Government Matters

ESRI • Spring 2009

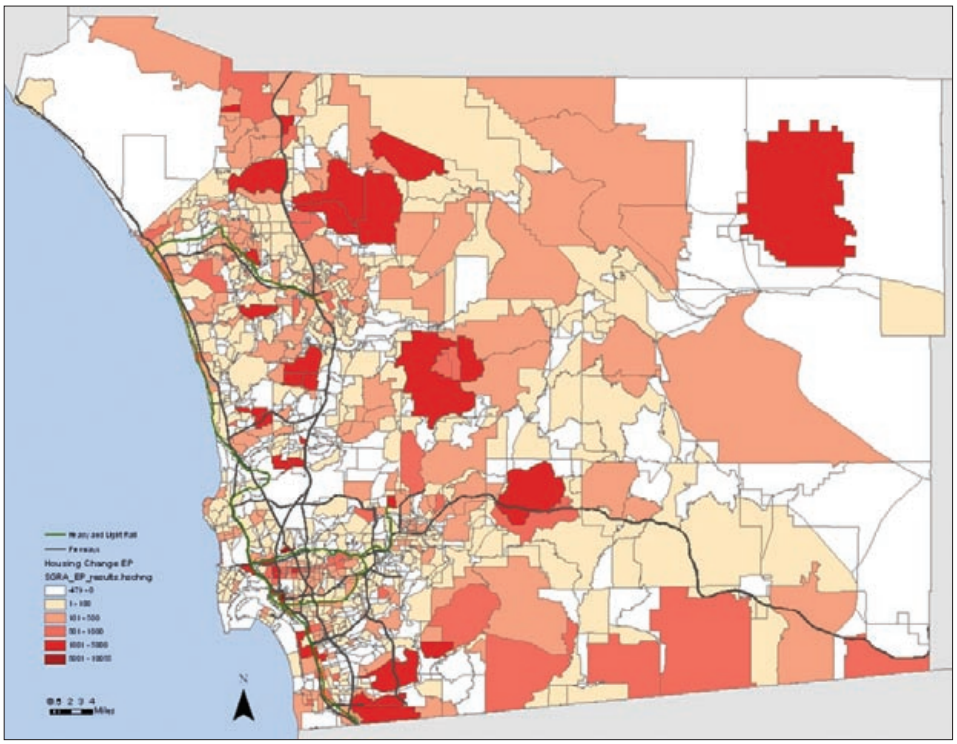
GIS for State and Local Government

SANDAG Creates Climate Action Plan with GIS

By 2030, the San Diego area is expected to add 1 million residents to the more than 3.1 million currently residing in the region. It also expects almost 300,000 new homes to be added to the current estimate of more than 1.1 million. Though the overall growth rate is predicted to slow to below one percent during that time, leaders in the area want to properly manage the environmental impact of what will still be significant growth.

In addition to the population of 4 million anticipated in 2030, 100,000 more people are expected to be commuting into the county by 2030 if land-use plans do not change. Currently, there are 40,000–50,000 people who commute into San Diego from nearby Riverside County and approximately 60,000 who commute from northern Baja California, Mexico.

Recently, an opportunity arose to study land-use and transportation scenarios that would positively impact the region. The California Energy Commission approached the San Diego Association of Governments (SANDAG) about conducting the pilot program, which would look at ways to reduce greenhouse gas emissions. The pilot was also part of meeting the requirements of California Assembly Bill 32 to reduce emissions by 2020, which Governor Arnold Schwarzenegger signed in 2006. It requires the California Air Resources Board to create regulations and market mechanisms that will reduce the state's greenhouse gas emissions by 20 percent by 2020.



This image shows the projected number of new dwelling units by SANDAG Geographic Reference Areas (SGRAs) between 2004 and 2030 under existing development plans. White areas show areas of no growth or minimal housing unit loss. The darkest areas show the most growth in housing stock. Note that the pattern of development includes fairly substantial growth in the eastern, rural portions of San Diego County.

The commission asked SANDAG to study possible transportation infrastructure improvements and land-use planning changes that would decrease the area's carbon footprint and result in a Climate Action Plan. Geographic information system (GIS) technology played a critical role in modeling the possibilities.

SANDAG is the region's primary research and planning agency and is composed of representatives from each of the 18 cities in San Diego County as well as unincorporated parts of the county. It began as a transportation planning agency in the 1970s, and transportation planning remains its primary focus.

"It is a place where collaborative regional planning can occur so that cities are not working at cross purposes," said Beth Jarosz, research analyst at SANDAG. "In this forum, all parties can air their ideas and concerns and come to a

continued on page 4

In This Issue

Special Thanks to the 2009 FedUC Sponsors

ESRI thanks all the sponsors of the 2009 Federal User Conference (FedUC).

ESRI Offers Full Range of GIS Benefits to Small Utilities through Enterprise License Agreement Program

Small utilities now have greater access to GIS technology as ESRI rolls out the Small Utilities Enterprise License Agreement (SU-ELA) program. For an affordable, fixed cost, the SU-ELA program provides IT, business, and supply-chain benefits to utilities in the United States with 100,000 meters or fewer. The program offers select unlimited deployments to desktop, server, Web, and mobile solutions of ESRI's ArcGIS platform; maintenance and support for products; staff training; passes to ESRI's International User Conference; and ESRI's data models.

At the heart of the SU-ELA program is ESRI's ArcGIS software, an open, scalable, and interoperable platform that provides a complete system to author, serve, and use geographic information. An enterprise GIS, based on ArcGIS technology, serves designers, analysts, decision makers, field staff, and customers.

To improve the small utility IT work processes, the SU-ELA program includes established maintenance and complete flexibility of ArcGIS deployment without the need to acquire additional licenses. Organizational workflows are simplified because ArcGIS technology complies with IT standards and uses off-the-shelf, commercial relational databases and standard data models.

The SU-ELA program offers built-in GIS training and support for enterprise GIS operations. ESRI's enterprise GIS is a mission-critical tool proven to support more than 70 different business functions of a utility extending from asset, vegetation, and outage management to inspection, maintenance, and as-built record keeping. Utility staff from multiple departments can quickly access information; share workflows; provide better customer service; and respond effectively to work orders, leaks, or outages.

The SU-ELA program simplifies the contract and budgeting process, saving utilities time and money. Procurement costs are reduced because the agreements require only one payment per year for the three-year term. Administrative costs shrink as a result of centralized coordination and management of software distribution, support, services, and training.

"While small utilities sustain themselves on limited budgets and personnel, they are still expected to provide the same level of operations management and customer service as their larger counterparts," says Bill Meehan, ESRI's director of utility solutions. "To effectively and efficiently meet challenges, utilities rely on enterprise GIS. ESRI's SU-ELA program makes enterprise GIS easy for small utilities to acquire."

For more information, visit www.esri.com/suela or call 1-800-447-9778, extension 2990. To learn more about ELAs for government, visit www.esri.com/governmentela.

Attend the Twenty-ninth Annual ESRI International User Conference

This summer, from July 13 to 17, thousands of professionals across the globe will travel to the San Diego Convention Center in California for the highly anticipated 29th annual ESRI International User Conference (ESRI UC). For more information and to register, visit www.esri.com/uc.

ESRI Online

Listen to New Podcasts

Visit www.esri.com/podcasts to see the latest Speaker and Instructional Series podcasts. Here's a look at what you'll find:

- Instructional Series

  Creating Desktop and Workgroup Geodatabases

  Learn how to create desktop and workgroup geodatabases and be introduced to the role of the database server administrator account. This is the second episode of a series on implementing and managing desktop and workgroup geodatabases.

- Speaker Series—Interviews with ESRI Users

  NOAA's National Geodetic Survey Integrates Remotely Sensed Data and GIS to Provide Precise Positioning

  David Zilkoski, director of the National Oceanic and Atmospheric Administration's (NOAA) National Geodetic Survey (NGS), discusses how the NGS uses remotely sensed data and GIS to provide geospatial infrastructure to meet the nation's economic, social, and environmental needs.

