



GIS Excellence Awards



November 21, 2013

Ceremony Program



CONTENTS

- I. Agenda
- II. Foreword
- III. Awards Category Descriptions
- IV. Complete List of Excellence Awards Entries
- V. Awardees by Category with Project Description



AGENDA

I. Opening Introduction

Gordon Jarratt

Enterprise Systems Division Director, Department of Information Technology

2. Featured Speakers

Sharon Bulova

Chairman of the Board of Supervisors, County of Fairfax Virginia

Dave Molchany

Deputy County Executive

Tom Conry

GIS & Mapping Services Branch Manager

3. Presentation of Awards

Sharon Bulova

Dave Molchany

Gordon Jarratt

Tom Conry

4. Closing



GIS Excellence Awards

November 21st, 2013

The use of GIS technologies in the County has led to the work that you see honored here at the GIS Excellence Awards and posted in the Awards Gallery.

As part of the GIS Day celebrations, the GIS Excellence Awards are given annually for outstanding uses of GIS technology by Fairfax County employees and agencies. The awards were created to recognize and celebrate those County employees and agencies that are effectively and innovatively using GIS technology. This year, almost 50 submissions were received for the seven categories of recognition.

The awards have two categories recognizing individual and/or team accomplishments and five categories recognizing agency accomplishments. The following page lists the categories and their descriptions.

The awards were determined by a judging panel which included representatives from the George Mason University Department of Geography, the Northern Virginia Community College GIS Certificate Program, and Loudoun County's Office of Mapping and Geographic Information.



2013 GIS Excellence Award Categories

Individual/Team Categories

FIRST, SECOND, AND THIRD PLACE AWARDS FOR EACH CATEGORY

Best GIS Cartographic Product/Presentation

This award is intended to showcase the power of GIS tools in creating accurate, instructive, and visually-pleasing maps. Criteria used to evaluate the entries include:

- clarity of purpose and intent
- the use of GIS tools, methods, and operations to go beyond basic cartography
- visual balance and appeal
- inclusion of necessary map elements and conventions
- quality control for typos or other errors

Best Use of GIS for Analysis

This award is intended to showcase the power of GIS tools in undertaking sophisticated spatial analyses that aid County operations and answer significant questions. Criteria used to evaluate the entries include:

- complexity of analysis; use of tools, scripting, model-builder, etc.
- ingenuity/creativity/originality of GIS methods used
- project benefits to a team or department
- effective demonstration of the information and insight gained (e.g., diagrams, maps, presentations, report, text)

Agency Categories

ONE AWARD PER CATEGORY

Best Use of GIS on the Web

This award is presented to the agency that best demonstrates GIS interactivity, maps, and/or data on the internet or County intranet. Criteria used to evaluate the entries include:

- effectiveness of web product in meeting stated purpose
- benefit to the public and/or agency
- demonstration of advanced GIS techniques, including complex data analysis, customization or programming
- incorporation of web product into business practices



Best Use of GIS for Public Outreach

This award is presented to the agency that best utilizes GIS to serve the public with map documents, customer service operations, press relations, or public events. Criteria used to evaluate the entries include:

- effectiveness of the GIS work to the outreach effort
- degree to which a difficult message was clearly communicated
- complexity of cartography, data analysis, customization and/or programming
- adaptability to future expansion/modification
- contribution of GIS as a planning tool for the outreach effort

Most Significant Data Contributor

This award is presented to the agency that has created or refined the most significant spatial data for the County. Criteria used to evaluate the entries include:

- significance of the data for the county and/or agency
- importance to agency's long-term business processes
- level of effort required to create/maintain the data
- sophistication of process to create/maintain the data

Best GIS Integration or Application Development

This award is presented to the agency that has integrated GIS into their operations to the greatest degree and/or has created a significant GIS software application. Criteria used to evaluate the entries include:

