

Esri News

for State & Local Government

Summer 2015

Outage Halts Hunting and Fishing License Sales

California Department of Fish and Wildlife Uses ArcGIS Online to Speed Repairs

By Steve Goldman, GIS Manager, California Department of Fish and Wildlife

On Saturday, July 26, 2014, without warning, all 1,400 of the retail outlet hunting and fishing license sales terminals in California went offline. Suddenly, inconvenienced hunters and anglers had to figure out another way to obtain their licenses or cancel their weekend plans. For the California Department of Fish and Wildlife (CDFW), a small public relations problem would grow exponentially if it didn't get resolved quickly.

Sales at these in-store, cashier-operated terminals represent a significant number of the hunting and fishing licenses sold by the CDFW for activities in California. These locations together account for more than \$21 million in annual sales. This equates to approximately \$58,000 in potential lost sales for every day of such an outage.

CDFW's Internet sales were still operational, as were the 10 CDFW sales

offices throughout the state that sell licenses directly, but a large percentage of sales happen at the retail license agent terminals.

Working with the vendor that supplies and manages the sales terminals for CDFW, the problem was quickly identified: the security certificates that each terminal uses to communicate securely back to the server had expired.

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↑ Maps on iPhones helped field staff find and navigate to temporary locations in drought-stricken areas.

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Collin County, Texas, Reports Success with Election Polling Places Application

By Kevin Stewart, GISi

During past elections, Collin County, Texas, experienced server downtime that interrupted online services for citizens, including access to a polling place locator. In preparation for the big election on Tuesday, November 4, 2014, the county implemented Esri's Polling Locator template application with updates from GISi that improved citizens' online experience. Part of the ArcGIS for Local Government solution, this application allowed voting citizens of Collin County to locate the most convenient polling place in their area. In addition, the application was far more lightweight on the county's server than a previous application had been, which relied on several processes running at the same time and required multiple server reboots during an election in 2012.

An important feature of the new application allowed users to visualize wait times and thus decide which polling place to visit. Users then had the ability to print these locations along with directions to get to them. Users who arrived at a polling location and found that the line was too long could use the app to scan the QR code that was on the wall at the polling location, and then select a different location at which to vote.

"We were able to put together a more sound application and an overall better experience," said Tim Nolan, IT applications manager, Collin County.

"We rolled out a new

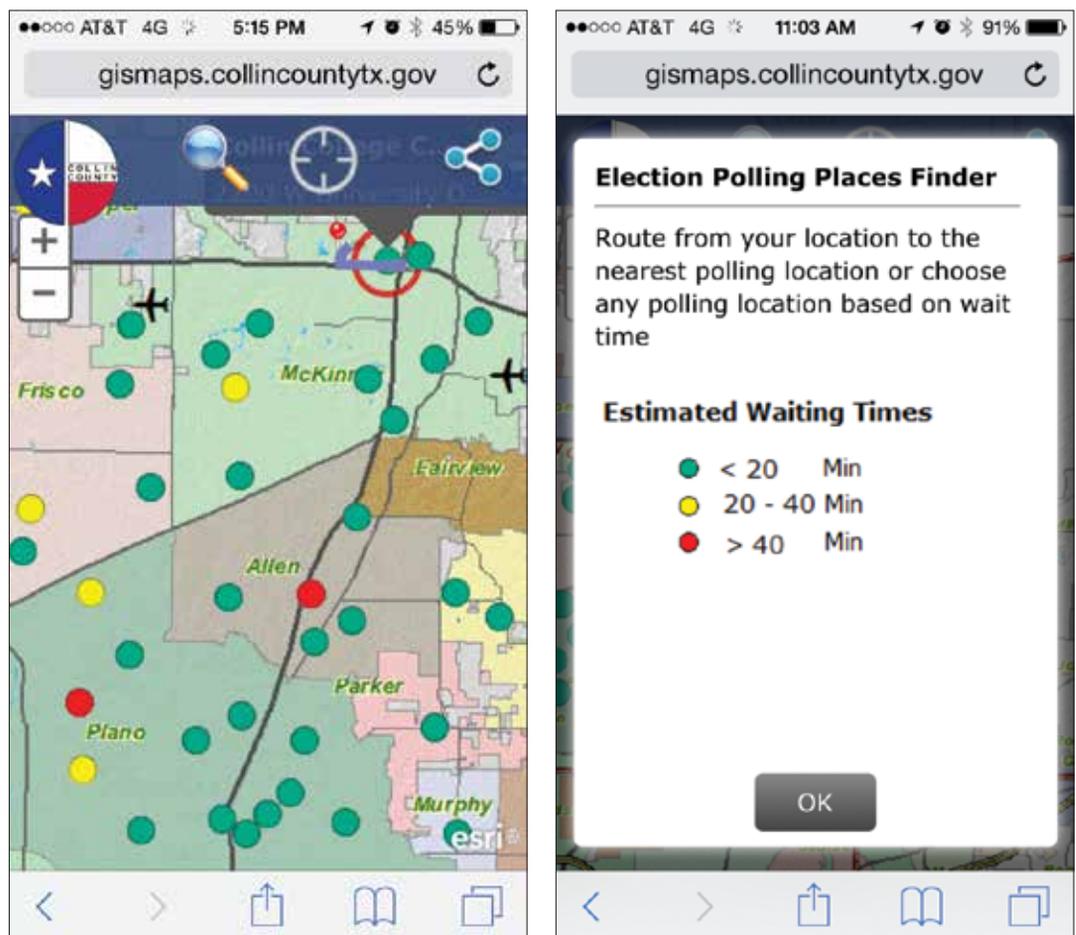
website version earlier this year and were pleased that we experienced no downtime during the recent midterm elections due to the follow-up improvements to our system. Also, having self-contained routing directions created a much better user experience for our citizens and allowed them the ability to more easily find the best location to vote."

In contrast to past elections, the 2014 midterm elections proved to be an enormous success with no server reboots, 174,242 total page views, 19,020 visits to the Election Polling Places Finder application,

and 26,842 routes generated from the Election Polling Places Finder application.

