

---

ANNUAL REPORT ON THE ENVIRONMENT

**CHAPTER II**

**LAND USE AND  
TRANSPORTATION**

---



## II. LAND USE AND TRANSPORTATION

### A. OVERVIEW AND ISSUES

This chapter considers the environmental aspects of land use and transportation, both separately and as they relate to each other from an environmental perspective. According to the Fairfax County Comprehensive Plan, “If current trends continue, the supply of land presently planned for residential development will be all but exhausted shortly after the turn of the century [2000].”<sup>1</sup> As the county approaches this “buildout,” the focus of land use across the county is shifting from new development to revitalization and redevelopment. Each acre in the county becomes more valuable every day. The desire to maximize land utilization or productivity puts a strain on all types of land, from residential to commercial to parkland.

While the amount of available land has decreased, the Plan potential has been increasing. The potential is the number of units that can be built in the county according to the current Plan. It changes as requests are evaluated and adopted by the board. Since 1989, there have been over 80,585 new townhouses and multifamily units added and 927 single family homes removed from the Plan. This clearly demonstrates the increased intensity planned for the county.

At the same time, transportation systems across the county and metropolitan region are becoming increasingly congested. During rush hour, most highways in the county receive a failing grade for peak hour level of service. Over the past 15 years, highway construction in the Washington area outpaced population growth<sup>2</sup>, yet congestion has still increased. This is due to increased per capita vehicle mileage that puts severe strains on the transportation infrastructure. According to the Texas Transportation Initiative, our region is the second most congested in the country. In 1982 the average metropolitan resident spent 16 hours in congestion; by 2007 that ballooned to 62 hours wasted in congestion. That can be translated into \$2.8 billion, 133 million hours and 90 million gallons of gas in lost productivity and wasted fuel.<sup>3</sup>

Public transportation systems are becoming increasingly important to the county and region. Metrorail is the second largest rail transit system and Metrobus is the fifth largest bus network in the nation. Every day Metro carries nearly 20 percent of all rush-hour trips in the metropolitan area, carrying as many people each day as 1,400 miles of new traffic lanes — equivalent to an 11 percent expansion of the region’s road system. From a purely environmental standpoint, Metrorail and Metrobus eliminate more than 10,000 tons of pollution each year and save the

---

<sup>1</sup> Fairfax County Comprehensive Plan, 2007 Edition, Land Use Chapter

<sup>2</sup> “Where We are Growing”, Southern Environmental Law Center, 2002

<sup>3</sup> Texas Transportation Initiative, 2009 Urban Mobility Report

region from using 75 million gallons of gasoline each year.<sup>4</sup> Public transit is clearly an important part of the future.

The buildout of the county's land use plan combined with the overload of the transportation infrastructure will continue to increase as the county population increases. In 2006 the county released a comprehensive demographic study, *Anticipating the Future: A Discussion of Trends in Fairfax County*. The report presents much needed data to plan for the future and incorporate future population and trends. It clearly points out that higher density residential development in Fairfax County and its neighboring jurisdictions will increase traffic congestion. This density, however, will make public transportation alternatives more viable.

As noted throughout this Annual Report, pressures from growth throughout the county directly affect the environment and consequently affect quality of life, health and natural experiences. The Comprehensive Plan specifically provides strategies and practices that can address land use and transportation together. Mixed-use development is an important tool to combine residential and commercial development to "enhance the sense of community" and to "increase transportation efficiency." It provides an opportunity for residents to live and work in the same area, thus reducing transportation needs while increasing the population density to support local businesses and mass transit.

The Board of Supervisors highlighted the effects of growth and congestion in its vision paper: *Environmental Excellence for Fairfax County, A 20-Year Vision*. A variety of tools were emphasized, including mixed use development and Low Impact Development. In addition, problems that at first seem tangential to the environment, such as neighborhood disruption through tear-down development and low income housing, were raised. Teardowns are becoming more common across the county, as single family homes are replaced with larger homes. The lack of low-income housing means workers cannot afford to live and work in Fairfax County and need to commute from outside the county, which exacerbates problems of both pollution and congestion. Furthermore, this situation skews the affordable housing debate, because it undercounts the number of households needing affordable housing and/or makes it appear as though "non-residents" (i.e., non-tax-payers) simply want to take advantage of Fairfax County affordable housing opportunities.

The county faces great challenges from the combined effect of:

- Land use constraints that result from reaching build-out and transitioning from a growth focus to redevelopment.
- Transportation systems strained by congestion and getting further constrained by sprawl beyond the county.

---

<sup>4</sup> Washington Metropolitan Area Transit Authority, [http://www.wmata.com/community\\_outreach/kids\\_zone/](http://www.wmata.com/community_outreach/kids_zone/)

- Population growth that will require additional residential and commercial facilities and transportation options.

Due to a variety of reasons, land use and transportation decisions in the county have often been made separately in the past. More recently and most pronounced in 2010, the county has made great strides in integrating land use and transportation planning and decision making, as evidenced by many of the programs and projects detailed in this chapter. The challenge will always remain, however, in part because the county and individual landowners have primary authority for land use while the state has primary authority for transportation. The issues stemming from state control over practically all of the roads in the county will remain a major stumbling block. The challenge will also remain as an effect from the necessity of breaking down complex issues in order to manage them, to the point of establishing organizational structures based on the pieces, but not having the resources or authorities to put them back together in a comprehensive manner. The HOT Lanes for the Beltway introduce yet another wrinkle, with a private corporation building a significant for-profit component to our infrastructure.

Environmental stewardship and high quality of life demand a holistic systems approach to the inevitable urbanization of Fairfax County. The “silver lining” is that urbanization, to be sustainable – environmentally, socially and economically – demands the same.

This chapter provides:

- Some background on current trends and concepts.
- An overview of planning technology.
- A discussion of county land use characteristics and planning tools.
- A discussion of county transportation characteristics a summary of transportation programs, projects and analyses with land use implications.
- A section that demonstrates the county’s integration of land use and transportation through ongoing projects and programs.

The chapter closes with sections on environmental stewardship, accomplishments and EQAC’s comments and recommendations.

## **1. Trends and Concepts**

The Department of Planning and Zoning (DPZ) has the lead responsibility for land use planning in the county. Over the past several years, there has been a concerted effort to improve how the county plans for development and redevelopment around mixed use centers. The Mixed-Use Centers were identified in the 1990 Concept Map for Future Development and are the areas that have the most concentrated development and the best potential for redevelopment. In the past, one or two areas would undergo a multi-year special study with other areas being handled as part of the larger area-wide Plan review that occurs at least once every five years (known as the Area Plans Review [APR] process). The trend has been to put more focus on these special

studies and try to leverage best practices and lessons to increase the quality and quantity of them. There are currently eight special studies under way or in the process of implementation.

The most significant special study covers Tysons Corner. The Board of Supervisors appointed the Tysons Land Use Task Force in 2005 with a very ambitious charge to consider the redevelopment of the “downtown” for Fairfax County. The task force met for over five years and published “Transforming Tysons: Vision and Area Wide Recommendations” in 2008. The vision was assigned to the Planning Commission, which, in turn, appointed a special task force to craft language for a Comprehensive Plan Amendment. The task force worked with staff, the Tysons Land Use Task Force and the community to propose an amendment that was formally adopted by the board in June 2010.

The scope of Tysons Corner required new and creative approaches. The task force consisted of appointees who represented a wide swath of stakeholders. It included developers, landholders and residents, as well as advocates for neighboring communities, distant communities, affordable housing, the arts, the environment, transportation, biking, accessibility and others. The task force worked together with professional assistance from county staff, a world-recognized urban design firm, experts in transportation and modeling and advisors on communications.

Technology was incorporated throughout the process with models and digital mockups that showed massing and expected growth projections. These were shared with members of the community to help them visualize the proposed vision. With the plan approved, new mechanisms will need to be adopted that encourage and monitor the vision and provide the ability to monitor the macro effects and provide mitigation options to make sure the reality aligns with the vision.

Every one of the ongoing special studies requires a similar collaborative effort that brings together the community, interested parties, county staff and elected officials. While there is some commonality across the areas, they each have unique aspects that need to be addressed. EQAC commends DPZ for undertaking this transformation that combines all aspects of the study area, including land use and transportation, into a holistic process. At the same time, performing so many special studies concurrent with the Area Plans Review process is a significant workload. EQAC has been advocating that the county undertake a strategic review of the Comprehensive Plan. Our recommendation this year has been modified to encompass both the strategic review as well as the planning process to put more focus on holistic planning, as practiced by the special studies, and less focus on the Area Plans Review.

**a. Sustainability**

Key concepts are emerging to reflect the interconnectedness of land use and transportation, as well as other factors such as housing, economic development and quality of life. As the most holistic of the concepts, “*sustainability*” may be a general term with specific meanings as it is adapted to practical purposes. The EPA website<sup>5</sup> provides a good overview:

*The traditional definition of sustainability calls for policies and strategies that meet society’s present needs without compromising the ability of future generations to meet their own needs.*

*The 1970 National Environmental Policy Act (NEPA) formally established as a national goal the creation and maintenance of conditions under which humans and nature “can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations of Americans” [emphasis added].*

*The concept of sustainable development was described in a 1981 White House Council on Environmental Quality report: “The key concept here is sustainable development. If economic development is to be successful over the long term, it must proceed in a way that protects the natural resource base of developing countries.”*

*Over the past 30 years, the concept of sustainability has evolved to reflect perspectives of both the public and private sectors. A public policy perspective would define sustainability as the satisfaction of basic economic, social, and security needs now and in the future without undermining the natural resource base and environmental quality on which life depends. From a business perspective, the goal of sustainability is to increase long-term shareholder and social value, while decreasing industry’s use of materials and reducing negative impacts on the environment.*

Sustainability harmonizes the concepts of *Sprawl* and *Smart Growth*. Sprawl is the very evident unrestricted growth out from the core of a city or a county. In the 1970s, Fairfax was one of the nation’s fastest growing counties. Today that rapid growth is happening beyond Fairfax County, in Loudoun and Prince William counties. As of 2003, Loudoun County was the fastest growing county in the nation, averaging 12.6 percent growth per year. This outer county sprawl directly affects Fairfax County through increased road congestion, changing property values and inefficient use of Fairfax County’s infrastructure.

<sup>5</sup> <http://www.epa.gov/sustainability/basicinfo.htm>

*Smart growth* is the antithesis of sprawl; it can be defined as environmentally-sensitive land development with the goals of minimizing dependence on auto transportation, reducing air pollution and making infrastructure investments more efficient. The Coalition for Smarter Growth lists the following principles for Smart Growth:

- Mix land uses.
- Take advantage of compact building design.
- Create housing opportunities and choices.
- Create walkable communities.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty and critical environmental areas.
- Strengthen and direct development toward existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair and cost-effective.
- Encourage community and stakeholder collaboration in development decisions.

Reston and the Orange Line corridor through Arlington are good examples of smart growth.

#### **b. New Urbanism**

*New Urbanism* is a design movement that is going beyond smart growth into community building based on traditional urban centers. New Urbanists strive to improve land use by focusing on walkable communities and town centers.<sup>6</sup> A walkable community reduces the distance between where people are and where they want to go.

An important New Urbanist concept to encourage consistent planned development in a community is called **Form Based Codes**. These codes define an appropriate form of development, that is, how it should look rather than function (for example, how a building looks rather than its use for commercial or residential purposes). Such codes also provide incentives for developers to adopt them. They have been successfully adopted as part of the Columbia Pike revitalization in Arlington County. The community worked through a series of **charrettes** with a planning consultant to create a vision for the new “pike.” Form Based Codes provide clear direction on the adopted vision, while incentives encourage developers to adopt the form as the Pike is redeveloped. In particular, developers who follow the codes have an expedited review and approval process.

---

<sup>6</sup> Charter of the New Urbanism at: <http://www.cnu.org>

The county has been adopting the use of **facilitated planning** for many of the special studies. The Tysons Corner Task Force utilized a private consultant, PB Placemaking, to facilitate community sessions. The Urban Land Institute has been assisting with the several other studies.

**c. Additional concepts**

More specific concepts apply to particular situations. **Infill** and **Clustering** are ways to increase density in a neighborhood. Infill is the process of filling in larger lots with multiple or larger housing and is a technique to reduce urban sprawl.<sup>7</sup> Infill development can provide new housing or commercial development on vacant or underutilized sites within developed areas, taking advantage of existing infrastructure. While infill provides increased land utilization, it also has the potential to increase the environmental impact upon the infilled community. Particular concern should be paid to the impacts of infill, such as increased stormwater runoff and heating due to additional impervious surface and loss of tree canopy.

Clustering provides residential development that allows homes to be built close together with the remaining acreage left as open space in perpetuity. Generally, homes are sited on smaller lots, with the remaining land dedicated to open space. In most cases, the density of homes in a cluster development is the same as what would have been built on the entire site; the development is just configured differently. The challenge with clustering is the lack of public trust that the open space will remain open.

**Multimodal transportation** refers to a transportation strategy that incorporates multiple forms of transportation. Multimodal transportation encourages the use of walking, biking or public transit for transportation instead of the sole use of the automobile. The use of multimodal transportation involves an increase in the accessibility of all transit options as well as the increase in transportation options.

**Transit Oriented Development or Design** is another approach to creating walkable, livable communities. TOD encourages increased multi-use density around transit centers. The goal of TOD is to promote walking, biking or transit as a means of getting to work or the store instead of by car. By focusing development around transit centers, ideally communities will have increased transit ridership, less traffic, reduced pollution and a better quality of life.

**Transportation Demand Management** is typically associated with a TOD proposal. TDM is a plan to reduce automobile trips that cause congestion.

---

<sup>7</sup> Greenbelt Alliance, [Smart Infill: Creating More Livable Communities in the Bay Area](http://www.greenbelt.org/downloads/resources/report_smartinfill.pdf), at [http://www.greenbelt.org/downloads/resources/report\\_smartinfill.pdf](http://www.greenbelt.org/downloads/resources/report_smartinfill.pdf)

Some elements of a TDM plan include easier and safer pedestrian access, local amenities, and shuttle service.

**Low Impact Development** is an approach that reduces the impact of development on a site. The goal of LID is to better integrate the natural environment with the built environment. LID techniques are intended to mimic an area's natural hydrology to manage stormwater on site, thereby reducing adverse downstream impacts.<sup>8</sup> For example, LID will reduce the amount of impervious surface on a site and reduce the amount of stormwater runoff leaving the site. LID tends to be relatively economical and is flexible enough to be applied to different types of landscapes.

**Green Building** is another approach to lowering the impact of development by designing structures to conserve resources and using technology that is more efficient. Green roofs can be built with succulent plant gardens that absorb water during rain storms and gradually release it back to dramatically reduce runoff and stream pollution. One of the first green projects in the county was the green roof at the Providence District Supervisor's office.

**High Occupancy Toll Lanes** are a tool to ease traffic congestion in urban areas. The idea behind HOT lanes is to open High Occupancy Vehicle lanes up to single occupant vehicles that pay a toll. The price of the toll varies, depending on the time of day and amount of traffic. An additional benefit of HOT lanes is that they can provide additional revenue to pay for other transportation improvements<sup>9</sup>, such as rebuilding aging bridges over the Beltway.

## 2. Macro Considerations

Many decisions in the county that affect land use and transportation are made on a micro level. That is, they affect a single parcel or neighborhood. The macro effect of many small changes has a great impact on the county environment. These macro consequences are lost in the day-to-day planning and construction that happens across the county. As higher densities and infill occur, their effects are cumulative and significant. For example:

- Small neighborhoods with a stable environmental footprint are being transformed with larger houses. These newer houses bring additional impervious surface through larger roofs and additional pavement. They also displace trees that protect the parcel with a green canopy, which provides shade, air cleansing and light dampening, and provide haven for birds and wildlife. While the effect of a single home is small, the macro effect on

---

<sup>8</sup> Low Impact Development Center at: <http://www.lid-stormwater.net/intro/background.htm>

<sup>9</sup> U.S. Department of Transportation, Federal Highway Administration, [A Guide for Hot Lane Development at http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS\\_TE/13668.html](http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13668.html)

community channels more runoff and pollution into the watershed, increases the ambient temperature and displaces wildlife.

- Large scale development, such as that contemplated by the ongoing special studies, bring additional residential and commercial density to a region. By including all facets of a large scale development impact into a special study, the increased density can be combined with infrastructure investments that improve the community and environment.

**a. Understanding Macro Changes**

These macro effects are going to become more pronounced with the county build out and change from development to redevelopment. The lessons learned from special studies and from the results of similar projects across the nation need to be incorporated into our planning process. Up to now, regional aggregations and averages were sufficient to predict development impacts. The Concept Map for Future Development, included in the Comprehensive Plan, has done a good job guiding decisions and projecting impact at a broad macro level. Moving into the future, tools are necessary to provide a finer resolution of real time changes that can be quickly aggregated into a macro view.

These new tools should combine the county GIS capability with the existing planning and zoning databases. The data are readily available at a parcel level, but the ability to view the data and use the data to model macro effects is not possible. Understanding and modeling the macro changes happening across the county will help provide insight to the Board of Supervisors and Planning Commission as they deal with micro decisions.

**b. Creative approaches**

The county also needs to consider creative approaches to address these macro effects. One way to avoid macro consequences is to reduce the impact of micro decisions. For example:

- Modifying the Public Facilities Manual to encourage Low Impact Development can protect streams and mitigate the micro impact of infill development.
- Providing incentives for green building can protect streams and decrease heat generation from asphalt roofs. This encouragement will be a win-win for the county and for developers.
- Utilizing Transportation Demand Management plans can mitigate unforeseen impacts of development. The TDM plan included in the Fairlee/Metro West rezoning set the standard for TDM in the county.

Due to economic reasons, the development has not yet occurred, so the results of the plan are to be determined. However, the potential for TDM should be leveraged in all new development projects.

- Continuing to develop comprehensive plans for multi-modal transportation alternatives can reduce transportation impacts of additional density. The pedestrian and bicycle programs are an excellent example of building a long term strategy that can be implemented as opportunities arise.

These creative approaches begin to mitigate micro changes that combine into unexpected and often unintended larger problems.

### c. **Additional Macro Considerations**

The sections above focus on changes caused by development and redevelopment. There are also macro effects generated by non-development changes, such as work patterns, mixed-use opportunities and economic considerations, that affect the county environment.

**Telecommuting**, or **telework**, reduces or eliminates the traditional commute to the office. Teleworkers work from home or at local work centers that provide infrastructure for a community of workers. This reduces pressure on the transportation network without building physical infrastructure. The county has an aggressive telework program in place for county employees.

**Mixed-use development** brings work, play and home closer together, reducing the distance for trips and commutes. Mixed use is proliferating across the county, providing economic growth with less congestion than traditional separated communities.