- effectiveness of the application/integration in meeting its stated goal
- demonstration of a labor/time savings for staff or the public
- ingenuity/creativity/originality of GIS methods utilized
- ease of use/intuitiveness of the integration/application
- ability to gain insights into data/project/issue as a result of the integration/application

Most Significant Progress

This award is presented to the agency that has demonstrated the most progress in their use of GIS over the past year. Criteria used to evaluate the entries include:

- increase of use of GIS in the agency, either directly or through agency-generated GIS products
- magnitude of the change in GIS use by the agency
- increased agency efficiency as a result of GIS
- demonstration of significant effort to train staff in GIS
- potential for further GIS-related growth



List of All Excellence Award Entries

GIS Cartographic Product/Presentation

Virtual Representation of the 18th Century Port Town of Colchester Virginia

- Marion Constante; FCPA

Fairfax County Zoning Districts - Daniel White; DPZ

Migration to and from the Fairfax-Falls Church Area - Paul Maliszewski; NCS

Fairfax County Elementary School Students who Speak a Language Other than English at Home - Komail Khaja; NCS

AT&T Originating Cell Site Activations - Jessica LeBlanc; FCPD-CAU

Riverbend Park Tree Walk Map - Jay Rauschenbach; FCPA

Rescue: 8 Minute Travel Time - Katherine (Keg) Good; FRD

Stormwater Pipe Diameter – Chip Galloway; DPWES-MSMD

i-Tree Hydro Analysis for the Difficult Run Watershed

- Frank Finch, Nick Drunasky, Joan Allen, Mike Knapp; DPWES-UFM

How Far Do My Honeybees Roam? And Why Does This Matter? – Katherine (Keg) Good; FRD

Visualizing Population & Employment Growth for Fire Station Symposium

- Kristen Hushour; DPZ

Lee District Park – Buddy Rose; FCPA

George Mason Family Houses – Buddy Rose; FCPA

Braddock District Roadway Ownership – Chip Galloway; DPWES – MSMD

Evolution of Fire Engine and Medic First Due Maps

- Katherine (Keg) Good, Brian Connor McMillan, Sarah Joliat; FRD

Motorcycle Crash Map - Brandi Horita; FCPD-OSB

Use of GIS for Analysis

Constructing a Web-Based Mapping Application for Police to Analyze the Efficiency of Patrolling – Jeffrey Gallagher; FCPD

Counts of 2013 Assaults with a Weapon Event Types within Proximity to Police Stations

- Jeffrey Gallagher; FCPD

Analysis of New Property Manager PODS - Diane Jenkins; FCHCD

Safety Officer Staffing Analysis

- Brian Connor McMillan, Eric K. Fisher, Keg Good, Maura Ardike; FRD

Health Center Program New Access Point

- Adrian Joye, Chris Stevens, Rosalyn Foroobar, Nyrma Hernandez; FCHD

Rec PAC – Buddy Rose, Nick Duray; FCPA



2013 DWI Enforcement Planning: High-Impact Operations – Brandi Horita; FCPD-OSB
Migration to and from the Fairfax-Falls Church Area – Paul Maliszewski; NCS
Fairfax County Elementary School Students who Speak a Language Other than English at Home
- Komial Khaja; NCS
Rescue: 8 Minute Travel Time – Katherine (Keg) Good; FRD

Use of GIS on the Web

Bike Fairfax and Trail Buddy Interactive Maps

- Fairfax County Park Authority, Department of Transportation

The Department of Planning and Zoning Public Website – Department of Planning and Zoning

Constructing a Web-Based Mapping Application for Police to Analyze the Efficiency of Patrolling

- Fairfax County Police Department

Police Incidents Displaying a High Rate of Canine (K9) Unit Response

- Operations Service Branch of the Fairfax County Police Department

Use of GIS for Public Outreach

Fairfax Center Area Existing Conditions Report and Study Website

- Department of Planning and Zoning

Fairfax Trail Buddy – Fairfax County Park Authority

County Dialogue on Transportation Public Outreach Maps –Department of Transportation