"This is just a great example of how powerful it is to combine a few usability requirements with the right location technology and the profound effect it can have, in this case, for improving the citizen voting experience," said Kevin Stewart, GISi managing partner for state and local government.

To learn more, contact Kevin Stewart, GISi, at kevin.stewart@gisinc.com.



↑ Collin County's Election Polling Places Finder shows estimated wait times.

Content for Your Secure Environments

Data Appliance for ArcGIS

Kim Avery, Esri

Maps are only as good as their underlying data. Your organization probably spends a lot of time and money on building and maintaining the operational datasets used in mapping applications that support your decision-making processes. But what about the basemaps and layers that provide context for your operational layers?

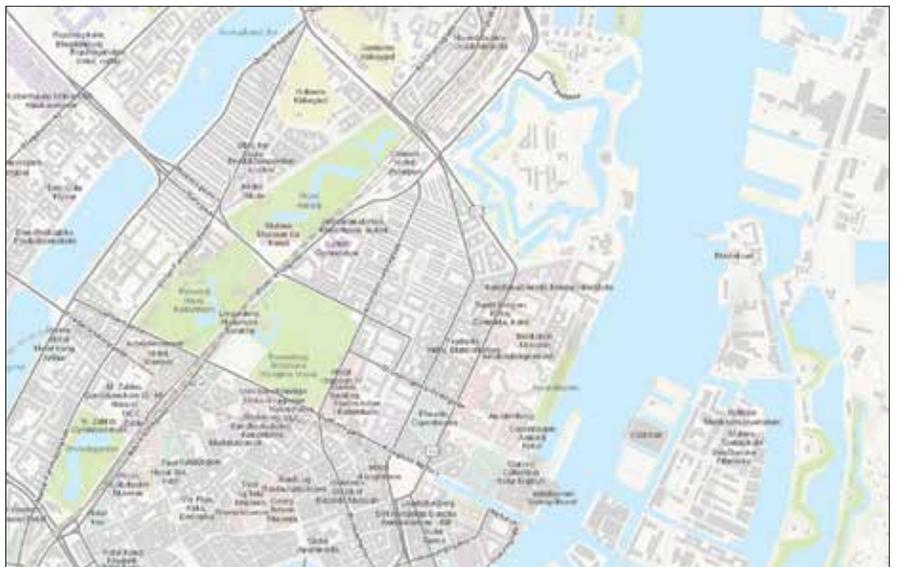
One of the best features of ArcGIS Online is instant access to a rich set of ready-to-use content, but if you work in a secure environment, you may not be able to leverage this great online content. For example, if your agency or department deals with public safety, health, or defense, you are probably using custom applications that do not have access to the Internet. To solve that problem, Esri has an on-premises solution, Data Appliance for ArcGIS. Much of the data that is available in ArcGIS Online is also included on the appliance, which can be used in your secure environment behind your firewall.

Content includes imagery and street, topographic, and elevation maps and is preloaded on a network-attached storage (NAS) device. Esri has done all the work up front to make sure the content is prerendered and precached, so you get not only access to visually appealing basemaps but also high performance. If you have worked with large datasets, you know that this process can take a lot of time—weeks or months, depending on the size of the datasets.

In your secure environment, Data Appliance for ArcGIS gives you access to great content to highlight the existing operational data in your applications. And because the appliance is ready to connect to an internal network, it dramatically reduces the time and expense that it would normally take to acquire, manage, and deploy an equivalent amount of geospatial data.



↑ High-Resolution Imagery of Göteborg, Sweden, from World Imagery
(Source: DigitalGlobe, Microsoft)



↑ Detail of Copenhagen, Denmark, from the World Topographic Map
(Source: Danish GeoData Agency, HERE)

Visit esri.com/dataappliance to learn more about Data Appliance for ArcGIS and how it can be used to enhance your secure enterprise applications.

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With an expired certificate, all online communication was severed. Each location was going to require a physical intervention to install an updated certificate and restore operation.

