4. Transportation

The Fairfax Center Area is well-located in terms of its access to regional and interstate transportation systems. Lee Highway, Lee-Jackson Memorial Highway and I-66 run east–west through the study area, and the Fairfax County Parkway provides a north–south connection. I-66 and the Fairfax County Parkway are designated as Enhanced Public Transportation Corridors (EPTCs) on the Countywide Transportation Plan Map, adopted on July 31, 2006 and amended through September 13, 2011. EPTCs are corridors planned to provide major public transportation facilities, such as Metrorail, light rail, bus rapid transit, and high occupancy vehicle (HOV) lanes. Accessibility and travel through the Fairfax Center Area is affected by land uses and transportation infrastructure in the Fairfax Center Area, the adjacent areas in the county, and the Northern Virginia region. Since the adoption of the Comprehensive Plan for the Fairfax Center Area in 1982, the local and external factors have necessitated changes to the planned infrastructure.

The following section provides an overview of the existing and planned transportation facilities, performance of the roadway system, the Access Management Plan (AMP), and the Road Fund for the Fairfax Center Area. The AMP and Road Fund are both unique aspects of the adopted Fairfax Center Area Comprehensive Plan and have helped shape the transportation infrastructure present within the area today.

Transportation Plan

The 1982 Fairfax Center Area Comprehensive Plan recommended significant transportation improvements for the study area. Since adoption, some of the improvements recommended have been completed. The most notable completed improvements are the following:

Interchanges

- I-66/Fairfax County Parkway
- Lee-Jackson Memorial Highway/Fairfax County Parkway
- Lee-Jackson Memorial Highway/West Ox Road

High-Occupancy Vehicle (HOV) lanes on I-66.
Source: Google Maps; image taken May 2012

Opposite: Intersection of Monument Drive and West Ox Road.

Intersection of Lee Highway with the Fairfax County Parkway.
Source: Google Maps; image taken May 2012

» West Ox Road/Lee Highway/Fairfax County Parkway
» Fairfax County Parkway/Fair Lakes Parkway/Monument Drive with widening of the parkway to six lanes between I-66 and Lee-Jackson Memorial Highway

Roadways

» Fairfax County Parkway
» Monument Drive
» Government Center Parkway
» Fair Lakes Parkway
» Monument Drive and I-66 overpass
» Widening Fairfax County Parkway to six lanes between I-66 and Lee-Jackson Memorial Highway in conjunction with the construction of an interchange at Fair Lakes Parkway/Monument Drive

The major transportation improvements recommended in the Comprehensive Plan for the Fairfax Center Area include the following (Figure 4.1):

At-Grade Improvements/Construction

» Widening of Waples Mill Road to six lanes between Lee-Jackson Memorial Highway and Lee Highway
» Widening of Rugby Road to four lanes between Fairfax County Parkway and Lee-Jackson Memorial Highway
» Widening of Lee-Jackson Memorial Highway to eight lanes between Waples Mill Road and I-66

Interchanges

» Waples Mill Road/Lee-Jackson Memorial Highway
» Waples Mill Road/Lee Highway
» Monument Drive/Lee Highway
» Legato Road/Lee Highway