**Economic factors**, such as increasing or decreasing property values, also affect the overall county environment. Low-income residents are struggling to find affordable housing near their jobs in the county and frequently choose to live outside the county. This negatively impacts the transportation system. As property values rise, homeowners choose to expand their residences rather than relocate. As they decrease, the tax base shrinks, adversely affecting such quality of life factors as a healthy environment, excellent schools and functional transportation systems, which may send communities into decline.

The Board of Supervisors has specifically raised **affordable housing** and **infill development** as an environmental concern in their Environmental Vision.

Macro considerations need to be better understood and modeled as the county increases in density. Traditional models did not need to consider macro changes, and the resolution and quality of data is insufficient for planning and protecting the environment. Dealing with the proliferation of small changes across the county will take creative approaches using all available tools, including the Comprehensive Plan, the Public Facilities Manual, special ordinances and public outreach.

## **B. TECHNOLOGY TO UNDERSTAND THE COUNTY**

Fairfax County is a recognized leader in utilizing technology to better understand, explain and predict changes within our borders. The centerpiece of the technology is the Geographic Information System. GIS provides a capability to “see” the county through maps, imagery and other geospatial data. To compliment the GIS, the county has assembled a comprehensive digital inventory of the 395 square miles within our borders. These investments in information technology (IT) and GIS are paying dividends in increased staff productivity using more and better data.

The new **Virtual Fairfax** 3-D application is a wonderful example of the power of digital technology. EQAC strongly applauds the county for making Virtual Fairfax available to residents on the Internet. Besides being fascinating to fly through our neighborhoods, it is very practical for boards and commissions to visualize proposed changes and make more informed decisions and recommendations.

Over the past several years, EQAC has advocated for an enhanced IT capability for managing and monitoring land use. Our original recommendations in this area focused on updating the 1970s mainframe-based Urban Development Information System. In 2005, the Integrated Parcel Lifecycle System debuted--IPLS combines parcel based information from various county agencies with the GIS system. Many agencies work on parcels for a particular period, but IPLS allows that full lifecycle to be captured across agencies. Layering these data on the GIS system allows for a visualization of how land in the county is used and how it changes over time. Through work with the county’s Department of Information Technology, EQAC has become more familiar with capabilities and possibilities for using GIS. There are three attributes that must be in place for the technology to be effective:

- The GIS and IPLS capability—these are the technical systems that gather, move, manipulate and display information based on geographic location.
- Data that are geographically located, also called spatial data—this is an expensive component that needs to be constantly updated as the county changes. There are many sources of data, from aerial imagery to U.S. census data to county records, which need to be transformed into useable information.

- Models and applications that can use the data to prepare for future scenarios and advanced visualization tools to help with decision making. The Visual Fairfax application is an example that leverages the GIS and data to help make informed decisions.

The next sections cover each of these topics in more detail.

## **1. GIS and Integrated Parcel Lifecycle System**

The IPLS System is in production and staff has been doing outreach to train users across agencies on how to leverage the capability. The main transformation is that IPLS provides users with relevant data that can be used for analysis. Prior systems would produce a report that summarized the data. This opens new possibilities for understanding and innovating with information.

The current parcel data include:

- Housing Units.
- Households.
- Population.
- Gross Floor Area.
- Housing Value.
- Residential Development.
- Existing Land Use.

All data are spatially enabled and can be analyzed with the GIS tools.

This information managed by IPLS is used by the county to help determine services and service provision levels, respond to state and federal reporting requirements and respond to regional initiatives such as transportation planning, air quality modeling and other programs of regional significance. One example of the increased resolution the system provides is enhanced demographic forecasts that take advantage of parcel characteristics such as age of structure, location, steepness and other features. County staff can evaluate 30 year demographic forecasts including low, high, and “most likely” estimates. Staff is also able to produce reports in a GIS environment using user defined geographies. Reports can be generated for population density, population forecasts, housing starts and completions, vacant land and underutilized land.

The uses of these data clearly go beyond the scope of EQAC but illustrate the interconnectedness of the systems. EQAC’s recommendation was narrowly focused on improving the county’s land use planning capability to enable better integration of land use and transportation. It turns out that many other organizations and departments also benefit from this capability.

EQAC commends the Department of Systems Management for Human Services for its leadership and advocacy on the IPLS. EQAC also congratulates the department on receiving the 2007 GIS Excellence Award for the Best GIS Integration or Application Development.

One of the benefits of tracking information at the parcel level is that very detailed analysis can be accomplished. However this granularity highlights the fact that the existing categories are no longer appropriate, especially as the county adopts more transit-oriented designs that incorporate mixed use development. Parcels in a mixed use development cross categories and parcels with multiple stories of mixed use further complicate simple analyses.

With IPLS in place, the county needs to develop an updated reporting methodology to accurately reflect the land use across the county. IPLS provides a base to analyze parcel information, but there is a considerable task remaining to synthesize that information and turn it into useful land use reports.

## **2. Data**

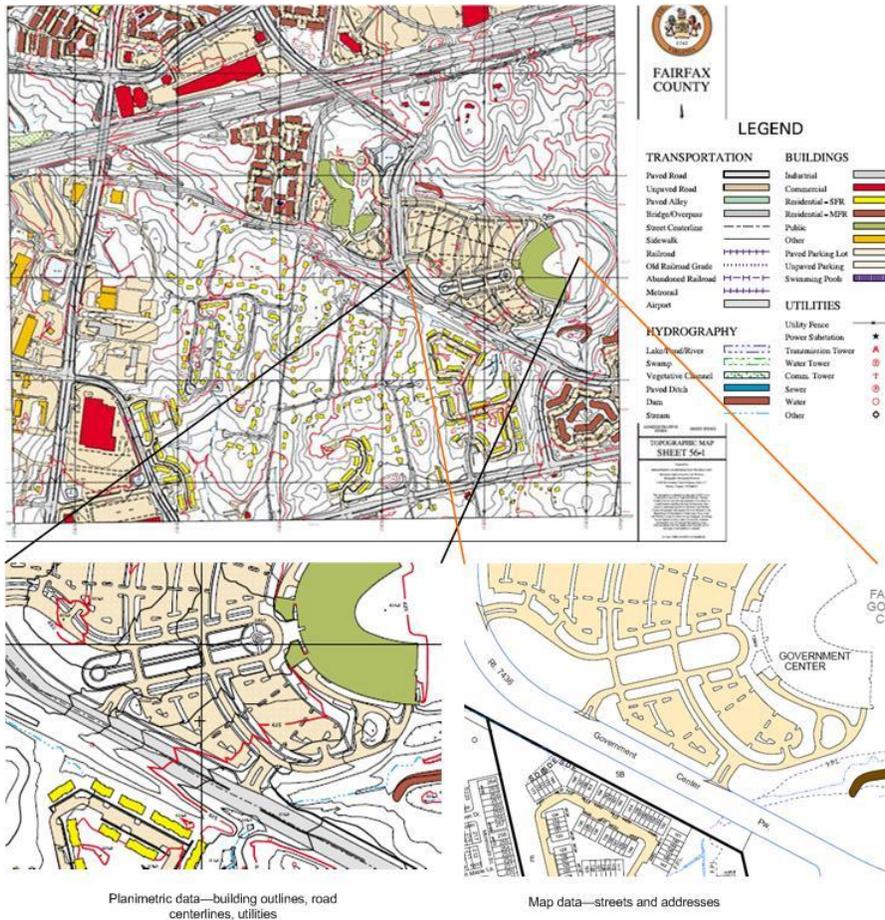
The GIS systems are only as reliable as the data they process. The county has acquired significant data and maintains these data on a regular basis. Prior EQAC recommendations focused on enhancing different types of data in particular:

- Planimetric data—features you can see, such as buildings, driveways, pools, railroads, ponds, trees.
- Oblique imagery—creating three-dimensional images and incorporating them into the planning process.
- Natural Resource data – identification of resources that should be considered during environmental and conservation planning efforts.

### **a. Planimetric Data**

Planimetric data are the features that can be seen. These data typically come from an aerial image or photograph of the county. The image is analyzed by a specialized contractor to extract features for the GIS system. The current planimetric database was created from imagery gathered in 1997. The following GIS pictures show a map around the county's Government Center with planimetric data and a blowup of some types of information it portrays. It is contrasted with a normal map that has streets and addresses. The planimetric data show the reality of the building outlines and the actual road path. It correlates the data on the map with the actual data and adds additional information not shown on a map.

**Figure II-1. Planimetric Information—  
Fairfax County Government Center**



The county is planning another round of planimetric data gathering and is considering adding additional feature extraction to include driveways, sidewalks, pools, patios, decks, sheds and tennis courts. These impervious surfaces are of interest in modeling the effects of property improvements and calculating the effects that increasing small scale imperviousness have on a macro level.

**b. Oblique Imagery**

Oblique imagery is taken from an aircraft at an angle rather than straight down. The images can then be processed by software to show the sides of buildings and structures and measure their heights. The primary users of the oblique imagery are agencies such as the Department of Public Works, the Department of Tax Administration and public safety agencies to reduce field time in assessing and planning. The image below is a sample oblique image of the Government Center:

**Figure II-2: Oblique Imagery—Fairfax County Government Center**



It begins to enable three-dimensional models and can have wide applicability beyond the county operations to public participation. In particular, the Area Plan Review process can benefit from better understanding three-dimensional areas around sites subject to proposed amendments.

Looking into the future, it is possible to begin accepting Land-Use proposals with three-dimensional Computer-Aided Design and Drafting data. The CADD models can be combined with oblique data to provide accurate 3-D representations of the changes. In effect the county can begin examining proposals using fly-through technology overlaid on ground truth. This will be much more illustrative than artistic interpretations.

The county has oblique imagery collection in the current IT plan. EQAC recommends that the county continue to gather these data and to expand the use of 3-D analysis in planning.

**c. Natural Resource Data**

In 2006, county staff began a series of discussions to determine which agencies currently possess ecological data and whether or not other agencies could utilize various ecological data as a shared resource. These data include Resource Protection Areas, wetlands, vegetative communities, hydric soils, tree cover and open space as well as archaeological and

cultural resources. The Park Authority has spearheaded the effort to identify data resources and to develop analysis models to evaluate these data. Once appropriate models and protocols have been developed, they may be used in the future to identify areas that could be targeted for conservation or protection. Currently, the final product of this endeavor is envisioned as a model that will allow county staff to evaluate ecological resources. Also included will be a detailed report listing data sources needed and a plan to consolidate these data and recommendations on the applicability and appropriateness of the model and its limitations.

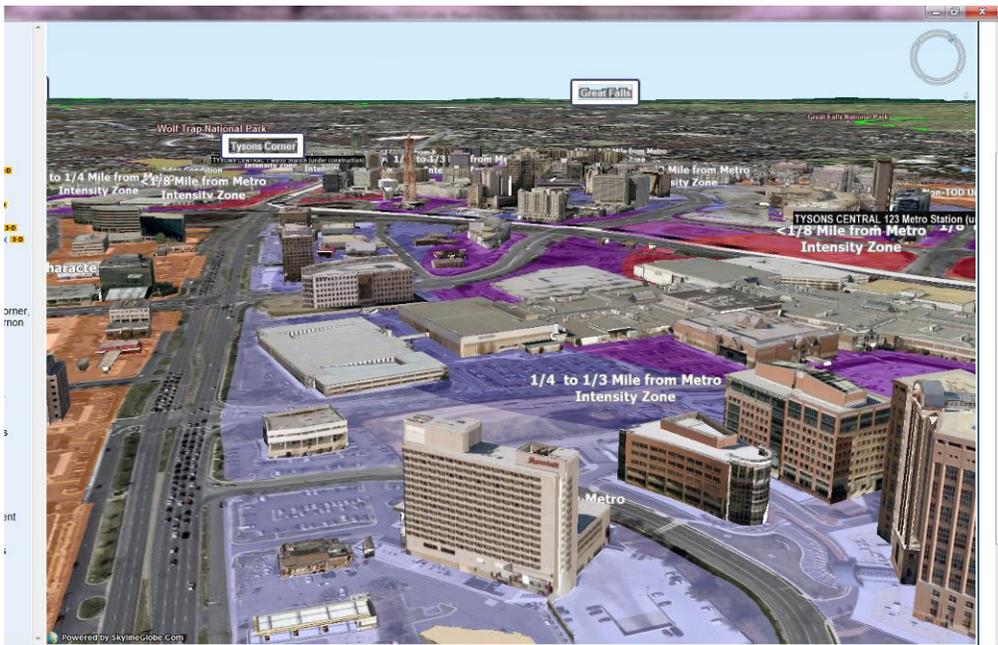
### **3. Models and Visualization**

While the GIS system and new data provide valuable insight by which to view the county, they do not necessarily provide new information. Models are computer programs that analyze the data and create reports or projections of future scenarios. The county regularly uses transportation and traffic models to analyze congestion. Some of this information is reviewed in this chapter.

Computer models are complicated and expensive. However their use is becoming more important and expected for the special study planning approaches that are under way. The Tysons Land Use Task force relied on traffic projections for several development scenarios, and the results of these models weighed heavily in the decision to adopt the 2010 Comprehensive Plan for Tysons Corner.

The county made great strides in visualization tools available to the public with the Virtual Fairfax application. EQAC expects this application to greatly enhance the work of Area Plans Review task forces and encourages all new development proposals to include data sets compatible with Virtual Fairfax. Some sample screenshots of the Tysons Corner area are shown below. The second figure shows the proposed new density overlain on the existing conditions. Note that the 2-D screenshots are a poor substitute for the actual 3-D application.

**Figure II-3: Virtual Fairfax--Tysons Corner Area**



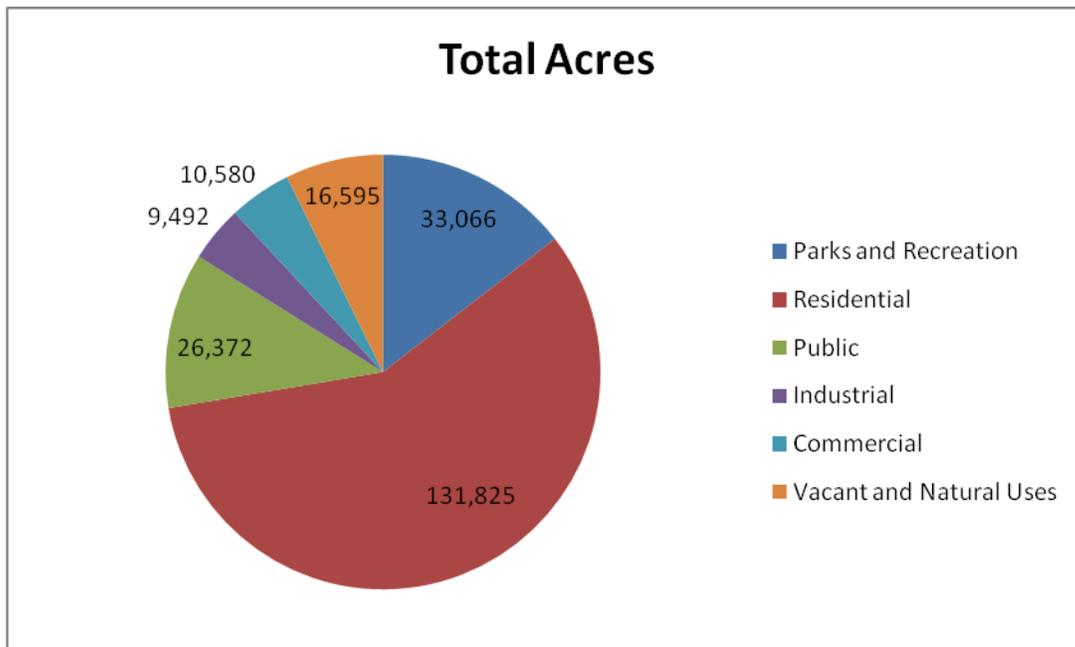
## C. LAND USE

Land Use and Transportation will be examined separately in this and the next section; they will then be discussed with respect to their systemic interrelationships in section E. This section describes land use and land use decision-making in Fairfax County. The data were extracted from the Fairfax County Demographic Report, which applies information from the IPLS system.

### 1. How Is Land Used In Fairfax County?

Fairfax County has 227,929 total acres of land, excluding areas in roads, water or small areas of land unable to be zoned or developed. Those acres are organized into the broad categories identified in Figure II-4.

**Figure II-4: Existing Land Uses in Fairfax County**



*Source: Fairfax County Department of Systems Management for Human Services, 2009 <http://www.fairfaxcounty.gov/demogrph/Lusebut.htm>. Note: Land in Towns of Clifton, Herndon and Vienna included. Total acreage figures do not include areas in roads, water or small areas of land unable to be zoned or developed.*

- Residential—acres dedicated to living. Residential acres are measured by the number of dwelling units per acre. For example, a low-density neighborhood has a DU/AC from .1 to .5, a suburban neighborhood ranges from 1-20 and an urban center has a core DU/AC of 35-60.
- Commercial/Retail—acres developed for people to work or shop. Commercial space is measured by looking at the Floor Area Ratio, which is the ratio of gross floor area to the size of the lot. For example,

an FAR of 0.5 means that a single story building can cover half the lot, a two-story building can cover 1/4 of the lot and a four-story building can cover 1/8 of the lot. FAR does not include other impervious surfaces, such as parking lots.

- Industrial—acres zoned for industrial use. Industrial space is measured by FAR.
- Parks and Recreation—acres dedicated to public enjoyment and recreation.
- Public—acres owned by the public but not for parks or recreation. This includes: Fort Belvoir; Dulles Airport; the campus of George Mason University; county government facilities such as fire stations, landfills, police stations, training facilities, schools and government centers; and other publicly-owned properties.
- Vacant—acres currently unused, either natural or vacant, but zoned for Residential, Industrial or Commercial uses.