12 Months of Distracted Driving in Fairfax County, VA

- Operations Service Branch of the Fairfax County Police Department

Fairfax County Data Visualization and Infographic Gallery, Fairfax County Elementary School Students who Speak a Language Other than English at Home

- Department of Neighborhood and Community Services

Significant Data Contributor

Bike Fairfax & Unfunded Projects SDE Layers – Department of Transportation

Signalized Traffic Intersections – Operations Service Branch of the Fairfax County Police Department



[Fairfax Trail Buddy](#) – Fairfax County Park Authority

[GIS Polling Place Location Project](#) – Office of Elections

[7-Class Landcover Classification](#)

- Urban Forest Management Division of the Department of Public Works and Environmental Services

[FRD GIS Data Project - FCPS Exit Door Numbers](#) – Fire and Rescue Department

GIS Integration or Application Development

[Plan & Profile](#)

- Wastewater Management Branch of the Department of Public Works and Environmental Services

[Fairfax County BOS Property Viewer](#) – Facility Management Department

[Fairfax Trail Buddy](#) – Fairfax County Park Authority

Significant Progress

[Department of Transportation](#)

[Fairfax County Park Authority](#)

[Department of Planning and Zoning](#)



Best GIS Cartographic Product/Presentation *Individual/Team Awardees*

Third Place

Virtual Representation of the 18th Century Port Town of Colchester Virginia

Marion Constante - Fairfax County Park Authority

The virtual 3-D representation of the 18th century port town of Colchester Virginia is an ongoing project of FCPA's Cultural Resources Management and Protection Section of the Colchester Archaeology Research Team (CART) as a way to use archaeological and historical data to recreate the colonial town and surrounding structures found within Old Colchester Park and Preserve on the Occoquan River. The submitted map shows a unique oblique aerial view of the buildings and street layout of what Colchester likely looked like over 200 years go. Each structure built for the project was spatially determined from either features recorded during excavation or from archival research. As an ongoing data driven project, Virtual Colchester will continue to expand as more research is conducted within the park.

Second Place

i-Tree Hydro Analysis for the Difficult Run Watershed

Frank Finch, Nick Drunasky, Joan Allen, Mike Knapp - Urban Forest Management Division of the Department of Public Works and Environmental Services

i-Tree Hydro is a USDA Forest Service model that simulates the effects of changes in urban tree cover and impervious surfaces on hourly stream flows and water quality. GIS data is used to generate several of the critical inputs required for Hydro: County watershed data, USGS stream gage data, and a watershed's digital elevation model (DEM). To derive estimates of tree canopy and other land cover types required by i-Tree Hydro, Urban Forestry also acquired Worldview-2 satellite imagery to classify seven land cover classes. With these inputs, i-Tree Hydro was able to model tree and impervious cover changes within watersheds and to quantify the resulting effects on runoff and water quality. A well designed poster with a series of maps was able to effectively demonstrate the required inputs and outputs of the model.

First Place

Migration to and from the Fairfax-Falls Church Area

Paul Maliszewski - Neighborhood and Community Services

The purpose of this project was to conduct an in-depth analysis on migration to and from the Fairfax-Falls Church Area. Using a well-designed series of maps, pictograms and charts, this poster effectively and simply characterizes migrant data from the American Community Survey showing the characteristics of migrants including age, sex, employment status, income, educational attainment, and language spoken. The results from this analysis will aid in population forecasting, inform and guide planning for various Fairfax County Human Services programs and initiatives, help decision-makers leverage resources and align policies to the county's changing needs, and let County residents better understand Fairfax's population.