- Speaker Series—Interviews with ESRI Business Partners

  GeoCove Applications Use ArcGIS Mobile Technology to Increase Efficiency of Damage Assessments

  Karyn Tareen, president of GeoCove, Inc., an ESRI business partner, discusses her company's use of ArcGIS Mobile software-based field data collection applications to improve damage assessment workflows and quickly provide decision makers with a common operational picture.

- Speaker Series—Interviews with ESRI Staff

  ESRI's ArcLogistics Helps Governments Improve Routing and Scheduling of Vehicles and Staff

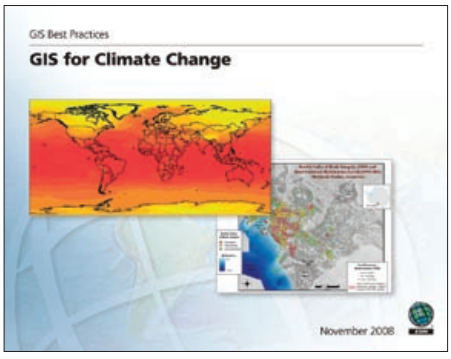
  Christopher Thomas, government industry solutions manager at ESRI, discusses how ESRI's ArcLogistics allows governments to make the most of the resources they already have by optimizing the routes of employees in the field, eliminating inefficient district designations, improving productivity, and reducing vehicle use.

Get Practical Tips and Tricks

Visit the ESRI Training Matters blog at www.esri.com/trainingblog to learn about ESRI training and education products and get practical tips and tricks for working with ESRI technology.

Download *GIS for Climate Change*

Learn more about how GIS provides a framework for understanding global climate change in *GIS for Climate Change*. This compilation of articles includes "Science and Our Changing Climate," "NCAR Publishes Climate Change Models in ESRI GIS Format," "Carbon Nation," and "Traditional Knowledge Meets New Tools." Download a free copy at www.esri.com/bestpractices.



continued from page 1

SANDAG Creates Climate Action Plan with GIS

consensus about how to plan for transportation, habitat preservation, and environmental conservation. Fortunately, the members of SANDAG are open to sharing their data."

Community Planning

Jarosz and fellow GIS analysts with SANDAG examined greenhouse gas reduction options. With ArcGIS software, they developed model inputs for land use and transportation, reviewed the output, and displayed that output for policy makers. Inputs included areas identified for infill and redevelopment and new land-use codes and density assumptions.

To develop alternate land-use scenarios, analysts used ArcGIS Desktop software to select transit stations with high production and attraction values as areas where additional housing could help ease greenhouse gas emissions by reducing individual commutes in cars. A one-half-mile buffer was selected around transit stations, then all parcels within the buffer that were not cut off from a station by a walk barrier, such as an interstate, were selected. Lastly, changes were made to the planned land-use mix in these transit target areas to reflect increased density.

With GIS, policy makers could see the resulting housing and employment patterns. Then SANDAG presented policy recommendations.

Moving Forward

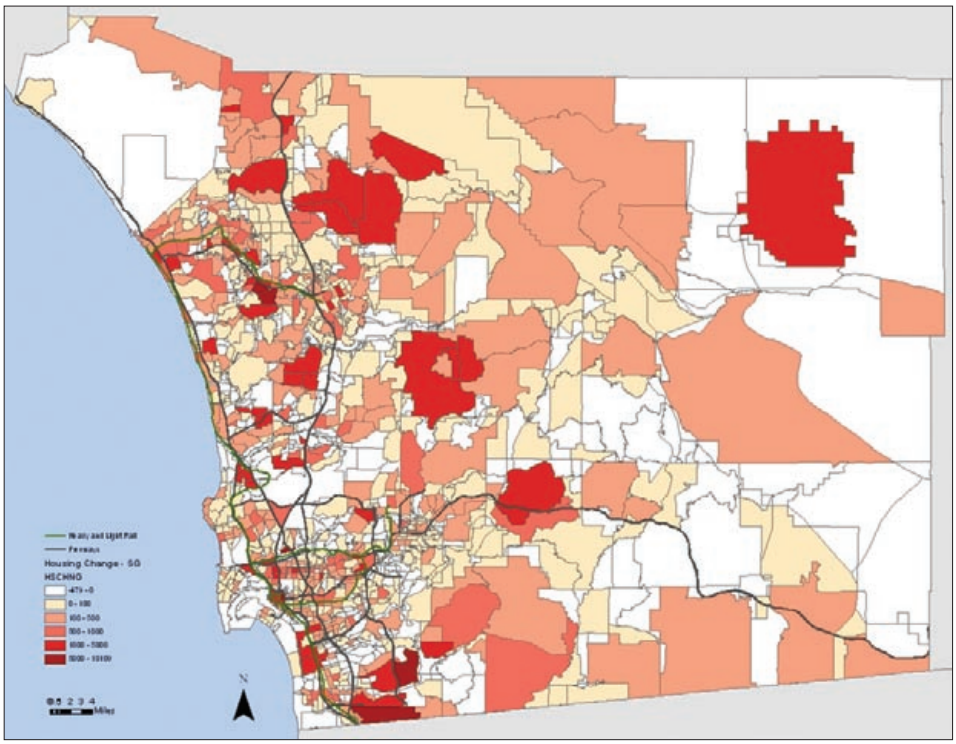
The Climate Action Plan research found that transportation infrastructure and land-use changes will help diminish greenhouse gas, but transportation demand management measures are even more effective. These measures include imposing a fee for driving, such as higher parking fees or higher gas prices, and encouraging telecommuting. In this study, those approaches appeared to have the strongest impact on greenhouse gas reduction and are the most efficient strategies.

"It's important to look at practical solutions," said Jarosz. "Although it would be ideal to change future development patterns so that people could live closer to transit lines, more than one million housing units already exist in the suburbs and rural areas. Having everyone move into the urban core from the suburbs is an extreme and therefore unlikely scenario."

Determining practical solutions was challenging because it involved considering new ways of going about daily life. "Brainstorming to determine what transportation and land-use plans could realistically look like in 2030 was a creative exercise," added Jarosz.

SANDAG doesn't have land-use planning authority, but it funds transportation projects and infrastructure improvements, such as sidewalk repairs, landscaping, and streetlight installations, to encourage dense, walkable communities. The Climate Action Plan is an important piece of the organization's work to create smart growth and transit-oriented development. Though it is serving to inform now, the hope is that leaders will integrate the plan's findings into upcoming development plans.

