

Esri News

for State & Local Government

Spring 2012

New Information Channel

Android app gets evacuation information to residents

By Matthew DeMeritt, Esri Writer

When the 2011 Tohoku earthquake, one of the strongest ever recorded, struck the coast of Japan, it sent a tsunami Hawaii's way.

In a sense, Hawaii had dodged a bullet. The March 11, 2011, earthquake transferred most of the tsunami's energy toward Japan's coast rather than toward Hawaii. The wave that Hawaii experienced was 1 meter high (compared to Japan's 10-meter wave) but still caused millions of dollars in damage to docks and seacraft but—fortunately—no deaths.

The tsunami alert sent many Hawaiians scrambling to find out if they were in a tsunami evacuation zone or where the nearest shelter was located. Requests to Honolulu's government website created a logjam that disabled the site.

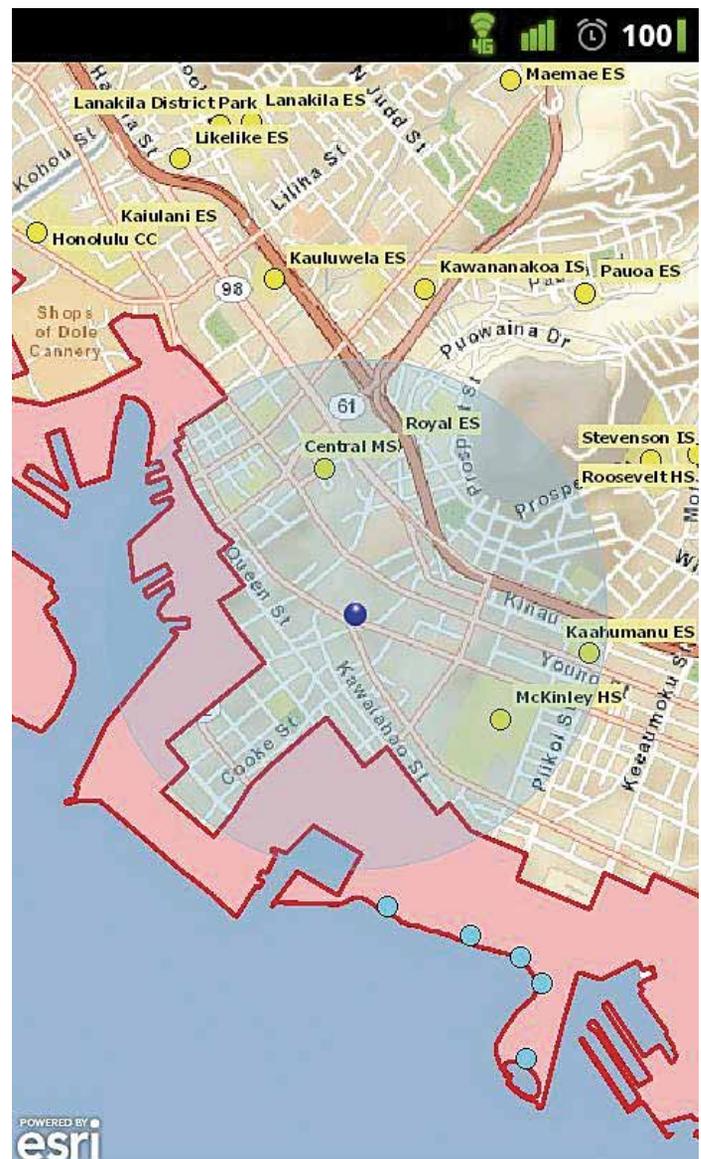
During a government meeting to assess the tsunami's toll, Honolulu technical staff raised the issue of public access to critical evacuation zone maps during times of high demand on the county server.

"One of the GIS analysts mentioned that their site [Honolulu.gov] went down following the alert because too many residents were trying to find information related to the tsunami at once," said Kyle Shimabukuro, a systems analyst for City and County of Honolulu. "That spurred discussion about why the bottleneck happened and how we could avoid it in the future."

Staff eventually concluded that the emergency maps in local phone books also were not sufficient to disseminate critical information about tsunami evacuation zones immediately following a seismic event. Because a large percentage of Hawaiians exclusively depend on cell phone service for their telephone needs, many residents simply don't have phone books.