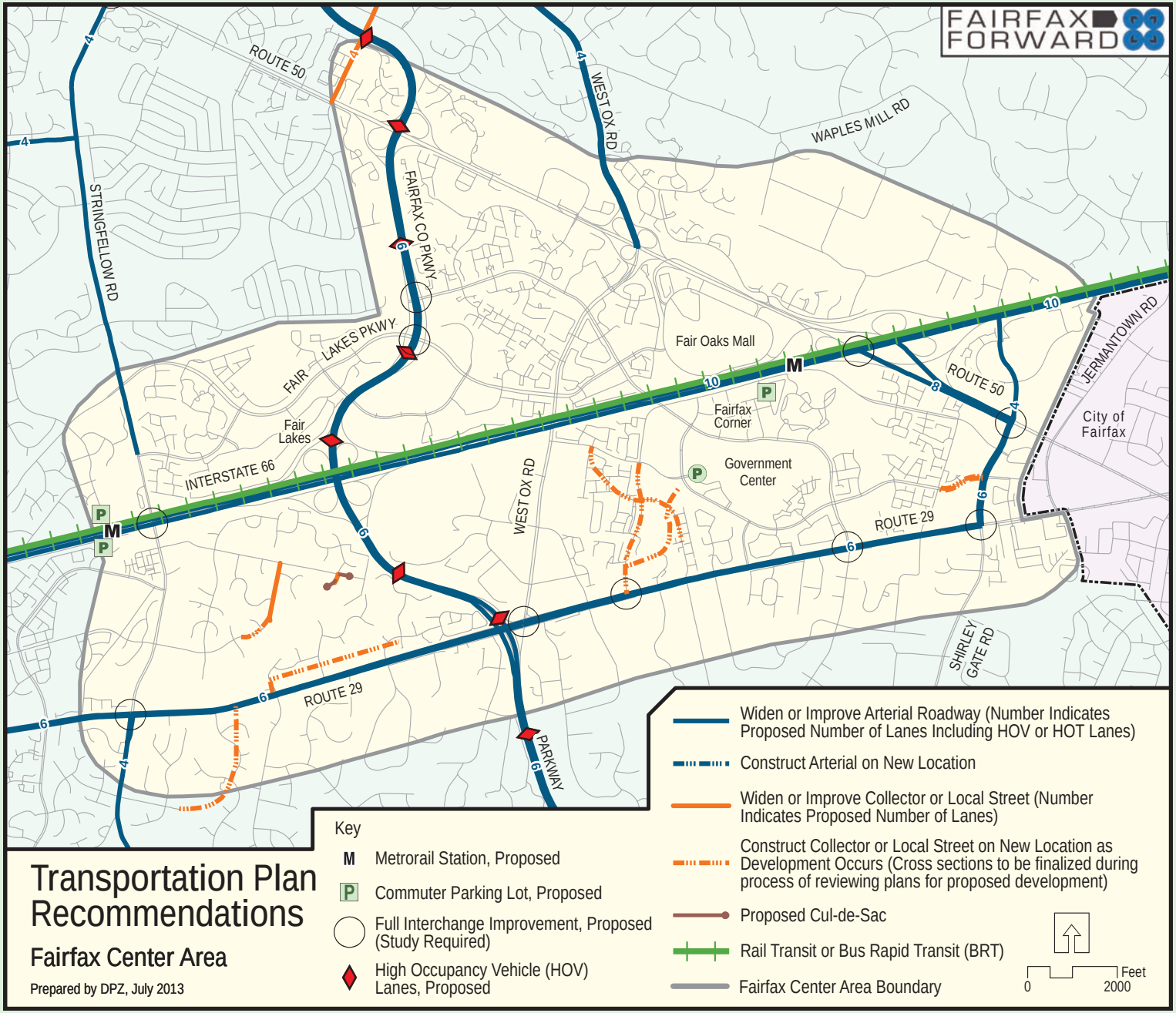

Figure 4.1 Planned transportation improvements for the Fairfax Center Area.

The Metrorail Orange Line along I-66. Source: VDOT

Lee Highway Reconstruction/Widening to Six Lanes

» East of West Ox Road (completed), including interchanges at Shirley Gate Road, Monument Drive, and Legato Road
» West of West Ox Road, including an interchange at Clifton Road/Stringfellow Road

Fairfax County Parkway Widening - Adding HOV Lanes

» Construction of six through lanes between I-66 and Lee Highway

Metrorail Extension on I-66

» The Metrorail extension on I-66 from Vienna to Prince William County passes through the Fairfax Center Area
» The Fairfax Center Area has planned Metrorail station location points near Fair Oaks Mall and West of Stringfellow Road
» Park and ride lots are planned near future Metrorail stations

In addition to the Fairfax County Transportation Plan, county and regional projects are depicted in various other long range plans. These plans include the following:

Constrained Long Range Plan (CLRP)

The Regional CLRP is a comprehensive plan of transportation projects and strategies that the National Capital Region Transportation Planning Board (TPB) anticipates can be funded over a 30-year time frame. CLRP projects that fall within the study area are shown in Appendix C.