Best Use of GIS for Analysis

Individual/Team Awardees

Third Place

Fairfax County Elementary School Students who Speak a Language Other than English at Home

Komail Khaja – Department of Neighborhood and Community Services

In the Fairfax-Falls Church Area, the Census Bureau estimates that 373,215 persons (or 34% of the area's total population) speak a language other than English at home, and 2012 FCPS student registration data show that nearly half of the 96,483 students enrolled in elementary school spoke one of over 170 different languages other than English at home. Using FCPS and the U.S. Census Bureau data, multiple versions of joining and spatial joining were used to synthesize datasets and layers to create a series of maps illustrating the geographic dispersion of the most frequently spoken languages other than English among FCPS elementary school students. The results of this analysis may be a benefit to any organization or program that needs to be correlated with concentration of a particular language: schools, recreation groups, human service regions, faith-based and community-based organizations, nonprofits, Office of Elections, and other branches of human services.

Second Place

Health Center Program New Access Point

Adrian Joye, Chris Stevens, Rosalyn Foroobar, Nyrma Hernandez -Fairfax County Health Department

In 2012, the Fairfax County Health Department sought to identify areas of the county that were medically underserved by conducting a comprehensive geographic analysis of key health indicators. These indicators include access to primary care, maternal and child health outcomes, as well as socioeconomic characteristics. This effort succeeded in having parts of the Lee/Mount Vernon area designated as a Governor's Exceptional Medically Underserved Population (EMUP). This work progressed in 2013 with the FCHD partnering to secure funding for operational support of a New Access Point (NAP) delivery site to provide comprehensive primary and preventive medical health care services to underserved communities and vulnerable populations. In addition to geocoding and analyzing vital statistic data provided by the Virginia Department of Health, a GIS based decision-support tool was used for service area analyses. Using the geographic analysis, a grant of \$769,000 for a NAP operation was secured. It is expected that the NAP will serve almost 5,000 individuals through 25,000 health care visits by the end of 2015. The use of GIS was an integral part of this successful effort to leverage valuable resources.



First Place

Constructing a Web-Based Mapping Application for Police to Analyze the Efficiency of Patrolling

Jeffrey Gallagher - Fairfax County Police Department

Using data from the Automated Vehicle Locators (AVLs) that are installed in patrol cars, this project attempts to provide a tool for analyzing the efficiency of police patrol routes. Using a custom GIS geoprocessing model, the tool is able to convert the patrol car's GPS "bread crumbs" to create a choroplethic map that the normalized percentage of time a vehicle spends in a Patrol area. Along with density and hotspot analysis maps, this geographic data provides Station Commanders the ability to quickly determine if any changes to patrolling are warranted within their station to increase coverage. Future plans are to put this type of analysis in a GIS web application to make an easily deployable and simple to use tool for non-GIS professionals.

Best Use of GIS for Public Outreach Agency Winner

Fairfax Trail Buddy

Fairfax County Park Authority

Buddy Rose, Liz Cronauer, Jeffrey Snoddy, Sandy Stallman, Judy Pedersen, Lynne Johnson

The Fairfax Trail Buddy Application was developed to provide a better way to respond and reach out to citizens who have questions about trails in Fairfax County. The project's initial goal was to give citizens a tool that they could use to plan trail trips as well as act as a virtual map while on the trails. The application enables users to know their exact location on the trail which they can also communicate in an emergency. With a tap of the finger the user is able to get real time GPS coordinates to relay to the responders. Fairfax Trail Buddy can also provide the park name and address, the width and surface type of trails, and park features such as restrooms and parking lots.

In addition to the public outreach that occurred in the application development, there was extensive outreach for trail data. FCPA collected data from all trail providers in Fairfax County, including National Park Service, The Bureau of Land Management, City of Fairfax, Town of Herndon, Town of Vienna, Fairfax County Department of Public Works, Fairfax County Department of Transportation, Virginia Department of Conservation and Recreation, Virginia State Parks, U.S. Fish and Wildlife Service, Reston Association, Burke Conservatory, Northern Virginia Regional Park Authority and George Mason University. When the application was completed, we reached out to these agencies to promote its use among their constituents.