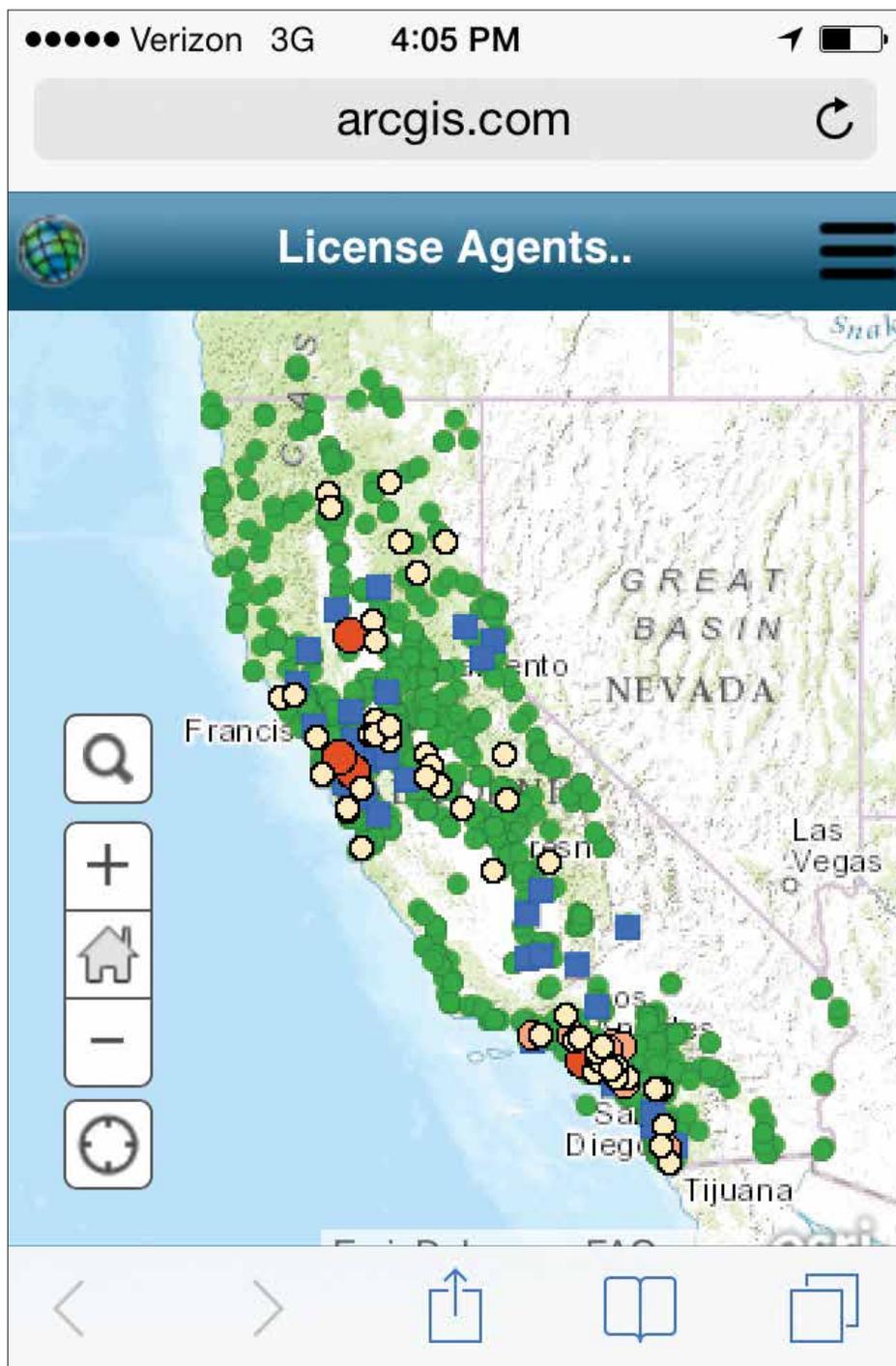
Overnight, the terminal vendor sent new certificate files on USB portable drives to all the outlets along with basic instructions on how to install the certificate. This was a start, but CDFW knew from experience with these outlets that many would not have the time or technical knowledge to perform this task to get their terminals back up and running. CDFW officials soon realized that they needed to mobilize a sizable workforce to quickly visit as many of these locations as possible. Good maps and fast data turnaround would be the key to efficiently tasking this workforce to get the job done.

GIS Visualized the Problem

The vendor provided CDFW with an Excel spreadsheet listing the outlets that were unable to sell licenses. The spreadsheet contained outlet address information but lacked exact coordinate location information. Over the next week, the vendor supplied spreadsheet updates every two hours during expanded working hours, allowing CDFW staff to track their progress in near real time.

CDFW's CIO Tom Lupo pulled together an initial strategy meeting. Knowing that GIS would be an important part of the solution, he included GIS analyst Daniel Rankin and GIS developer Chet Egbert in the group. Their direction from Lupo was to map the data, make the map accessible for the field staff on their iPhones, and update it quickly with each new data delivery.

Lupo, Rankin, and Egbert had two problems to solve very quickly: (1) determining the quickest and most accurate geocoding method to convert the outlet addresses to map locations and (2) finding the simplest way to make a map of the data available on iPhones.



↑ Dot sizes indicated annual sales totals at each outlet. Dots turned green once sales terminals were operational. Blue squares represented sites with known issues.

Problem #1

The GIS team knew that geocoding is a foundational function of GIS. Geocoding has been one of the most basic and important methods of making tabular data spatial since the early days of GIS. However, being a wildlife agency, CDFW had very little recent experience in performing any geocoding. Plants, animals, and habitats don't have addresses that can be geocoded.

In concept, geocoding is straightforward, but in reality, it can be extremely messy, depending on the cleanliness of the data. Address data can, and usually does, contain a wide variety of ways of representing an address including nonstandard abbreviations, strangely notated address and apartment numbers, and descriptions instead of an actual address. The data may also have complications such as spelling errors and mismatched city/ZIP code combinations. It can take hours to go through a single dataset and hand-match the addresses that don't get high-quality initial matches. CDFW's GIS needed a workflow that prevented this problem.

Several in the group had done geocoding in previous jobs, and they quickly came up with three potential address datasets or services for running the geocoding process. The group ran the Excel spreadsheet through all of them and found a pretty clear winner. The ArcGIS Online geocoding service was the best at parsing the addresses and came up with the most high-quality initial hits.

Problem #1 was solved.

Problem #2

CDFW's GIS team now needed to get the data onto an iPhone-usable map. It had to be quick to initially deploy, and data updates had to be easy and fast. The team members considered the web mapping technologies they were already employing to see if those would work.

This included ArcGIS API for JavaScript applications meant for desktop use, and some web-embedded ArcGIS Online web maps. The existing JavaScript API applications were much too complex to meet this need, and viewing the ArcGIS Online web maps on an iPhone did not present a usable solution.

GIS developer Dean Chiang then noted that the basic ArcGIS Online map viewer would work out of the box on an iPhone. Basic controls were laid out well, and the Identify function provided an appropriately sized pop-up with text scaled for mobile devices. By the end of the day of the request, the team had the data on the map and had the map on the iPhone, ready for use by field staff.

Mobile Map Led the Way

The iPhone map became the cornerstone of the field efforts over the coming days. It was used in daily morning deployment planning sessions to properly allocate and direct efforts, and it was used directly by field staff to retrieve information for each stop, enabling them to easily call and navigate to each location. They chose basic color ramp point symbology to symbolize four categories of annual sales totals for the outlet locations. This allowed staff to have the information at their fingertips on the map to help guide deployment.

As each location was visited and restored to operational status, the change was indicated with a green dot on the map. This visualization of the places that still needed attention along with those where the problem had been fixed provided something of a motivator among the field staff, as they unofficially competed with each other to put more green into their respective areas of the map.

The next few days witnessed huge efforts by many CDFW staff to cover most areas of California, including a great many that are mainly rural. There were days that staff put in more than 400 miles, hitting 10 or 11 outlets in one day.