TransAction 2040

The Northern Virginia Transportation Authority (NVATA) plans projects for the counties of Arlington, Fairfax, Loudoun and Prince William, as well as the cities of Alexandria, Fairfax, Falls Church, Manassas and Manassas Park. The Authority is charged with identifying short- and long-term transportation needs in Northern Virginia. Its planning, however, is not constrained by projected levels of funding. A complete list of TransAction 2040 projects can be found on the NVATA website:

http://www.thenovaauthority.org/trans2040overview.html. Trans Action 2040 projects that fall within the study area, some of which are also shown on the CLRP, are shown in Appendix C.

Roadway Functional Classification

Roadway functional classification is the process by which street and highway facilities are grouped into classes according to the type of service the facility provides. The classification defines the role of a road or street in serving the flow of trips through the roadway network. Functional classification is useful when considering the dual role of the transportation network to provide both travel mobility and access to property. Appendix C depicts the functional classification of the major roadways in the Fairfax Center Area. The roadway classifications can be described as follows:

- A **Freeway** is an expressway highway with four or more lanes, limited access, and no signals or at-grade intersections.
- An **Expressway** is a highway with a wide grassy median, four to eight lanes, limited access, and few signals or intersections.
- A **Principal Arterial** is a high capacity urban road with a divided median, four to eight lanes, and two or more turn lanes at intersections and no stop signs.
- A **Minor Arterial** is rarely divided, has two or four lanes, and usually has turn lanes.
  - A **Type A** minor arterial is closely related to a principal arterial in terms of their traffic characteristics and role in the road network. They are typically multi-lane divided facilities with a minimum right-of-way of 122 feet. Inter changes are typically provided at intersections with freeways. Interchanges at other locations should only be provided where the results of a detailed traffic study indicate at-grade intersections cannot accommodate traffic.
  - A **Type B** minor arterial are somewhat shorter in length, traverse a less densely developed area, or are located in more mature areas and consequently built to a somewhat older design standard.

The Fairfax County Parkway is an example of an Expressway.
Source: Google Maps; image taken September 2012

Random Hills Road is an example of a Minor Arterial.
Source: Google Maps; image taken September 2012

"LOS measures how well the stream of traffic moves along roadways. It is generally defined in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety."

- A **Collector** is two lanes, and may have some driveways and turn lanes
  - A **Subconnector** is a special category within the collector roadway classifi cation in the Fairfax Center Area. A higher design standard is expected for a subconnector than for other collectors in the Fairfax Center Area.

Operational Efficiency of Selected Intersections

Roadways are planned, designed, constructed and improved based upon volume demand, future anticipated capacity needs, and travel time delays. Traffic operations are typically measured through level-of-service (LOS) standards. LOS measures how well the stream of traffic moves along roadways. It is generally defined in terms of speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Level-of-service is conveyed on a scale from "A" through "F", with "A" representing conditions with extremely little traffic and F representing conditions with extremely congested traffic. These levels are defined as follows:

- **LOS A** describes free flow condition. The operation of a street vehicle is unaffected by the presence of other vehicles.
- **LOS B** indicates free-flow; however the presence of other traffic becomes noticeable. Drivers have slightly less freedom to maneuver.
- **LOS C** indicates an influence of density on traffic operations. The ability to maneuver within traffic is affected by other vehicles.
- **LOS D** indicates high-density flow in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even though flow remains stable.
- **LOS E** indicates unstable flow at or near capacity levels with poor level of comfort and convenience.
- **LOS F** represents forced traffic flow in which the amount of traffic approaching a point exceeds the amount that can be served. LOS F is characterized by stop-and-go waves, poor travel time, low comfort and convenience.