To avert a similar crisis in the future, systems staff at Honolulu created a tsunami evacuation zone app built with Esri's ArcGIS Runtime Software Development Kit (SDK) for Android to serve as a critical information channel. "It took an event like this to point out the obvious problem," said Shimabukuro. "Being an Android phone owner, I knew that a large majority of those seeking information from the web had smartphones and that Esri had already created a variety of mapping solutions for them."

Theoretically, a large percentage of requests could be transferred to a simple mapping app similar to the ones Esri had already created, so Shimabukuro went looking for a way to make a custom app for →



↑ The app taps into the Android device's GPS and displays the user's current location.

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Welcome



Christopher Thomas,
Director, Government
Markets
Federal, State, and
Local

Welcome to the first issue of *Esri News for State and Local Government*, formerly known as *Government Matters*. We are launching a new name for our newsletter, and you've also certainly noticed our new look. As we search for ways to improve your experience with the publication, we will continue to bring you all the news you've come to expect from our quarterly newsletter. We'd love to hear from you. Let us know what you think of the new design and thoughts on topics you would like to see covered. And continue to send us your GIS success stories.

Sincerely,



→ Hawaii's Android phone owners.

Because City and County of Honolulu had already integrated ArcGIS throughout its departments, Shimabukuro was familiar with Esri technology and its online customer support channels. He started his research at Esri's ArcGIS Resource Center, and it immediately paid off. There he saw the beta version of ArcGIS Runtime SDK for Android available for free download.

"Seeing the beta of the API confirmed my hunch that an evacuation zone app was within reach," said Shimabukuro. "After a simple registration, I downloaded the API as well as information on how to build apps and add functionality. It was all well documented and easy to find."

Esri's approach to customer support involves giving users access to example apps and preconfigured templates for developers to build on. Rather than having to start from scratch, the application available with the Android SDK gives developers a starting place for adding code and testing functionality during the development process.

"It's good to know that documentation could provide the answers I needed, but having the sample apps to immediately reference saved me much time in not having to start from the ground up," said Shimabukuro. "The examples gave me a logical starting point to pick and choose the kind of functionality our app should have."

Shimabukuro could easily add and remove code as needed and attach a variety of available map services using the runtime SDK. "I downloaded many libraries to see what each one did and incrementally built the app using that process, which would have been much

harder without having access to the example apps and seeing how they operate," he noted.

During development, Shimabukuro had envisioned using the smartphone's onboard GPS to verify whether the user was in an evacuation zone and generate driving directions from there. "The idea of exploiting the GPS technology already available on Android devices and producing something more than static maps was exciting," said Shimabukuro. "In addition to displaying the address of a given point, I was also able to pass that address to Google Navigation, an external navigation app, to give driving directions."

The final product, which includes full integration with GPS and a handy navigator, exceeded Honolulu's original objectives for the app. Honolulu has successfully promoted it to residents with nearly 1,000 installations. Shimabukuro plans to integrate additional services as they become available. ArcGIS Runtime SDK for Android is scheduled for official release before the 2012 Esri International User Conference.

For more information on the Honolulu Tsunami Evacuation Zones app or to see it in action, visit the download site in Android Market. For more information, contact Kyle K. Shimabukuro at kshimabukuro@honolulu.gov.

Do You Really Know Your Constituents?

Marketing Tools and Segmentation Data Reveal the Answers for Elected Officials

Tapestry can answer the *who, where, what, and how* marketing questions about voters.

Campaign organizers and elected officials can probably divide constituents into categories of Very Supportive, Somewhat Supportive, Undecided, and Not Supportive. But what do they really know about these voters? The Very Supportive folks are already with them, and the Not Supportive group probably won't change, so how can they identify other voters who may be Somewhat Supportive or Undecided, and where do they find more like them?

The *who, where, what, and how* elements of segmentation are valuable marketing tools that elected officials can adapt to learn more about the types of voters in a district. For more than 30 years, companies, agencies, and organizations have used segmentation to divide and group consumer markets to more precisely target their best customers and prospects. This targeting method is superior to applying scattershot methods that might attract these preferred groups. Segmentation incorporates a wide range of data, explains customer diversity, simplifies marketing campaigns, and describes lifestyle and lifestage.