And, of course, nothing happening in California in 2014 was free from the effects of drought. Quite a few of the outlet terminals are normally in small buildings at boat docks. Almost all the lakes and reservoirs in California were at historically low levels, thus the dock operators had been required to move their docks downslope and sometimes to significantly different areas, just to find an accessible waterline. This put an additional burden on the staff trying to reach these new locations, as they weren't always clearly visible or accessible from the dock's normal location. Braving the summer heat, some CDFW staff walked up to half a mile in 108-degree weather to reach these outlet locations.

Although there were challenges, with the rapid deployment of GIS and the large mobilization of staff, CDFW achieved 90 percent operational status of retail license agents by the end of the week.

For more information, contact Steve Goldman, GIS manager, California Department of Fish and Wildlife, at steve.goldman@wildlife.ca.gov.

Reducing the Cost and Complexity of Publishing Open Data

Roscommon County Council, Ireland

Roscommon County Council was established in 1899 and serves a population of approximately 64,000 people in the ninth-largest county of the Republic of Ireland. The council is committed to making public data open and accessible to everyone living in the county as well as those visiting or wishing to invest there.

Open data is fast becoming an imperative for all government organizations in the Republic of Ireland. Indeed, it is a fundamental requirement for the Open Government Partnership (OGP), a program launched in 2011 to promote transparency in governments around the world. The Irish government is fully committed to upholding the aims and principles of OGP and, in May 2014, the government published its National

Action Plan in what is one of the final stages of the journey toward becoming a full OGP partner. With the quickening pace of the OGP movement, all central government departments, public-sector bodies, and local authorities in Ireland are under great pressure to make more of their data open. In practice, this means making public data resources free for any individual or organization to access, unconstrained by license agreements and available in standard formats suitable for use in a range of different IT applications.

For councils in Ireland, however, there are inevitable challenges involved in making data open. There were questions: How could councils overcome the technical obstacles to making vast data volumes available in multiple standard

formats? and, In the current period of economic recession, how could all the objectives of open data be achieved by existing staff with limited time and significantly constrained budgets?

Roscommon County Council turned to GIS technology to help it push through these challenges. The council had recently purchased licenses to Esri's ArcGIS platform and discovered that Esri offers a prebuilt, ready-to-use template for publishing open data, using ArcGIS Open Data.

Barry Doyle, GIS officer at Roscommon County Council, used this ArcGIS Online template to develop a brand-new channel for delivering open data (roscommon.roscommonco.opendata.arcgis.com). As a subscription-based cloud service,

→ Users can use search terms such as "parks" and instantly get results.

The screenshot shows the Roscommon County Council Open Data Portal. At the top, there is a search bar with the text "Parks" and a "SEARCH WITHIN MAP" button. Below the search bar is a map of Roscommon County, Ireland, with various parks highlighted in green. The map includes navigation controls like zoom in (+), zoom out (-), and a search icon. Below the map, there are buttons for "OPEN IN ARCGIS", "SHARE", "SUBSCRIBE", and "Download Dataset".

Below the map, the "PublicParks" dataset is displayed. It has tabs for "Details", "Table", and "Charts". The "Details" tab is selected, showing "DATASET ATTRIBUTES" and "ABOUT" information.

DATASET ATTRIBUTES	
Location_Comment Text	Main Entrance (1), Entrance next to Castle (1), Knockranny Amenity (1) ... (1 more)
Name Text	Ballyleague Amenity & Bathing Pool (1), Boyle Lawn (1), Corober, Carrick on Shannon (1), Lisnamult (1) ... (3 more)
Streetview_Link Text	http://apps.roscommonco.ie/GoogleStreetView/G... (1)

ABOUT
RoscomOpenData
By RoscomCoCoGIS on May 20, 2014
Updated: 22 days ago
Source <http://services1.arcgis.com/0g8o8746Sun2eDgq/Metadata/PublicParks>
Metadata PublicParks
Licensing This dataset may only be reproduced and/or

“ArcGIS Online makes it very easy for councils to create and maintain an open data portal.”

Barry Doyle, GIS Officer at Roscommon County Council

ArcGIS Online required no hardware infrastructure, on-site data storage, or system maintenance, so it was quick and inexpensive for Doyle to launch the new approach. So far, Roscommon County Council has published 25 datasets on its new open data portal, ranging from angling sites and recycling facilities to local election results.

“ArcGIS Online makes it very easy for councils to create and maintain an open data portal,” Doyle says. “You don’t have to be a programmer. You don’t have to export data in multiple formats. All the hard work is done for you.

“If I hadn’t had ArcGIS Online, I would have had to engage a web developer to build a separate website specifically for serving up open data,” Doyle explains. “I

would then have had to export all our data to the open formats, maintain it, and host it. That would have taken a lot of time and money.”