The Transportation section of the Policy Plan notes that the county strives to provide a street network LOS as high as practical recognizing social, environmental and

financial constraints are associated with a diverse county. At a minimum, LOS D should be provided, except where a lower LOS has been determined acceptable, such as in some activity centers.

Appendix C includes a table that provides a list of the major signalized intersections in the study area indicating morning (AM) and afternoon (PM) peak hour performance. The delay is the average number of second a vehicle is delayed from free-flow conditions. The AM peak hour is defined as 7:15 AM to 8:15 AM and the PM peak hour is defined as 4:30 PM to 5:30 PM. Based on the data, all selected intersections in the Fairfax Center Area are currently operating at an acceptable LOS during peak hours.

Transit Services and Facilities in the Fairfax Center Area

One of the major objectives and policies of the Comprehensive Plan is to maximize the efficient use of the existing and future transportation system by reducing reliance on automobile travel, and encouraging better land use and transportation planning coordination within Fairfax County and the region as a whole.

I-66 is a designated "Enhanced Public Transportation Corridor" in the Comprehensive Plan. The Plan shows a Metrorail extension along I-66 from Vienna to Prince William County. The Fairfax Center Area is planned to be served by two Metrorail stations. The approximate locations of the stations are near the Fair Oaks Mall and west of Stringfellow Road.

A Tier One Environmental Impact Study (EIS) on I-66, west of the Beltway, was recently completed by the Virginia Department of Transportation (VDOT) and Virginia Department of Rail and Public Transportation (VDRPT). The main purpose of the EIS was to improve multi-modal mobility along I-66 corridor by providing diverse travel choices in a cost effective manner. The first tier of the study focused on three items: 1) the purpose and need for improved multimodal mobility; 2) the general location of the proposed improvements; and 3) identification of viable transportation mode options. The second tier of the study will focus on the impacts, costs, and congestion mitigation. Additional transportation options may prove beneficial to the study area.

Enhanced Public Transportation Corridors in the Fairfax County Transportation Plan (Adopted July 31, 2006, Amended through September 13, 2011).