For more information, contact Beth Jarosz at bja@sandag.org. GM



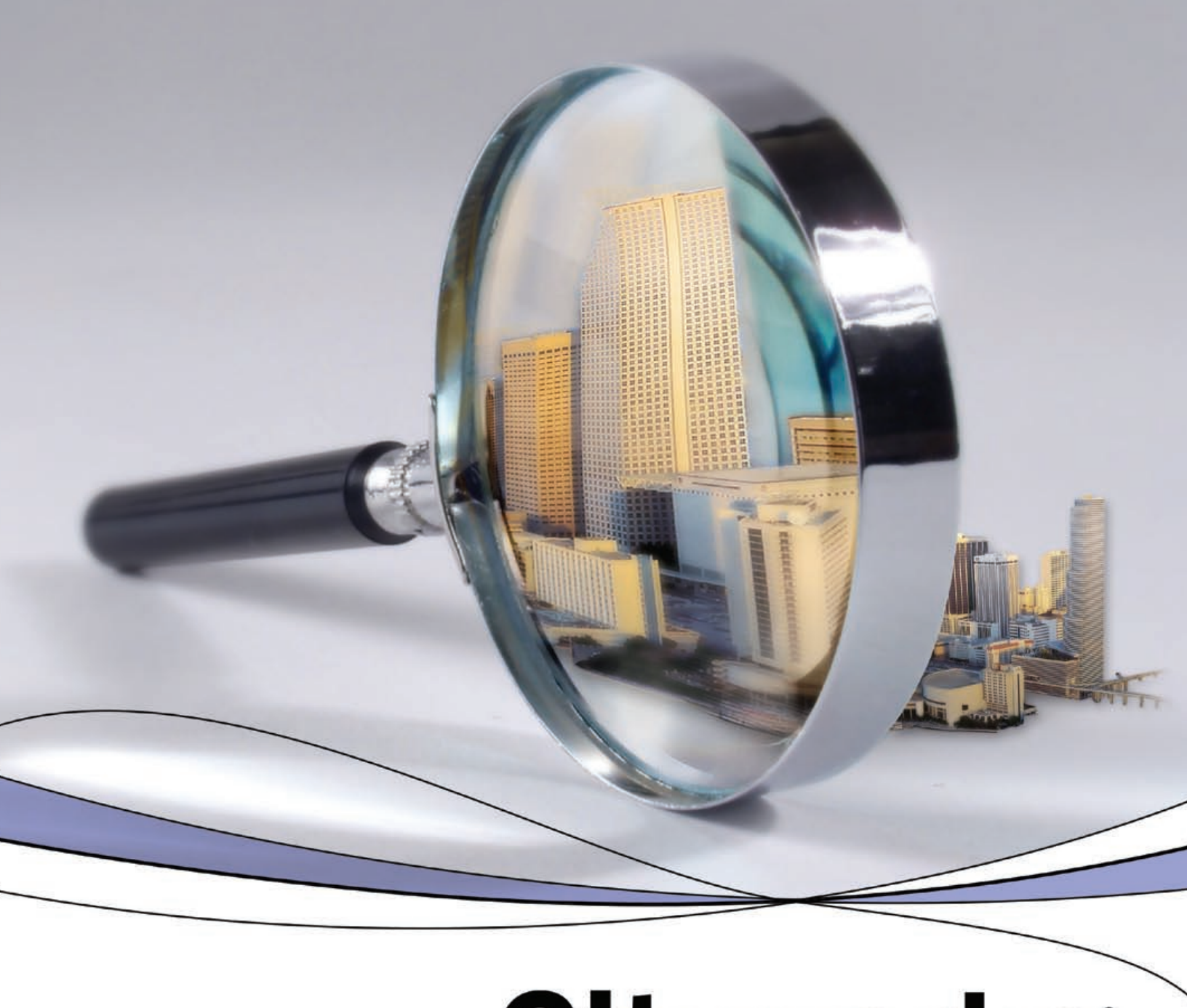
This image shows the projected number of new dwelling units by SGRAs between 2004 and 2030 under a Smart Growth alternative land-use forecast. White areas show areas of no growth or minimal housing unit loss. The darkest areas show the most growth in housing stock. While this scenario still shows some growth in the eastern portions of the county, more growth is focused in the western, urbanized area. SANDAG used this scenario as the basis for Climate Action Plan modeling work.

SANDAG's Data and Models

SANDAG uses data from a variety of sources including the U.S. Census Bureau, the San Diego County Assessor's Office, aerial imagery, and local government agencies in San Diego. For the transportation models, roadway data came from the City and County of San Diego and other local jurisdictions and included historical data such as vehicle count numbers from the state and the area's cities, which was used to calibrate the models. Data also comes from SANDAG surveys.

The land-use and transportation forecasting process used data stored in SANDAG's Landcore geodatabase. In the database, each parcel of land has a unique record that includes information on current and planned land use and future housing and/or employment capacity.

For more information on SANDAG's land-use, transportation, and greenhouse gas models, visit www.sandag.org.



Cityworks®

Works the way your city works.

Azteca Systems, Inc.
801.523.2751
info@azteca.com
www.azteca.com

Cityworks is a powerful, flexible and affordable GIS-based Asset Maintenance Management System for Public Works and Utilities. Built on ESRI's ArcGIS technology, users can manage assets, work activities and customer needs.

Cityworks™

GIS Delivers Results to Alameda County Registrar of Voters

At first glance, it seems that Alameda County, California, is politically uniform, especially since the majority vote has gone to the Democratic candidate in every presidential election since 1956. Dividing the county into precincts, a different picture unfolds—one that shows diversity. The Alameda County Registrar of Voters (ROV) offers online maps of voting patterns at a smaller scale, thus acting as a resource to the local community, media, and political organizations. For example, looking at ROV maps of the most recent presidential election, a pattern emerges of the more liberal Oakland-Berkeley Bay Area and a more conservative inland region.

This technology initiative was instituted by Alameda County's director of Information Technology, Dave Macdonald, who was appointed Registrar of Voters, so it was a natural fit to make technology the focus of his new position. Initiative goals included automating precinct consolidation and polling station assignment processes as well as creating election results maps on the county's Web site. In the past, all map-based ROV election processes were completed manually.

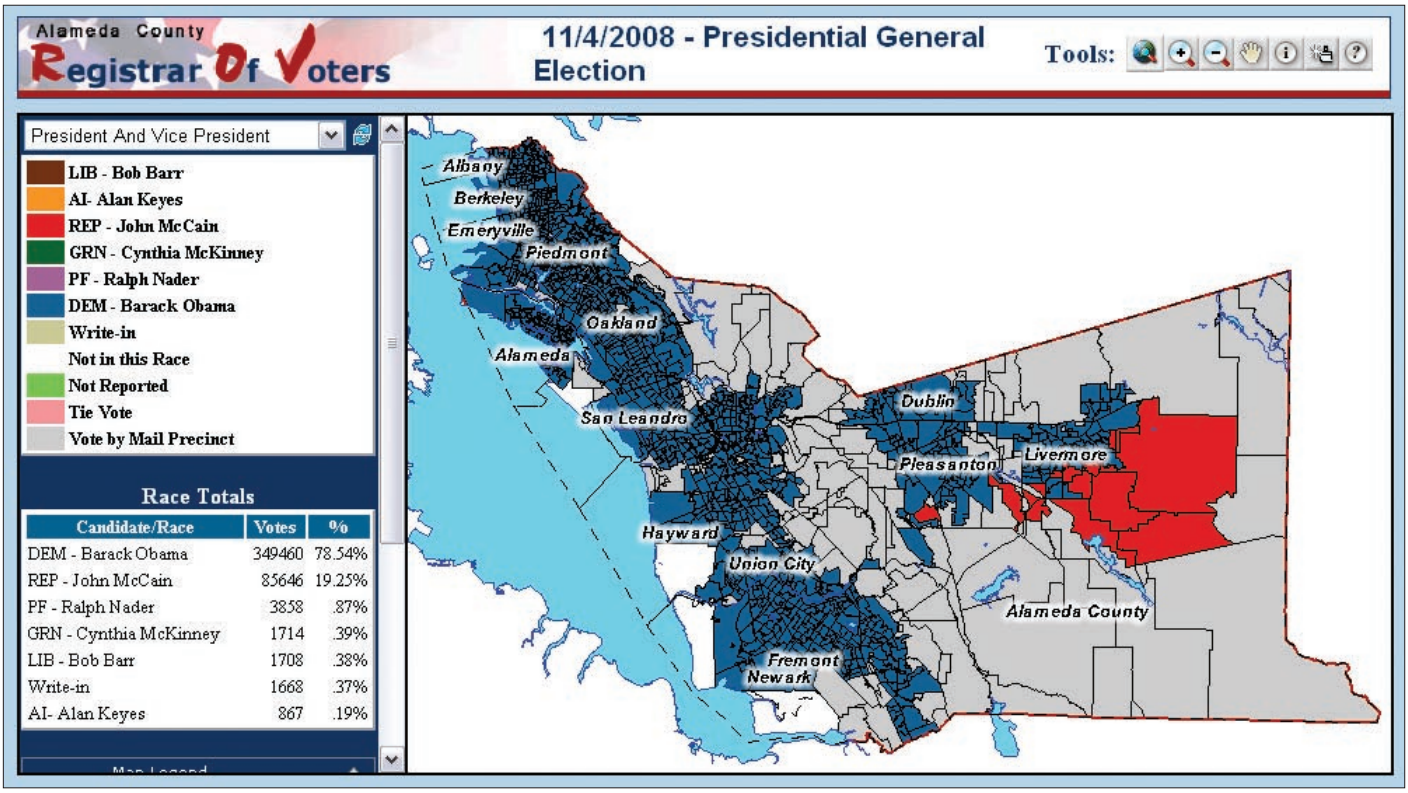
After a careful review of technology options, the Alameda County ROV partnered with Weston Solutions, Inc. (WESTON), an ESRI business partner. Since other departments and cities in the county were successfully employing ESRI technology, WESTON took an enterprise approach and built ROV's geodatabase layers in reference to parcel data maintained by the Alameda County Assessor's Office.