The Park Authority Public Information Office created a specific webpage on the Park Authority website and coordinated with the County Public Information Office to include it on the County website front page. A press release was created and widely distributed among a variety of media outlets. Fairfax Trail Buddy also provides access to the Bike Fairfax Interactive Bike Map, which highlights the most desirable on-road and off-road bike routes for recreational and commuter bicyclists. To date there have been close to 13,000 visits to the website in less than six months. The application website seeks



continual public input to improve its features and usability over time. Additional attributes to the data will be added over time as the application evolves to further enhance its value to the public.

Fairfax Trail Buddy was a feature of the 2013 National Trails Day events in Fairfax County on June 3, 2013. Fairfax Trail Buddy flyers and cards were created to inform the public of its availability and value and are distributed at Park Authority public meetings and events.

Best Use of GIS on the Web Agency Winner

The Department of Planning and Zoning Map Portal/DPZ Public Website

Department of Planning and Zoning

Greg Chase, Daniel White, Allison Clark, Harry Rado

Through the use of static and interactive GIS maps throughout its website, DPZ strives to provide easy access to important, relevant, and timely information and services. By joining geospatial technology and web design on the internet, DPZ is able to better serve the public, development community, staff, county officials and others.

The DPZ Map Portal Page brings together DPZ-developed maps from diverse sources to a dedicated page with user friendly access and navigation in a one-stop shop. The Portal Page showcases DPZ-developed maps created by using GIS as well as links to county-wide GIS resources. The Fairfax County Planning and Zoning Viewer, an interactive map, provides information about current zoning applications and associated zoning layers for areas within Fairfax County, Virginia.

A major focal point of the DPZ Maps Portal is the Zoning District Analyzer Map, an interactive map of existing zoning districts within Fairfax County. Users of this map have the ability to toggle on/off each zoning district within Fairfax County. The site also provides access to the high-resolution Fairfax County Comprehensive Land Use Map that facilitates detailed review of the map online. A fully interactive version of the Fairfax County Comprehensive Land Use Plan is expected to be released shortly.



Most Significant Data Contributor Agency Winner

7-Class Landcover Classification

Urban Forest Management Division of the Department of Public Works and Environmental Services

Michael Knapp, Frank Finch, Nick Drunasky

In 2012, the Urban Forest Management Division of DPWES entered into a data exchange agreement with Casey Trees Foundation in order to obtain an updated remote sensing analysis of the Fairfax County's tree canopy along with other landcover types. Casey Trees had contracted with the University of Vermont Spatial Analysis Laboratory (UVSAL) to produce a regional tree canopy analysis and was searching for high-quality satellite imagery for Northern Virginia. In exchange for the County's 2011 high resolution satellite imagery, Casey Trees was given rights to the resulting classification data; in return, Fairfax County received a highly-accurate landcover classification free of charge.

This new classification delineates (1) tree canopy, (2) shrub/grass, (3) roadways, (4) buildings, (5) waterways, (6) impervious surfaces, and (7) bare soil. The remote sensing techniques employed by UVSAL in the classification are considered state of the art. The 2011 imagery used in this classification has 0.46 centimeter spatial resolution which is 37 times the ground sampling distance of the imagery used in 2003, and includes eight spectral bands, three of which are included to improve vegetation analyses. In addition to satellite imagery, LIDAR data was used to distinguish trees from other vegetation such as shrubs and grass. The new landcover classification indicates that approximately 53% of the county's landmass is covered by tree canopy. This percentage is significantly higher than previously detected. An accuracy assessment conducted by GIS/UFMD revealed that a user of the classification would find that 94.0% of the time, a visit to an area mapped as tree canopy would prove to be truly of that class.

Example of Data Application: The countywide tree canopy data was broken down into all 30 major watersheds and provides a theoretical canopy gain for each watershed which will prove useful in setting meaningful watershed-based canopy goals as recommended in the County's Tree Action Plan. UFMD, DIT-GIS and Stormwater staff are currently using the landcover data, digital elevation models, and iTree Hydro software to model the impacts of tree canopy gain/loss on water quality and stream flow. This modeling may prove useful in developing future land use policies and in setting canopy goals in support of the MS4 Permit and Chesapeake Bay TMDL regulatory requirements.