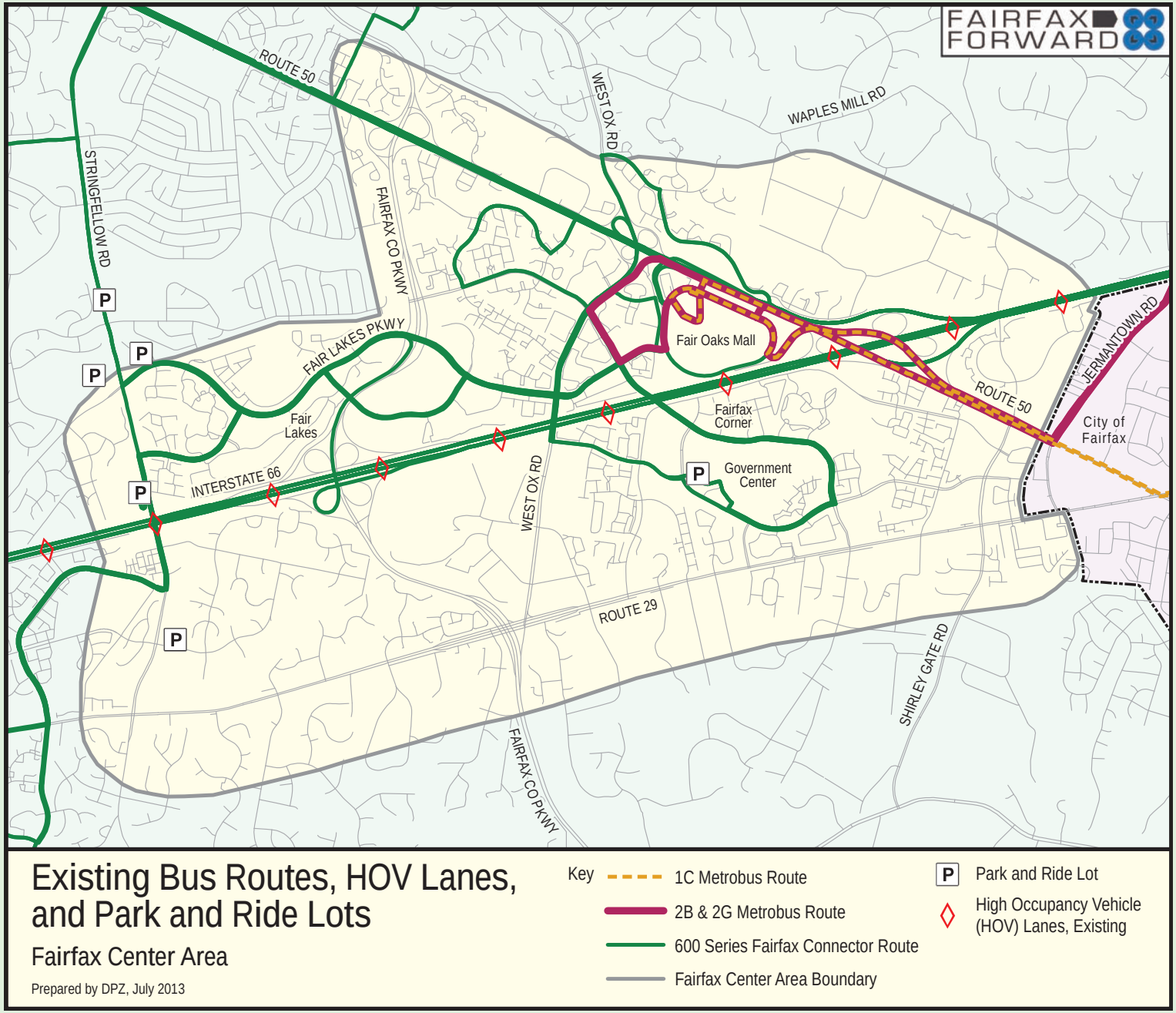

Figure 4.2 Exisiting bus routes, HOV Lanes, and Park-and-Ride lots serving the Fairfax Center Area.

The Fairfax Center Area was mainly served by Metrobus until the county's Fairfax Connector bus system absorbed a large portion of the routes in 2009. This change provided greater flexibility for the county to determine the levels and types of bus service at a lower cost as compared to operation by the Washington Metropolitan Area Transit Authority (WMATA). After 2009, the county increased services on many of these routes in the Fairfax Center Area by adding trips to extend the span of service and improving coordination with Metrorail.

Today, the Fairfax Center Area is mainly served by the Connector 600 series and Metrobus 1C, 2B and G. Much of the bus service in the western portions of the county runs only during morning and afternoon peak periods, functioning as commuter service to the Vienna Metrorail station and the urban core of the District of Columbia. Some of the bus services in the central and eastern portions of the study area run all day and serve major arterial roads, such as the 605 service from Fair Oaks to Reston. The 605 Connector service is the only route that provides a north-south bus connection to the Reston Town Center (Figure 4.2).

To facilitate efficient use of bus transit, Park-and-Ride lots are situated adjacent to major bus routes (Figure 4.2). The Stringfellow Park-and-Ride lot located north of I-66 on the west side of Stringfellow Road is undergoing expansion. Three hundred additional spaces will be added to the existing 387 spaces at the Park-and-Ride lot. The Comprehensive Plan shows future Park-and-Ride lots west of Stringfellow Road, south of I-66 and near Fair Oaks Mall. As previously mentioned, these two locations are planned for future Metrorail stations.

The Fairfax County Department of Transportation (FCDOT) has produced a Transit Development Plan (TDP), a comprehensive ten-year plan for bus service in the county including Fairfax Connector and Metrobus. The plan contains recommendations to increase service and overall transit usage in the study area. Besides suggesting revisions to the Connector series in the Fairfax Center Area, the TDP has recommended new express routes from Centerville to Tysons, Reston and George Mason University. All these routes would pass through the Fairfax Center Area.

Fairfax Connector bus.