WESTON worked closely with Alameda County ROV to develop ArcIMS applications with easy-to-use interfaces for election technicians to streamline each process, which reduced labor hours. Election technicians are responsible for supporting county election activities such as tabulating results, entering voter registration records, securing polling places and volunteers, and testing and delivering voting equipment.

Using the traditional paper method and calculators, one of the most time-consuming processes had been precinct consolidation. During the last election, the process of precinct consolidation consisted of looking at more than 1,000 voting precincts and 170 ballot types. Precincts with the same ballot type were joined so residents could be assigned to polling stations with a target of 1,000 voters per location.

With the new system, a GIS model derived the numbers much faster. Time savings from the new process also allowed technicians to better prepare and organize equipment and supplies for polling stations. "Making the switch to GIS means precinct consolidation that traditionally took six election technicians up to three weeks to complete now takes three technicians one to three days to complete," stated Tim Dupuis, chief technology officer (CTO), Alameda County.

After the consolidation process, each precinct needed a polling station. Locating polling stations and assigning both voters and volunteer staff to the stations was another time-consuming process. Before using GIS, technicians would take a list and drive by locations to determine which would be suitable stations. Depending on



Alameda County ROV's GIS Web site shows results from the recent federal, state, and local elections at the precinct level.

availability and the number of new voters, polling stations changed from year to year.

With GIS, information about each polling station was tied to the location of the building; then the consolidated precincts and possible polling station data was accessible on the same map. Technicians could more easily determine whether a polling station met their requirements such as being accessible by multiple modes of transportation. Using ArcIMS, these maps were available via the Alameda County ROV intranet.

ArcIMS software also allowed Alameda County ROV to make new services available to the public. Alameda County ROV previously used a legacy system to create online election results maps for the public, but it was difficult and time consuming for technicians to operate. This time, an administrative tool was developed using Microsoft .NET, which quickened the selection of races to be displayed and the thematic presentation of the maps showing the election results.

In addition, the Election Results Web site was engineered to provide election results in near real time to the public. ROV's Election Results Web site provides election results at a precinct level, serving as an important resource to local news and political organizations. When ballot results came in from the polling stations, GIS automatically updated the map so the public could see the results for federal, state, and local elections at the county and precinct levels.

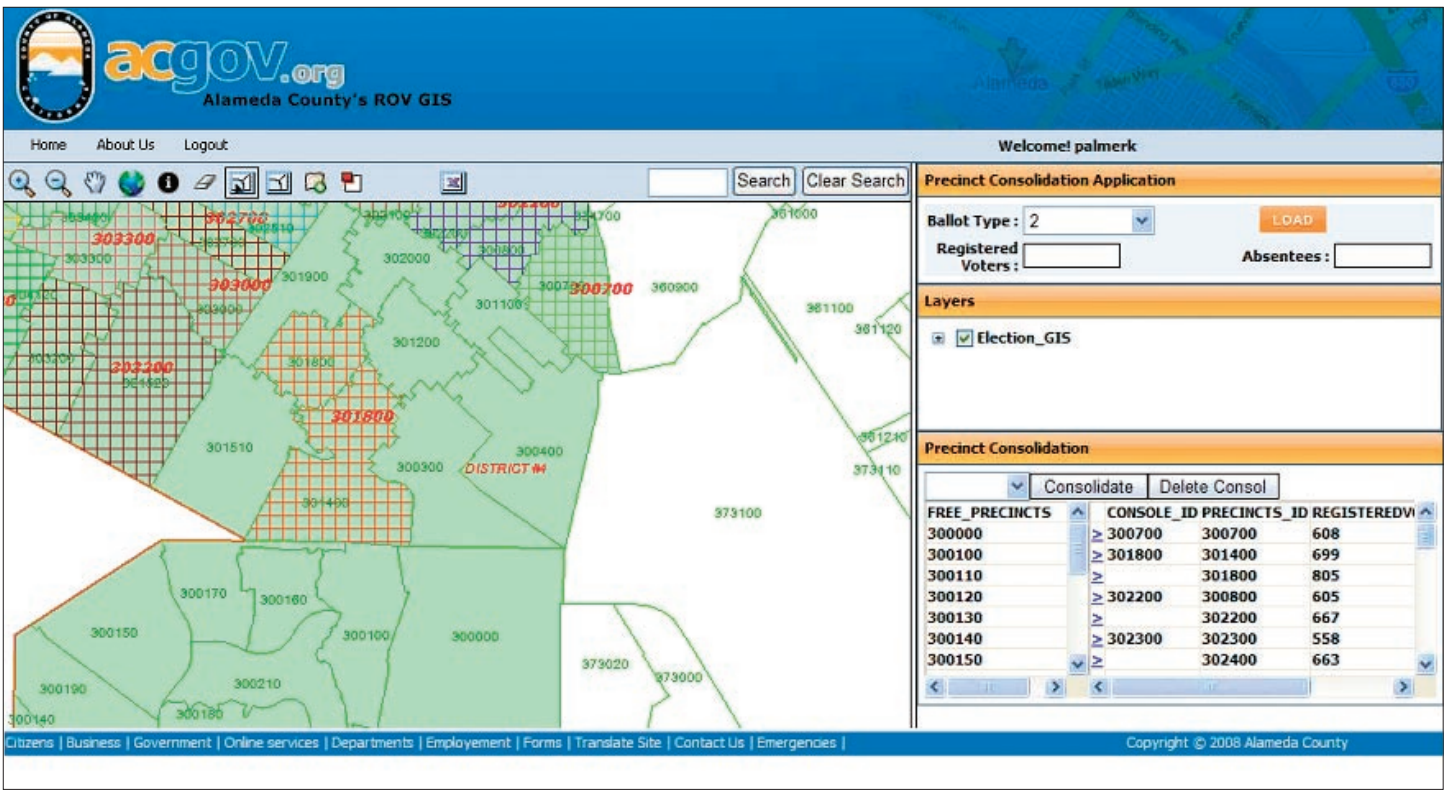
"In November, the month of the election, we received 4,394 unique visitors just for the election results map," said Dupuis. "In comparison, for the month of September, we received 467 unique visitors to our GIS Internet maps."

An additional way ROV staff increased customer relations was using GIS to quickly find answers to people's questions about ballots or polling station locations. "One citizen came to the offices thinking he had received the wrong ballot in the mail. In less than five minutes, we showed him on a map that parts of his street were in different precincts and assured him that indeed he had received the correct ballot," said Dupuis.

Yet another incidence of improved customer relations occurred with the introduction of GIS-based precinct maps published on CDs, which are sold via the Web site or at the ROV office. Other agencies and media organizations that needed precinct maps were able to obtain CDs immediately.

ArcIMS has created many benefits for Alameda County ROV. When asked if changing from a paper-based to technology-based project system had a positive impact this past Election Day, Dupuis stated, "We recorded some of our fastest times this year, especially when it came to organizing and transporting equipment. The success comes from the technology initiative and all the preparation that took place before Election Day. GIS was definitely a big part of that."

For more information, contact Tim Dupuis, chief technology officer, Alameda County, at tim.dupuis@acgov.com.



Alameda County ROV staff use ArcIMS to quickly see the number of voters per precinct and join like voters in a precinct consolidation process.

GIS Creates a Paperless Asset Management System in Colorado Springs

New Workflow Saves City Time and Labor Costs

In 2006, *Money* magazine ranked the City of Colorado Springs, Colorado, "the best place to live" in the category of cities with 300,000 or more people. With a growth rate close to 30 percent, the city's transportation improvements have been a sore point for its government as it strives to continue to be seen as a top city in which to live and invest.

As the city grows and the budget tightens, traffic engineering and public works have focused their efforts on transportation asset management—especially sign and school markings. Last year, there were more than 13,700 requests for new assets or to fix damaged assets. According to Andy Richter, team lead on asset management in Colorado Springs, "The problem with all these requests and work orders was that we had no information about asset inventory, and we were getting buried in paperwork."

