2014 VACo Achievement Awards

Deadline: June 2, 2014

Application Form

All applications must include the following information. Separate applications must be submitted for each eligible program. **Deadline: June 2, 2014.**

Program Information

Locality: County of Roanoke

Program Title: "GIS Maps and Apps Gallery"

Program Category: Information Technology

Contact Information

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Signature of county administrator or chief administrative officer

Name: B. Clayton Goodman, III

Title: County Administrator

Signature: B. Clayton Goodman, III

Short Overview

Roanoke County launched a new Geographical Information System (GIS) website that contains a new generation of applications that allow greater and easier access to the County's mapping, tax parcel, zoning, and government services data. The website is powered by geo-location technology to facilitate streamlined access to data within a familiar context. The applications were developed with an emphasis on being user-friendly, intuitive and conveniently accessible to promote citizen engagement, increasing transparency and helps foster informed decision making. The applications were intentionally designed and developed to be able to access the information from any device at any location at any time. The applications are largely designed with a single focus and common interface, which creates a comfortable environment that doesn't require instruction or training. We developed a solution that is easily maintained in-house while taking advantage of other commercial technologies. As a result, the new apps allow users to explore the County from every angle using Esri's ArcGIS for Server and ArcGIS Online features, combined with Google StreetView and Pictometry. Already this suite of applications has been used by Fire & Rescue to help save the lives of stranded hikers, produced a net positive gain of $65,618 for the Real Estate Valuation Department, and has triggered interest in Economic Development throughout the County. Additionally, the Stormwater Department has saved 350+ personnel hours by collecting field data with mobile GIS apps that offer convenient access to data that has historically been available only to a subset of users via desktop solutions.

Summary

Roanoke County launched a new Geographical Information System (GIS) website that contains a new generation of applications that allow greater and easier access to the County's mapping, tax parcel, zoning, and government services data. The goal was to replace a legacy system that was no longer supported. The old site was slow, built on old technologies, difficult to navigate, offered limited data and was not mobile accessible. We resolved the problem by building a platform to share geographic information using simple and easy to use single focused applications. The applications were developed with an emphasis on being user-friendly, intuitive and conveniently accessible to promote citizen engagement, increase transparency and help foster informed decision making. The applications were intentionally designed and developed to be able to access the information from any device at any location at any time. A professional application was also developed for the more advanced user that requires more robust tools to perform their job duties and make smarter decisions. Finally, each application was developed using modern technology therefore providing the capability to maintain all applications in-house.

Implementation

Mobile technologies continue to drive user expectations for data services and data sharing. Our new GIS apps combine the power of geographic information systems and mobile-enabled technologies to deliver data within a familiar spatial context. By combining off-the-shelf functionality with custom development to create a suite of interlinked, yet stand-alone applications that are mobile accessible, cross-platform compatible and user-friendly, the County can now share data with citizens like never before. While many local governments have access to free, map-based application templates through industry leader Esri, the County's innovative approach used these templates as a starting point to enhance and customize GIS services for a more tailored experience for end users. Generic searches were replaced

with interactive and intelligent searches and user interfaces have also been customized to create an improved mobile experience. Related data presentation was also expanded to provide more topic-specific information in single-focused apps for government services, voter information, and tax parcel data. To anchor the system, the County developed OneView, a robust and comprehensive GIS application based on HTML5/JavaScript. This innovative approach allowed us to build a mobile-friendly application framework from the ground up. Asynchronous Module Definition (AMD) and Model View View Model (MVVM) design patterns were leveraged to create a sustainable, yet scalable system, with Knockout JS and Twitter Bootstrap libraries incorporated to provide a more seamless, interactive, and social user experience. The County invested in custom development to offer even more creative ways to deliver data to users, including an application that allows users to view the County's Pictometry data (oblique aerial imagery) adjacent to Google Maps and Google StreetView, providing a "Tri-View" interface to virtually explore the County without leaving the home or office. A custom Property Report was also developed to allow users to create custom reports that include the data and content they choose. The rich interaction of the Property Report is a feature not found in other localities, with check box selections to indicate which data categories will be included and several optional, interactive map that can be manipulated independently for the final report. Among the most innovative aspects of the implementation, however, is the degree to which the suite of applications are seamlessly interlinked. Users can click dynamically embedded links that launch another applications or reports based on the selected property or location.