Segmentation systems operate on the theory that people with similar tastes, lifestyles, and behaviors seek others with the same tastes—like seeks like. These behaviors can be measured, predicted, and targeted. Segmentation combines the who of lifestyle demography with the where of local neighborhood geography to create a model of various lifestyle classifications or segments of actual neighborhoods with addresses—distinct behavioral market segments. Geography is a key element of segmentation that links demographics with neighborhood geographies such as ZIP Codes, census tracts, block groups, or blocks.

All marketers use demographics to describe customers and prospects. Demographic data is easy to use and provides simple descriptions of people by age, income, gender, family status, and educational level. However, relying solely on demographics hinders officials from identifying the precise groups they wish to target. Segmentation builds on demographic data and adds valuable lifestyle information such as who would work on a political campaign or vote in an election and attitudinal data such as whether they consider themselves somewhat liberal or somewhat conservative.

The next step is to learn about what products and services voter types prefer. Segmentation information also explains what they do in their spare time, the media types they prefer, the kinds of cars they drive, and the stores they patronize. For example, targeting young married couples with children would call for a message different from one used in neighborhoods of seniors. This knowledge saves time and money, allowing candidates to focus only on areas that will produce the best results and avoid neighborhoods with little potential.

The fourth element of consumer marketing is how to reach targeted constituents and prospects most effectively with the types of media and messaging that will generate the best responses. For example, if constituents listen to the radio during their commutes, shop online, or watch TV, buying time during morning drive times or advertising on local websites and cable TV would probably produce positive results.

Where can elected officials obtain this valuable information about voter types?

Esri's Tapestry Segmentation System

Esri's Tapestry Segmentation system represents the fourth generation of market segmentation that began more than 35 years ago. To provide an accurate, detailed description of US neighborhoods, Tapestry classifies all US residential areas into 65 distinctive segments that are based on socioeconomic and demographic characteristics. Tapestry enables users to profile constituents by

- Standard geographic areas including congressional district, census tract, block group, ZIP Code, and ZIP+4
- User-defined areas such as rings or polygons based on distance, drive time, or other specifications
- Customer addresses or site locations

Geocoding Voter Addresses

Once candidates have used Tapestry to identify best voter types and their locations, geocoding address records can increase the value of voter lists. Appending a latitude-longitude coordinate and a Tapestry segment code to each record improves the ability to accurately target voters with the appropriate messaging, fund-raising requests, and other campaign activities. How can this help target voters more precisely? Here's an example of an address record with no Tapestry segment code appended:

John's address record contains very little information about him. We know only that he is a male and lives on South Main Street in Fairfax, Virginia. When a Tapestry segment code is appended to the address record, it is easier to understand who John is:

John is in the *Enterprising Professionals* segment. He is a young, educated, married, working professional with growing consumer clout who lives in a townhouse or apartment in a newer neighborhood. He relies on cell phones and PCs to stay in touch. He goes online to find his next job or home, track his investments, and shop. He is likely to own the latest electronics, practice yoga, play Frisbee and football, jog, and go to the movies and basketball games. He might also travel frequently in the United States and abroad.

Tapestry can answer the *who, where, what, and how* marketing questions about voters. This information will support more targeted campaigns, increasing fund-raising response rates, analyzing voters more precisely, improving messaging, and quite possibly winning an election.

For more information about Tapestry Segmentation, visit esri.com/tapestry.

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Esri Online

Discover Map Stories

Maps can tell wonderful stories that fascinate and educate us, which is why Esri launched Storytelling with Maps (storymaps.esri.com). Visit the site to see maps on topics like wealth and poverty in the United States and cell phone use around the world.

Allen Carroll, ArcGIS Online content program manager at Esri and former chief cartographer at National Geographic Maps, heads this initiative. In 2012, look for more stories that relate to current issues including the economy, unemployment, the elections, and sustainability.



← The wealthy (blue) live in relative isolation from the less affluent (red).

Engage Citizens during Elections

Give voters easy-to-use tools to access election information. At esri.com/engagingcitizens, you'll find links to Esri's Election Polling Places and Election Results View application templates. Video demos will show you how the templates can help you better serve citizens.