Potential Data Users: The classification data is expected to prove useful to multiple agencies involved with land use decision making, natural resource management, land development review, and property management.



Best GIS Integration or Application Development Agency Winner

Plan & Profile

Waste Water Management Division of the Department of Public Works and Environmental Services

Edward Langdon, Keith Chilton, Leon Lyles, Bo Baik, Charles Gerlach, Rita Noorzad, Mark Leonard, Rhonda Whitney, Gilbert Osei-Kwadwo, Lana Tran

Fairfax County Wastewater Management is responsible for one of the Country's largest Sanitary Sewer Collection systems (59 pumping stations, one treatment plant, and over 3,200 miles of pipe). When GIS was first conceived as a viable option of asset management in the early 1990's, one of the most eagerly anticipated functions was the ability to retrieve as-built (depictions of existing infrastructure) drawings within the GIS interface. As-built drawings of the sewage collection system are the backbone to most operations in WWM.

Since its inception in the 1930's, this department has maintained an expanding library of as-built documents that now exceeds 30,000 drawings. These drawings were created on a wide range of materials that include linen, paper, vellum and mylar. Because the scope of converting over 30,000 drawings to a digital format has competed with other needs of the department, implementation of this project was long delayed. This project was initiated in 2009, and the conversion process was finally implemented by WWM staff in 2012. Converting the drawings to digital format and writing & deployment of the application was then accomplished in eight months.

The application has significantly benefitted the department, other County agencies, and the public:

- County GIS users may now obtain drawings without assistance from WWM staff. This has resulted in fewer requests for printing and a substantial reduction of labor required for document retrieval, scanning and printing services.
- Printing (and associated costs & labor) has been greatly reduced since drawings can be e-mailed to the public – further supporting the department's "Green" initiatives.
- Preserves the information on the drawings in digital form to mitigate the potential loss of the original documents due to fire or material deterioration.
- Increased GIS staff's efficiency for QC work.
- Increased efficiency to staff in the design and/or review process for proposed sewer projects by providing instant access to existing sewer system data.
- Has created a technical environment that will make providing drawings to the public by use of a web application possible.
- Eventual retirement of the micro-film based plan retrieval system and the cost savings from the discontinued use and maintenance of the film system's supporting hardware.



Everything from future system expansion, modeling the network for capacity, and maintenance of the system utilize this information. The investment in time and technology to complete this project has shown immediate rewards and will likely realize long term savings exceeding millions of dollars.

Most Significant Progress Agency Winner

Department of Transportation

Vanessa Aguayo, Tom Wampler, Adam Lind

The Department of Transportation launched Bike Fairfax, a new interactive bike map, this past year, marking its first foray into deploying interactive GIS web applications. Bike Fairfax launched in May of 2013 to give all users an alternate way to have access to bike route information throughout the County.

Prior to Bike Fairfax, DOT had a static PDF version of the printed map broken up in quadrants, and users had the ability to click on one of the 12 quadrants of the map. Once within the selected quadrant, users can scroll within the PDF map in a typical manner. Bike Fairfax, however, not only gives users a friendly interface similar to that of Google Maps, but also has the ability to look up addresses, measure distances and print among other great features. For those who are familiar with the printed map, the Bike Fairfax color scheme for routing information is kept the same, making it easy to distinguish between preferred routes and trails. In cooperation with the Fairfax Park Authority, Bike Fairfax also includes information from Trail Buddy, which has additional trail information within the County park system, giving the user a complete bike network in one location. Another great feature of Bike Fairfax is its mobile phone application, which users can download and use on the go.

DOT staff see great potential in Bike Fairfax as a one-stop shop for all biking related information. Staff is currently working on gathering locations for bike racks, which would include relevant information such as secure and unsecure parking, covers, and total capacity. Staff continues to work on Bike Fairfax, adding features that the biking community will find useful.