Cost Savings

The project was under budget and cost approximately $83,000 to implement. It was a team effort accumulating a total of 3,849.75 staff hours over more than one year. The new website helps mitigate administrative overhead while maximizing data delivery and access for both citizens and staff. Our

applications make parcel and property data quickly accessible and data exploration by staff and citizens is further enhanced by economic and demographic information offered through GeoEnrichment reports. Staff and citizens can get data quickly, make smarter choices, and develop new solutions faster. The new website is being used by departments to improve operational efficiency and customer service in many creative ways.

Outcomes

In today's economic climate, localities are tasked with doing more with less staff and declining budgets. Our new GIS system helps to address this constraint by mitigating administrative overhead while maximizing data delivery and access for both citizens and staff. Efficiencies were gained through consolidation of all GIS staff into one department which allowed us to develop a County-wide strategic vision for an enterprise level GIS system that serves all departments and citizens. Questions that had previously required input from technical staff can now be tackled independently and quickly, creating efficiencies for staff and public users alike. Our applications make parcel and property data quickly accessible, with quality printed products available for both citizens and staff. Staff and citizens can get data quickly, make smarter choices, and develop new solutions faster. The new website is being used by departments to improve operational efficiency and customer service in many creative ways. The following are a few examples:

- Community Development provides front counter support for building permits, inspections, address assignments and other services. Through use of the new apps, efficiencies have increased due to faster customer service and a reduction in extended phone support for the old website.
- Planning and Zoning uses it to help employees and citizens shape our community through efficient land use and planning and enforcing zoning ordinances. New data models also assist in

vital projects such as community planning areas, transportation corridors, and other special study areas.

• Real Estate Valuation uses it to improve the conformity, volume, and accuracy of annual real estate assessments. Appraisers can establish market values of properties by quickly evaluating sales data from the surrounding area. Staff can now view properties previously blocked by terrain, security gates or other obstacles. In addition, GIS technology allows appraisers to see new unpermitted construction behind dwellings, which often increases a property's assessed value.

• Public safety agencies have also adopted the GIS applications to make our community a safer place. Fire & Rescue staff has used it to rescue lost and injured hikers on the nearby Appalachian Trail and the Police Department has used GIS Services to map traffic and crime data as part of the DDACTS (Data-Driven Approach to Crime and Traffic Safety) program, resulting in an overall decrease in crime and crashes in targeted areas.

The projected usage rate for the new website is more than 951 page views per day. The legacy website averaged 951 page views per day. We project the total page views will increase since the new website is more user friendly and accessible. We took a sample calculation from April 24, 2014 thru April 30 and found a total of 1,112 page views per day. At this rate, we will experience 404,768 page views per year for an increase of 58,604 page views per year. This is a public website so anyone with an internet connection can access it.

Conclusion

The new GIS system has been used to help save lives on the Appalachian Trail, rescue lost hikers, work more efficiently using electronic mobile data collection and provide better service to our internal and external customers. Now, we have a platform to deliver new services and products to support the

needs of our citizen and business users. Education and outreach will continue to be a priority with this project and we will continue to provide live demonstrations and on-site training to our customers such as realtors, developers, appraisers, Civic Club Presidents, Business Groups and many more. These are just the first steps for GIS services in Roanoke County. We are planning on implementing more citizen-focused, GIS-enabled tools and applications in the future.