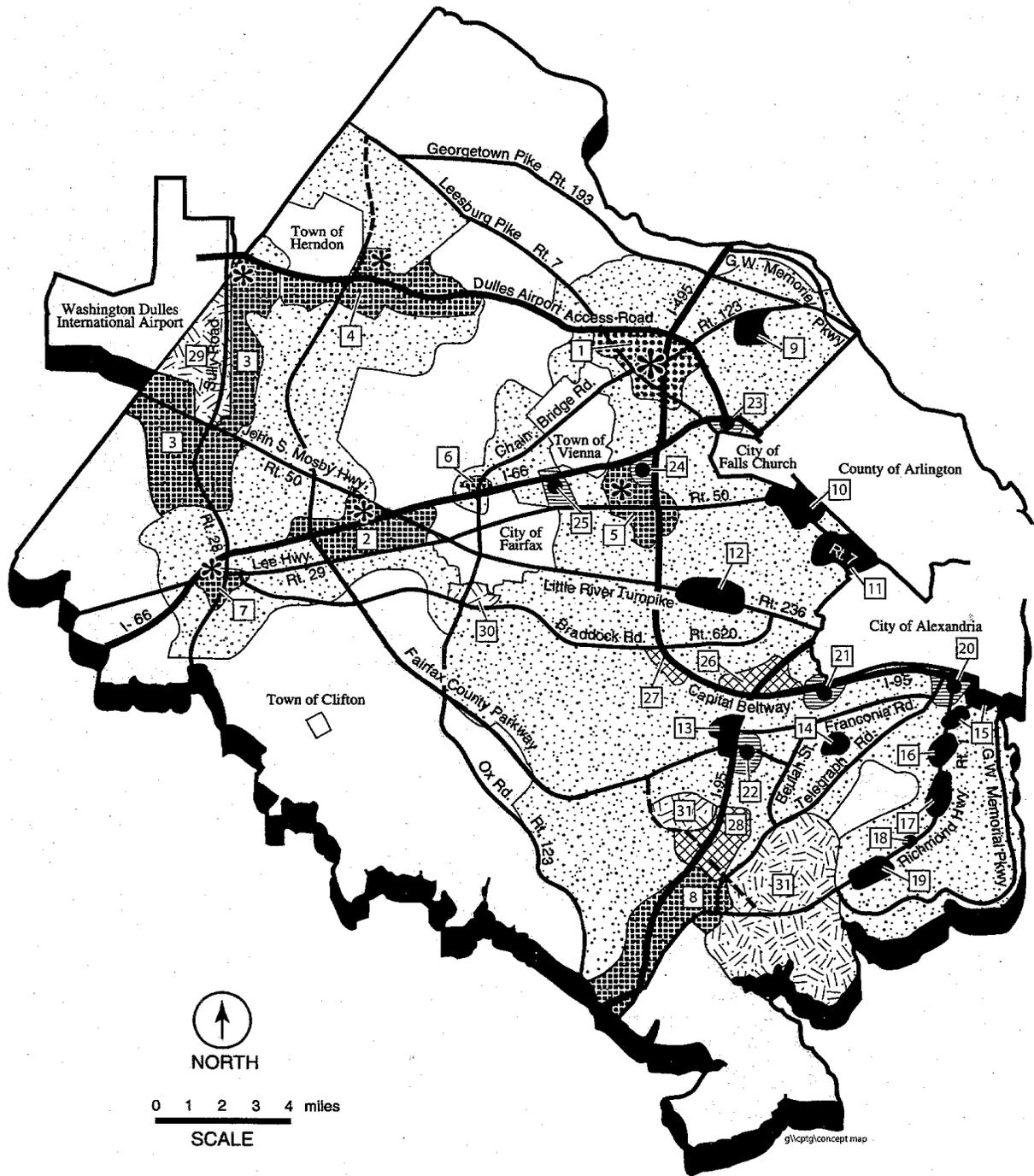
## **2. Land Use Planning**

The Fairfax County Comprehensive Plan is a guide for making land use decisions in Fairfax County. Major Plan revisions took place in 1975 and 1991. The 1991 Plan, that is the foundation for the current 2007 edition, was developed around 18 Goals for Fairfax County (a 19th goal was added later). The 2007 edition of the Fairfax County Comprehensive Plan consists of the Policy Plan, four Area Plans, the Plan map, and the Transportation Plan map. The Policy Plan has ten functional sections plus a Chesapeake Bay Supplement. The functional sections are: Land Use, Transportation, Housing, Environment, Human Services, Public Facilities, Parks and Recreation, Revitalization, Economic Development and Heritage Resources.

### **a. Concept Map for Future Development**

In 1990, the county's Concept Map for Future Development was developed. This map identified 23 mixed-use centers; the Concept Map has been revised slightly since then and includes Lorton-South Route 1 and the South County Center, for 25 mixed-use centers shown (Figure II-5). While the Concept Map was not formally adopted, it is an integral part of the Area Plans.

Figure II-5: Concept Map for Future Development



## CONCEPT MAP FOR FUTURE DEVELOPMENT

### CONCEPT MAP FOR FUTURE DEVELOPMENT

#### LOCATIONS OF MIXED-USE CENTERS

##### Urban Center

1. Tysons Corner Urban Center

##### Suburban Centers

2. Fairfax Center
3. Dulles (Route 28 Corridor)
4. Reston-Herndon
5. Merrifield
6. Flint Hill
7. Centreville
8. Lorton-South Route 1

##### Community Business Centers

9. McLean
10. Seven Corners
11. Baileys Crossroads
12. Annandale
13. Springfield (West)
14. Kingstowne
15. North Gateway and Penn Daw
16. Beacon/Groveton
17. Hybla Valley/Gum Springs
18. South County Center
19. Woodlawn

##### Transit Station Areas

20. Huntington Metro Station
21. Van Dom Metro Station
22. Franconia/Springfield Metro Station
23. West Falls Church Metro Station
24. Dunn Loring Metro Station
25. Vienna Metro Station

#### LOCATIONS OF LARGE INSTITUTIONAL AND INDUSTRIAL AREAS

##### Industrial Areas

26. Beltway South
27. Ravensworth
28. I-95 Corridor

##### Large Institutional Land Areas

29. Washington Dulles International Airport
30. George Mason University
31. Fort Belvoir  
(Main Post and North Area)

### LEGEND



**Suburban Neighborhoods**  
(Residential density ranges defined in Area Plans; 0.15-0.25 FAR\* for neighborhood-serving non-residential use)



**Low Density Residential Areas**  
(Residential density of 0.1 to 0.5 du/ac \*\*, specific density ranges in Area Plan; Non-residential use intensity 0.05 to 0.1 FAR)



**Tysons Corner Urban Center Core** (1.0-1.65 FAR; 35-60 du/ac)  
**Non-Core** (0.25-1.0 FAR; 8-45 du/ac)



**Suburban Centers Core** (0.3-0.8 FAR; 15-35 du/ac)  
**Non-Core** (0.15-0.30 FAR; 5-25 du/ac)



**Community Business Centers** (0.20-0.50 FAR; 5-25 du/ac; if a core is designated, intensities of up to 0.70 FAR may be allowed)



**Transit Station Areas** (0.30-1.00 FAR; 8-45 du/ac)



**Industrial Areas** (0.25-0.50 FAR for Industrial Uses)



**Large Institutional Land Areas**

\* FAR - floor area ratio  
\*\* du/ac - dwelling units per acre

In 1995, a study of the Plan was prepared entitled: *State of the Plan, An Evaluation of Comprehensive Plan Activities Between 1990-1995 with an Assessment of Impacts Through 2010*. This study outlined a series of recommendations for the county to improve its ability to meet the Plan goals. Many of those recommendations are still applicable.

Currently, the Policy Plan is reviewed by functional sections. The Parks and Recreation section was reviewed in 2003. The Transportation Section was reviewed in 2005 with recommendations presented in 2006. A comprehensive review of the complete Policy Plan is not anticipated in the future due to the overall complexity of the complete document.

**b. Area Plans Review**

The Area Plans Review process is a community-wide review of site specific changes proposed to the Area Plan volumes of the Comprehensive Plan. The APR process is organized by the Supervisor Districts.

The APR task force for each district is appointed by the district supervisor. Each task force reviews proposed changes at a public hearing and submits a recommendation to the Planning Commission. This is accompanied by a staff recommendation that may or may not concur with the task force recommendation.

APR nominations span the county. Whereas the plans for Urban, Suburban, and Transit Stations are comprehensive in scope, the APR nominations are opportunistic. Each nomination is analyzed thoroughly by staff to consider factors such as impact on transportation, education, and environmental resources of the individual nominations. The cumulative effects--the macro considerations, however, are not analyzed. Such a concern was the motivation to defer nominations in Tysons Corner and appoint a task force to look at comprehensive changes.

The northern portion of the county, which includes Dranesville, Hunter Mill, Providence and Sully districts, was reviewed in 2009. The South County APR is being reviewed in 2010.

**c. Recent Special Studies and Selected Amendments to Area Plans<sup>10</sup>**

i. [Springfield Connectivity Plan Amendment](#)

On January 12, 2010, the Board of Supervisors approved an amendment to the Comprehensive Plan for the Franconia-Springfield Area. The Plan amendment brings together the final report recommendations of the Springfield Connectivity Study, published August 2008, and the

---

<sup>10</sup> <http://www.fairfaxcounty.gov/dpz/comprehensiveplan/planadopted.htm>

land use changes proposed in several BRAC Area Plans Review nominations, located in the Franconia-Springfield Area. The amendment primarily focuses on new areawide guidance pertaining to urban design, streetscape and placemaking concepts. Transportation recommendations for improved connectivity, such as an enhanced circulator service, complete streets, and improved road network, also have been adopted. Portions of the Community Business Center, north and south of Old Keene Mill Road, have been replanned as an urban village and commuter parking facility, respectively.

ii. [Loisdale Road Special Study](#)

On April 6, 2010, the Board of Supervisors adopted a Comprehensive Plan amendment for the approximately 120 acre Loisdale Road study area. The study area is planned for industrial use at an intensity up to .35 FAR (floor area ratio). The Plan amendment added an option for office use at an intensity up to .77 FAR on 30 acres, vehicle sales and service or comparable uses at an intensity up to .10 FAR on 30 acres and public parks.

iii. [Tysons Corner Urban Center](#)

On June 22, 2010, the Board of Supervisors adopted a Comprehensive Plan amendment to guide future redevelopment in the Tysons Corner Urban Center. The Tysons Plan amendment sets forth a vision and implementation approach and area-wide recommendations for land use, transportation, environmental stewardship, public facilities and urban design. The Plan amendment also contains district recommendations for the four new Metrorail stations that are part of Metrorail's Silver Line (Tysons East, Tysons Central 123, Tysons Central 7, and Tysons West) that are referred to as Transit Oriented Development Districts (TODs). Four districts are identified as Non-TOD Districts with recommendations that provide a transition between the higher intensities planned near the stations and the surrounding communities.

iv. [Baileys Community Business Center](#)

On July 13, 2010, the Board of Supervisors adopted a Plan amendment for the Baileys Crossroads Community Business Center. The Plan amendment identifies a Town Center District along Leesburg Pike (Route 7). The Plan Amendment identifies the Town Center area as a prime redevelopment area because of its strategic location with respect to the proposed streetcar route from Pentagon City to Baileys Crossroads and encourages redevelopment of the Town Center according to a new land use concept that promotes higher density mixed use development with urban parks and pedestrian amenities. Guidance

for the redevelopment of the other areas of the Baileys Crossroads CBC and transportation recommendations is also provided.

v. [Inova Fairfax Hospital/Woodburn Center for Mental Health](#)

On July 27, 2010, the Board of Supervisors approved an amendment to the Comprehensive Plan for the 66-acre site currently developed with the Inova Fairfax Hospital campus, the Woodburn Center for Community Mental Health and Woodburn Place. The approved amendment allows for an option for additional medical care facility and related uses up to 1.0 FAR for the subject area.

vi. [2009 Heritage Resources Plan Update](#)

On March 9, 2010, the Board of Supervisors adopted a Plan Amendment to update information on heritage resources throughout the county. The amendment updates the Inventory of Historic Sites tables and maps, and revises language in the Area Plans related to heritage resources to reflect changes, such as where research has uncovered more accurate information on a site. In addition, fifteen sites were added to the inventory tables.

**d. Lee District Planning Process**

The Lee District planning process is a unique review process that has been in place since 1976. This interjects a step before the public hearing at the Fairfax County Planning Commission. All land use cases (rezonings, special exceptions, and changes to the Master Plan) are presented to the Lee District Land Use Advisory Committee. The committee asks questions, makes comments, etc. When all the information is available, the committee votes to either recommend approval or denial of the application. The Lee District Planning Commissioner participates in these meeting and typically supports the committee decision at the Planning Commission public hearing.

**e. Recent Amendments to the Policy Plan<sup>11</sup>**

As stated in the 2007 Edition of the Comprehensive Plan:

*The purpose of the Policy Plan is to provide a concise statement of objectives, policies, and guidelines for implementing the County's Goals that apply to the future development pattern of the built environment in Fairfax County, while protecting natural and cultural resources for present and future generations.*

The following amendments to the Policy Plan were adopted recently:

---

<sup>11</sup> <http://www.fairfaxcounty.gov/dpz/comprehensiveplan/planadopted.htm>

i. [Visual and Performing Arts](#)<sup>12</sup>

On May 11, 2010, the Board of Supervisors adopted an amendment to the Policy Plan to add a new section on the visual and performing arts. Additions include: 1) an introduction; 2) a Board of Supervisors goal that expresses support for the visual and performing arts; and 3) objectives and related policies that support the display of arts and encourage investment in existing and new arts facilities, support the provision of a variety of arts venues and address mitigation of new and renovated arts facilities on surrounding land uses, environment, transportation and public infrastructure.

ii. [Disturbances to Environmental Quality Corridors](#)<sup>13</sup>

On July 27, 2010, the Board of Supervisors adopted an amendment to the Policy Plan to clarify policy guidance regarding circumstances under which proposals for disturbances to EQCs should be considered favorably. The amendment essentially groups such proposals into three categories: (1) Disturbances that, by their nature, are unavoidable or otherwise supported by Comprehensive Plan policy; (2) disturbances associated with stormwater management; and (3) other proposed disturbances. Because the amendment links the evaluation of some proposed disturbances to EQCs to the purposes of the EQC system, the amendment also revises these statements of purpose.

**f. Chesapeake Bay Preservation Ordinance**

Another important ordinance that affects land use is the county's Chesapeake Bay Preservation Ordinance. Amendments to this Ordinance were adopted on November 18, 2003 by the Board of Supervisors. This Ordinance codifies the county commitment to protect the Chesapeake Bay. An important aspect is the designation of Resource Protection Areas around all water bodies with perennial flow. RPAs are the corridors of environmentally sensitive land that lie alongside or near the shorelines of streams, rivers and other waterways. They include any land characterized by one or more of the following features:

- A tidal wetland.
- A tidal shore.
- A water body with perennial flow.
  
- A non-tidal wetland connected by surface flow and contiguous to a tidal wetland or water body with perennial flow.

---

<sup>12</sup> <http://www.fairfaxcounty.gov/dpz/comprehensiveplan/planadopted.htm>

<sup>13</sup> <http://www.fairfaxcounty.gov/dpz/comprehensiveplan/planadopted.htm>

- A buffer area that includes any land within a major floodplain or any land within 100 feet of a feature listed in the four bullets above.

The Chesapeake Bay Supplement, which was incorporated into the Policy Plan in 2004, provides an excellent overview of land use factors in Fairfax County that affect the Chesapeake Bay.

The Comprehensive Plan plus the Chesapeake Bay Preservation Ordinance provide an outline for how and where development is planned to occur in Fairfax County. They can be used to analyze the **potential** development that can occur within the county. The **realization** of that potential is subject to many external variables.

### 3. Land Use History and Buildout Projections

The Comprehensive Plan contains land use recommendations for all of the land in the county. When the concept plan was conceived in 1990, there was a significant amount of vacant land, so it could address changes across the county. That vacant land has been steadily decreasing as shown in Table II-1. In 2007, with only approximately 7.5 percent vacant and much of that fragmented, the decisions are much more constrained. Significant planning changes require decisions that will most likely affect existing developed land.

| <b>Table II-1<br/>Vacant Land in Fairfax County</b>  |                                |                                       |                       |
|--|--------------------------------|---------------------------------------|-----------------------|
| <b>Year</b>  | <b>Vacant Land<br/>(acres)</b> | <b>Total Planned Land<br/>(acres)</b> | <b>Percent Vacant</b> |
| 1980   | 75,550                         | 234,744                               | 32.2 percent          |
| 1985   | 66,685                         | 232,941                               | 29.2 percent          |
| 1990   | 45,042                         | 230,678                               | 19.5 percent          |
| 1995   | 37,006                         | 229,366                               | 16.1 percent          |
| 2000   | 29,529                         | 228,541                               | 12.9 percent          |
| 2007   | 17,117                         | 228,240                               | 7.5 percent           |
| Planned land does not generally include public roads and water<br>Note: Some of the decrease in vacant land between 2000 and 2007 is due to a change in the definition of vacant land. Areas previously classified as vacant but owned by tax exempt entities such as houses of worship and private schools are no longer included as vacant land. |                                |                                       |                       |
| Source: Fairfax County Department of Systems Management for Human Services (IPLS), 2007  |                                |                                       |                       |

A general overview of how land is used in Fairfax County is provided in Table II-2 below. The table shows that 57.8 percent of the county land has been developed for residential use, with 4.6 percent for commercial. These numbers show the land devoted to each use type, but they do not show the corresponding density/intensity. It is also difficult to determine the footprint of mixed-use

acreage since it is not classified as a separate category. As the current Plan is exercised and the county reaches build-out, much more land will become mixed use.

| <b>Table II-2</b>   |                    |                         |
|---|--------------------|-------------------------|
| <b>Acres of Land by General Land Use Category</b>                                 |                    |                         |
| <b>Existing Land Use</b>  | <b>Total Acres</b> | <b>Percent of Total</b> |
| <b>Parks and Recreation</b>   | 33,066             | 14.5                    |
| <b>Residential</b>  | 131,825            | 57.8                    |
| <b>Public</b>   | 26,372             | 11.6                    |
| <b>Industrial</b>   | 9,492              | 4.2                     |
| <b>Commercial</b>   | 10,580             | 4.6                     |
| <b>Vacant and Natural Uses</b>  | 16,595             | 7.3                     |
| <b>Fairfax County</b>   | <b>227,929</b>     | <b>100.0</b>            |
| Source: Fairfax County Department of Systems Management for Human Services , 2009 |                    |                         |

#### 4. Plan Density Increases

The aggregate acreage available in the county is relatively constant, with occasional changes as land is converted to other uses, such as roads and drainage ponds. The Comprehensive Plan capacity, however, is constantly increasing as new density is allocated across the county. This occurs primarily by increasing the Floor Area Ratio (FAR), and allowing higher buildings to be built that have additional capacity in the same acreage.

#### 5. Plan Density Trends

Informal observations show that the overall residential units are:

- Increasing in total number—as the population grows, Fairfax County is able to expand through Plan changes that increase the number of potential units.
- Getting closer—the trend is to add more multi-family units (an 84 percent increase since 1989) while maintaining a consistent number of single family detached homes.

The Tysons Corner vision highlights the density increases. The vision called for increasing from 17,000 to 100,000 residents and from 120,000 to 200,000 jobs. This growth, which will all occur as redevelopment within an existing developed area, will be more complex than any other development in the county’s history.

With that increasing density, the Tysons Corner plan provides a comprehensive urban vision that provides:

- 95% of all development within an easy walk of transit.
- A new transit oriented focus with public circulators and Metrorail stops.
- A jobs/housing balance of approximately 4.0 jobs per household.
- A sustainable Tysons with restored streams, new parks and green buildings.

This vision highlights the need for new analysis techniques and models to better understand and prepare for future land-use decisions.

## **D. TRANSPORTATION**

This section examines transportation and transportation decision making in Fairfax County.

### **1. How do People and Things Move About Fairfax County?**

There are numerous options for people and things to move about the county.

