WELCOME TO GIS DAY
2010

Fairfax County, Virginia
The Environmental Review Process
Department of Housing and Community Development
Neighborhood Stabilization Program (NSP)

Spending distribution for the acquisition of foreclosed homes.

Fairfax County Department of Housing and Community Development

NSP Recipients and Funding Source:
- Silver Lining Initiative: 10 first time home buyers received downpayment assistance
- Christian Relief Service: 3 units acquired
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Forclosures as of March 2010
In an initiative to create more effective presentations with our 3-D models we have utilized the Virtual Fairfax Platform. After years of using 3-D models in the planning & zoning process we now have a universal platform to showcase and share our models.

The Virtual Fairfax Application allows the ability to utilize 3-D models through an internet application to promote community involvement.

The department now has a systematic method to utilize 3-D in the planning & zoning process, as well as, a standard platform for presentation.
GIS and Field Assessments Help Prioritize Natural Resource Management

Low Score

High Score
NGA
Geographic Distribution of Employees

NGA Employees by Office Location
Reston: 1259
Bethesda: 1388
Washington Navy Yard: 966

NGA Employee Distribution by County/City

Approximate NGA Office Location
Area Boundary
Employee Office Distribution (Counts)
Reston
Washington Navy Yard

NCE Office Location
State Boundary
County Boundary

Map prepared in September 2010 by the Fairfax County Department of Transportation Virginia/North State Plans Coordination Section. North American Datum 1983, US Survey Foot. Employee address data obtained from NCE.
Fire and Rescue Incidents: FY2010

Calls for Service either within Fairfax County/City or that Fairfax units responded to. Many calls outside the County were not mappable.

Total Calls for Service
1
- 1-4
- 5-24
- 25-49
- 50-99
- 100-162

Fire and Rescue Department uses the incidents each year as a basis for budgeting and long range planning. This year was particularly challenging because of the County's October 2009 reorganization of police and dispatch (CAD) systems from Allstate CAD to Intergraph CAD.

The analysis supports improvements in locating agencies and realizing and targeting areas for additional education in a relatively short time. If there are many calls for service in a particular area, then some priorities may actually need attention and the Department. Hot spot analysis points out the need for further investigation since the incidents are somewhat dispersed over a pattern of unusually high versus relatively stable data.

As expected, most of the emergency medical (EM) hotspots are near residential living facilities and large medical facilities. Public Service hotspots concentrate along commercial areas. Structure fire hot spots appear to be not as concentrated. Further examination is being devoted to an interpreted "hot spot" in the Annandale area.
Travel Time from Fire Stations

- Fire and/or Rescue Stations
  - within 2 minute travel
  - within 4 minute travel
  - within 8 minute travel
  - beyond 8 minute travel

A major component of measurable statistics for the Fire and Rescue Department is response time. One component of response time is travel time. Travel time is the time from acknowledging an emergency call at the unit level to arriving on scene.

National standards produced by the National Fire Protection Association (NFPA) designate specific resources (certified people and apparatus) to meet travel times on specified incident types. Frequent measures of travel time are 4 minutes and 8 minutes.

This map models 2, 4, and 8 minute travel times along streets using the best available data.

The 2 minute travel time is in planning stages as a benchmark for vertical communities. In high rises, measuring time only when arriving on scene does not give a true picture of when a fire floor or patient's side is reached. 2 minute travel time is under review with the proposed development in Tysons Corner.

Travel time is modeled as a function of street length, speed limits (posted or assumed), one way designations, and in special areas, time factors.

Not included in this model are weather factors, turn restrictions, vehicle limitations (including weight and height restrictions), traffic factors, or stoplights/signs.

Mutual aid fire stations' travel times are included when their travel time overlaps into Fairfax County. The complete travel time polygons are not shown because the model did not include all roads outside Fairfax, Arlington, and Alexandria.

Map reflects data for Computer Aided Dispatch effective November 2010 (centers as of September 2010).
Effect of New Roads and Fire Station at Belvoir North/Engineer Proving Grounds (EPG)

The latest section of Fairfax County Parkway connected I95, Franconia- Springfield Parkway, and Rolling Road in September 2010. This new road affects fire and rescue response in the area. Later in Fall 2010 a new fire station, 464, will open housing a truck, engine, and battalion chief. Together, these changes precipitated studies to review the placement of nearby fire and emergency medical units.
Halloween Weekend DUI/DWI Directed Patrol

Note: Crashes and arrests shown have occurred between 1800-0600 hours.

Legend
2010 Alcohol Crashes (Jan-Oct 18th)
2010 DWI Arrests (Jan-Oct 18th)
- 1 - 2
- 3 - 6
- 7 - 18
Historical Fall Alcohol Crashes ('03-'10)
- 1
- 2
- 3 - 6

Operations Support Bureau (OSB) | BHorrata | Oct 2010
The map shows the percent of time that 810B and 811B spent in each ESZ. Percents were calculated by taking the total count of AVL points that fell inside each ESZ and divided by the total AVL points.