Appendices

I. Maps and Apps Gallery

II. TaxView

III. VoterView

IV. GovView

V. OneView

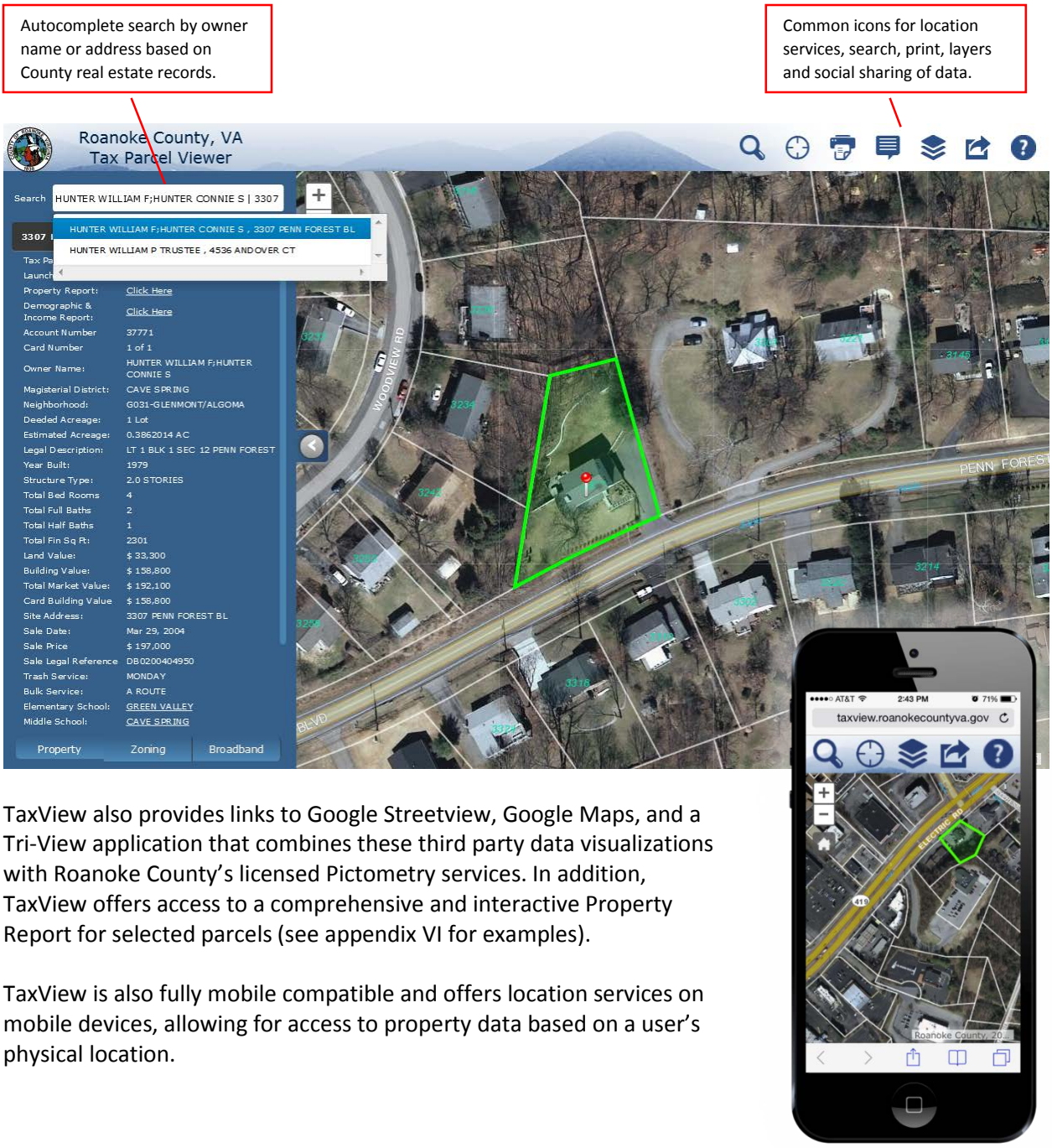
VI. Property Report

I. **Maps and Apps Gallery** http://gis.roanokecountyva.gov

A branded website dedicated to hosting the various GIS applications. Site users can sort by categories, submit feedback to staff, or request additional functionality. This site is mobile-ready.