Extend the Reach of Your GIS

Did you miss the Extend the Reach of Your GIS half-day seminar last fall? If so, check out the seminar materials at esri.com/extendyourreach to access recorded presentations, video demos, and other resources. Learn about best practices for publishing and sharing your maps, data, and models.

Esri Career Opportunities

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Esri ELA Supports Maryland's Nationally Recognized GIS Program

ArcGIS Software Empowers Agencies to Deliver Transparency and Accountability

“The ELA is important because it makes accessing software easier but also because it is a collective, multiagency investment in geospatial technology.”

Barney Krucoff, Geographic Information Officer, State of Maryland

The State of Maryland has acquired an Esri enterprise license agreement (ELA) that provides unlimited access to ArcGIS software to staff in its agencies. Under governor Martin O'Malley's leadership, the state uses GIS for much of its work including groundbreaking transparency and accountability initiatives such as StateStat, GreenPrint, and PlanMaryland. Now, access to the software will extend to all corners of state government.

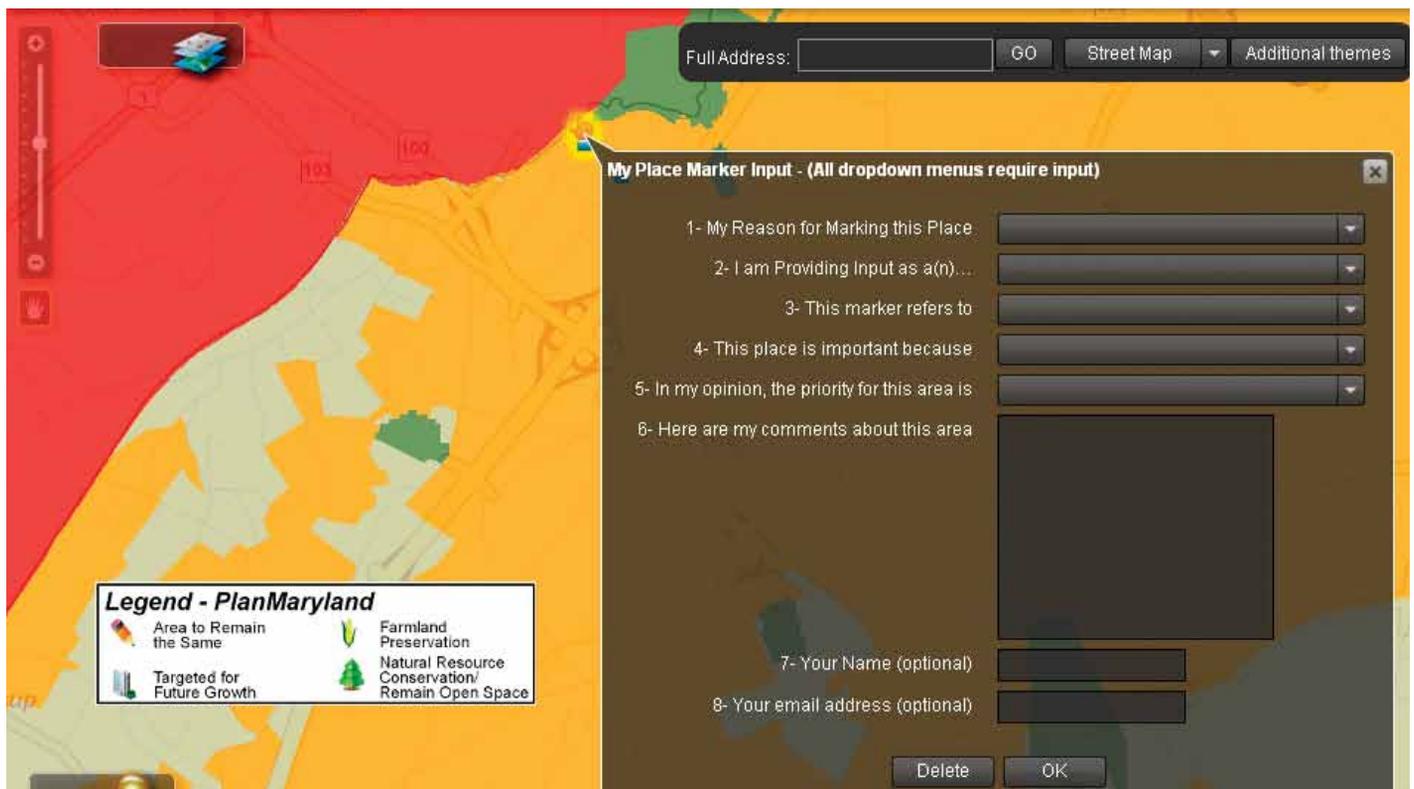
“The drive for this came down from the top,” said Kenny Miller, deputy geographic information officer, State of Maryland. “Governor O'Malley is such a tremendous supporter of using GIS technology to improve decision making and transparency that he wanted all the agencies to have access so they can adopt GIS in their business missions.”