- Private, motorized transportation is one of the most significant elements of transportation that has a major effect on the environment and is most closely related to land use and development. In modern times, people have become more reliant on the use of automobiles for business, pleasure and various daily functions and activities. The urban sprawl that has been experienced in Fairfax County has greatly influenced this problem, causing major congestion on roadways, particularly during rush hour as many individuals are commuting long distances to and from their jobs.
- Rail and rapid bus transit has long been looked upon as a means of reducing traffic congestion and thereby creating a positive impact on pollution and air quality. It also has a direct relationship to land use planning and development because rail transport centers are ideal locations for business and housing developments. There are numerous projects that have long been in the planning phase; due primarily to budget constraints, however, virtually none of them have reached the actual development phase.
- Commercial vehicular transportation, mainly trucks and buses, are another serious factor impacting the environment. Trucks, whether they are local, inter-county or interstate, are serious contributors to the environmental crisis. In addition to many of them using “dirty” diesel fuel, they also have a negative impact on traffic congestion. Bus traffic includes school buses, most of which are transporting students during

rush hour periods. Many of these buses are old and are a hazard to the environment, because of the type of fuel they use.

- Non-motorized transportation opportunities, namely walking and biking, have been looked upon as viable alternatives for reducing traffic congestion and improving air quality. Not having sufficient infrastructure for walking and biking is a major deterrent to that form of transport, not to mention the frame of mind of the general public that has become automobile-dependent over the years, even for short trips. This component has an important relationship to land use planning and development in order to ensure that adequate facilities (walking and biking trails) are included in the plans.
- “Virtual transportation” has surfaced in recent years as another viable alternative to motorized transportation. Modern technology has created opportunities for people to work out of their homes, using computers for telecommuting and e-commerce to perform their jobs. If these techniques become a more widely accepted means of performing one’s job, it would have a significant positive impact on reducing pollution and improving air quality. Fairfax County is a leader in this field with the Fairfax County Government Telework Program.

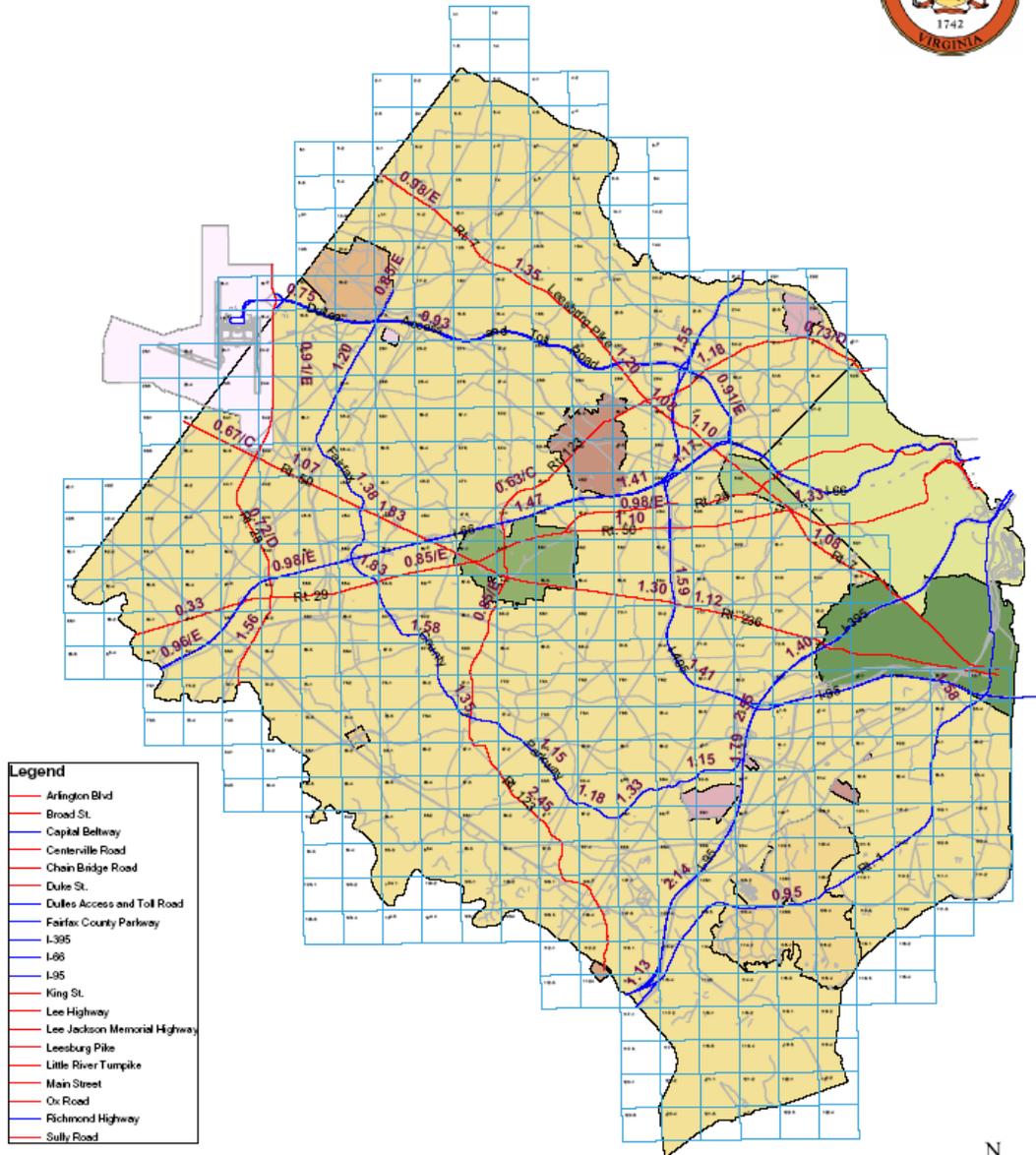
## **2. Vehicular Congestion and Volume to Capacity Ratio Maps**

This section examines vehicular transportation options and the associated congestion that is experienced every day by drivers. Vehicle congestion on roadways is typically measured by volume to capacity ratio. The Fairfax County Department of Transportation’s Planning Division created a map for this report that shows the current and projected V/C ratios on major Fairfax County roadways. As V/C increases from zero to one, the volume approaches the road capacity. Over one, there is more volume than the road can support. The Level of Service is a measure of congestion; once V/C reaches one, the road is fully saturated and the LOS is graded an F for failing.

V/C ratios on county highways as of 2002 are shown in Figure II-6. Major portions of the Beltway, I-66 and the Fairfax County Parkway already have a failing LOS.

Projected V/C ratios for 2025 are shown in Figure II-7. This information considers population growth and settlement projections. Comparing the current V/C ratio map with the future V/C ratio map provides many insights into how the transportation infrastructure grows with population.

**Figure II-6.**  
**Average Volume/Capacity V/C Ratios -**  
**Existing Peak Hour Conditions (2002)**

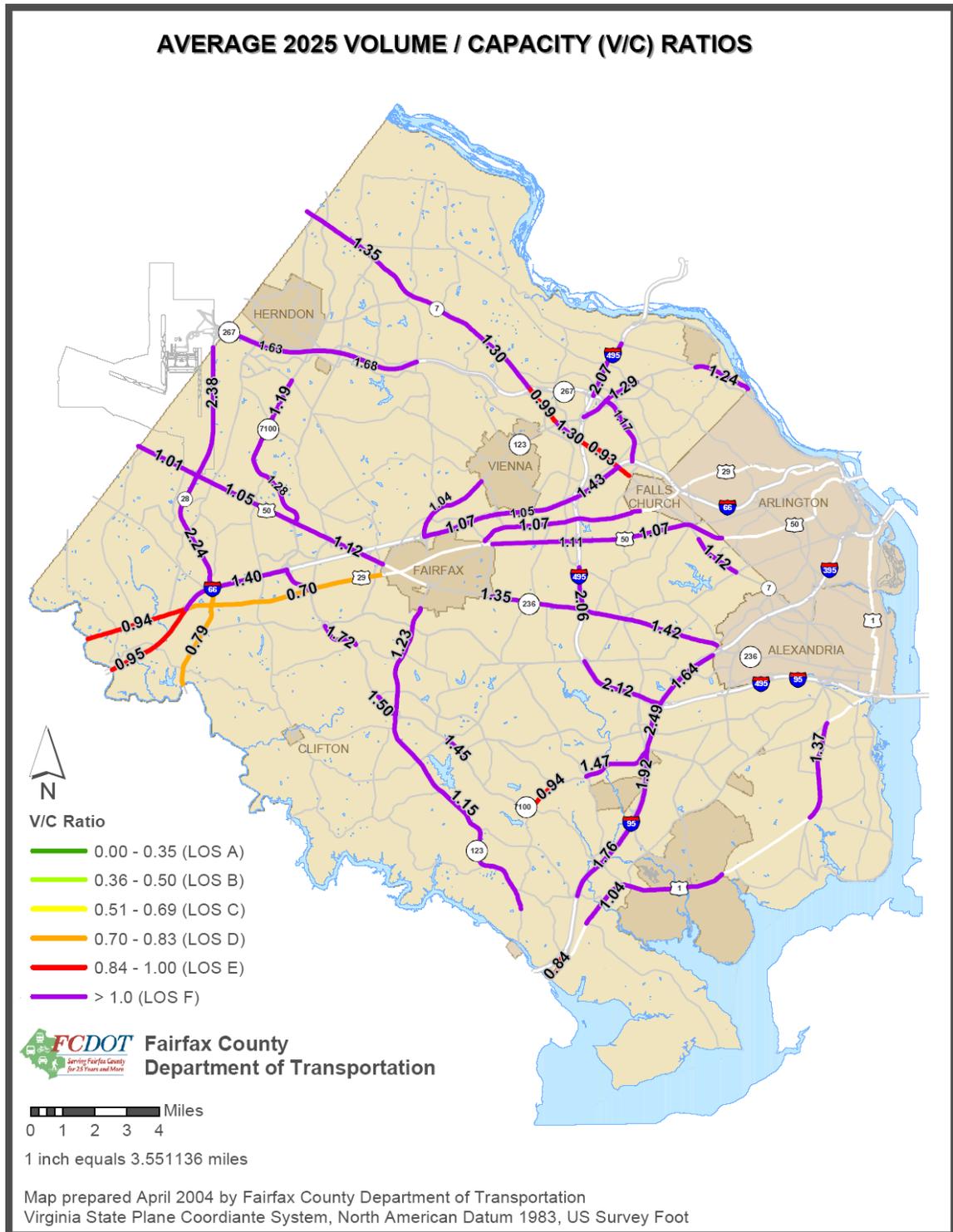


**Note:**  
 0.00/A: volume-to-capacity ratios/level of service  
 All V/C ratios above 1.0 = LOS F



Source: Fairfax County Department of Transportation

Figure II-7.



Some observations:

- The failing highways are still failing, some much worse and others actually better:
  - I-66 West of the City of Fairfax will get increasingly more congested, while I-66 east of Fairfax will get less congested.
  - The Beltway will become considerably more congested, with V/C ratios ranging from 1.5 to over two. Congestion in the “mixing bowl” area (the I-95/I-395/I-495 interchange area) will continue to get worse. The impacts of the reconstructed mixing bowl are not yet factored into the model; however, interchanges are modeled separately from segments and the data may not reflect the current improvements.
  - I-95 outside the Beltway will get significantly worse, with V/C ratios increasing from 1.01-1.04 to 1.76 or greater.
- Major roads closer to Washington D.C. will not change considerably over this period. This includes Route 29, Route 50.
- Major roads in the western part of the county will get more congested; this includes portions of Routes 28, 123 and 7 west of Reston. This will primarily be induced by commuters from outside the county.

The maps do not include potential improvements from mass transit. In particular, the Dulles Rail extension will impact congestion in the Tysons Corner area, and an Orange Line extension to Centreville will impact congestion along I-66 throughout the county. The maps also do not show changes from the proposed HOT lanes on the Beltway.

Both of these improvements have a dynamic component and are more difficult to model accurately. One of the recommendations of this Chapter is to continue studies to better model the effect of transit on congestion and other dynamic aspects of a modern transit system. These improvements are being considered as part of the Transportation Section review of the Comprehensive Plan that is currently under way; the improvements need to be implemented to provide the board with better data to make future transportation decisions.

Frequently the focus of transportation congestion is on big projects, such as Tysons or HOT lanes. This needs to be balanced with regular maintenance of the existing infrastructure. An important policy identified by the Coalition for Smarter Growth is “fix-it-first” to ensure that all state maintenance needs are met and to direct funding to fixing problems on existing roads and transit prior to funding new construction.<sup>14</sup> As infill becomes the primary mode of development, the existing infrastructure will demand more resources to accommodate denser developments.

---

<sup>14</sup> <http://www.smartergrowth.net/vision/regions/region.html>

### 3. Residential Commuting

An interesting statistic on commuter patterns is that over 50 percent of the residents in Fairfax County work in Fairfax County (see Table II-3), with another 17 percent working in the District of Columbia. Similarly, most of the workers in Fairfax County live in Fairfax County (see Table II-4); however over 80,000 workers commute to jobs in Fairfax County from Prince William and Loudoun counties. Only 12,000 workers commute to the county from the District of Columbia.

The following has been noted by the Metropolitan Washington Council of Governments in its January 2006 publication “Fairfax County and the Washington Region: A Look at Economic and Demographic Characteristics” (see page five):

*“Nearly three-quarters of Fairfax County resident workers commute to work by driving alone, compared to 68 percent of the Washington region’s workers. Seven percent of Fairfax County’s resident workers use public transportation, compared to 11 percent of the Washington region’s workers. Thirteen percent of resident workers of both Fairfax County and the Washington region use car pooling as a means of transportation to their jobs.*

*Of the 350,714 owner-occupied housing units in Fairfax County, four percent (14,207 housing units) do not have vehicles. For renter-occupied housing units, approximately nine percent do not have vehicles.”*

| <b>Table II-3<br/>Where do Residents of Fairfax County Go to Work?</b>                                   |   |  |
|--|---|--|
| <b><u>Destination</u></b>  | <b><u>Number of Commuters from Fairfax County</u></b> | <b><u>Percent of Total Commuters from Fairfax County</u></b> |
| Fairfax Co, VA   | 278,064   | 52.72 percent  |
| District of Columbia   | 88,908  | 16.86 percent  |
| Arlington Co, VA   | 48,670  | 9.23 percent   |
| Alexandria City VA   | 27,641  | 5.24 percent   |
| Montgomery Co, MD  | 16,943  | 3.21 percent   |
| Loudoun Co, VA   | 16,420  | 3.11 percent   |
| Fairfax City, VA   | 15,741  | 2.98 percent   |
| Prince George's Co, MD   | 9,594   | 1.82 percent   |
| Prince William Co, VA  | 7,013   | 1.33 percent   |
| Falls Church City, VA  | 4,061   | 0.77 percent   |
| Source: U.S. Census Bureau, Commuting Patterns of Fairfax County, Virginia Residents, 2000 <sup>15</sup> |   |  |

<sup>15</sup> [http://www.fairfaxcounty.gov/demogrph/census\\_summaries/2000census\\_commuting.pdf](http://www.fairfaxcounty.gov/demogrph/census_summaries/2000census_commuting.pdf)

| <b>Origin</b>          | <b>Number of Commuters</b> |
|------------------------|----------------------------|
| Fairfax Co, VA         | 278,064                    |
| Prince William Co, VA  | 44,322                     |
| Loudoun Co, VA         | 35,933                     |
| Montgomery Co, MD      | 22,148                     |
| Arlington Co, VA       | 20,476                     |
| Prince George's Co, MD | 18,258                     |
| Alexandria City, VA    | 14,643                     |
| District of Columbia   | 12,244                     |
| Stafford Co, VA        | 7,249                      |
| Fauquier Co, VA        | 5,499                      |
| Manassas City, VA      | 5,145                      |

Source: U.S. Census Bureau, Commuting Patterns of Fairfax County, Virginia Residents, 2000

#### 4. Transportation Decision Making

Management of transportation to maximize its usefulness and minimize its adverse impact on the environment is made very difficult because of the complex interrelationships of federal, state, regional, sub-regional and local entities that are all involved in Fairfax County transportation planning and funding. Local initiative in addressing transportation needs is further limited because the commonwealth of Virginia owns and maintains every public road in the county. Even subdivision cul-de-sacs are state roads.

The complexity of solving transportation problems in Fairfax County and mitigating the adverse environmental impact of inadequate or less than optimum projects can be better visualized by reading the *Northern Virginia Transit Funding Resource Guide* issued by the Northern Virginia Transportation Commission. This Resource Guide describes the many sources of funds that are available for transit projects and lists over 50 federal and 30 state and local funding programs. However, with governments at all levels facing a severely reduced capability to fund projects, they cannot provide funding levels to qualify for matching grants from many of these sources.

A variety of funds are available from the federal government, but they all come with specific requirements. Federal regulations, standards and guidance must be met before consideration will be given as to whether federal share contributions will be made available toward transportation needs.

In Virginia, the **Commonwealth Transportation Board** has final approval authority over the six-year transportation program for the entire state. Under guidance of the CTB, the Virginia Department of Transportation is responsible for building, maintaining and operating the state's roads, bridges and tunnels.

For Fairfax County, the transportation goals are included in, and promulgated through, the Fairfax County Comprehensive Plan. Those projects that are to be funded by county resources are included in the county's Capital Improvement Program. However, transportation projects that are to be funded through state and federal funding are included in the Virginia Department of Transportation's six-year transportation program.

The **Northern Virginia Transportation Coordinating Council** has developed a Northern Virginia 2020 Transportation Plan, December 1999, which is a comprehensive study identifying a multi-modal transportation solution to provide safe, efficient and economical choices for travel and transport of goods. The Plan has become part of the broader planning effort of the Transportation Planning Board of the Metropolitan Washington Council of Governments. Specific projects will be submitted by the commonwealth of Virginia for inclusion in Washington, D.C. region's financially Constrained Long Range Plan as funding streams open up.

The Fairfax County Department of Transportation initiated a **Transit Development Plan** study in January 2008.<sup>16</sup> This study, being conducted by a consultant team, will result in a 10-year plan to enhance the efficiency and expand the coverage of bus transit in the county. The study has four major elements: data collection; public outreach; analysis of existing service; and development of recommendations. The initial phase of public outreach was completed in September 2008. The data collection and analysis phase was completed in November 2008. The service recommendations were completed by the end of December 2009. Four additional tasks related to materials and processes used to provide information about Fairfax Connector bus service were begun in January 2010.

A further description of the interplay of planning and funding of projects between agencies in the metropolitan Washington area can be found in "A Citizens Guide to Transportation Decision-Making in the Metropolitan Region," 5/30/2008, which is available from the Transportation Planning Board of the Metropolitan Washington Council of Governments.