II. **TaxView** http://taxview.roanokecountyva.gov/TaxView/

TaxView is based on citizen need to find accurate and comprehensive map-based information about property, including real estate valuation, magisterial districts, structure, government services, school districts and Roanoke County Zoning data. TaxView also offers users the ability to share results with others via social media and e-mail.

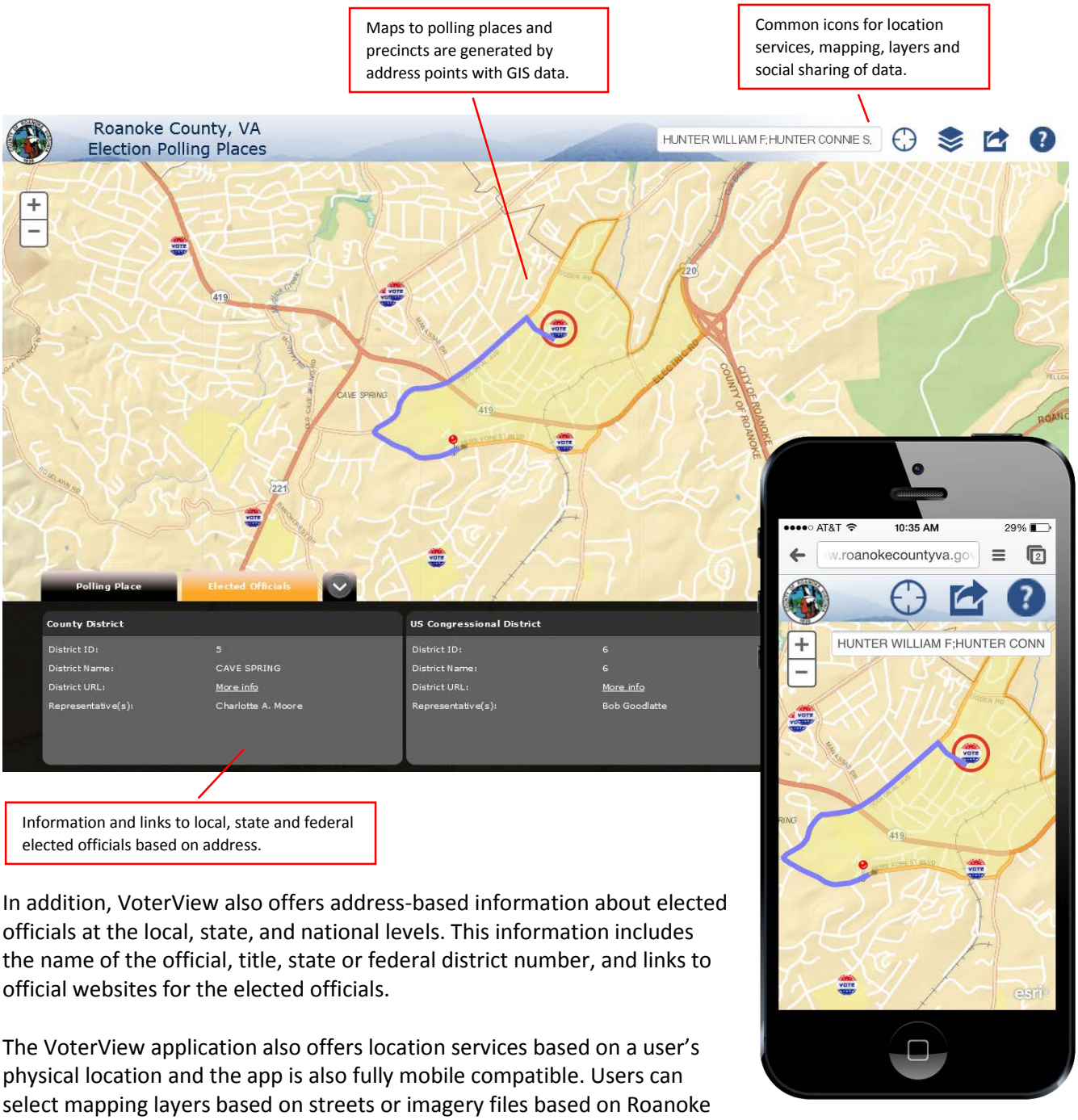


TaxView also provides links to Google Streetview, Google Maps, and a Tri-View application that combines these third party data visualizations with Roanoke County's licensed Pictometry services. In addition, TaxView offers access to a comprehensive and interactive Property Report for selected parcels (see appendix VI for examples).

TaxView is also fully mobile compatible and offers location services on mobile devices, allowing for access to property data based on a user's physical location.

III. **VoterView** http://voterview.roanokecountyva.gov/VoterView/