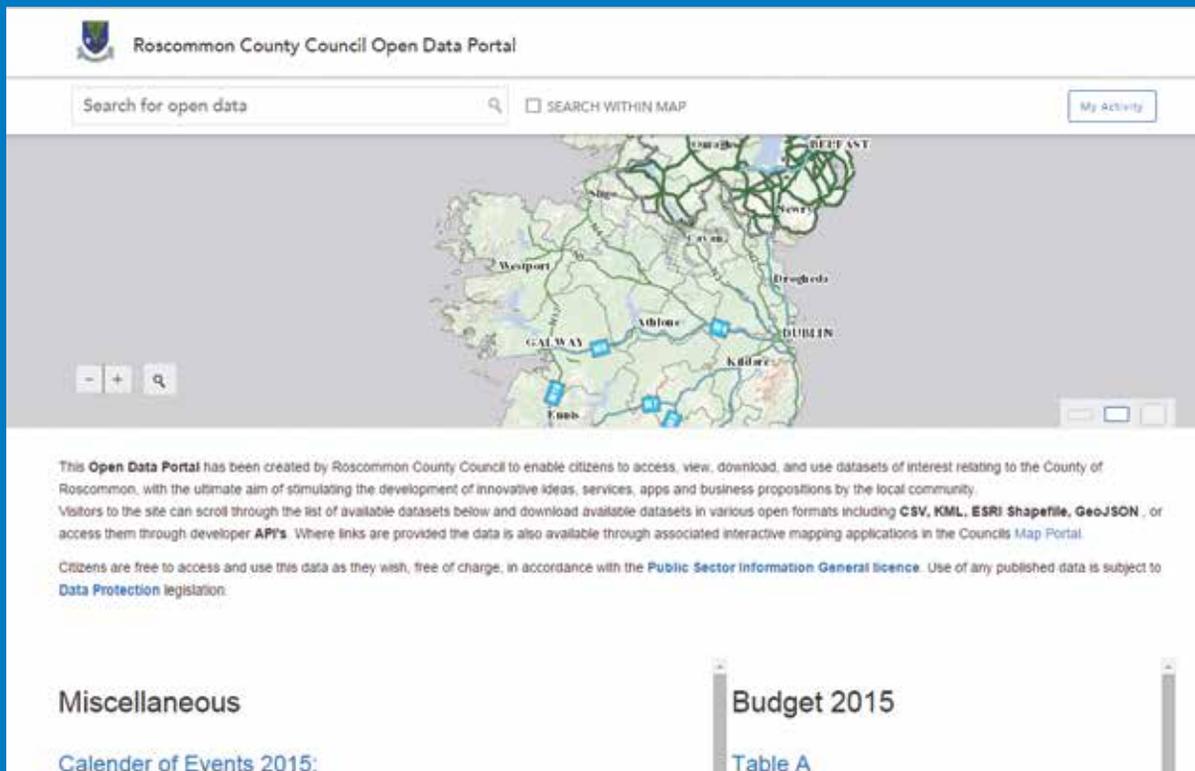
ArcGIS Online is an integrated part of the ArcGIS platform and, as such, draws on the same single source of geospatial data as does the public-facing interactive map service that the council has on its website.

“I only have to maintain and publish our data once and it is presented to the public in two different ways,” Doyle observes.

Roscommon County Council now has a simple means of publishing data in a range of standard formats, making it easily accessible to anyone. The county’s open data can be used by a wide range of organizations and individuals to support local businesses and community

groups and stimulate the local economy. Roscommon County Council achieved its open data objectives very cost efficiently and with minimal internal resources.

Like all local authorities, Roscommon County Council receives many requests for information. “It can take a lot of our time internally to respond to these requests,” says Doyle. “Now people can go to the open data portal themselves and the information is all there for them to use, so ArcGIS Online saves us time in this respect too. I estimate that we save a week or two a year.” He adds, “I like to think that the benefits of open data will increase over time as more people catch on to the fact that all this data is available. As I publish more datasets, the more the value of our open data portal will grow.”



← Roscommon County Council Open Data Portal

Selfies—More than Photos

Provide Different Services for Different Types of Selfies

In 2013, Oxford Dictionaries announced that *selfie*, defined as “a photograph that one has taken of oneself, typically one taken with a smartphone or webcam and uploaded to a social media website,” was its Word of the Year.

However, economist Edward Yardeni uses *selfie* to describe single people who can afford to spend on themselves or save for later because they’re not supporting a family, saving for college, or paying off a mortgage. How many people fit into this category? William Frey of the Brookings Institute states in the report *City Families; Suburban Singles*, “More than 80 percent of nonfamily households are single persons living alone; of these, more than one-third are 65 years and older.” More than 125 million people in the United States are single; more than half of all US adults are unmarried. From seniors to Millennials, selfies are found in every age, race, and income group.

Reasons vary for being single. Many young people burdened by student loans are postponing marriage and family to concentrate on their careers and pay off debt. Other singles are divorced or alone after the death of a spouse. For a large number of people who have never married, wedded bliss is not necessarily a goal—or the right person just hasn’t come along yet. A survey by the Pew Research Center cites that in 2012, a record number of Americans—20 percent of adults aged 25 and older—have never married. These folks may be quite content with the single life.

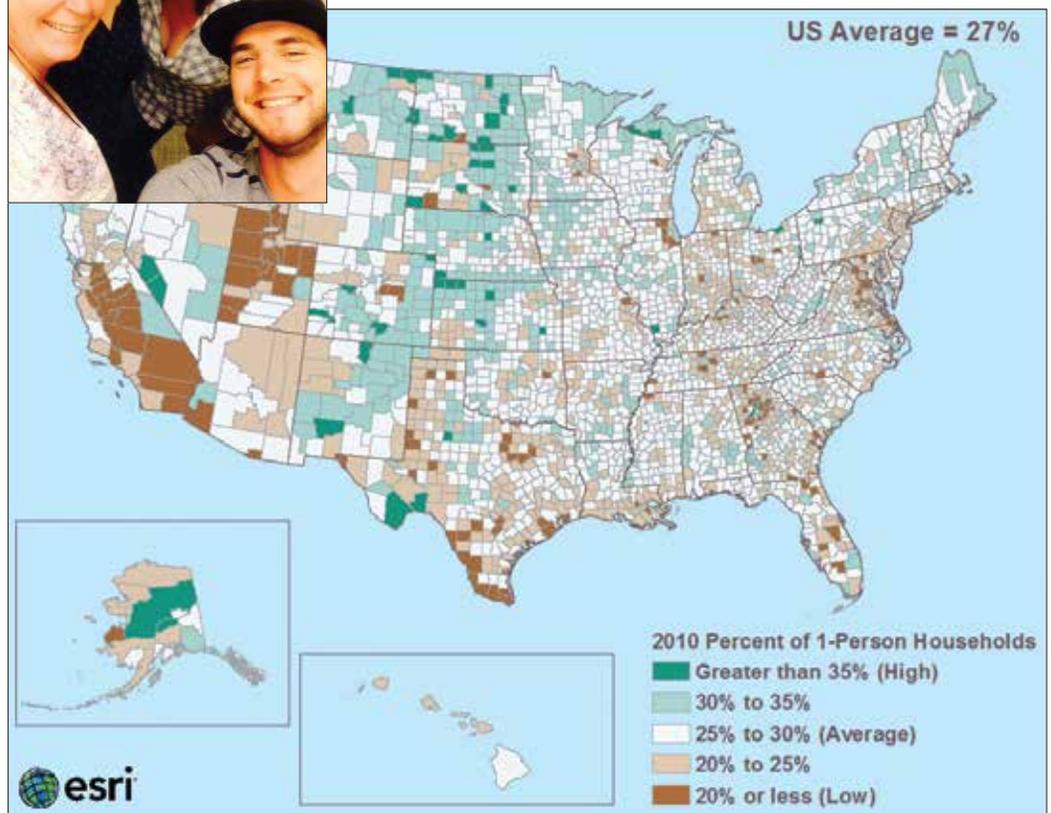
Selfies are a formidable consumer market; the US Bureau of Labor Statistics estimates that they spend approximately \$2 trillion on goods and services each year. Because selfies’ demographics and interests are so varied, community economic development