Agencies that did not have GIS software can now spatially enable their data to make workflows more efficient and map complex

issues for greater clarity. For example, the Department of Legislative Services hadn't previously used GIS but immediately secured licenses once the ELA was in place. Staff will use the software to map capital and operating budgets for legislators who can then spatially analyze impacts of budgetary decisions.

“The ELA is important because it makes accessing software easier but also because it is a collective, multiagency investment in geospatial technology,” said Barney Krucoff, geographic information officer, State of Maryland. “The ELA is a case of many pooling their resources for the common good and, as such, is a model for the rest of the Maryland geospatial program as a whole.”

For more information on Esri ELAs, visit esri.com/ela.



↑ Interactive mapping applications, like this one for PlanMaryland, support transparency and citizen engagement.



GIS Integrated Asset And Pavement Mangement



Asset Management

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

Pavement Management

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Taking the Scenic Route

Mono County Plans Ahead to Increase Tourism

Tufa rock formations leap from the surface of Mono Lake in Mono County, California. The beautiful landscape of this ancient lake attracts hikers, campers, kayakers, and photographers every year. It also provides a lesson in how ancient people used to survive in the area—eating flies from this saltwater pool.

The county government wants more people to know about this kind of natural and cultural jewel set along California's Highway 395.

Throughout Mono County, the highway weaves along the eastern side of the Sierra Nevada range between Yosemite National Park and Nevada. It is a designated California scenic byway, but the county wants the United States Department of Transportation's Federal Highway Administration (FHA) to recognize it as one of the nation's scenic byways too. This designation will help the county preserve; enhance; and, very important, promote this route. Federal byway status also opens up new sources of federal funding that will help the county maintain its infrastructure and develop new projects.

Understanding Assets

FHA awarded the county a grant to create its corridor management plan, a key step on the path to federal recognition. To create the plan, county staff went into the field with GPS to inventory assets and opportunities along the highway. As part of this inventory, staff collected facility and infrastructure data along the corridor and attributed to it key asset management information such as manufacturer, date of installation, repair needs, and accessibility according to Americans with Disabilities Act (ADA) standards.

"For each site along the byway, we collected GIS data on the facilities to better understand the current visitor experiences and identify key areas that can be improved," said Nate Greenberg, GIS coordinator for Mono County. "We also want a better understanding of maintenance costs associated with our infrastructure, which will ultimately dovetail into an asset management system we want to create with this data."

The corridor management plan will help the county protect the essential nature of this part of the eastern Sierra. In the plan, FHA requires the county to explain the intrinsic qualities of the facilities and attractions as recreational, cultural, scenic, natural, or archaeological.

↓ Photo Courtesy of Greg Newbry





↑ To gain recognition of Highway 395 as a federal scenic byway, Mono County mapped assets along the route including this welcome center.

“If a site has cultural qualities, for example, specific fields were populated when we collected the data,” said Greenberg. “It might have been a site where Native Americans carved arrowheads or a site like Bodie State Historic Park, which was one of the original and largest mining sites in California during the gold rush of the 1800s.”

At the end of each workday, the county’s GIS intern Steve Connett would upload the data gathered from the field to ArcGIS for Server, which would allow other staff to immediately review the information on an internal web map. The same data is available publicly at http://gis.mono.ca.gov/silverlightapps/FacilitiesInfrastructure_Public.