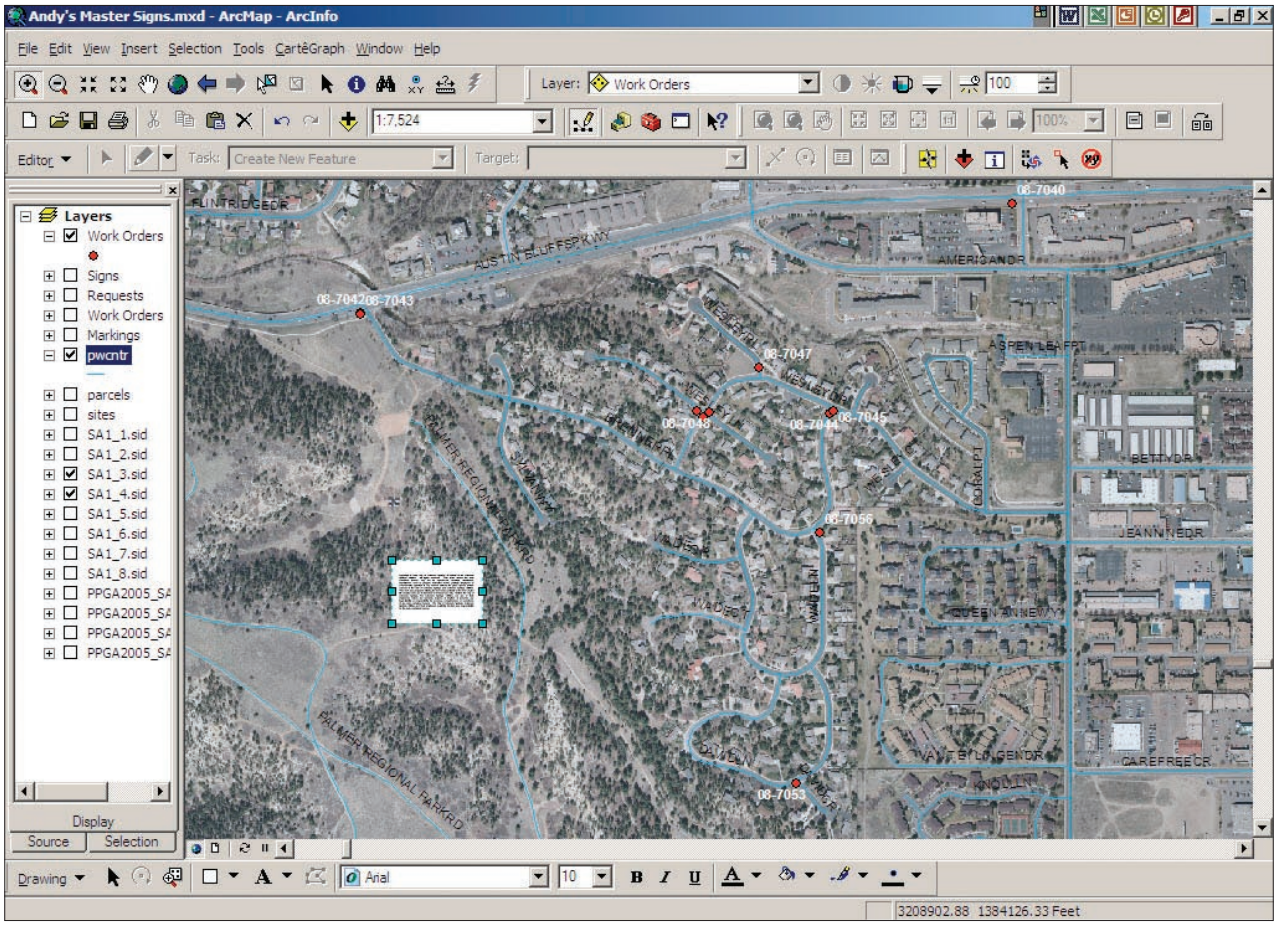
> Increased productivity without having to add new staff gives us a huge return on our investment.

The traditional work order process for asset management was paper based and very time consuming. It took 50 hours to complete each work order, and with an average of 6,000 work orders per year, that meant 30,000 labor hours per year. Requests were reviewed and converted to work orders in one building, sent by interoffice mail or the postal system to another building where orders were prioritized, then moved to a third building and assigned to a team. After a crew finished a work order, it was mailed back to the original building and entered into a new spreadsheet to be filed as completed.

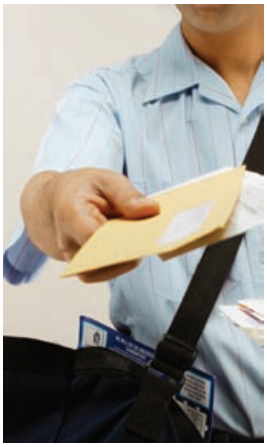
To increase the speed of asset management, a new solution was needed. The city government was going through a reorganization process, and as a result, staff from traffic engineering and public works formed an asset management team. They evaluated solutions that would reduce the amount of time needed to process work orders and establish an asset inventory.

Richter and his team went through a rigorous evaluation process to de-

continued on page 10



Working with wireless Toughbooks, field crews use ArcGIS to see the location of an assigned job or inventoried signs. Clicking on a point gives them more information about a particular asset.

From the Desktop to the Enterprise— LoGIStics Solutions that Pick-up and Deliver.

RouteSmart Technologies understands the middle name of logistics is GIS! Over the past two decades we've delivered scalable, sustainable GIS-based routing solutions that operate using the ESRI® technology platform. RouteSmart software is specifically designed to meet the demanding route planning needs of the newspaper, postal, public works and utility meter reading industries.

To learn more, route yourself to www.routesmart.com or call us today 1.800.977.7284.

ESRI Technology
AUTHORIZED BUSINESS PARTNER

RouteSmart TECHNOLOGIES
The world's most intelligent routing system.

NAVTEQ

continued from page 8

GIS Creates a Paperless Asset Management System in Colorado Springs

termine which technology system would best fit their needs. They requested proposals from vendors, met with public works departments in cities around the state that were using GIS, and also involved Colorado Springs staff in the decision process. "Buy-in from managers and end users of the solution is the main ingredient for success," said Richter. "Without their support, you won't be able to grow the program to its full potential."

The city chose to work with ESRI business partner CartêGraph because the company offers an ArcGIS platform with applications specific to asset management. "Basically, we took CartêGraph applications off the shelf and form-fit each to meet our needs," said Richter. "We can make the forms for work orders look any way we want so they are familiar looking to staff." Implementation included teaching staff how to use ArcGIS Desktop software and applications developed by CartêGraph such as WORK*director*, CALL*director*, SIGN*view*, and MARKING*view*.

Using GIS, asset management workflows became more efficient. For example, CALL*director* links a request for a new or repaired asset to a map and address locator file. In the past, requests were done by hand with paper maps and spreadsheets of addresses. With GIS, call takers quickly see where similar requests and work orders are located, which avoids duplicate work orders. WORK*director* allows technicians to easily see the location of the proposed request and determine which requests will become work orders. After a work order is approved, a field crew is assigned to it. Field staff use wireless Toughbooks that have real-time access to the assignments. Using ArcGIS Desktop, they map the assigned and new work orders to navigate to sites more efficiently and process work orders in the same area to save fuel.

