, making access by automobile the most convenient alternative. I-370 was built in the right-of-way for the Inter-county Connector to provide direct access to the Shady Grove metro station. Shady Grove's 4,000 plus parking spaces, the most of any station, serves the 55 percent of Metrorail riders who drive and 20 percent who enter the station as auto passengers. Only 2 percent of Shady Grove's transit patrons walk or bike there, while the remaining 23 percent come by bus.

C. PEDESTRIANS AND BICYCLES

* The potential role of walking and bicycling beyond "health and recreation objectives" as envisioned in the General Plan is just being recognized. At the time of the General Plan, when there were about ten miles of County maintained bikeways, there was no explicit recognition of non-motorized modes as viable

alternatives to automobile travel. Since that time, numerous bike plans have emerged, among them the County's first *Master Plan of Bikeways* in 1978 and the Park Department's *Guide to Recreational Trails* in 1990. In these documents we see the emergence of bike connections around as well as between urbanizing areas, and between park trails and developed areas.

Since 1970, approximately 156 miles of bike paths, lanes, and routes have been built in Montgomery County. A 34-mile system of hiker-biker trails has been constructed by M-NCPPC in stream valley parks around the County. Another 54 miles are located in Gaithersburg, Rockville, and State and Federal parks. The County Department of Transportation maintains 45 miles of off-road bike trails (Class I bike routes) and 33 miles of on-road signed bike lanes (Class II and III routes). Another 79 miles of bicycle trails are proposed, which would bring the total system to 245 miles.

* Sidewalks are more often a feature of road construction and improvements than at the time of the 1969 General Plan. The County's Road Code now requires the construction of sidewalks in developing residential subdivisions of one acre density (RE-1) or greater. Since 1974, the Road Code has required that sidewalks be provided with road improvement and construction. Public expenditures on pedestrian facilities totaled \$970,000 in 1989, compared to \$240,000 in 1982. While the absolute dollar amount spent on pedestrian facilities increased between 1982 and 1989, the share of total expenditures dropped from 3 percent to 1 percent. About one-quarter of the approximate 1,550 miles of County maintained roads, or 370 miles, had sidewalks along one or both sides in 1972. Today, almost half of the 1,700 miles of County maintained roads have sidewalks (840 miles). Most major roads, especially in commercial areas of the County, have sidewalks.

Despite these gains, the existence of sidewalks does not guarantee increased pedestrian

use. As roads have been widened, auto volumes have increased, creating greater crossing distances and increasing the perceived risk of injury for pedestrians at intersections. Walking is especially difficult along certain stretches of major highways such as Rockville Pike, where auto speeds and volumes combine with large building setbacks to discourage walking.

D. OTHER TRANSPORTATION

***General aviation capacity in Montgomery County has remained fairly stable. The Mont-**

gomery County Airpark continues to provide service for private, non-commercial aircraft only. All aviation studies conducted in the County over the last 20 years have concluded that no additional general aviation or commercial airport facilities are required in the County due in part to expanded service provided in Frederick County. *The Gaithersburg Master Plan* calls for no significant physical improvements or changes, other than safety improvements, to the airpark.