staff should seek businesses that cater to singles of all ages and income levels. To reach different groups of selfies, one message definitely cannot fit all. Another challenge is to balance marketing efforts targeting selfies and singles in committed relationships while not ignoring married couples and families.

Local government departments serving a high population of selfies may be challenged to find housing for young, old, affluent, or low-income one-person households. Areas with affluent selfies could be pitched to real estate developers that are building luxury apartments, whereas lower-income selfies of all ages need affordable or subsidized housing. Economic development departments serving mostly affluent selfies can pitch the area to small gourmet grocers, high-end electronics stores, boutiques, travel agencies, restaurants, and other types of businesses that cater to well-to-do singles.

Food companies, for example, are attracting different types of selfies by providing variety such as smaller portions, prepared meals, and other convenience foods. Because many Millennials snack during the day or eat out instead of sitting down to meals, companies have packaged on-the-go foods. However, more

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by Hyland

affluent selfies eat out frequently at full-service restaurants and grocery shop only for essentials or specialty foods. Older selfies might look for small packages of low-fat, low-sodium meals and appreciate the convenience of prepared items.

Because many selfies rent, they're not busy with do-it-yourself (DIY) projects; major appliances and home improvement items don't appeal to them. However, such people might spring for fancy coffee makers and floor cleaners. Electronics are always a major necessity for younger selfies, who don't mind spending for the newest upgrades.

Adventurous selfies who want to travel can find a wide variety of options. Travel, resort, and hotel companies are targeting selfies with themed cruises, destinations, and travel packages designed for all ages.

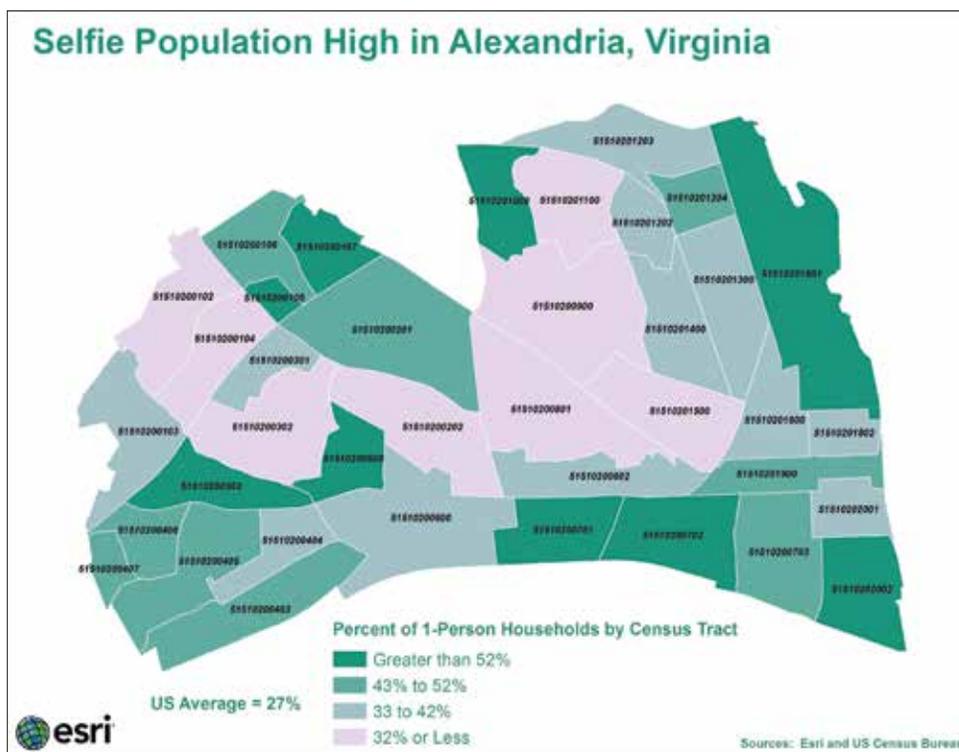
Where can you find selfies in the United States? Pockets of selfies can be found in densely populated urban areas such as New York; Chicago; San Francisco; and Washington, DC, where young people move to find work. Seniors are located in many places like Sumter County, Florida, and other selfies are scattered across nearly every state. Esri Tapestry Segmentation data provides information about lifestyles in one-person households. A few Tapestry segments of singles are summarized below:

College Towns

The people in this segment are either college students or work for a college or its supporting services. Students are busy with studies but make time for part-time jobs, sports, and socializing. These people might splurge on impulse purchases such as the latest fashions. Computers and cell phones play major roles in life for *College Towns* people, who go online for everything.

City Strivers

Many in this segment are foreign-born, holding onto their native cultures as they embrace American ways. These people rent apartments in densely populated city neighborhoods and spend most of their hard-earned wages on rent. They work in retail or service jobs, for which the commute is long, often on public transportation. They value style and image, follow trends, and look for deals on brand-name clothes. Eating out or splurging on personal services is an occasional treat. This segment also spends money on cable TV.