"The Comprehensive Plan for the Fairfax Center Area calls for comprehensive and coordinated walkway networks within this area and greater inter- and intra-parcel connectivity."

Pedestrian and Bicycle Systems

Bicycling and walking are viable forms of transportation for shorter trips and are important for people who live near transit stops. As transportation costs and congestion increases, walking and bicycling continue to grow in importance, taking automobiles off the road while also improving public health. The Fairfax Center Area is well-suited for nonmotorized transportation due to the proximity of different land uses and access to transit and commuter facilities. Most of the Park-and-Ride lots in the study area have facilities for bicycle parking.

Fairfax County is developing a Countywide Bicycle Master Plan. The plan will recommend improvements to the existing transportation system in order to make the county more bicycle-friendly. It will recommend how bicycle friendly design can be incorporated into future roadway projects, transit projects, and it will provide policy guidelines to both the public and the private sectors on establishing and promoting bicycling as a mode of transportation.

I-66, Lee-Jackson Memorial Highway, Fairfax County Parkway, and West Ox Road are major thoroughfares and adequate safety measures should be adopted for the successful implementation of the bicycle plan. The Comprehensive Plan for the Fairfax Center Area calls for comprehensive and coordinated walkway networks within this area and greater inter- and intra-parcel connectivity.

More details about existing bicycle routes within the Fairfax Center area can be found on the FCDOT website: http://www.fairfaxcounty.gov/fcdot/bike/bikemap/.

The complete countywide trails plan reflecting both existing and planned improvements for various trails and sidewalks can be viewed at http://www.fairfaxcounty.gov/parks/trails/.

Fairfax Center Area Road Fund

An important aspect of the transportation plan is the implementation of the recommended improvements. The ability to acquire and generate funding for transportation improvements is the key factor in the implementation process. The Fairfax Center Area Road Fund was the county's the first attempt to have an organized and

Bicycles at East Market in the Fair Lakes area.

"The Fairfax Center Area Road Fund was the county's the first attempt to have an organized and structured approach to collecting funds for transportation improvements within the study area."

structured approach to collecting funds for transportation improvements within the study area.

History and Background

In 1982, a subcommittee of the Route 50/I-66 Task Force launched a follow-up to the Fairfax Center Area Study to give further consideration to transportation improvements and approaches to financing additional facilities. In July 1982, the subcommittee released a report titled Financing Transportation Improvements in the Fairfax Center Area. The study indicated that the overlay level possessed a greater likelihood than the baseline level for securing public funding due to the significant contribution of the private sector towards off-site improvements associated with the greater density/intensity recommendations. The report was the first of its kind to establish transportation priorities as an integral part of a Comprehensive Plan. The report had "measured" the transportation problem, identified a specific set of priority improvements, placed a cost on them, and recommended an approach for assuming funding responsibility for needed improvements.

Staff also developed Procedural Guidelines for contributing to a transportation fund for the Fairfax Center Area, which were adopted by the Board on November 22, 1982. The guidelines stated that the residential and the nonresidential contribution rates of the Fairfax Center Area would be adjusted annually based on the Consumer Price Index. The Board periodically reviews the public-private sector funding ratio through an established public process. An annual appraisal of funding and implementation of roadway improvements in the Fairfax Center Area is presented to the Board by staff. This annual appraisal is not conducted as a full-scale traffic analysis and roadway needs study. Rather, it evaluates the suitability of roadway project implementation with respect to specific site developments and the overall Fairfax Center Area development.

Contribution Formula

The Contribution Formula is designed to encourage the participation of the private sector in the funding and implementation of off-site roadway projects and provision of land and facilities for transit-related purposes. Off-site roadway projects are

defined for the Fairfax Center Area as follows:

» Projects which include major improvements to non-interstate primary facilities such as Lee Highway, Lee-Jackson Memorial Highway, and the Fairfax County Parkway;
» Improvements to secondary roadways, functioning as arterial roadways, including Waples Mill Road, Shirley Gate Road, West Ox Road, Stringfellow Road and Clifton Road;
» Bridges and interchanges on interstate and primary roadways;
» Traffic signals which are not otherwise required within the boundaries or adjacent to site subject to development; and
» Those portions of roads internal to the Fairfax Center Area which are not within the boundaries of or adjacent to sites subject to development.