“It was really exciting to literally watch this very rich dataset grow right before our eyes,” said Greenberg. “Not only were we capturing information that helped shape the picture of our byway, but each day we were gathering critical data that will help us support decision making and better understand management needs for years to come.”

Drawing Crowds

Gaining a deeper understanding of the resources along the byway and enhancing the visitor experience will be part of creating a Highway 395 brand. The county will market the experiences along the 100 miles of highway and build a brand identity of the area, likely tied to the current slogan Wild by Nature.

“At the end of the day, creating the plan and attaining federal recognition has as much to do with marketing and economic development as it does with protecting our resources,” said Greenberg. “Having a

better understanding of what is out there, how it’s being used, and whether it’s being overused or underutilized helps us make decisions that will attract people to the area for decades.”

In the future, the county plans to create another public-facing website, showcasing the data it collected, that will help visitors get to know this area better and plan their adventures here.

“We expect to have a pretty interactive website including a dynamic map that will be a tool to create customized itineraries for visitors, branded like the paper publications we’ll hand out at visitor centers, but on a whole other level,” said Heather deBethizy, assistant planner for Mono County. “We’d like for it to also be tied to a mobile app, but we’re in the very early phases of development now. Right now, we’re just doing all the foundation work, and after that, the possibilities are endless.”

For more information, contact Nate Greenberg, GIS coordinator for Mono County, California, at ngreenberg@mono.ca.gov.

Opening Up Health Reform

Riverside County's Public Health Department Takes a New Look at Grant Applications

Staff at the Epidemiology and Program Evaluation Branch of the Riverside County Department of Public Health understand the power of a map. This branch performs most of the data profiling for anyone who needs map-level data at the Department of Public Health. The maps are used to promote and protect the health of county residents and visitors, as well as ensure that services promoting the well-being of the community are available. From grant work for funding health programs to ensuring that people across the county have fair and equitable access to emergency medical services, maps provide insight like no other tool.

Riverside County Department of Public Health oversees the health of almost two million people located in more than two dozen cities. Issues the department faces in this culturally diverse population include high rates of cardiovascular disease, obesity, and physical inactivity.

"It is our vision," explains Wendy Betancourt, public health program chief of Epidemiology and Program Evaluation at the Riverside County Department of Public Health, "that the county's residents will engage in active, healthy lifestyles; enjoy good physical and mental health; and have access to appropriate and cost-effective preventive, primary, specialty, and emergency care. This can be achieved through a high level of public and environmental health services and mental health programs where these services are most needed."

To target these areas and manage a finite arsenal of resources and government funds, the Riverside County Department of Public Health turned to GIS to help make decisions. The department has been a user of ArcGIS for Server and ArcGIS for Desktop for a number of years. It uses ArcGIS to easily share data back and forth between other Riverside County departments and the federal government, whose staff are also standardized on the software.