Fairfax County Calls For Service Hot Spot Map For January 7th, 2009.

Density Map From the 01/07/2009 AVL Tracking of 810B and 811B

AVL density for 810B and 811B on January 7th, 2009 was calculated by GPS time read. This data was then projected on a base map of Fairfax County to view the routes taken and where most of the time was spent.

January 7th Calls For Service Hotspot Density

01/07/2009 AVL TRACKING of 810B and 811B
Environmental Mapping

Reston Master Plan Special Study

The purpose of this GIS map project is to provide to the Reston Master Plan Special Study Task Force the best available GIS information on existing environmental conditions inside the Reston-Herndon Suburban Center. The task force is comprised of Reston area residents and landowners, and will provide citizen guidance to the Department of Planning and Zoning and the Board of Supervisors on future development in the Reston area.

Two maps were prepared. The first map, Environmental Features, presents fifteen separate thematic elements. These elements were created using Arc Toolbox tools either by developing new shapes or by definition queries of existing GIS data. These thematic layers are portrayed in combination with several additional base map layers. Much care was taken to ensure a legible final map. The greatest difficulty was finding appropriate patterns and colors to allow an easy read of the thematic information.

The second map is Ground Cover Analysis. The land area was assigned to a five-category scheme suggested by the land use planners. The polygons were created by photo interpretation of the infrared aerial, introducing an analytic component to the project. Arc Toolbox tools were used extensively to achieve good fit on the coverages.

The final maps will be published both on-line and at a scale of 1 inch = 600 feet as paper plots.
Youth Crash Map
Injury and Fatal Crashes Involving Drivers 15-20 Years of Age
Includes Crashes Occurring Within Fairfax County from 1/1/2008 to 12/31/2009

Crash Map Facts

How many youth injury crashes have occurred in the County?
In 2008 and 2009 there were a total of 1958 youth injury crashes and 3 fatal crashes including 1 pedestrian. The total number of youth injury crashes has dropped 28% from 2006, and the number of fatal crashes by 83.3%.

When did these crashes occur?
The highest average of youth injury crashes occurred in the month of June, followed by the month of October, and then May. Daily averages were highest on Fridays, followed by Thursdays. Sunday had the least average number of crashes.

At what times did these crashes occur?
During 2008 and 2009 the highest number of crashes occurred during the same time blocks: 6-10 a.m., 12 noon, 2-6 p.m., and 8-10 p.m.
Daytime Apartment Burglary Series

March to July 2010
Prepared by EMS 8/5/10, FCPD
LAW ENFORCEMENT USE ONLY

McLean Cases - 3/9 (x3), 3/30 (x3), 4/13 & 5/25 (x3)
Lincoln Ln (x3), Lincoln Way (x2),
International Dr (x4),
and Palladium Ct. Major Roadway
nearby - 495 & 257.

Reston Cases - 6/22, 6/25 (x2) & 6/28 (x3)
5 Cases - Fox Hunt Ln (x3), Laurel
Tree Ln & Elm Tree Dr (x2). Major Roadway
nearby - 267.

Fair Oaks Cases - 6/8 (x2), 6/10 (x3),
& 7/29 (x3)
Summit Corner Dr (x2), Monument Hill
Way, Grand Commons Ave & Summit
Heights Way, Hunt Club Cir (x2),
and Fairfax Hills Way. Major Roadway
nearby - 63.

Franconia Cases - 3/11 (x2), 3/15 (x3),
3/18 (x2), 3/25 (x2), 4/13
Founders Hill Ct (x3), Highdale Ct,
Terrapin Pl, Marshall Ct, Ellingham Ct (x2),
Grange Ln & Coverdale Wy. Major Roadway
nearby - 95.
Residential Storm Drainage and Infiltration

Structures, channels and underground pipes carry stormwater to ponds, lakes, streams and rivers.

The stormwater management system is designed to control the quantity, quality, timing, and distribution of storm runoff.

All stormwater in the county eventually flows to the Occoquan and Potomac rivers and the Chesapeake Bay.
Park and Ride Demand Estimation
Caijun Lou, Senior Transportation Planner, Fairfax County Department of Transportation
Michael Demmon, GIS Coordinator, Fairfax County Department of Transportation

Abstract
The Fairfax County Park and Ride Study was a comprehensive analysis of existing park and ride customer origins and market dynamics leading to the development of a GIS-based demand estimation tool to analyze the demand for potential future lots in Fairfax County. Plate numbers were collected from all vehicles at 56 lots in and around Fairfax County and the associated addresses were geocoded to analyze customer origins. Coefficients were developed based on the population, households and work trips occurring in market areas around each lot. These values formed the basis for a dynamic GIS based tool that will assist the County in predicting usage at potential future park-and-ride lots.