Young and Restless

Residents of *Young and Restless* neighborhoods are Millennials— young, diverse, well-educated, and either finishing classes or working. Typically, these people rent, live alone, or share a place in densely populated metropolitan areas in the South, West, and Midwest. Cell phones are vital to people in this demographic. Not brand loyal, they shop for the best price. They buy natural/organic food but will also go for fast food. They go online to bank, buy from eBay, and access Twitter and Facebook, and watch TV and movies.

Set to Impress

Set to Impress residents are young, either still in college or working, and rent apartments in large multiunit buildings in the city or suburbs. Many live alone but keep in close touch with family. Most have a cell phone. These people are very image conscious and often buy clothes impulsively to make themselves look good. They're really into music, listening to and downloading a variety of the latest music and knowing about their local music scene.

Metro Renters

Metro Renters residents are young, mobile, college educated, or still in school. They live alone or with a roommate in rented apartments or condos in city centers. Most of their income goes to rent; fashion; and the latest technology, including the cell phones and computers they use every day. They buy groceries at Whole Foods and Trader Joe's and shop for clothes at Banana Republic, Nordstrom, and Gap.

Elections and the ArcGIS Platform

By Matt Sheehan, WebMapSolutions

Trendsetters

Living life to the fullest, *Trendsetters* residents aren't ready to settle down. Young, educated singles with good jobs, they spend their disposable income on upscale city living and entertainment—mostly on rent. They're connected at all times; texting and social media are essential. E-readers and tablets are preferred for everything except women's fashion and epicurean magazines. These people shop at Whole Foods and Trader Joe's.

Laptops and Lattes

Affluent, well-educated singles, *Laptops and Lattes* residents love life in the big city and hold professional jobs. Most don't own a home or a vehicle; they rent apartments close to amenities. These people are investing in mutual funds and contributing to retirement plans. Regular expenses include nice clothes, travel, lattes at Starbucks, organic food at high-end grocers, or treatments at spas. To stay connected, laptops, cell phones, and iPads are always on.

Golden Years

These active, independent seniors are either retired or nearing the end of their careers. Most are singles or empty nesters. They enjoy life, staying busy with lots of interests. These people go online for everything and donate generously to charity. They read daily and Sunday newspapers, keep a landline phone, and use cell phones only for convenience. TV is for news, sports, and on-demand movies.

Social Security Set

These residents live alone on low, fixed incomes in low-cost apartments in high-rise buildings near heavily traveled urban business districts across the country. Wages and salary provide income for those who are still working. Social Security, Supplemental Security Income, and public assistance provide support for those who aren't employed. Low income limits shopping; these people are very careful spenders. They're technology averse. Cable TV and bingo at the community center provide entertainment.

Want to learn more about all 67 Tapestry segments? Available at multiple geographies in maps, reports, and software and online, Esri Tapestry Segmentation data contains detailed lifestyle information about every US neighborhood. Visit esri.com/tapestry.

We are in the midst of a location technology revolution. The popularity of mobile and cloud technology is driving huge demand for location intelligence. The ArcGIS platform, especially ArcGIS Online and Portal for ArcGIS, is making it far easier to publish and share GIS data and provide focused ArcGIS applications across organizations.

Being able to visualize data on a map and having tools to search and analyze this data is hugely empowering. Any dataset that has a location component (address, ZIP code, region, district, etc.) can be used in a GIS. Elections are inherently location based: voters, polling stations, precincts, blue/red states, voting districts, phone campaigns, etc.

Since spreadsheets, charts, and paper-based data collections continue to be the key tools used to plan, conduct, and monitor election campaigns, it's important to take a look at the value GIS brings to all aspects of the elections process, including planning and coordination. The ability to centrally store elections-related data in a GIS and provide access to this data anywhere, anytime, and on any device to all elections-focused staff is revolutionary.

Campaign Planning

Successful election campaigns are built on exceptional planning. GIS can be a key tool used in planning for

- Finding concentrations of likely voters or supporters for more efficient targeting.
- Searching and displaying data based on a set of criteria such as showing a map of all 2014 primary voters by district.
- Filtering data on a map using queries such as, Show all 2014 primary voters who voted in the last three elections, or Show only hard-core Democrats.
- Making spatial queries, such as selecting a group of voters by drawing a square on the map to get a voter summary. Users can see information such as the number of voters selected, the average distance between voters, the total number of hard-core Republicans in the group, and number of perfect voters.
- Identifying best locations for candidate events.

As field-based staff use mobile GIS apps, field directors will be able to see the progress of sign placement operations, volunteer recruitment, and literature distribution. Directors will also be able to see the location of fieldworkers while they are interacting with voters and to view responses in real time. Unit and district chairs could use the data recorded in a GIS for mass e-mails, the content being related

continued on page 14

to the recipients' district or location. Task lists could be created and posted for party or campaign employees, allowing them to record their progress.

Election Canvassing and Walk Lists

Political canvassers spend much of their time talking with voters. Often they are supplied with a walk list. Mobile GIS provides markers on a map showing canvassers the location of target households on their walk list. A mobile GIS app can also provide the shortest route from one household to the next.

Mobile GIS also provides ways for canvassers to collect information on voter feedback. Household interviews can be tied to a point on the map. Comments, images (taken with the mobile phone or a tablet's camera), and answers to questions can be collected and shared with campaign headquarters. That information is potentially very powerful for current and future elections.

Coordination and Phone Campaigns

Since GIS is focused on location, it is the perfect tool to help coordinate field staff, campaign offices, candidate events, and phone banks. All successful election campaigns require careful coordination. Phone banks are often crucial since they play a key role in motivating people to vote on Election Day and provide follow-up to direct mail campaigns. GIS can help develop call lists based on location, past voter behavior, and demographics.

Sign Placement

Choosing the best locations for election campaign signs is important. The goal is to find the best locations in terms of traffic and demographics. If a campaign is targeting certain voters, it is key that these voters see the signs. GIS can provide the analysis to discover the best locations for signs. Sign placement can then be recorded with images of the location and competing signs.