VoterView provides residents with voter-related information to enhance civic engagement. The app features autocomplete search function based on name or address, which returns a map of the user's voting precinct and polling place within the precinct, along with information about voter registration deadlines and a link to Roanoke County's Registrar.



In addition, VoterView also offers address-based information about elected officials at the local, state, and national levels. This information includes the name of the official, title, state or federal district number, and links to official websites for the elected officials.

The VoterView application also offers location services based on a user's physical location and the app is also fully mobile compatible. Users can select mapping layers based on streets or imagery files based on Roanoke County's GIS data.

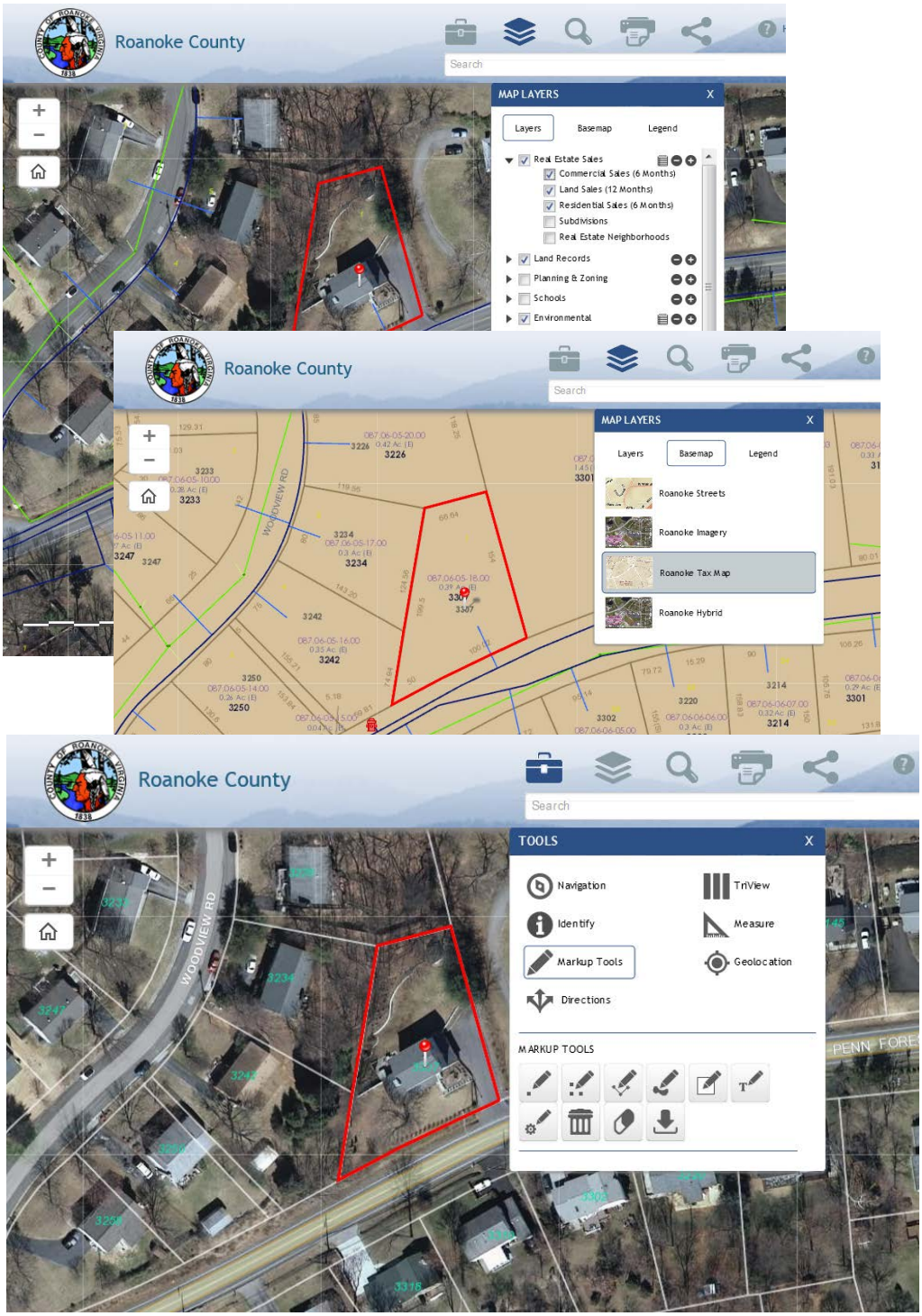
IV. **GovView** http://govview.roanokecountyva.gov/GovView/