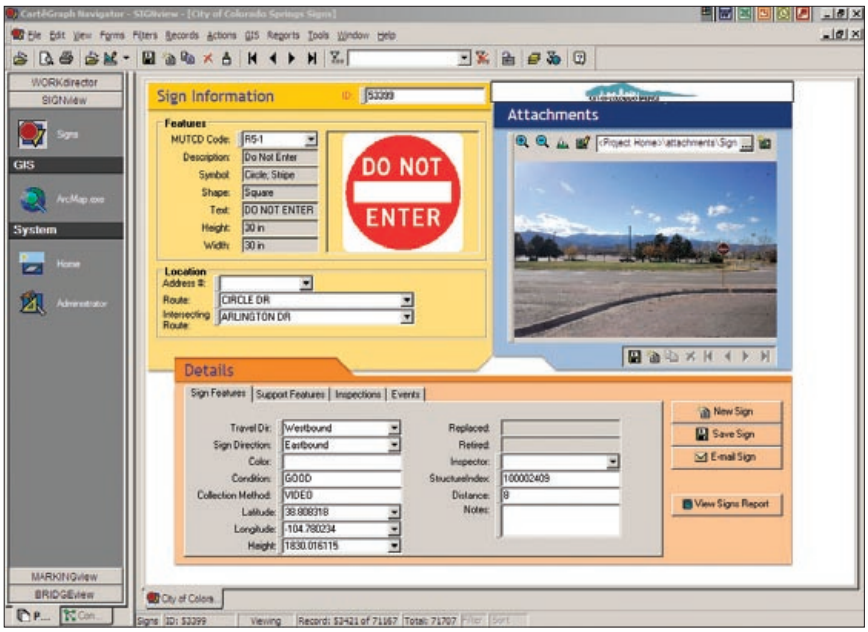
By clicking the appropriate point on their screen, GIS*director* users finish the work order once the task is complete. Supervisors are automatically kept up-to-date when a project has been completed and can see the current status of the fixed or new sign. Each team's location is tracked with GPS, making it easier to assign teams to emergency projects. With GIS, they are able to create an electronic thread of data from the initial call about a problem to the finished job marked as complete.

This GIS project has been in place for three years, and the city is seeing significant benefits from the investment. "The transition from paper to GIS has been quite seamless," stated Richter. "Going electronic, we are able to eliminate seven steps of our workflow, most of it related to paper processing, which decreases the time it takes to complete a work order from 49 hours to 18 minutes. Increased productivity without having to add new staff gives us a huge return on our investment."

Saving time on labor allowed the asset management team to consolidate responsibilities, which permitted other staff to focus on areas that were just sliding by or out of date such as collecting field data. Colorado Springs also created a traffic count program, since it now has time to dedicate to such necessary projects. Another benefit has been more efficient billing: now invoices are automatically sent and tracked for each work order. Instead of losing money, the city is putting money back into its budget.

To secure increased GIS funding, Richter established consistent communication with public works management about each success and realized benefit from the GIS project. Richter volunteered to attend manager meetings, and when a major milestone was reached, such as completing sign inventory, he presented the results. He explained that adding two mobile units in 2006 resulted in 1,000 more work orders completed than the previous year. The same scenario occurred the following year, so 2,000 more work orders were completed without having to hire additional staff.

Richter also asked senior city management what they wanted to know about the sign inventory project. "The assistant city manager asked me how many 25 mph signs we had. In less than five minutes, not only could I tell him, but I could show him on a map. He said that he had asked another department a similar question, and three weeks later they still had no answer," avowed Richter. He added that as a result of the success with GIS, "While other cities are losing people and having their budgets cut, we are actually getting money and getting staff dedicated to asset management."



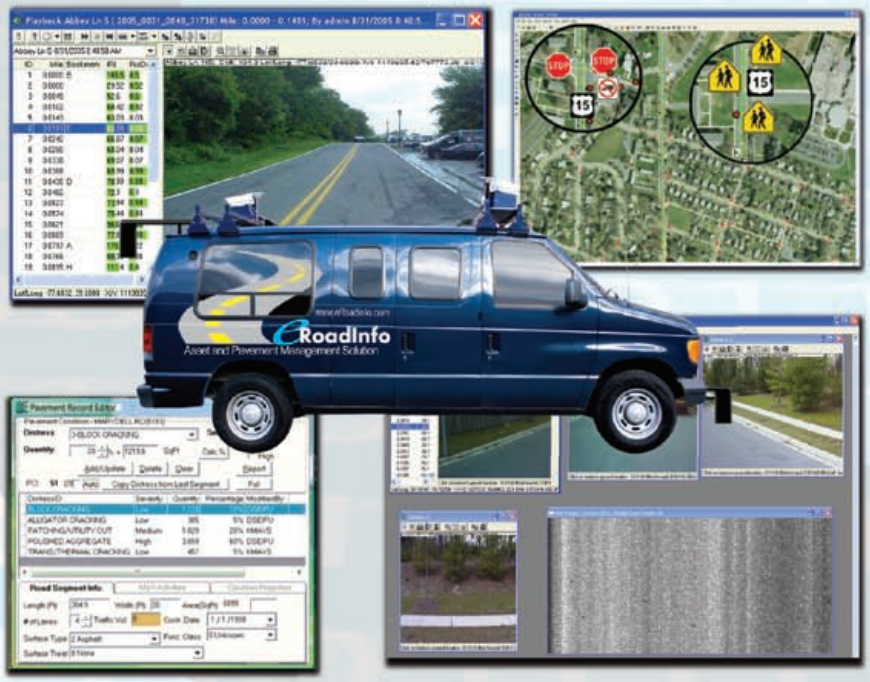
After clicking on the point in the locator map, information about an inventoried sign appears through SIGNview. Field crew can see a picture of the sign, enter new information, and amend incorrect details.

Because of continued funding, the city plans to have all assets inventoried in the next three to five years. Next year, they will begin using CartêGraph's BRIDGE*view* to inventory and maintain city bridges. The project, along with other ongoing asset management projects, will help Colorado Springs meet federal regulations and keep citizens safe.

For more information, contact Andy Richter, City of Colorado Springs, at ARichter@springsgov.com. GM

GIS Integrated Asset and Pavement Management

eRoadInfo



Asset Management

- Intelligent ROW Imaging
- Click on Photo to Locate Assets
- Click Road to View Video
- Measure Dimensions on Photos
- Geo-referenced Voice Notes
- WEB Distribution Ready
- ArcGIS Integrated

Pavement Management

- Automatic Crack Detection
- Full Lane Downward Imaging
- Integrated Rutting and IRI Indexes
- Complete Repair Decision Support
- Optimal Repair Strategy Analysis
- Road Condition Forecasting
- ArcGIS Integrated

GIS Integrated Real-time Snowplow Management

eSnowInfo

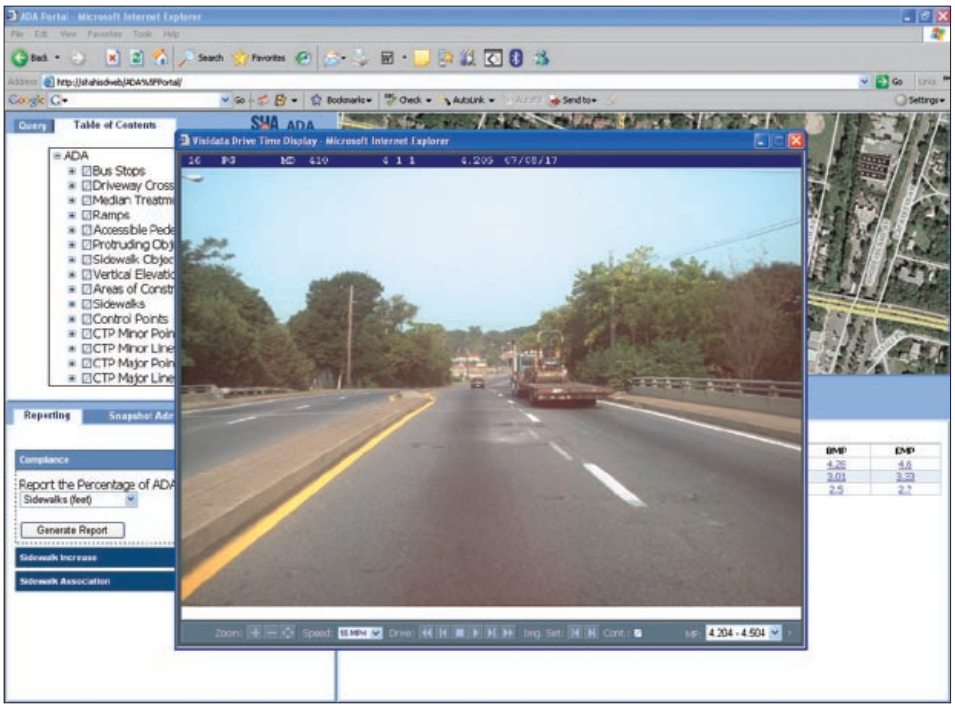
- Real-time Road Surface Friction Index
- Real-time Road Treatment Status
- Real-time Road Condition Photos
- Mileage and % Completion Tracking
- Centerline Color Shows Status
- Point Color Shows Surface Friction
- Advanced AVL
- Real-time Locations & Travel Histories
- Snowstorm Playback and Simulation
- RFID Reader and Temperature Sensor

eRoadInfo and **eSnowInfo** are products of **Enterprise Information Solutions**.
Call Enterinfo at 410-381-7898 or visit **www.enterinfo.com** for more information.