## **5. Programs, Projects, Analyses and Accomplishments**

### **a. Walking and Biking Facilities**

There are many potential environmental improvements that can be brought about by providing greater opportunities for non-motorized means to commute, travel or obtain recreation. They include: reducing air pollution caused by traffic congestion; reducing water pollution caused by roadway and parking lot construction made necessary by traffic demands; reducing

---

<sup>16</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

noise pollution caused by on-road vehicles; and reducing energy consumption required to operate motorized vehicles.

i. Pedestrian Program<sup>17</sup>

Fairfax County's Pedestrian Program was started in 2002 following a spike in pedestrian fatalities. In 2006, the board endorsed a ten-year funding goal of \$60 million for new pedestrian projects. Through FY 2012, Fairfax County has designated \$58 million in federal, state and county funding to construct pedestrian improvements in high-priority areas of Fairfax County.

Major sidewalk projects are complete along Route 1, Route 29 and Route 236. Pedestrian intersection improvements are complete along Route 7, Route 28, Route 29, Route 50, Route 123, the Fairfax County Parkway and Old Keene Mill Road. At the beginning of FY 2011, over 100 pedestrian projects and over 100 bus stop projects are currently under design for future construction. Pedestrian and bike access are being constructed on most of the bridges crossing the I-495 HOT Lanes project and will improve some of the worst barriers to pedestrian and bicycle movement in Fairfax County.

The Fairfax County Department of Transportation has also funded priority roadway lighting projects and countdown signal improvements as part of the Pedestrian Program. In coordination with DPWES, roadway lighting projects are under way at initial project locations including George Mason University, Route 1, Columbia Pike and Oakwood Road at Van Dorn Metro. Fairfax County also has a greater number of modern countdown signals installed than any other jurisdiction in Virginia. The Fairfax County Department of Transportation initially funded VDOT signal upgrades at 150 locations, and VDOT has continued upgrading with state funding.

The Pedestrian Program also has a role in pedestrian education and outreach in Fairfax County. Fairfax County is the local government funding leader for regional Street Smart Pedestrian and Bicycle Safety Media campaigns, which have used television, radio, print and bus advertising to promote safety awareness responsibilities of drivers and pedestrians. The Pedestrian Program Manager, Bicycle Program Coordinator, Bus Stop Coordinator, Pedestrian/Bicycle Planner and Pedestrian Outreach Coordinator are all involved in community outreach. The Fairfax County Department of Transportation

---

<sup>17</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT; Fairfax County Pedestrian Program Activity Status Summary presented on August 11 to EQAC, and EQAC Minutes from the August 11<sup>th</sup> Meeting

coordinates with other facility resources and departments as appropriate.

The Fairfax County Police Department conducts pedestrian safety enforcement in high pedestrian crash areas countywide. In addition, Fairfax County is one of the few jurisdictions in Virginia permitted to install “Yield to Pedestrians in Crosswalk \$100 - \$500 Violation Fine” signs. Fairfax County has installed and maintains over 1,800 of these signs at 455 intersections.

ii. Fairfax County Comprehensive Bicycle Initiative<sup>18</sup>

The Fairfax County Comprehensive Bicycle Initiative, launched in 2006, continues to address the growing needs of area bicyclists and is making Fairfax County bicycle-safe and friendly. The program has four major goals: (1) creating a county bicycle route map; (2) establishing a staff position with substantial responsibilities devoted to bicycle facility planning, implementation, and coordination; (3) identifying roadways that may accommodate on-road bike lanes with little or no additional construction; and (4) creating a pilot program in a specific area of the county for the establishment of an interconnected bicycle network.

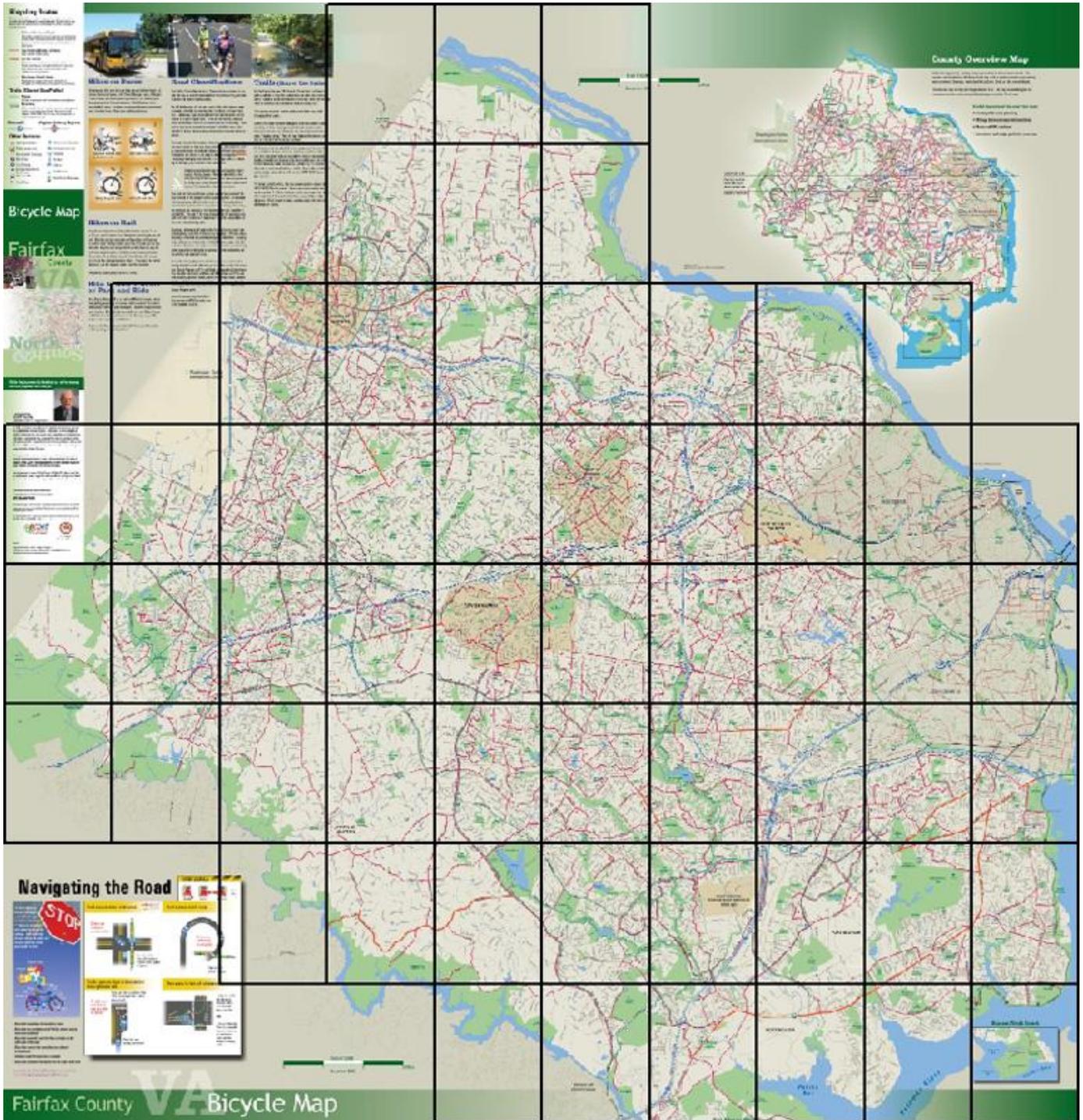
As directed by the Board of Supervisors, a major goal was the development and printing of the first “Fairfax County Bicycle Route Map,” issued on May 16, 2008, “Bike to Work Day.” The map defines a network of preferred as well as less preferred on-road bike routes that enable bicyclists to traverse the county. The county printed about 6,000 copies in the initial print job and will follow up with another run of approximately 41,000 more as a result of demand for the maps. The Fairfax County Department of Transportation was also awarded a transportation enhancement grant for fiscal year 2010 to complete a bicycle map that highlights a route along historic Civil War sites in Fairfax County. Electronic copies of the “Fairfax County Bicycle Route Map,” map are available for download in PDF format at <http://www.fairfaxcounty.gov/fcdot/bike/bikemap.htm>. A small scale copy of this map is shown in Figure II-8.

Utilizing county transportation bond funds and federal Congestion Mitigation and Air Quality Grant funds, project scopes are being prepared for bicycle spot projects countywide. Projects include the installation of bicycle racks and lockers, construction of missing segments of trails and bridges in order to provide connectivity and

---

<sup>18</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT; EQAC Minutes from August 11, 2010

Figure II-8. Fairfax County Bicycle Route Map



Source: Fairfax County Department of Transportation, <http://www.fairfaxcounty.gov/fcdot/bike/bikemap.htm>.

retrofitting roadways with on-road bicycle facilities. Working in conjunction with the Fairfax County Park Authority, the Fairfax County Department of Transportation completed the Wolfrap Road Bike/Pedestrian bridge in 2010. Planned construction includes the Pohick Stream Valley “VRE 2 VRE” connection and the “Bobann Bikeway” project, which would connect Centreville to the Stringfellow Road Park and Ride.

The Fairfax County Department of Transportation continues to manage a bicycle locker rental program that was initiated in 2007 at the Reston East and Herndon Monroe Park-and-Ride lots. Additional lockers and racks are planned at various locations countywide. Over 150 new bicycle racks are in the process of being installed in 2010, with 48 new lockers to come in the following year.

Other bicycle-related county projects include the development of bicycle parking standards for Fairfax County, working with VDOT to develop bicycle-way signage, providing support to the development community and continuing outreach and safety efforts.

**b. Fairfax County Telework Initiative and Employer Services Program<sup>19</sup>**

Fairfax County has a teleworking option for the county staff. The support from the Board of Supervisors and the County Executive, plus the marketing and training campaign and technology enhancements, are working. Increased interest in telework is evident in the number of employees who participate in training sessions, ask for information via email and phone and sign up for telework. There are now teleworkers in departments that previously had none. Managers have expressed an interest in telework as a way to continue business operations during inclement weather or emergencies. The county’s active partnership in regional efforts to expand telework keeps it current on best practices and identifies the county as a resource for other businesses on teleworking.

With respect to the county’s telework program, the increased publicity and organizational focus on teleworking has resulted in an increase in the number of teleworkers, from 138 in December 2001 to over 1,000 by 2005 (thereby meeting a goal that was set based on the Metropolitan Washington Council of Governments’ goal of having 20 percent of the regions’ eligible workforce teleworking by 2005), and the number of teleworkers continues to increase, as there are, **as of August 2010, 1,500 county teleworkers.** Based on information provided to EQAC previously regarding the 2005 telework goal, it is estimated that county teleworkers potentially saved roughly 80,000 commuting hours and 2.5 million commuting miles in

---

<sup>19</sup> E-mail from Catherine Chianese, Assistant Fairfax County Executive, August 13, 2010

a year. The county will continue to increase the number of county workers who telework and will emphasize telework as an important component of its Continuity of Operations Planning, in order to ensure that county workers have the tools to work from remote sites.

Promotion of teleworking is also part of the county's Employer Services Program. This program partners with area businesses to facilitate the creation and implementation of commuter programs. Commuter programs have been shown to improve productivity, make recruitment and retentions easier and improve morale. The Employer Services Program also partners with businesses and the state and federal governments to encourage telecommuting and the use of mass transit, carpools, vanpools, biking and walking instead of drive-alone commuting.

A description of the Employers Service Program can be found on the county's website at: [www.fairfaxcounty.gov/fcdot/Employer.htm](http://www.fairfaxcounty.gov/fcdot/Employer.htm).

**c. Major Transportation Projects<sup>20</sup>**

**i. Dulles Rail Project**

The Dulles Corridor Metrorail Project (DCMP) has completed its first 15 months of construction along the extension between I-66 at the Dulles Connector Road and Wiehle Avenue in Reston. Approximately 12% of the construction is complete, with major work efforts under way: on the alignment along the Dulles Connector road; along Route 123 between International Drive and Route 7 in Tysons Corner (tunnel construction); and station construction at the Tysons East station, Central 123 station and Wiehle Avenue station. Utility work is approximately 90% complete along Route 7 and major reconstruction of Route 7 began in July 2010. The project is within budget and is slated to begin passenger service in December 2013.

The DCMP has been working closely with landowners in Tysons Corner to accommodate requests by landowners to provide for direct connections to the Metrorail system. At the Tysons West station, the entry pavilion on the east side of the station will be relocated into the proposed development by Georgelas and Cherner at the intersection of Route 7 and Spring Hill Road. SAIC has requested a direct connection to the entry pavilion on the east side of the Central 7 station and has submitted a request to DPZ to amend its development plan to include an elevated pedestrian bridge to the station. Along Route 123, Capital One has requested an additional ground level entry to the station to accommodate its employees and a future 'knockout' panel at the mezzanine level as its site fully develops. Work is continuing with

---

<sup>20</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

Tysons Corner Center to adapt the south side entry pavilion at the Central 123 station to accommodate the development conditions placed on its approved rezoning.

The Fairfax County Planning Commission and the Board of Supervisors approved the rezoning for a transit oriented, mixed use (TOD) development on nine acres of county land at the Wiehle Avenue station. Comstock Companies will construct the development as well as a below-grade 2,300 space parking garage, 12 bus bays, 45 kiss-and-ride spaces and 150 secure bicycle spaces for the Metrorail station. The project will include approximately 1.3 million square feet of office, retail and residential uses; 19.5% of the residential units will be affordable dwelling units. The Metrorail facilities will be operational when the DCMP opens for passenger service in December 2013.

The Metropolitan Washington Airports Authority (MWAA) anticipates completing Preliminary Engineering (PE) for Phase 2 of the Dulles Corridor Metrorail Extension (Wiehle Avenue to Dulles International Airport, and Loudoun County) by spring of 2011. At the completion of Phase 2 PE, and the delivery of a cost estimate for Phase 2, Fairfax County will have 90 days to determine if it will participate in the project or forego three additional rail stations at Reston Town Center, Herndon-Monroe and Route 28. In December 2009, the Board of Supervisors approved a petition of landowners to form a Phase 2 tax district to provide \$330 million to fund a major portion of the county's portion of Phase 2 of the DCMP. MWAA will initiate Phase 2 final design and construction through a competitively procured design/build contract that will be awarded by the 1<sup>st</sup> quarter of 2012. This process will result in rail passenger service commencing by late 2016 to early 2017.

On February 23, 2010, the Board of Supervisors approved a Special Exception Amendment (SEA) for expansion of the West Falls Church Service and Inspection Yard to accommodate rail car storage and maintenance for Phase 1 of the DCMP extension to Wiehle Avenue. The SEA will expand the yard capacity by 42 rail cars and add more maintenance bays in a new annex building. As part of the approval, MWAA and the Washington Metropolitan Area Transit Authority (WMATA) agreed to construct a new stormwater detention pond and rehabilitate the existing stream that runs through the property. In addition, a \$10 to \$12 million cover box will be installed over the eastern most curved track in the yard to reduce "wheel squeal" that occurs as rail cars are moved within the yard. These improvements will be implemented to coincide with the initiation of passenger service to Wiehle Avenue.

The Dulles Corridor Metrorail Project website is at:  
<http://www.dullesmetro.com/>

ii. Tysons Metrorail Access Group<sup>21</sup>

On June 1, 2009, the Board of Supervisors directed staff to develop a comprehensive public participation mechanism to bring relevant Tysons Corner studies and projects together to allow the public to evaluate and comment on program improvements to the bus, pedestrian and bicycle network accessing the four Tysons Metrorail stations. To meet this objective, the Tysons Metrorail Station Access Management Study (TMSAMS) started in January of 2010. A TMSAMS Advisory Group has been formed to guide the study, determine how to present the information to the public and collect public input. Ultimately, the public input collected through this process will be used to prioritize bicycle, bus transit and pedestrian transportation improvements that will enhance access to the four new Metro Stations in Tysons Corner.

The first TMSAMS Advisory Group meeting was held in March 2010. Since then the advisory group has been meeting twice per month. The advisory group is currently developing a TMSAMS website, designed to inform the public about planned facilities and obtain input for project prioritization. The Fairfax County Department of Transportation has fairly detailed information regarding planned bus transit and pedestrian improvements that will serve Tysons. However, the Tysons Bicycle Master Plan study is just beginning, and taking this into consideration, the advisory group decided to time the TMSAMS public outreach concurrently with the Tysons Bicycle Master Plan schedule. Bicycle facility recommendations from the Master Plan should be available by the beginning of the fall 2010. When these facility recommendations are available, the TMSAMS effort will move forward to present these options to the public along with the planned facilities currently available for bus transit and pedestrian improvements. Until bicycle facility recommendations are available, the advisory group will work on refining the data currently available, determine how best to present this data to the public and collect input.

Approximately \$4 million in Congestion Mitigation and Air Quality funds are being used to implement pedestrian and bicycle improvements identified in the *Reston Metrorail Access Group* study for the Wiehle Avenue station.

iii. Columbia Pike Streetcar Project<sup>22</sup>

The Columbia Pike Transit Alternatives Analysis (Pike Transit Initiative) was conducted by WMATA and its engineering consultants with the cooperation of Arlington and Fairfax Counties from spring

---

<sup>21</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

<sup>22</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

2004 to spring 2006. WMATA undertook the Pike Transit Initiative to consider the development of an advanced transit system connecting the Pentagon/Pentagon City area with Bailey’s Crossroads. In May 2006, the Fairfax County Board of Supervisors endorsed the “Modified Streetcar Alternative” recommended in the Columbia Pike Transit Alternatives Analysis as the preferred transit alternative for the Columbia Pike corridor. The endorsement allowed the project to advance to the next phase of project development in which the project team developed a financial strategy.

After the conclusion of the Columbia Pike Transit Alternatives Analysis, the project team was awaiting the outcome of Virginia legislative action regarding the Northern Virginia Transportation Alliance funding assumption that changed due to the ruling of the Virginia Supreme Court. Based on the ruling, the project team decided to enter the Small Starts program (through the Federal Transit Administration (FTA)) to assist with financing the construction of the project.

Currently, the Pike Transit Initiative has entered the environmental documentation stage. A letter from the FTA agreed with the recommendation by the counties and its consultants that the environmental documentation needed for this project is an Environmental Assessment (EA). As part of the EA, the project team will determine the environmental impacts, ultimate alignment, minor preliminary engineering, a financial strategy and a project sponsor/operator that will advance the project through full engineering, construction and operation.

Funding for this project is anticipated from FTA, local and state transportation fund fees and taxes, as well as other options. Fairfax County’s current commitment for the environmental documentation phase is 20 percent. Fairfax County’s commitment for the total capital and operating expenses will be determined at a future date. Total capital costs for the board-adopted modified streetcar alternative are currently estimated at \$160 million. The annual operations and maintenance costs based on assumed operating plans and fleet sizes were estimated to be \$5 million (2005 dollars).

iv. High Occupancy Toll Lanes on the Beltway<sup>23</sup>

This project will build fourteen miles of new HOT lanes (two in each direction) on I-495 between the Springfield Interchange and just north of the Dulles Toll Road. These HOT lanes will allow the Beltway to offer HOV-3 connections with I-95/395, I-66 and the Dulles Toll Road

---

<sup>23</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

for the first time. When completed, buses, carpools and vanpools with three or more people, and motorcycles can ride in the new lanes for free. Vehicles carrying two people can either travel for free in the regular lanes or pay a toll to ride in the HOT lanes. Tolls for the HOT lanes will change according to traffic conditions, which will regulate demand for the lanes and keep them congestion free - even during peak hours.