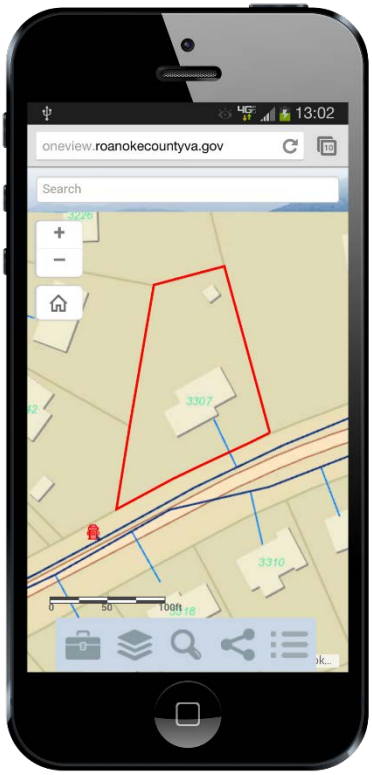
GovView provides citizens with information about government services associated with their address or location when using the app. Services include Trash Collection Day, Bulk and Bruch Pickup Schedule, and locations of the nearest Recycling Facilities, Libraries, Police Stations, Fire Stations, Recreation Centers, and other government offices. The GovView app is a location-aware, mobile compatible app that also allows users to share results via social media and e-mail.

The example at left shows how GovView lets users select a government service and then uses location services to provide live mapping data and directions based on the user's physical location.

V. **OneView** http://oneview.roanokecountyva.gov/

OneView is a comprehensive GIS application targeted for professional users. OneView collects the features of the other GIS applications and includes advanced functions for adding data layers, changing basemaps, professional markup tools and KML export features.





OneView empowers professional users with GIS information and date, all in one mobile compatible, location-aware application for modern smartphones and tablets.

VI. **Property Report** (integrated reporting component)

The Property Report provides users with a comprehensive eight page Adobe PDF report of any selected property. By leveraging third party services Google StreetView and the County's Pictometry license with Roanoke County's GIS data, users can select any available real estate data to include with the report.

In addition, the report offers interactive screen quadrants from each of the services, allowing users to customize the views on the report. Users can adjust the zoom and direction available in Google StreetView, while independently adjusting the angle and perspective in the Pictometry quadrant.

The remaining quadrants contain Count-generated data for Zoning, Tax Parcels, and hybrid terrain and street mapping. Each parcel can be zoomed and manipulated to create custom reports that can be exported to high-resolution PDF files.

The Property Report is an integrated feature of TaxView and OneView applications.