Maryland SHA Uses GIS to Manage ADA Sidewalk Compliance

Web Portal Improves Business Processes and Decision Support

Access to government services is a right for all citizens of the United States. To ensure those with disabilities have an equal opportunity to benefit from state and local government programs, services, and activities, Title II of the Americans with Disabilities Act (ADA) requires that state and local governments make programs and services accessible to persons with disabilities, for example, wheelchair access to sidewalks. To accurately assess and improve compliance of sidewalks along Maryland state routes and highways, the Maryland State Highway Administration (SHA) turned to GIS to improve business processes and make data available to decision makers. With a well-thought-out plan, SHA was able to complete data collection in eight months.



Within the ADA Portal, users can click a point in the map to view SHA video of that section of roadway.

"We started collecting the data in 2006, but before that, we needed to figure out exactly what data we were going to collect, how we were going to collect it, and how we could do it efficiently," said Norie Calvert, deputy director for the Office of Highway Development. "We really had to think long and hard about how we could do it in a way that made sense and wouldn't be too costly."

> We can look at where we have existing capital projects already in place, and we can tie sidewalk improvements to those existing projects to streamline our approach to maximize our dollars.

SHA gathered data along nearly 900 miles of state roadways. Six temporary staff members working in pairs collected data via Trimble GeoXH handhelds that had a customized application built with Trimble GPS Pathfinder Office software. Staff collected data on sidewalks, ramps, driveway crossings, medians, bus stops, and obstacles such as utility poles.

To make data collection more efficient, SHA used pull-down menus. For example, sidewalk cross slope is a feature that is measured to determine accessibility, and the maximum cross slope for accessibility is 2 percent. Instead of recording the actual cross slope, data collectors simply chose "yes" or "no" to record compliance. Another example is the width requirement: a sidewalk either met minimum width requirements or it did not. "You don't need the actual measurements to make a decision," noted Calvert. Simplifying the process allowed SHA to quickly collect the data it needed and begin to focus on improvements. ArcSDE technology is being used to manage the data, and it is shared via an ArcIMS software-based ADA Portal application.

A state measure requires that sidewalk compliance increases 2 percent each year, and the budget for sidewalk improvements supports this pace. Staff members are now able to track that data and the progress of the program through the ADA Portal. As of August 2008, 54 percent of SHA's 900 miles of sidewalks were compliant. This is an increase of 5 percent since the initial data collection in September of 2006.

The intention behind the application is not only to measure SHA's performance in improving facilities but also to guide the sidewalk improvement program so it focuses improvements where the need is most significant and uses funding for the greatest benefit.

Better Business Processes

Redefining business processes to make them more efficient was the biggest challenge in this GIS project, explained Gregory Slater, chief of the Design Technical Services Division at SHA. There are seven SHA district offices and several divisions within the SHA that were overseeing various aspects of ADA compliance, and all were working independently. Now, SHA has a group in the Innovative Contracting Division that is the single point of contact and manages data updates. Once business processes were streamlined, the second component, IT, could be developed to support the new processes.

"What we really did is allow the GIS to pro-

vide enhanced decision support," noted Slater. "The GIS manages the data but also steers us. We have a dashboard where we can report the success of the program statistically, but then we also have what I call a 'steering wheel' that goes with the dashboard, which are the components built into the GIS." The components Slater refers to include data from Maryland Department of Transportation's (MDOT) Consolidated Transportation Program that allows SHA to see where sidewalk facilities are in relation to capital improvement projects. "We can look at where we have existing capital projects already in place, and we can tie sidewalk improvements to those existing projects to streamline our approach to maximize our dollars," Slater explained.

The GIS is also linked to the State Department of Assessments and Taxation database so SHA can see data on property ownership and values. This helps SHA determine right-of-way issues that arise. "By consolidating our efforts, we get the most out of our money," Slater added. GIS has also helped SHA identify areas with high pedestrian traffic. Data on pedestrian volume and pedestrian accidents is utilized in the GIS and improves prioritization of sidewalk improvement projects. "We are able to prioritize where our greatest needs are based on pedestrian incidents; community feedback; and the proximity to heavy pedestrian centers like government facilities, shopping centers, and mass transit," Slater added.

In addition to maps and aerial imagery, the ADA Portal links to a video log the SHA gathers once a year from crews that drive the state roadways. This video's original purpose was to enhance monitoring of pavement condition and support decisions about resurfacing projects. Now, SHA links mileage points in the video to coordinates in the ADA Portal to see the condition of sidewalks along state roads. In the portal, SHA is able to access the video log at the current location being analyzed and see ground-level shots along with sidewalk data and aerial photography views.

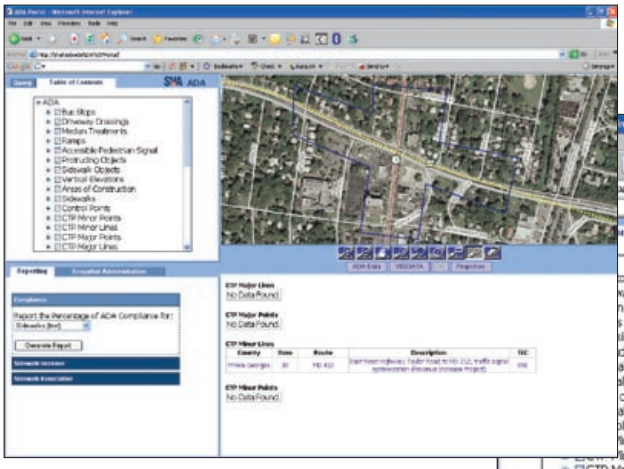
Citizen Participation

In the end, the purpose of sidewalk improvement projects is to better serve communities and taxpayers. To gather citizen input, SHA representatives meet with members of the disabled community on a regular basis to gain insight into their needs. Another public outreach initiative involves sending SHA staff into each of Maryland's 23 counties to hold public meetings. At these gatherings, SHA staff members present the self-assessment project, explain the status of improvements, and give community members an opportunity to share their ideas.

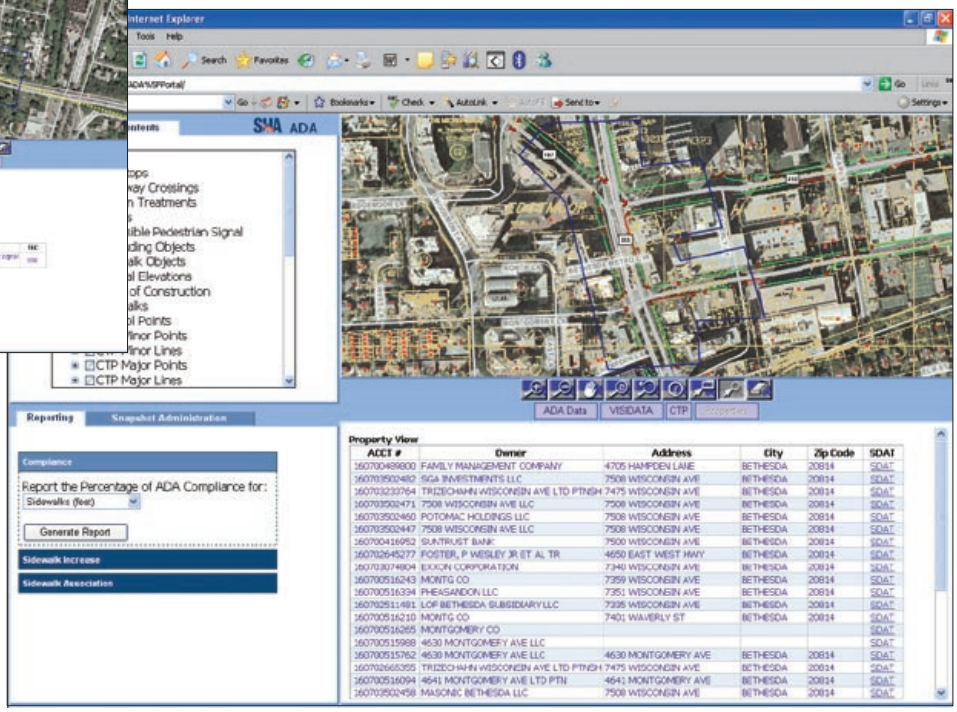
Eventually, there will be a public-facing Web site. SHA is currently working on developing a site that will be accessible to those with disabilities.