In addition to providing new travel choices, this project will also make a significant contribution to the Beltway's 45-year-old infrastructure, replacing more than 50 aging bridges and overpasses, upgrading 10 interchanges and improving new bike and pedestrian access. This project is made possible through a public-private partnership between the Virginia Department of Transportation (VDOT) and Fluor-Transurban.

Project construction is ongoing. At several interchanges, new overpasses have been constructed. Major traffic switches are scheduled for this construction season, realigning the main lanes of interstate 495 to their ultimate configuration and then construction will proceed creating the new inner lanes. VDOT continues to work and coordinate the project landscaping efforts with the Fairfax County Restoration Project. The project has an estimated completion date of early 2013, with revenue service collection in December of 2012.

v. I-95/395 HOV/BUS/HOT Lanes<sup>24</sup>

The Virginia Department of Transportation (VDOT) is partnering with Fluor-Transurban to develop an innovative project to relieve congestion on one of the nation's most heavily traveled roadways. It provides new choices that benefit everyone – carpools, transit riders, drivers, “slugs,” businesses and communities. The I-95/395 HOV/Bus/HOT Lane project will improve vital links between key employment, commercial and residential centers, ensure that the interstate continues to support the economic vitality of the region and create new public transportation and carpooling opportunities.

The project will expand the existing High Occupancy Vehicle (HOV) lanes on I-95/395 from two to three lanes and extend two new lanes south to Massaponax. All of these lanes will become High Occupancy Toll (HOT) lanes – meaning buses and carpools with three or more people can continue to use the lanes for free, while non-HOV motorists can choose to pay a toll and access the lanes as well.

---

<sup>24</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

A Public Hearing was held February 9-11, 2009. Fairfax County submitted formal comments to VDOT, based on the March 30, 2009 Board item. VDOT is negotiating the project scope and price and finalizing the comprehensive agreement with Flour-Transurban. Fairfax County is coordinating with VDOT Mega projects on corridor issues such as transit, the Franconia-Springfield Pedestrian Bridge and Park and Ride lots.

VDOT and the private partners have not yet reached an agreement due to local government and community concerns and challenging credit market conditions. In the meantime, VDOT is continuing project development by:

- Addressing local traffic issues between Eads Street and Duke Street by working collaboratively with Arlington, Alexandria and Fairfax County staff.
- Working with Stafford, Prince William and Fairfax Counties and appropriate transit staff to develop a HOT lanes project from Garrisonville Road to just inside the Beltway.
- Working collaboratively with all affected stakeholders to assure that the significant transit capital and transit operating commitments are met.

**d. Transportation Alternatives and Accomplishments<sup>25</sup>**

i. Transportation Demand Management (TDM)

The county has integrated Transportation Demand Management (TDM) strategies into the land development process and is working to formalize this program. TDM proffers promote alternatives to single occupant vehicle trips. These proffers contain commitments to provide TDM services, goals for percentage trip reduction and remedies or penalties for non-attainment of proffered goals. The TDM proffer coordinator is negotiating proffers and monitoring implementation and performance of existing proffers. In FY 2010, TDM proffers were committed for new developments in Reston and Fairfax; such proffers are being considered in Tysons Corner, Merrifield, Mount Vernon and Newington. Proffer monitoring continues for properties in Tysons Corner, Vienna, Herndon and Fairfax.

A consultant study on integrating TDM into the land use and approval process is near completion. In fall 2010, the study and recommendations on TDM reductions and parking strategies for transit-oriented development will be completed and discussed in one or more

---

<sup>25</sup> Transportation Information for EQAC Updated July 20, 2010, Dan Southworth, FCDOT

public presentations. If adopted, the study recommendations will lead to more effective TDM strategies and formal arrangements for TDM proffers.

Preliminary findings from the TDM study were used to inform the TDM and Parking sections of the land use plan and zoning ordinance amendments approved for Tysons Corner.

ii. Bus Stop Safety and Access (Bus Stop Improvement Program)

Fairfax County places a priority on providing safe access to efficient transportation options, including pedestrian amenities and transit service. A comprehensive inventory and study of all bus stops in Fairfax County identified undesirable bus stop conditions for priority action. The board has identified \$2.5 million from the general fund and \$7.75 million in the 2007 Transportation Bond for improvements to the priority stops identified in the study. Since implementing the program, 73 sites have been completed. There are currently 129 sites in design, 25 in land acquisition and 11 under construction.

iii. Programs and Accomplishments

The combined demand management programs and outreach efforts of the Fairfax County Department of Transportation's Transportation Services Group, along with programs sponsored by the Metropolitan Washington Council of Governments' Commuter Connections programs, have allowed the county to continue to reach thousands of people who live or work in Fairfax County with messages about environmentally friendly transportation options.

- Over 400 Fairfax County employers have implemented Transportation Demand Management (TDM) programs. Over 205 of those are at level three or four, which means they have implemented benefits or programs that significantly help to reduce single-occupant vehicles. Outreach to businesses to encourage employee transportation benefits programs this year reached over 187 new employers and 50,688 employees.
- The RideSources Program received over 1,576 applications from commuters looking for car or vanpool matches last year. Of the 18,845 people already in the ride-matching database commuting via car or vanpool, just under 2,789 reside in Fairfax County and approximately 1,811 work in the county.
- Within Fairfax County government, 199 employees participate in the Commuter/Transportation Benefits Program, taking public

transportation to work, and 20 percent of employees (roughly 1,500) telework at least one day a week. The county also provides reserved parking spaces for car and vanpools at some facilities.

- Information about transportation options such as the HOV lanes, Ridesharing, Guaranteed Ride Home, car sharing, using bus and rail and teleworking is disseminated at outreach events throughout Fairfax County. In total, The Fairfax County Department of Transportation participated in 47 events this year within the community such as town fairs, employer fairs, and public meetings.
- Fairfax County continues outreach efforts including congestion mitigation and support for BRAC construction and relocation efforts.
- Fairfax County is working with the VDOT Mega Projects construction and the Employer Solutions Team to provide transportation alternatives to employers impacted by both HOT Lanes and Rail to Dulles construction. This activity has given the Employers Services and RideSources Team additional exposure to decision makers with many of the top corporations and organizations in Fairfax County.
- The Fairfax County Community Residential Services Program has partnered with over 210 multi-family complexes, area developers and civic organizations to promote telecommuting and the use of mass transit, carpools, vanpools, biking and walking instead of drive-alone commuting.
- The Fairfax County Transportation Services Group also supports Transportation Management Associations and other organizations that assist commuters and the community, including the Dulles Area Transportation Association, LINK of Reston Town Center, TyTran in Tysons Corner and the Transportation Association of Greater Springfield.
- TaxiAccess, first initiated on May 1, 2007 for members of the Fairfax County disabled community, continues to provide subsidized taxicab service to Fairfax County residents who are currently registered users of MetroAccess, which is a transportation service provided by the Washington Metropolitan Area Transit Authority. TaxiAccess was implemented originally as a one-year pilot program and its funding has continued to be extended. It continues to provide its users with the ability to purchase up to eight coupon booklets (\$240.00 value) per year at only one-third the cost (\$80.00).

- *Seniors On-The-Go!* is the subsidized taxicab program that offers Fairfax County seniors the opportunity to purchase up to eight coupon booklets (\$240.00 value) at a discounted price. For the first time since the program's inception on March 1, 2001, the \$10 purchase price for a 33-ticket coupon booklet was raised on July 1, 2009 to \$20 due to the county's FY10 budget shortfall. Despite the increased price, the program remains popular, with over 250 participants added in FY10. Since the inception of the program, *Seniors-On-The-Go!* has enrolled 4,984 senior participants.

**e. Honing the "527 Process"**

At the request of the Board of Supervisors, EQAC reviewed impacts on Fairfax County operations and residents from the passage of Chapter 527 of the 2006 Acts of Assembly, Traffic Impact Analysis Regulations, effective June 30, 2008. EQAC reviewed this issue with VDOT and county staff. The review was to assess any burdens imposed or values gained from the VDOT 527 process based on the first-hand experiences of staff. The general consensus is that, after working out initial start-up issues and adapting county procedures, the regulations have not added a significant burden and have provided a value to the county by improving the quality and consistency of proposals submitted for consideration by the development community.

County staff addressed concerns that the process could be burdensome, time consuming and intrusive. Fairfax had processes in place that were already performing the substance of the studies through various practices and timeframes that 527 would supplant. Through the startup phase, staff adapted its procedures to comply with the regulations while gaining value from the process.

The general view is that the county has gotten through the bugs of implementation and now there is added value in the standardization of submissions. In addition, staff cited some examples where the 527 process was leveraged to improve the level of developer commitment. The 527 process encourages developers to provide more rigorous transportation studies in a standardized system. Prior to the 527 process, staff requested such information but received studies that were inconsistent or incomplete. By having studies done up front, the county gets good information for the rezoning process that is used to enhance the decision and negotiating process.<sup>26</sup>

---

<sup>26</sup> Memo from Stella Koch, Chairman, Environmental Quality Advisory Council to the Board of Supervisors August 11, 2010

## **E. THE INTERRELATIONSHIP BETWEEN LAND USE AND TRANSPORTATION**

The above sections presented “Land Use” and “Transportation” as separate environmental issues. The focus of this section is on the interrelationship between land use and transportation. Throughout this chapter, three fundamental challenges are addressed:

- The county is rapidly approaching build-out and is transitioning from a growth focus to redevelopment.
- The county transportation systems are strained by congestion and getting further constrained by sprawl beyond the county.
- The county will continue to grow in population and prosperity, putting more pressures on the environmental quality and quality of life, which are underpinnings of that growth and prosperity. It needs to provide residential, commercial and transportation options for more people while increasing environmental stewardship.

As the concept plan becomes realized, the transportation infrastructure must be in place to accommodate those new living and working populations. With the county reaching build-out, the transportation options are constrained. Dense options, such as Metrorail and HOV, are enablers of future growth. Alternatives and choices, such as mixed-use development, transit-oriented development, telecommuting and flex-work, reduce the amount of transportation that is required.

Combining the land use projections with transportation planning is essential for the county to continue to grow and prosper in a way that is sustainable. By considering the land use and transportation facets of future decisions together, the county can continue to maintain a high quality of life. Conversely, when land use or transportation decisions are made in isolation, they will exacerbate the problems of build-out and congestion and negatively impact quality of life.

The county is well along this path with the designation of Urban, Suburban and Transit centers, and the progress made in 2010 as described throughout this chapter. The Board of Supervisors has adopted Comprehensive Plan guidance for several areas based on the recommendations of board-appointed task forces. The comprehensive results of these efforts have been impressive, and EQAC anticipates similar results from ongoing and future task force efforts. Equally important are policy changes that encourage more comprehensive planning, such as Transportation Demand Management.

## 1. Programs, Projects and Analyses

This section reviews projects that have combined elements of land use and transportation via special studies or revitalization districts that incorporate mixed use and transit oriented development. They are in various stages, from conceptual to planning to implementation, and provide valuable lessons for future projects. A consistent thread that runs through them is the holistic integration of Land Use and Transportation that has contributed to public acceptance and enhanced utility.

### a. Tysons Corner Urban Center

Tysons Corner is the only Urban Center designated in The Fairfax County Comprehensive Plan (June 22, 2010). It consists of 1,700 acres of land that currently house 16,000 residents and provide employment for roughly 105,000 people. The Comprehensive Plan for Tysons Corner has evolved over the past 48 years. In 1960 Tysons Corner was first viewed as having potential to become the Fairfax County “downtown.” In 1975 the Board of Supervisors commissioned a special study that guided development through 1993. In 1994 a second major study was commissioned that produced a significant amendment to the comprehensive plan. The result of this long term planning is mixed. On the positive side, Tysons Corner has become a successful economic engine for the county as the 12<sup>th</sup> largest employment center in the United States. On the negative side however, the area faces significant challenges with traffic congestion, pedestrian accessibility, stormwater management and environmental impact. It has effectively become a destination, not a place to stay, and it lacks the essential 24-hour vibrancy of a traditional downtown.

In March 2005, the Fairfax County Board of Supervisors created the Tysons Land Use Task Force with the following mission to update the 1994 Plan to:

1. Promote more mixed use.
2. Better facilitate transit-oriented development.
3. Enhance pedestrian connections throughout Tysons.
4. Increase the residential component of the density mix.
5. Improve the functionality of Tysons.
6. Provide for amenities and aesthetics in Tysons, such as public spaces, public art, parks, etc.

In September 2008, the task force delivered a report containing a revised Vision and Area Wide Recommendations. Throughout the three year process, the task force worked closely with over a dozen public and private agencies, engaged with world-renowned consultants that specialize in transit oriented design, and conducted 45 public meetings attended by over 2,000 participants.

The recommendations for a transformed Tysons Corner are organized around six key points:

1. Create a people-focused urban setting;
2. Redesign the transportation network to balance walking, biking, transit and the automobile;
3. Place a strong focus on the environment;
4. Develop a vital civic infrastructure of the arts, culture, recreation and the exchange of ideas;
5. Sustain and enhance the contributions of Tysons as the county's employment center and economic engine; and
6. Establish an authority for implementation that provides the flexibility, accountability, and resources necessary to achieve the vision.

The conceptual plan for the vision is shown in Figure II-9. The majority of the development is mixed use with different concentrations highlighted by their primary orientation towards residential, office, or evenly split.

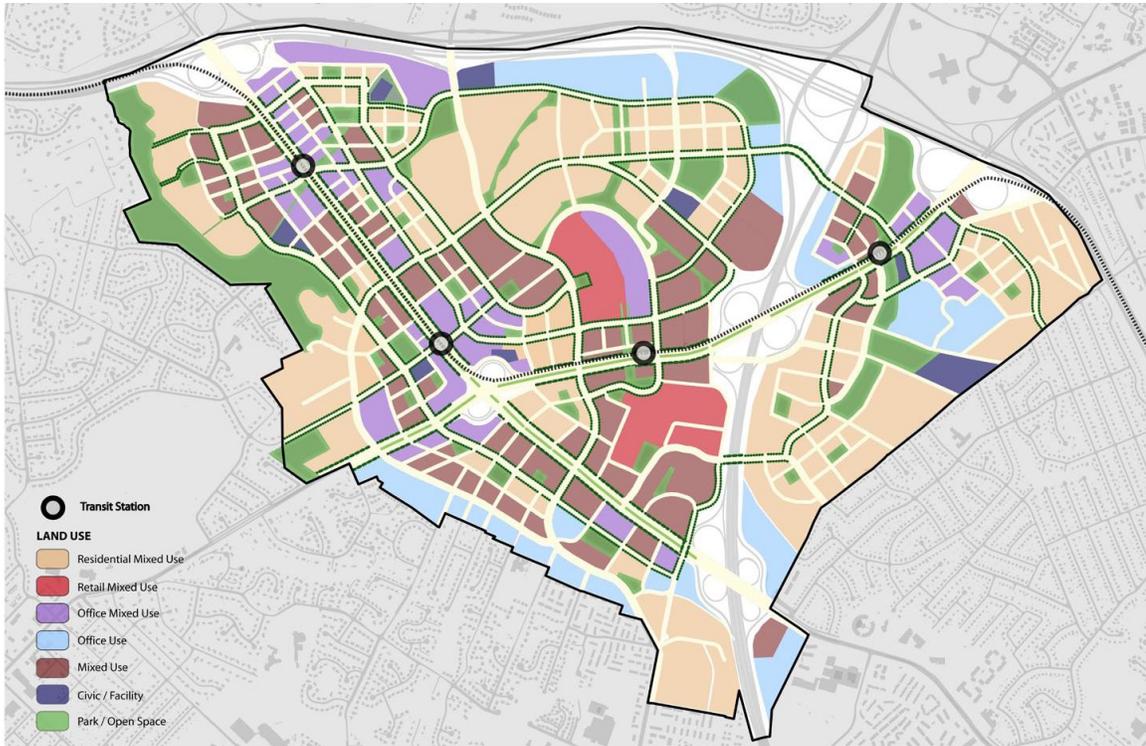
The vision will increase the residential population six-fold from 16,000 to 100,000 and almost double the number of jobs from 116,000 to 200,000. This is more balanced and will increase the vibrancy of the community.

Transportation will be centered on the four metro stops, with significant density within 1/8 mile of each station tapering outward. A new circulator transit is proposed to weave between the metro stops and the community. To encourage development along the circulator routes, additional development density is planned within 400-600 feet of the circulator route.

The plan is subdivided into eight separate districts or places, each with a particular character. These districts are effectively neighborhoods that allow further detailed planning. The connectedness and uniqueness of each place will be mutually supportive and add vibrancy.

Environmental stewardship is an important aspect of the plan. Specific objectives and incentives are presented for green buildings. Open space is an integral part of the conceptual plan, with 160 acres identified as open space or parkland. Rigorous storm-water management practices are recommended to restore stormwater retention to the equivalent of forested condition. Redevelopment will include stream valley restoration. With this green-focused redevelopment the plan should help the county achieve an 80 percent reduction in carbon emissions by 2050 with the goal for Tysons Corner to achieve carbon neutrality by 2030.

**Figure II-9: Tysons Land Use Task Force’s Recommended Conceptual Plan for Tysons Corner (Land Use, Parks and Open Space Network)**



The Vision and Area Wide recommendations were the first milestone for an updated comprehensive plan. The next steps that needed to be taken were the development of Area-wide plan text, District and Sub-district Plan text, and a Draft Plan Amendment. Ultimately, a Comprehensive Plan amendment for Tysons Corner was adopted by the Board of Supervisors on June 22, 2010.

As the county begins to implement the recommendations of the Comprehensive Plan for Tysons Corner, there are two significant transportation projects under way that are being coordinated by other authorities:

1. The Dulles Corridor Metrorail Project is proceeding with plans to extend the Metro from East Falls Church to Wiehle Avenue with four stations in Tyson Corner. The Comprehensive Plan for Tysons Corner is aligned with the Metrorail construction, with specific bonus density increases designed to be phased in with the Metrorail construction. This project is under the authority of the Metropolitan Washington Airports Authority.

2. The I-495 Virginia HOT Lanes Project will deliver the most significant enhancements to the Beltway since its opening in 1964. It includes two new lanes in each direction from the Springfield Interchange to just north of the Dulles Toll Road. This project falls under the authority of a public/private partnership between VDOT and two private corporations.

These three projects are executing concurrently, with agreements to coordinate as they move forward. Having three separate authorities responsible for implementing different aspects of land use and transportation is not an ideal situation. The agreements in place are a first step towards an integrated approach. With multiple levels of decision making authority distributed among the county, state and federal governments, such coordination may be the only practical arrangement. It however highlights the complexity involved in integrating land use and transportation.