Easy Drive-Time Analysis for Health Reform Law

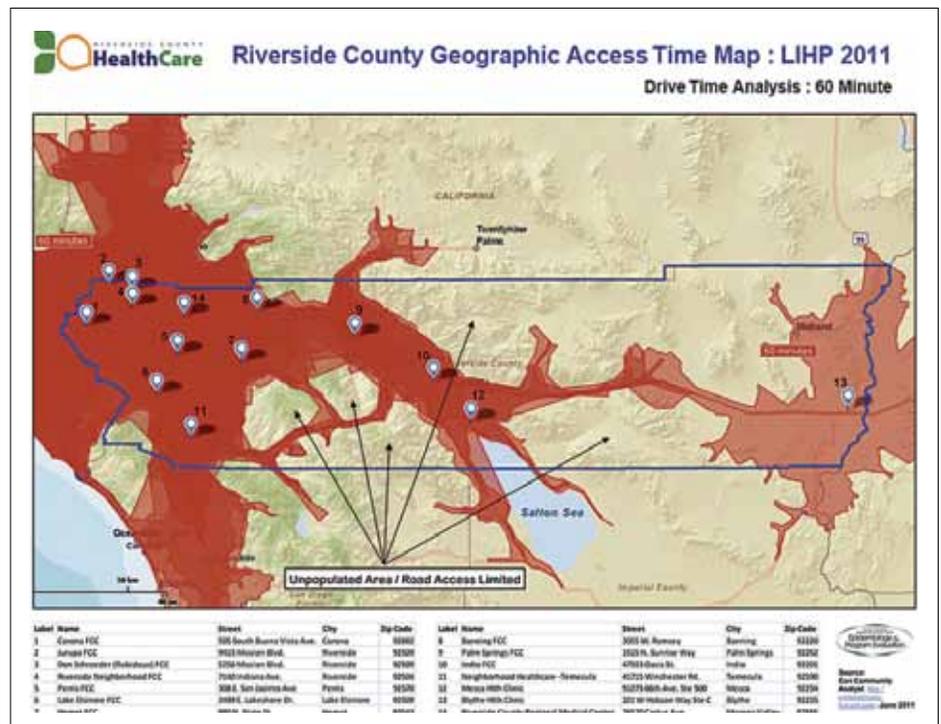
Staff at the Epidemiology and Program Evaluation Branch found out about a new Esri software solution—Community Analyst—through a list service and decided to explore its possibilities. Epidemiologist Kevin Meconis and research specialist Wayne Harris have put the web-based mapping and reporting solution to work analyzing data. They are specifically using the solution to help the county adhere to a new health care reform law that requires the county to ensure that its clinic system serves low-income community members and the uninsured. The federal health reform act includes \$11 billion for nationwide expansion of community clinics like these, and California is gearing up to receive \$1 billion of that money. Riverside is looking forward to securing some of this funding for its community clinics. The law takes effect in 2014, but Meconis and Harris are using Community Analyst to research a preparatory grant application that in essence gives them a head start to this process.

The grant application requires a map product displaying a 60-minute drive time of the catchment area surrounding each clinic; Meconis was able to easily mark on the map the exact locations of the clinics based on the clinic addresses and then calculate drive times for each clinic. "There was no other way to do this that was as convenient," says Meconis. "I don't think we would have been able to perform this function any other way."

And even though this particular feature of the software was new to Meconis, in less than a day, he understood how to use the software and created a customized drive-time analysis on a dynamic map. This analysis was then easily output in the format he needed to submit for the grant.

The Latest Data at Users' Fingertips

The ability to generate profiles was another feature of this GIS solution that the epidemiologists and researchers appreciated. Before using this solution, staff would have to find the area on a map that they were interested in →



↑ Riverside County is using Community Analyst to apply for grants for low-income community clinics, analyzing how long it takes for members of these communities to travel to the clinics.

Solar Mapping Enabling Sustainable Cities

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Property Summary

Total Roof Area: 7,771 Sq. Ft.
Electric Utility: Green Energy

Solar Electric

Area Suitable for Solar:
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Solar PV Potential:
Up to 62.3 kW