This formula does not relate to the dedication of right-of-way for or the construction of local and collector roads traversing the Fairfax Center Area where such roads lie within or adjacent to sites being developed. In addition, this formula does not apply to those improvements necessary for site access, such as turn lanes, traffic signals, or service drives. The expectation is that these improvements would be provided solely by the owners or developers of individual sites. These improvements are referred to as on-site projects.

Transit–related purposes are defined as the following:

» Rail station and facilities peripheral to their function;
» Park-and-Ride lots; and
» Bus transit transfer stations and facilities peripheral to their function.

The formula does not apply to facilities or activities designed to address site-specific needs to reduce the number of single-occupant vehicle (SOV) trips, such as construction of bus shelters and implementation of a Transportation Demand Management (TDM) program.

"The Contribution Formula is designed to encourage the participation of the private sector in the funding and implementation of off-site roadway projects and provision of land and facilities for transit-related purposes."

Government Center Parkway is an example of a Divided Roadway Facility. Source: Google Maps; image taken September 2012

Example of a Minor Service Road along Lee Highway. Source: Google Maps; image taken September 2012

Access Management Plan

To provide guidance for parcel accessibility to the arterial roadway system in the Fairfax Center Area, an Access Management Plan (AMP) was developed. The AMP was developed from an analysis of the planned arterial system and land uses for the Fairfax Center Area. The AMP identifies key design features of roadway circulation and access, which have directed development, infrastructure design, and implementation. The guidelines can be summarized as follows:

Divided Roadway Facility: All multiple-lane arterials should be designed as divided facilities in the Fairfax Center Area. This type of roadway design will separate the major 'through' travel movements, minimize traffic conflicts, and provide safer travel movement. Access points should be oriented over cross-over locations on divided roadway facilities. Driveway access points should be minimized between cross-overs.

Single-Ended Access (Cul-De-Sac): The length of the single-ended access points should be minimized whenever possible and should be no longer than 1,000 feet. This maximum length is recommended to provide the needed access for emergency vehicles and service vehicles and to provide adequate traffic flow and circulation.

Cross-Over Spacing: The minimum design speeds of roadways should be utilized in determining the cross-over (median break) spacing of divided facilities in the Fairfax Center Area. Adequate cross-over spacing is essential to providing sight distance, weaving distance, stopping distance between cross-over points and minimizing potential conflicts between through and turning movements.

Service Drives: Service drives should be minimized whenever possible in the Fairfax Center Area. Service drives provide for the separation of the access and travel functions along roadways designed to accommodate primarily through traffic movements and to orient adjacent parcels to a controlled access point.

Whereas the overall goal of the AMP was to identify the access between the planned arterial system and land uses of the area, more specific objectives were also identified:

- Minimize service drives;
- Minimize median breaks (or cross-overs);
- Minimize the need for traffic signals;
- Minimize the need for heavy left-turn movements (encourage clockwise traffic circulation patterns);
- Preserve right-of-way for planned roadway improvements; and
- Provide public street access for every parcel or contiguous parcels of the same ownership.

In some cases one objective hindered the achievement of another. For example, minimizing median breaks required the existence of more service drives. Likewise, minimizing service drives required the existence of more median breaks (cross-over) and intersections. A concerted effort was made to balance the objectives to develop an efficient, economical and safe access plan for the study area.

Except for the collector-distributor roads associated with I-66 and Lee Highway, there are two types of service drives planned for the Fairfax Center Area:

Minor (Residential) Service Road: Predominately serves as an access street for residential uses; and

Major Service Road: Predominately serves as an access street for a mix of uses (e.g., multifamily residential and retail, office and retail) or a variety of nonresidential uses.

Residential Street in the Fairfax Center Area.