**b. Dulles Corridor Metrorail Project**

Rail service has been envisioned in the Dulles Corridor since construction of Washington Dulles International Airport in the late 1950s, when the right-of-way for future rail was reserved in the median of the Dulles Airport Access Road. That vision is now becoming a reality. The first phase will connect East Falls Church to Wiehle Ave, passing through Tysons Corner and providing the transit component for the new Tysons Corner Urban Center. The second phase will link Wiehle Ave through Reston to Dulles Airport. The Metropolitan Washington Airports Authority is responsible for the construction with funding being provided by the county, the Commonwealth of Virginia and the U.S. Department of Transportation.

On March 10, 2009, the Secretary of the U.S. Department of Transportation executed the Full Funding Grant Agreement with the Metropolitan Washington Airports Authority to provide \$900,000,000 of federal funds to Phase 1 of the Dulles Corridor Metrorail Project. This action finalized the funding plan for the \$2.7 billion project.

The Dulles Corridor Metrorail Project has completed its first 15 months of construction along the extension between I-66 at the Dulles Connector Road and Wiehle Avenue in Reston. Approximately 12% of the construction is complete, with major work efforts under way: on the alignment along the Dulles Connector road; along Route 123 between International Drive and Route 7 in Tysons Corner (tunnel construction); and station construction at the Tysons East station, Central 123 station and Wiehle Avenue station. Utility work is approximately 90% complete along Route 7 and major reconstruction of Route 7 began in July 2010. The project is within budget and is slated to begin passenger service in December 2013.

Phase II of the Dulles Metrorail project will complete the extension of the new Silver Line to Dulles Airport and into Loudon County. Phase II will be funded primarily through bonds issued in relation to revenue collected from Dulles Toll Road tolls. In December 2009, the Board of Supervisors approved a petition of landowners to form a Phase 2 tax district to provide \$330 million to fund a major portion of the county's portion of Phase 2 of the DCMP. MWAA will initiate Phase 2 final design and construction through a competitively procured design/build contract that will be awarded by the 1<sup>st</sup> quarter of 2012. This process will result in rail passenger service commencing by late 2016 to early 2017.

An additional critical funding source will be the Metropolitan Washington Airports Authority Dulles Toll Road rate increases at specific on-ramps, to take effect in 2010, with an additional increase at the Main Plaza in 2012.

**c. Dulles Corridor Special Study**

On May 18, 2009, the board authorized a special study of the Reston segment of the Dulles Corridor, in conjunction with the review of the Reston Master Plan, to look at the 20 North County Area Plans Review nominations submitted. This special study is being conducted in the following four segments: 1) a land use college and existing conditions analysis; 2) a review of the planning for the Town Center and the Reston areas along the Dulles Corridor; 3) a review of planning principles for Reston and the planning for the Reston residential neighborhoods; and 4) a review of the Reston Village Centers.

**d. Ft. Belvoir—Base Realignment and Closure**

On January 26, 2009, Fairfax County's Board of Supervisors adopted Comprehensive Plan Amendments for seven BRAC Area Plan Review nominations. The adopted changes modify Plan guidance for parts of the Woodlawn Community Business Center along Richmond Highway, the Springfield Community Business Center and a block near the Huntington Metro Station.

The purpose of the BRAC APR cycle is to determine whether amendment of the Comprehensive Plan is warranted given the relocation of approximately 20,000 jobs to Fort Belvoir. The impacts of the planned movements will significantly affect transportation systems, the natural environment and the quality of life both on- and off-post. The new jobs and residents moving to the area also may have a beneficial impact on the local economy.

**e. Revitalization Projects in Targeted Commercial Areas**

The Fairfax County Office of Community Revitalization and Reinvestment is facilitating strategic redevelopment and investment opportunities in seven targeted commercial areas. Six of these are summarized below, and the seventh, Merrifield is summarized within the next section of this chapter (Suburban Centers). Unless otherwise noted, quotes are taken from the OCRR website.

**Annandale** - “Annandale business core is a culturally diverse hub that contains more than two million square feet of commercial space, including shops, restaurants, and service businesses that draw customers from throughout the Washington, D.C., Metropolitan Area. Excellent development opportunities exist within Annandale, which is in process of being studied to develop and refine an urban concept, with the goal of creating a town center consisting of a diverse mix of uses.”<sup>27</sup> The Annandale Design Guidelines for developing property or making site or building improvements, in Annandale, was completed in September 2009.

On July 13, 2010, the Board of Supervisors approved the Annandale Community Business Center Comprehensive Plan Amendment that covers approximately 200 acres, including all of the Commercial Revitalization District (CRD). The Plan uses a new form-based approach that provides flexibility by using building form and height to guide development instead of floor area ratios (FARs). The land use guidance recommends a proactive and comprehensive transformation of the existing, suburban form into a walkable, urban and active mixed-use center. Innovated urban design, streetscape, placemaking and context-sensitive techniques are also included. These techniques will enhance street presence, integrate a diversity of land uses and create distinct built form along the streetscape. The built form will relate to a network of usable and public urban plazas and parks at a variety of scales and functions and utilize planned transit services and facilities. These design and transportation elements will contribute to and establish a cohesive and unique identity; they will support revitalization efforts in Annandale.

The Annandale Transportation Study was completed in April 2010. This study “was conducted to analyze transportation system network alternatives, and to develop associated recommendations for a transportation system plan that handles local and through traffic in an efficient manner, while facilitating the community redevelopment and revitalization needs.”<sup>28</sup>

---

<sup>27</sup> <http://www.fcrevit.org/annandale/index.htm>.

<sup>28</sup> Annandale Transportation Study, Final Report, April 2010, p.ii  
<http://www.fcrevit.org/annandale/comprehensive.htm>

**Bailey’s Crossroads/Seven Corners** - “Located at the eastern edge of Fairfax County, this Commercial Revitalization District includes two dynamic business centers in Bailey’s Crossroads and Seven Corners capitalizing on the close proximity to Arlington County, the City of Alexandria, and downtown Washington, DC. Commercial and retail activity is concentrated along Columbia Pike (Route 244) and Leesburg Pike (Route 7). The core of the district includes Skyline Center, national chains, and a diverse array of locally owned stores and restaurants. Neighborhoods of single-family homes and apartments house the diverse population.

Great development opportunities exist for Bailey’s Crossroads and Seven Corners and it is envisioned to become more urban in character. The area is in the midst of a series of studies to develop and refine an urban concept with the goal of increasing density, mixing uses and improving the transportation network.”<sup>29</sup>

The Baileys Crossroads Planning Study focuses on evaluating and refining the concepts and strategies developed by the Urban Land Institute Advisory Services Panel.

On July 13, 2010, the Fairfax County Board of Supervisors approved the Bailey’s Crossroads Community Business Center Comprehensive Plan Amendment, which covers approximately 530 acres, including portions of the Commercial Revitalization District (CRD). This Plan Amendment sets forth a concept for future development that encourages a transition from a predominately retail environment to one that balances retail, office, residential, civic uses and open space. The plan also supports redevelopment of a “Town Center” to take advantage of the proposed transit stops for the Pike Transit Initiative Route from Pentagon City to Skyline. The recommended transportation improvements are intended to balance land use with infrastructure, and provide intermodal connectivity. Other guidance regarding open space and urban design is also provided in the new plan.<sup>30</sup>

In April 2010, the Bailey’s Crossroads Planning Study was presented to the community, as summarized in a county news release:

“The concept is intended to stimulate revitalization of this area, as well as take advantage of the [proposed streetcar route](#) to run between the CBC and Pentagon City. It features more mixed-used development; easier pedestrian, bicycle and transit rider access; and increased green spaces. Future development also would be compatible with the surrounding neighborhoods. It is envisioned that the densest development will be focused in the area near the future streetcar stop along South Jefferson Street on the north side of

---

<sup>29</sup> <http://www.fcrevit.org/baileys/index.htm>.

<sup>30</sup> <http://www.fcrevit.org/baileys/comprehensive.htm>

Leesburg Pike. This urban-style downtown will incorporate mixed-use buildings with ground-floor retail, a tree-lined grid of streets and a new arts center. A greenway will connect the north and south sides of Leesburg Pike.

...

The preferred concept is based on public input on two previous conceptual options, incorporating desired elements from both. An 11-member Citizens' Advisory Committee led the efforts to solicit public feedback.”<sup>31</sup>

**Lake Anne** – “The Lake Anne Commercial Revitalization Area, which includes the Historic Overlay District, is bounded by Baron Cameron Avenue (Rte 606) to the north, Lake Anne to the south, North Shore Drive to the west and Moorings Drive to the east.” “The Lake Anne Village Center Washington Plaza was the first area developed in the planned community of Reston, and its unique design and sense of place are recognized worldwide by planners, architects and developers.” “An integrated planning effort consisting of a stakeholder charrette, focus groups and planning, parking and transportation studies resulted in an amendment to the Fairfax County Comprehensive Plan on March 30, 2009. These changes reflect community values and perspectives, and position Lake Anne to again become an example of how innovative reinvestment and development can result in a renewed economic future.”

On August 8, 2010, the Lake Anne Village Center Commercial Reinvestment Plan was presented at a public workshop. The Lake Anne Village Center (LAVC) Short and Long Term Commercial Reinvestment Plan Public Workshop was designed to assist the commercial property and business-owners in identifying strategic opportunities to stabilize and sustain current establishments and to attract viable and complementary new non-residential uses to the LAVC. The county has engaged consultants to assess current conditions affecting the LAVC and develop short and long term concepts aimed at strengthening the long term economic viability of the LAVC non-residential uses. At the public workshop, the consultants discussed their findings, presented potential strategies and actions and solicited feedback on the LAVC Current Conditions Assessment, Market & Economic Overview, Commercial Management Program for LAVC and Development Concepts for LAVC.<sup>32</sup>

**McLean** - “The McLean area is renowned for its affluent, stable residential neighborhoods and a wide variety of community serving retail uses and businesses. Seeking to preserve and enhance the McLean Commercial Revitalization District’s small town environment while stimulating change, the revitalization concept for McLean centers on the creation of North and South Villages. This balanced reinvestment strategy primes the area for

---

<sup>31</sup> <http://www.fairfaxcounty.gov/news/2010/bailys-crossroads-land-use-concept-presentation.htm>

<sup>32</sup> <http://www.fcrevit.org/lakeanne/index.htm>.

expansion of community serving retail and businesses, additional residential development, public amenities and entertainment venues that will draw current and future generations to live, work, and play in the McLean CRD.”<sup>33</sup> The McLean Revitalization Corporation secured funding to test the viability of these concepts, estimate their costs and recommend an approach to implementation. The MRC has also been working with the Supervisor's office and the county to begin the first phase of a long-term process to move utility infrastructure underground.

**Richmond Highway Corridor** - “In general, the Richmond Highway corridor has an uncoordinated, strip-commercial appearance. The corridor itself serves a dual purpose of being a Main Street for surrounding residential development as well as a major north-south oriented transportation route, carrying heavy volumes of commuter traffic. The width of the highway varies from four to six lanes and service drives exist sporadically along its length.”<sup>34</sup>

The Southeast Fairfax Development Corporation (SFDC) is a public/private non-profit economic development corporation established to guide and assist businesses with locating or expanding into southeastern Fairfax County's Richmond Highway (U.S Route 1) Corridor. The SFDC is focused on three key areas: marketing; economic restructuring; and urban design. Since incorporating in 1981, it has been a key player in decisions to invest more than \$1 billion in new construction and redevelopment.  
(cite: <http://www.fcrevit.org/richmondhwy/sfdc.htm>)

**Springfield** - “The Springfield CRD consists of a variety of retail, commercial, office and residential activities clustered at the Franconia Road - I-95 Interchange, accessed via the Old Keene Mill Road, Backlick Road, and Commerce Street roadway network. While there have been some important redevelopment projects in the area such as the Towne Place Suites by Marriott, Waterford Conference Center, and the Marriot Residence Inn, much of the area consists of dated retail and commercial buildings. These sites continue to be rehabilitated over a period of years, creating a Central Business area within Springfield that continues to be functional, busy, providing opportunities for future expansion and development of a variety of business activity. The presence of the rebuilt I-95 Interchange, ramps, and Metro access at the Franconia-Springfield Transit Station, provide the Springfield CRD area with considerable advantages with respect to location and regional transportation access.

A number of projects are ongoing in Springfield and will provide catalyst for future redevelopment within Springfield. Springfield Mall was recently

---

<sup>33</sup> <http://www.fcrevit.org/mclean/index.htm>.

<sup>34</sup> <http://www.fcrevit.org/richmondhwy/index.htm>.

approved for redevelopment as a lifestyle shopping and entertainment center while adding over 2,000 residential units. In the northwestern area, the newly rebuilt [Richard Byrd Library](#) offers modernized facilities, meeting space, and a larger building than the previous library located at the same location. The library will be part of a walkable village town center convenient to well located and well maintained neighborhoods. Older apartment buildings are expected to be renovated and new luxury and workforce housing will be built. The new vision and redevelopment opportunities were recently adopted in the Springfield Connectivity Plan Amendment which was approved by the Board of Supervisors in January, 2010. The Comprehensive Plan changes included raising land use and intensity within the CRD to spur redevelopment, new transportation infrastructure improvements and provide detailed guidance with respect to urban design, streetscape, and placemaking concepts.”<sup>35</sup>

**f. Suburban Centers**

The county has designated seven areas as Suburban Centers. These contain a complementary mixture of office, retail, residential uses and parks (including Urban Parks and active recreation facilities) in a cohesive, moderate intensity setting. The Reston and Merrifield Suburban Centers are presented as representative of the comprehensive approach at each area.

**Reston Suburban Center:** The purpose of the plan for the Reston Suburban Center area is to encourage a more urban and transit-oriented development pattern. The objective is to create, at each Transit Station Area, a pedestrian-oriented core area consisting of mixed-use development that includes support services while maintaining transitional areas at the edges of the Transit Station Area.

Options for development in the Transit Station Areas allow higher intensities based upon compliance with specified conditions. Those options are designed to be site specific.

**The Merrifield Suburban Center:** On June 11, 2001, the Board of Supervisors adopted an amendment to the Comprehensive Plan that created the Merrifield Suburban Center. The area is served by the Dunn Loring – Merrifield Metrorail station and has regional and local access from I-66, I-495, Route 29, Route 50 and Gallows Road. As set forth in the Comprehensive Plan, the vision for the Merrifield Suburban Center includes two core areas: one focuses on development near the transit station and the second is planned to evolve into a town center. A new “Main Street” would connect the two core areas.

---

<sup>35</sup> <http://www.fcrevit.org/springfield/index.htm>.

“With the Dunn Loring-Merrifield Metro station and proximity to Interstate 495 and 66, Merrifield is one of the most centrally located and easily accessible areas in Fairfax County. Taking advantage of its location, Merrifield is planned to accommodate a new town center envisioned to be a thriving mixed-use area attracting new residents to Merrifield while also supporting the surrounding existing neighborhoods. This evolution is underway as recent mixed-use developments have brought additional residential, retail and office space while also providing amenities such as improved pedestrian connections and open space with Merrifield Park.”<sup>36</sup> On April 27, 2009, the Board of Supervisors created the county’s first Community Development Authority for the proposed Mosaic - Merrifield Town Center development.

**g. Transit Station Areas**

The county contains six Metrorail stations with four more slated for Tysons Corner and additional stations stretching through Dulles Airport along the Orange Line. These Metrorail stations are evolving into the transportation hubs for the county. Redevelopment can be seen at each Metrorail station. At both the Vienna and Dunn Loring-Merrifield Metrorail stations, the Washington Metropolitan Area Transit Authority is in the process of selling land adjacent to the stations to be transformed into transit oriented developments. These transit oriented projects provide the density for future growth with a smaller per-person traffic demand than single family housing that is typical in the county.

Some of the important lessons from the Fairlee development proposed adjacent to the Vienna Metrorail station include:

- Metrorail Capacity—the Metro system needs to expand to support new riders at these denser developments. Consideration is needed for both additional Metro cars and bottlenecks in the system, such as the Rosslyn tunnel.
- Replacement of Metrorail Parking—as redevelopment occurs at the transit stations, existing commuters need to be accommodated.
- School Capacity—as density increases, public facilities and schools need to be enhanced and expanded to support new residents.
- Transportation – Transportation Demand Management needs to be in place to verify transportation projections are in line with the development reality and mitigation plans need to be approved in

---

<sup>36</sup> <http://www.fcrevit.org/merrifield/index.htm>.

advance. The Fairlee project highlighted the need for better TDM across the county.

- Environmental Issues—include protecting the environment and providing environmental or natural space for residents. Environmental protection includes stormwater management as well as preserving air quality, managing waste, recycling and “green” building to minimize energy consumption. Environmental opportunity means that additional open space needs to be preserved for a denser human population.
- Mix of Uses—the mix of uses should help to create a synergy of uses resulting in an opportunity for both current and new residents to walk to shopping and other services in their neighborhood.
- Protection of Stable Neighborhoods— any increased density should be focused and constrained in a core area of the Metrorail station platform. The purpose of focusing density is twofold: first, TOD studies show that the highest percentage of transit ridership is generated by development within ¼ mile of the platform and that transit ridership drops off past the quarter mile. Secondly, the protection of stable neighborhoods requires that higher density be constrained and that density does not creep beyond clear, logical boundaries.

These lessons were specifically identified in the Fairlee Comprehensive Plan motion with specific language written into the Plan amendment to address them. As other transit stations are developed, similar consideration will be required.

#### **h. Cool Counties**

Fairfax County’s implementation of the Cool Counties program includes a number of exemplary efforts to reduce congestion and enhance transportation opportunities. Fairfax County’s Cool Counties strategy reflects the relationship between land use and transportation. The concentration of new development in relatively high intensity, transit-oriented centers characterized by a mix of residential, employment and retail uses, and the provision of opportunities for non-motorized transportation to, from and within these centers should serve to reduce, in aggregate, the number of motor vehicle trips and vehicle miles traveled, and the associated CO<sub>2</sub> emissions, that would otherwise occur through more traditional suburban development patterns in the region.

## **2. Summary**

With the advent of build-out and the continued growth within the county, new development will be much more complicated than the initial development

within the county. There will be changes imposed on existing residents and businesses and impacts that are both real and perceived. Integrated land use and transportation planning is essential to maintain our quality of life into the future.

From an environmental perspective, the initial development of the county created a baseline that currently exists. As redevelopment occurs, be it at higher density or simply expanding existing development, the county goal should be to improve the existing baseline. There is no need for any further environmental degradation.

By continuing to integrate land use and transportation planning, the county can change and grow without sacrificing our quality of life.

## **F. STEWARDSHIP**

The array of forces that influence, drive and guide transportation and land use, including individual and corporate interests and behaviors, government regulations and processes, urbanization, climate change and cultural behaviors are highly interactive and complex, but manageable. This report focuses predominantly on the government role in managing these forces, but individual and corporate activities and behaviors are the predominant factors in the success or failure of environmental stewardship.