Electric Savings:
Up to \$10,211 /Year

Electricity Produced:
92,827 kWh/Year

Carbon Savings:
6,721 lbs/Year

Solar Hot Water

Solar Water Heating Potential:
13,500 Therms/Year

Gas Savings:
\$10,732 /Year

Carbon Savings:
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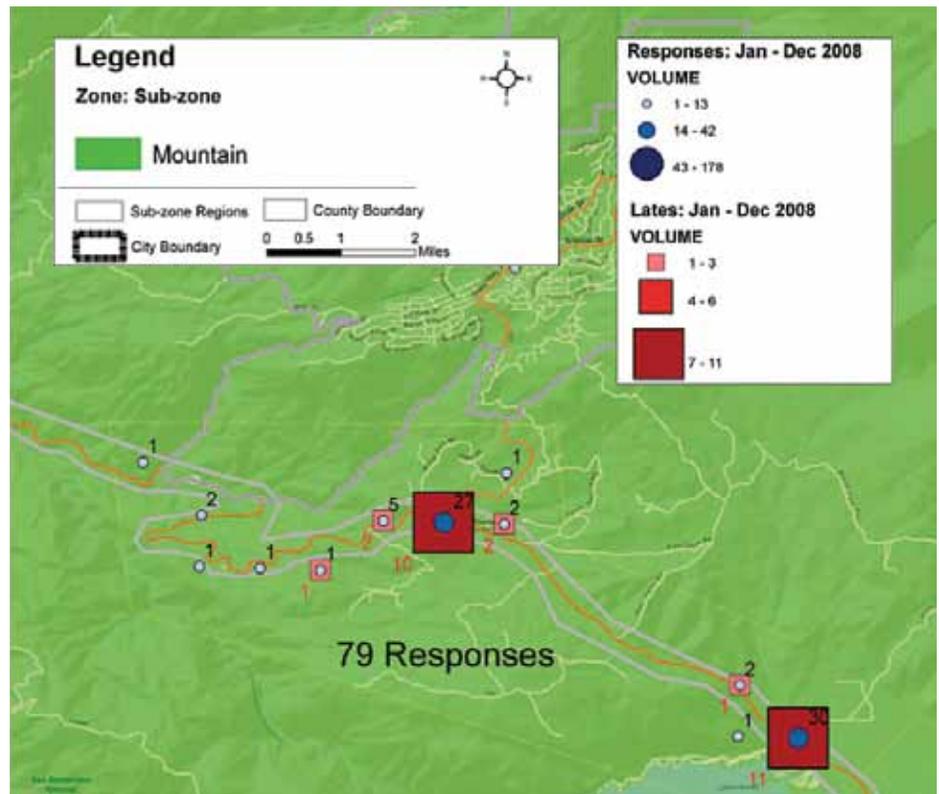
→ and then ferret out tabular data from multiple sources, such as the American Community Survey (ACS) and the US Federal Department of Finance and Population estimates.

Once the raw data is found, it needs to be put into the proper format to be seen and searched through a mapping interface. That process could be drawn out and cumbersome, and while Meconis says he and his colleagues are pretty good at hunting for data, the time it takes to find it can certainly be used on more valuable efforts. All this information became available to them. From ACS data contained in one-, three-, and five-year databases, as well as data from the Census 2010, Census 2000, and 1990 Census, Esri offers current-year demographic estimates that are included in the licensing of the solution. Geographies not supplied by the Census Bureau are also available through Community Analyst and include ZIP Codes, designated market areas, rings, drive times, and hand-drawn areas. Data for states, counties, tracts, block groups, places, core-based statistical areas, congressional districts, and county subdivisions is also provided.

“One of the requests we always get is to find the latest data that is available,” says Meconis. “Before, the most up-to-date data we had to work from was usually several years out of date; now we have the 2010 estimates right at our fingertips.”

Branch staff help with several grant applications each year. Sometimes, depending on the nature of the grant, the department must also apply for many certifications for federally qualified health centers. This means they routinely have to provide documentation to their funding sources that they do indeed serve the communities they state they are serving.

Part of this process requires the ability to create custom profiles based on selecting more than one ZIP Code and aggregating the data. Now the staff select the appropriate areas around each of these clinics, as well as parse the included data with their own data. “This is incredibly convenient, because all the data is in one place, and we don’t have to look elsewhere for information on race, ethnicity, age structure, economic indicators, and other information,” says Meconis.



↑ This ArcGIS analysis allowed branch staff to make sure ambulance services were in compliance with county regulations for response times to incidents.

Managing Workflows for Greater Efficiency

Community Analyst integrates well into the workflow of the branch staff. They support more than 10 departments in the Riverside County Department of Public Health using ArcGIS in many different capacities.

Currently, branch staff are working on a grant program for healthy homes funding that helps people remediate older houses that might contain dangerous substances, such as mold, insects, or lead paint. GIS is used to find and identify locations for at-risk housing across the county to help target their services. Since this information is all available from the county databases—which are maintained in geodatabases—ArcGIS can be used to easily find and analyze the information, such as identifying older neighborhoods and specific homeowners.

GIS is also helpful for supporting the emergency medical services program. By looking at ambulance service areas on a map, branch staff are able to ensure that the ambulance companies are in compliance with county

regulations for response times to incidents. “Anytime there is an issue with a provider about where a call is located and whether it is inside a particular boundary or not, maps are used to resolve the dispute,” says Meconis.

The county also works with schools and law enforcement to obtain grants for educational programs promoting safe walking to and from school. Detailed maps show the community where schools with high pedestrian traffic are located, as well as areas that have had past incidents, and help them plan routes that are safer.

For more information, contact Wendy Betancourt, Riverside County Department of Public Health, at wbetanco@rivcocha.org.



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