Key Points
• Park and Ride demand varies greatly based on transit service provided.
• Spatial analysis of park and ride demand indicates that about 50% of demand at most lots comes from within 3-5 miles (driving distance).
• Median density market areas tend to be oval shaped about the axis of radial or circumferential roadways.
• Population, household and trip characteristics of surrounding areas can provide a general basis for estimating demand at future park and ride lots.
• Use of Network Analysis to calculate driving distance buffers is useful as it accounts for travel barriers (water crossings, freeways).

Acknowledgements
VDOT, Fairfax County Planning, and Fairfax County Transportation

Park and Ride Tool Demand Estimate Outlier

<table>
<thead>
<tr>
<th>Name</th>
<th>Estimated Demand</th>
<th>Population within Market Area</th>
<th>Households within Market Area</th>
<th>AM Work Trips within Market Area</th>
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</thead>
<tbody>
<tr>
<td>Reston/Herndon Park and Ride</td>
<td>123</td>
<td>518</td>
<td>1566</td>
<td>1240</td>
</tr>
<tr>
<td>Vienna/Fairfax GMU Metro</td>
<td>123</td>
<td>518</td>
<td>1566</td>
<td>1240</td>
</tr>
<tr>
<td>Reston Park and Ride</td>
<td>123</td>
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</tr>
</tbody>
</table>

Network Analysis

Busing starts at origin, distance calculated by adding cost to each segment along network path. The Network Analysis tool can be used to estimate travel time and cost based on the network path. This tool can provide the basis for estimating demand at future park and ride lots.
A GIS application was developed to catalog all completed Land Survey Branch projects graphically on a dedicated GIS Survey layer.

When the GIS Survey layer is accessed in the future, all completed projects are easily identified.

This historical knowledge of work done in the vicinity of a current project, and the ability to easily access all the information pertaining to the prior projects, allows an analyst to make informed decisions.

By avoiding repeat work, the Land Survey Branch saves the county both time and money.
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2009-10 South County APR Nominations

The map on the right provides links to summary information for all individual nominations to the Comprehensive Plan received as a part of the 2009-2010 South County Area Plans Review by Supervisors District and forwarded for further consideration by the Planning Commission as part of their screening process.

2009-2010 South County APR Task Force Meetings Schedule

Staff Report Book for Non-VDOT Review Items (June 16, 2010 Planning Commission Public Hearing)

Staff Report Book for Non-VDOT Review Items (July 14, 2010 Planning Commission Public Hearing)

For more information, please see the 2009-2010 South County Area Plans Review (APR) Guide, or call the Department of Planning and Zoning at (703) 324-1300.
Questions to be answered
- Where in the county have Comprehensive Plan amendments been proposed?
- What types of changes have been proposed?
- Were the proposed changes adopted?
- Have the same properties been nominated for changes multiple times?

Problems
- Current shapefiles are saved in different places and are inconsistent
  * Minimal attribute information
  * Not all changes are mapped
- Cannot accurately map and research past proposed Comprehensive Plan changes
- Inconsistent quality of data does not enable DPZ to provide this data to other agencies for research purposes

Solution
- Create new geodatabases, providing a central location for proposed Comprehensive Plan amendments
  * Verify Comprehensive Plan amendments currently existing in shapefiles
  * Create shapes for Comprehensive Plan amendments that could not be found in existing shapefiles
- Add attribute information to shapes, tracking amendment number, type of Comprehensive Plan amendment, outcome of proposed change, and nature of change
- Create database tables for Comprehensive Plan changes that are not able to be mapped (i.e. countywide policy changes)

Outcome and Applications
- Ability to accurately map and assess past Comprehensive Plan amendments
  * Improved data reliability
  * Can obtain statistics about Comprehensive Plan amendments (i.e. percentage of amendments that are adopted, number and location of parcels that have had multiple amendments proposed, distribution of proposed amendments across supervisor districts)
- Better platform for county staff to do research on properties and past Comprehensive Plan amendments
- Organized geodatabase is established that can be easily updated with future Comprehensive Plan amendments
- Process will be repeated for Comprehensive Plan amendments in South County
2010 Watershed Boundaries

- This is a comparison between the 2009 and 2010 watersheds layer.
- The new 2010 watersheds layer is based off the new 2 ft. contours layer.
- As you can see, the 2010 watershed boundaries are more precise and accurate.
Option A Summary

- No new building additions
- Re-assigns 22 areas from one school to another within the region to balance enrollments.
- Impacts approximately 2,600 students by the 2016 school year
- No new Advanced Academic Program (AAP) centers
- Retains a 15-room modular addition at Clifton Powell Elementary
- Re-assigns students from Clifton Elementary to Union Mill, Fairview, and Sangster elementary schools; Clifton students re-assigned to Sangster would attend the Sangster AAP center
- Re-assigns Colin Powell and Eagle View AAP students from the Greenbrier West AAP Center to the Willow Springs AAP Center