Fairfax County residents have a huge selection of opportunities to engage in environmental stewardship ranging from personal activities in their daily lives and work, to active participatory citizenship, to serving as a volunteer with government or non-profit organizations. A well-informed, active citizenry is fundamental to good government and livable communities – everyone should know how his or her government operates, what we as a community are up against, where our taxes go in “one of the best-managed jurisdictions in the region” and exactly what government functions are diminished or lost with revenue losses. The county provides extensive opportunities for residents, employers and employees to learn about issues and the functions of government and extensive opportunities to participate. The Fairfax County website is a wealth of well-organized information that can serve as a starting point for stewardship resources and to get involved. The county also performs extensive public outreach for a wide array of programs and development projects, bolstered by project specific efforts like the Reston Land Use College and the Tysons Task Force.

## 1. Stewardship Responsibilities and Opportunities for Individuals

### a. Transportation

Current transportation challenges in the county require critical stewardship activities from every household. According to the FY 2011 financial forecast presented at the Board of Supervisors' retreat in June 2009, there are approximately 945,000 registered vehicles in the county. According to the Metropolitan Washington Council of Governments, there are 350,714 occupied housing units in the county and "nearly three-quarters of Fairfax County resident workers commute to work by driving alone, compared to 68 percent of the Washington region's workers. Seven percent of Fairfax County's resident workers use public transportation, compared to 11 percent of the Washington region's workers. Thirteen percent of resident workers of both Fairfax County and the Washington region use car pooling as a means of transportation to their jobs." (Metropolitan Washington Council of Governments, "Fairfax County and the Washington Region: A Look at Economic and Demographic Characteristics," January 2006, p.5).

Everyone who uses transportation systems in the county can protect and nurture a healthy environment by assessing their needs and habits and looking into the growing number of alternatives to our current traffic volumes. Some examples of these alternatives, from the county website, include the following:

[Bike Program](#) In 2006 the Fairfax County Board of Supervisors approved the comprehensive bicycle initiative--a program committed to making Fairfax County bicycle friendly. The program addresses the needs of bicyclists through construction, planning, and public information.

[Community Residential Program](#) The Fairfax County Community Residential Program partners with residential developments, multi-family complexes and associations to promote use of alternative modes of transportation including public transit. CRP is dedicated to encouraging people who live, work or commute through Fairfax County to use mass transit, carpools, vanpools, walking, biking or teleworking instead of driving alone.

[Employer Services](#) The **Fairfax County Employer Services Program** helps businesses and employees find transportation solutions that will not only make companies more successful, but will improve the economic vitality and quality of life for the entire region. The Employer Services Specialists work on-site with businesses to help them realize the bottom-line benefits of commute alternatives.

[Guaranteed Ride Home](#) The **Guaranteed Ride Home Program** is for commuters who regularly take the bus, rail, vanpool, carpool, bike or walk to work. The program is designed to serve commuters who are worried about how they'll get home when an emergency arises.

[Pedestrian Program](#) The Pedestrian Program for Fairfax County addresses pedestrian safety and community generated pedestrian systems improvements. The Pedestrian Task Force, consisting of residents, appointed commission members and multi-disciplined staff, reviews existing Fairfax County pedestrian programs and activities, makes recommendations on improving these programs, develops coordinated education and outreach efforts and prioritizes funding for pedestrian projects

[Ride Sources](#) The RideSources Program is operated by the Fairfax County Department of Transportation and is a member of Commuter Connections. The RideSources program provides commuters with free ridesharing information, including ridematching assistance to form or join carpools or vanpools.

[Travel Training - MATT Bus](#) is a unique Fairfax Connector bus that has been renovated and designed for training senior citizens to travel safely and independently on regional transit systems.

The county also offers periodic events or opportunities for commuters to test alternatives. For example, Fairfax County participated in Try Transit Week, September 2010, a statewide event sponsored by the Virginia Department of Rail and Public Transportation to encourage everyone to avoid driving solo and give transit options such as bus, rail, carpools, vanpools and telework a try. [Car Free Day](#) is an international event celebrated every September 22 in which people are encouraged to get around without cars and instead ride a train, bus, bicycle, carpool, subway, vanpool, walk or telework. Car Free Day is open to all commuters, students, homemakers and seniors in the Washington metropolitan area.

#### **b. Land Use**

Residents may practice stewardship with regard to land use in three significant arenas: first is on their own properties, condo/homeowners association properties or apartment complexes; the second is in regard to development and revitalization activities in the county; and the third is through volunteering with organizations that have a stewardship mission. Residents can all do their parts at home by becoming aware of the impacts of their activities and the buildings in which they live. Residential stewardship may be as simple as planting a tree or small garden or choosing

more efficient appliances and as complex as retrofitting with green features, reducing impermeable surfaces or creating a certified wildlife habitat.

Land use issues, in terms of development and revitalization, are generally focused through the county's planning and zoning, community revitalization and public works programs, and the county website provides an excellent starting point. LDSnet, which provides access to information in the Fairfax County Land Development System is comprised of the Zoning and Planning System ([ZAPS](#)) and the Plan and Waiver System ([PAWS](#)). Through LDSnet, it is possible to search for individual zoning applications and/or plans and studies submitted to the county to perform land-disturbing activities. In addition, the LDS database can be searched for zoning applications or construction plan submissions meeting any combination of the thirty-one search criteria. The Northern Virginia Soil and Water Conservation District is an excellent starting point for residents wishing to learn more about stewardship practices and is also an entre to other stewardship organizations.

The Office of Community Revitalization and Reinvestment provides a number of online tools for residents to use to learn more about their own properties and revitalization efforts throughout the county. These include county land use applications such as [iCare—Real Estate Assessments](#), the [Land Development System](#) , and [My Neighborhood](#).

Volunteers are increasingly crucial to environmental stewardship, and residents and other volunteers can broaden their knowledge while serving. There are a wide variety and number of environmental organizations from which to choose and the Fairfax County website, at <http://www.fairfaxcounty.gov/volunteering/> and Volunteer Fairfax, at <http://www.volunteerfairfax.org> are good places to start.

## **2. Stewardship Responsibilities and Opportunities for Corporations**

The Fairfax County Economic Development Authority held a conference called “The New Urban Economic Model: The Transformation of Fairfax County” in June 2009 to “highlight what suburban communities can and should do to be well-positioned as the strong business communities of the future.” According to a national survey commissioned by EDA in preparation for the conference, of the respondents who work in the suburbs, nearly half (47 percent) wish that their working environment offered more, such as: more parks and other open spaces nearby; a broader array of employers and work environments; access to convenient public transportation; greater cultural diversity; a more walkable environment; and proximity to housing options. Fairfax County already has many of these characteristics; however, as this EQAC report indicates, these

characteristics may be in jeopardy without informed and concerted environmental stewardship.

As environmental stewardship has become more mainstream, the awareness and practice of corporate social responsibility have developed to address employee sensibilities, community relations and the “double bottom line.” There are tremendous opportunities in Fairfax County for partnerships across the sectors to join resources, interests and expertise to protect and enhance our quality of life. In every major development, and many minor ones, opportunities exist for the environmental and social services agencies to work with EDA, developers, the real estate industry and future corporate tenants in new or revitalized developments. Tysons, the Dulles Corridor and other transportation oriented development projects are good examples of success and foundations for extending strategic stewardship partnerships. Issues such as affordable housing and an aging population in the county have land use and transportation components; these can be folded into broader land use and transportation issues to create broader solutions.

*The involvement of business leaders in crafting a set of locally supported solutions would seem to be a very important element in the future. At the strategic end, business leader actions take the form of information development and communication with the public and decision-makers to emphasize the role of transportation in the state and regional economy. On the tactical end, business and community leaders can make the case for small-scale improvements that may not be evident to the operating agencies. And they can support individual workers who wish to choose carpooling, public transportation, flexible work hours, telecommuting or other route or mode options.<sup>37</sup>*

## **G. ACCOMPLISHMENTS**

Over the past years, Fairfax County has made changes to improve the county’s ability to integrate land use and transportation. EQAC commends the county for these noteworthy accomplishments:

- Adopting the Board of Supervisors Environmental Vision and creating the Environmental Improvement Plan to achieve that vision.
- Implementing powerful GIS technology including the Integrated Parcel Lifecycle System and the Virtual Fairfax 3-D Internet application, as well as acquiring and updating the data repository with planimetric data and oblique imagery.

---

<sup>37</sup> 2009 Urban Mobility Report, Texas Transportation Institute, July 2009

- Completing the demographic survey, which collects important data about future projections for the county population and residents' issues through 2025.
- Adopting the Comprehensive Plan amendment for Tysons Corner to create a new Fairfax County downtown with mixed use development and multi-modal transportation alternatives.
- Initiating special studies for mixed use areas that take a holistic approach to Land use and Transportation.
- Achieving the goal of 20 percent staff participation in telework.

Several lessons have been incorporated into the county planning process and the Area Plan reviews. New projects include staff analysis of induced transportation, educational and environmental impacts. The Planning Commission is also working to incorporate better integration with its work on Transit Oriented Development, Low impact Development standards and Transportation Demand Management.

This continued focus on adopting new techniques and systematic modeling is an accomplishment and EQAC encourages continued improvement in the integration of planning for land use and transportation.

## **H. COMMENTS AND ONGOING CONCERNS**

### **1. Innovative Governance and Collaborative Spirit**

EQAC commends the Board of Supervisors for rising to meet environmental and economic challenges with excellent governance and a persevering commitment to the environmental, economic and social foundations of sustainability.

There has been a truly remarkable convergence of challenges and trends met with the emergence of innovative governance and collaborative spirit in the stewardship of Fairfax County environmental resources in 2010. The convergence of efforts to close budget shortfalls and cope with impacts from the recession; implement significant land use and transportation projects like Tysons, Dulles Rail, HOT Lanes and Ft. Belvoir BRAC; and to manage comprehensively environmental challenges that are increasing in scope and urgency is unprecedented. The county has responded to these challenges with outstanding community engagement efforts on budget development and mega-projects; consolidation and leveraging of some government functions; collaborative planning for Tysons resulting in an exemplary growth and development approach, focused on activity centers, that incorporates many of the principles of sustainable development; continued development and application of the Environmental Improvement Program as a comprehensive integrated mechanism to plan, manage and monitor county-funded cooperative environmental stewardship; and development and commitment to the Greater Washington 2050 Compact.

## **2. Economic Opportunities for Revitalization**

EQAC commends the Board of Supervisors for adopting “The Housing Blueprint: A Housing Strategy for FY 2011 and Beyond.” There are many land use and transportation efforts under way with significant relevance to the county’s housing goals. That coupled with evidence that the multifamily residential market holds the greatest potential for growth over the next year creates opportunities to leverage resources and interests.

Recovery from the recession presents a unique opportunity to view foreclosed homes, vacant commercial space and the expected employment rebound as targets of opportunity in achieving transportation and land use goals. EQAC suggests that the county:

- Continue to expand options for affordable housing by investing and partnering appropriately in locations that will need increased affordable options as the economy rebounds.
- Identify vacant offices and homes in locales with good transit options and coordinate with the real estate industry to aid in marketing those properties, thereby supporting new tenants with quality of life perquisites, improved commuting options and better residential/commercial or mixed use utilization.
- Coordinate with agencies and businesses to inform prospective/new workers of opportunities for desirable commutes and local housing amenities.

## **3. Comprehensive Understanding**

The county is very good at understanding micro changes in the county. EQAC is concerned that the county is missing the macro effects of these micro changes. The Integrated Parcel Lifecycle System provides a base capability to capture and analyze the changes. EQAC will continue to work with staff as IPLS evolves to realize those benefits:

- Evaluate planning issues and development options, account for Comprehensive Plan changes and capture real time plan changes.
- Facilitate public safety and plan for emergency preparedness.
- Forecast future growth.
- Understand and analyze land use at a finer resolution and provide information on mixed use.
- Evaluate the environmental effect of each parcel and provide data necessary for modeling and understanding the cumulative effect of development.

EQAC commends the county for its decision to acquire a full set of planimetric data and oblique imagery. The full planimetric data layer is an important addition to the

gathering of base land use data. Oblique imagery is just starting to be incorporated and will lead to cost savings in the long run.

#### **4. Green Buildings**

The county is becoming a leader in building green buildings and has adopted Comprehensive Plan policy that includes broad support for green building practices and establishes linkages between the incorporation of green building/energy conservation practices and the attainment of certain Comprehensive Plan options, planned uses and densities/intensities of development, particularly in the county's growth centers. EQAC commends the county for committing to LEED certification (generally at the silver level) for all new county buildings and for its efforts to encourage green building and energy conservation practices through the zoning process. EQAC encourages the county to further support green building design and energy efficient buildings.

### **I. RECOMMENDATIONS**

#### **1. Holistic Land Use and Transportation Planning**

The current Fairfax County Comprehensive Plan traces its roots back to the Planning Land Use System program that culminated in 1975 and the "Goals for Fairfax County" adopted in 1988. Numerous reviews and regular updates have occurred over the past 35 years, yet as stated in the current Plan: "Many of the key components of the 1975 Plan remain in the revised Plan, such as the emphasis on focusing growth in 'Centers'; decreasing automobile dependency; and protecting environmentally sensitive areas and stable neighborhoods. What has changed are some of the means to achieve these ends."

EQAC continues to recommend that the county evaluate the Plan and publish an updated version of the "State of The Plan, An Evaluation of Comprehensive Plan Activities between 1990-1995 with an Assessment of Impacts through 2010" - (published in 1996) to cover plan activities between 1995-2011 and assess impacts through 2025.

With the renewed focus on revitalization, especially in the mixed-use centers, EQAC recommends that the county formalize and prioritize the focus on these centers. The special studies currently under way provide a blueprint and a basis for extracting best practices that can be applied. These special studies bring together a myriad of issues that can be addressed holistically and with public participation. This would be in lieu of a complete review of the Comprehensive Plan. This formalization should include incorporating GIS technology and standards for modeling future conditions and plan potential.

The evaluation and assessment will help clarify the historical lessons learned and identify areas that have proven successful at a macro level across the county and where it needs to be strengthened for a future vision. The comprehensive preparations are timely with the significant changes happening in the county.

## **2. Data and Modeling**

- a. EQAC is an advocate of the county GIS system and the Integrated Parcel Lifecycle System. We understand that there are financial and training costs associated with these advanced technologies, but we recommend that the county continue to invest in these capabilities. In particular:
  - New nonresidential pipeline data needs to be incorporated into IPLS. This would be very useful for forecasting and analyzing with existing data.
  - IPLS should incorporate the COG forecast for regional household and employment data.
- b. These tools have become essential for county staff to get its jobs done. EQAC recommends that the county continue to expand the ability of the general public to access these tools, as appropriate and feasible. This includes the next iteration of My Neighborhood and regular updates of the county digital data holdings.
- c. EQAC is impressed with the ways the county has incorporated GIS technology to transform business practices. We recommend that this continue with a larger focus on strategic applications, such as a GIS Based Digital Comprehensive Plan. This would combine:
  1. The Integrated Parcel Lifecycle System as a base data capability.
  2. Three dimensional representations of the county.
  3. Future projections for planned changes and growth, as well as various alternatives.
  4. Environmental and Transportation models that illustrate local and countywide impacts to understand how micro and macro changes impact the county.

Such information is necessary as the county becomes more complex and densely developed.

## **3. Improve Transit Utilization**

EQAC recommends that the county focus on improving transit utilization through a systematic plan that includes multiple options within a community. For example, the Virginia Railway Express Burke Centre EZ Bus provides a convenient alternative to commuting to the Burke Centre VRE station. This can be combined with pedestrian improvements, more connector bus options and biking trails that together provide a diverse transportation plan.

## LIST OF REFERENCES

A Network of Livable Communities, Evaluating Travel Behavior Effects of Alternative Transportation and Community Designs for the National Capital Region; Chesapeake Bay Foundation and Environmental Defense Fund, 1996.

Chesapeake Bay Foundation and Environmental Defense Fund, May 1996- A Network of Livable Communities, May 1996.

Coalition for Smarter Growth, Blueprint for a Better Region--Policies for Implementing Smart Growth Solutions to Traffic Congestion in the D.C. Region  
[www.smartergrowth.net/vision/regions/region.html](http://www.smartergrowth.net/vision/regions/region.html)

Columbia Pike Transit Initiative--Columbia Pike Transit Alternatives Analysis, July 2005  
<http://www.piketransit.com/downloads/PTI-Final-Rpt-Cover.pdf>

E-mail from Catherine A. Chianese to Noel Kaplan, October 22, 2009.

Fairfax County, Virginia, Policy Plan: The Countywide Element of the Comprehensive Plan, 2007 Edition.

Fairfax County, Virginia, Tysons Corner Urban Center Element, Fairfax County Comprehensive Plan, 2007 Edition.

Fairfax County, Virginia, Upper Potomac Planning District (Reston-Herndon Suburban Center and Transit Station Area) Element of Comprehensive Plan, 2007 Edition, Amendment No. 2000-1 adopted May 21, 2001.

Fairfax County, Virginia, The Merrifield Suburban Center, 2007 Edition.

Fairfax Plan Monitoring, State of the Plan, An Evaluation of the Comprehensive Plan Activities between 1990-1995 with an Assessment of Impacts through 2010, May 1996

McLean Citizens Association, Resolution on the Dulles Corridor DEIS, August 14, 2002. Washington Regional Network for Livable Communities, Making the Most of Metro: Community Building Through Transit, undated.

Metropolitan Washington Council of Governments, "Fairfax County and the Washington Region: A Look at Economic and Demographic Characteristics," January 2006. Northern Virginia Transportation Commission, Northern Virginia Transit Funding Resource Guide, Revised Sept 2003.

Steven R. Suder, Memorandum to the TCC Technical Committee, Expanded Technical Committee, and Citizen Advisory Committee and attachment regarding Draft Land Use and Transportation Study, January 26, 2001.

Texas Transportation Institute, 2009 Urban Mobility Report, at:  
[http://mobility.tamu.edu/ums/congestion\\_data/tables/washington\\_dc.pdf](http://mobility.tamu.edu/ums/congestion_data/tables/washington_dc.pdf). The  
Washington Metropolitan Area Transit Authority Fact Sheet at:  
[www.wmata.com/about/metromattersfactsheet.pdf](http://www.wmata.com/about/metromattersfactsheet.pdf)

The Washington Metropolitan Area Transit Authority Fact Sheet at:  
[http://www.wmata.com/community\\_outreach/kids\\_zone/](http://www.wmata.com/community_outreach/kids_zone/)

Transportation Coordinating Council of Northern Virginia, Task Force on Land Use and  
Transportation, “The alternative transportation and land use activity strategies study.”  
March 28, 2001.

Virginia Department of Rail and Public Transportation and Washington Metropolitan  
Transit Authority, Draft Environmental Impact Statement and Proposed General Plans for  
the Dulles Corridor Rapid Transit Project, June 2002.

## **OTHERS**

Walkable Communities:  
[www.walkable.org/](http://www.walkable.org/)

Virginia Bicycling Federation:  
[www.vabike.org/](http://www.vabike.org/)