To achieve success with a project like this, Slater pointed out, "You can't be intimidated by measuring performance and statistics. You have to be willing to do it openly to be able to improve it, and what we did was build a system where we can openly measure the performance of this program and guide the direction of the sidewalk improvements."

For more information, contact Gregory Slater at gslater@sha.state.



The ADA Portal shows where existing projects are in MDOT's Consolidated Transportation Program so sidewalk improvements can be tied to existing improvement projects. This image shows a location slated for a traffic signal system improvement.



The ADA Portal links directly to the property database from the State Department of Assessments and Taxation for the most up-to-date information. This image shows a listing of potential property impacts and provides a rough assessment of how far SHA rights-of-way extend beyond the road. With this information, SHA can assess the impacts of sidewalk improvements in this area.

Orange County, California, Uses GIS to Support Ride Sharing Program

VanPool Route Mileage Calculator Eases Planning, Administration, and Reports

By Mark Jackman, GIS Transportation Analyst, Orange County Transportation Authority

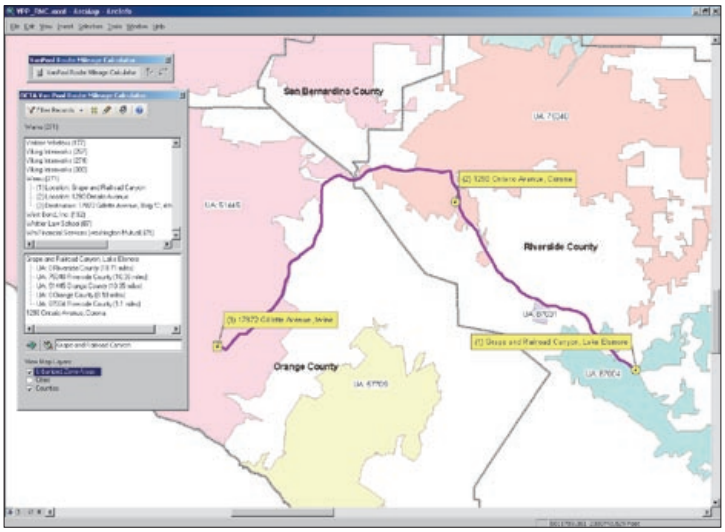
Orange County, California, part of the Greater Los Angeles metropolitan area, has experienced significant growth in the last 30 years—growing from a population of 1.9 million in 1980 to more than 3 million residents in 2008. As freeways and surface streets reach build-out capacity and the number of vehicles continues to increase, transportation alternatives are increasingly important.

The county's regional transportation authority, Orange County Transportation Authority (OCTA), in addition to providing long-range strategic transportation solutions, sponsors several ride share alternatives designed to increase mobility choices and reduce vehicle miles traveled. Beginning in July 2007, OCTA created a new alternative for commuters through the Vanpool Program. The program encourages ride sharing by subsidizing $400 of the monthly cost for qualified vanpools operated by van companies. Vanpool riders share a common destination and meet at convenient locations in adjoining counties as well as Orange County.

Federal funding helps OCTA promote and administer the program. The Federal Transit Administration (FTA) provides regional agencies with capital funds to support transit alternatives. To receive the allocated funds, the FTA requires that OCTA report revenue and passenger miles per vanpool. Funds are allocated based on miles traveled through federally designated Urbanized Zone Areas (UA) and counties. Accurate reporting of vanpool miles broken down by vanpool stop, UA, and county are thus a requirement to OCTA's program administration.

To assist OCTA's Vanpool Program administrators in calculating vanpool miles, OCTA's GIS department developed the VanPool Route Mileage Calculator application, which is based on ESRI ArcGIS Desktop software. This tool can be easily used by non-GIS-trained administrative staff to calculate mileage per vanpool passenger. Specific tasks included geocoding pickup addresses provided by vanpool riders, calculating the vanpool route traveled from each pickup point to the vanpool destination, and summarizing total route miles per UA and county.

"Without GIS support, it would have been prohibitively time consuming, if not outright too complicated, for our staff to find locations, calculate route mileage, and break down each portion of the route," said Sandy Boyle, Vanpool Program administrator. "The application developed by our GIS department is easy to use and accurately calculates the mileage breakdowns we need to report."



After geocoding vanpool pickup points and destination for a selected vanpool (here, "Wamu"), a route (purple line) is calculated, and mileage per UA and county is calculated for each pickup. Results are displayed in the VanPool Calculator user interface and are exported to OCTA's vanpool database for use by administrative staff.

Where address information is inaccurate or incomplete, the VanPool Route Mileage Calculator's customized search features allow the user to quickly find streets and freeways, and the address locations may be manually placed or moved. After geocoding locations and putting all stops in the correct route sequence, a shortest path is calculated based on a network developed with an average-mile-per-hour cost factor for each facility type such as freeway, major road, or secondary street. Once the route is determined, the application uses geoprocessing tools to summarize the route by UA and county and stores the data in OCTA's SQL Server 2000 vanpool database. The whole process generally takes less than two to three minutes per vanpool.

OCTA's GIS department's ability to customize ESRI's out-of-the-box GIS desktop software allows non-GIS-trained staff to effectively and efficiently process complex GIS routines. By using the power of GIS, OCTA is able to apply for and receive federal funds to support its vanpool initiative. Orange County businesses, employees, and the general public are the ultimate beneficiaries as additional ride share options and opportunities are made available.

The program has been met with enthusiasm by Orange County businesses and their employees. One year after program inception, more than 1,700 riders participate in more than 215 vanpools. As a result of the program, nearly 1,500 cars are removed from Orange County highways and streets on a typical workday. This helps ease congestion, decrease fuel consumption and pollution, and create more contented employees as the pressures of a long commute are eased.

For more information, contact Mark Jackman, GIS transportation analyst with the Orange County Transportation Authority (e-mail: mjackman@octa.net, tel.: 714-560-5724).

Government Matters is a publication of
the State and Local Government Solutions Group of ESRI.

To contact the ESRI Desktop Order Center,
call
1-800-447-9778
within the United States
or
909-793-2853, ext. 1-1235,
outside the United States.

Visit the ESRI Web site at **www.esri.com**.

View *Government Matters* online at
www.esri.com/localgov.

To submit articles for publication in *Government Matters,* contact the industry solutions manager, Christopher Thomas, at **cthomas@esri.com** or the editor, Emily Vines, at **evines@esri.com**.

Advertisers can contact **ads@esri.com**.
To subscribe to ESRI publications, visit **www.esri.com/subscribe**.
To unsubscribe from ESRI publications, visit **www.esri.com/unsubscribe**.

Back issues, missed issues, and other circulation services may also be requested by e-mailing **requests@esri.com**; by calling 909-793-2853, extension 1-2778; or by faxing to 909-307-3051.

To update your mailing address, visit **www.esri.com/coa** or use any e-mail, phone, or fax option.

If you are from outside the United States, please contact your international distributor to subscribe, unsubscribe, or change your address. For a directory of distributors, visit **www.esri.com/distributors**.

The Federal, State, and Local Government Solutions Team
Christopher Thomas, Government Industry Solutions Manager
E-mail: cthomas@esri.com

Jeff Allen, State and Local Government Coordinator
E-mail: jallen@esri.com

Richard Leadbeater, State Government/Trade Associations Manager
E-mail: rleadbeater@esri.com

115218
CREEL 177.5M 2/09tk

ESRI
380 New York Street
Redlands, CA 92373-8100