Data Collection and Polling Station Exit Interviews

Exit polls provide insights and data for making predictions on Election Day. Increasingly, exit polls are also recording problems at polling stations, such as voter intimidation. The data collected helps to prevent the disenfranchisement of voters. Many organizations are conducting volunteer-driven interviews with voters outside polling stations. Mobile GIS supports recording interview locations, voter response, images of ID cards, and problems such as lack of handicapped parking. Easy-to-use GIS applications that work both online and offline are a core requirement.

Postelection Analyses

All political parties will now be able to visualize their campaign efforts on a map with much better results. Looking back at any

campaign requires reflecting on the data used to organize and plan the campaign. With all the data stored in one authoritative source, GIS allows campaign managers to review the data and learn from it for future campaigns. GIS provides the data and tools to conduct such postelection analyses.

The Implementation Process

Successful ArcGIS implementations require four key areas of focus:

Planning

What problem are you trying to solve? This is what often starts the conversation. Is monitoring, campaigning, or organizing the focus? Answering this and similar questions leads to a clear action plan or blueprint.

Data

Bad data means a bad GIS that will result in an inaccurate, inadequate solution. Data is often considered too late or not at all. But before looking at mechanisms for publishing and sharing maps, careful consideration of data is needed. Know what data is available, what its quality is, and what else is needed.

Design

Organizations need to decide whether a cloud-based or an on-premises solution is the most appropriate. From there, subscription level, user base, setup and configuration, and training are key areas for consideration.

Applications

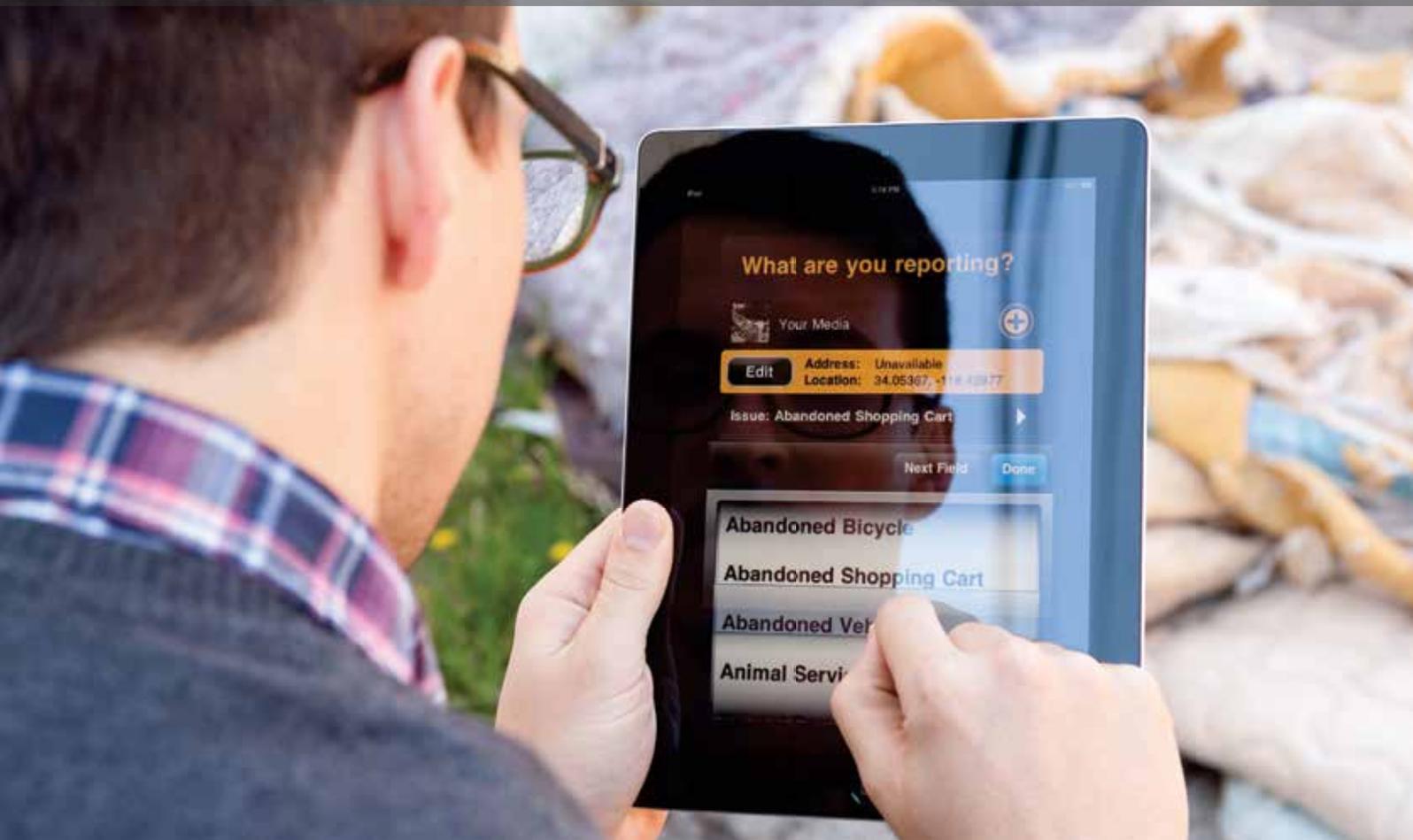
With the "plumbing" in place—blueprint ready, data prepared, platform agreed on, and configuration completed—providing staff and volunteers with focused maps and applications completes the implementation process. Ready-to-configure web map and app choices include the following:

- ArcGIS for Local Government templates—Esri has released a series of elections-focused templates including ones for election results, polling place finders, and citizen engagement.
- Esri Story Map—Similar to the ArcGIS for Local Government templates, Story Map templates combine images, video, and other media with a map.
- Web AppBuilder for ArcGIS—Widgets can be used to provide focused functionality to a web application.

Also, when a user needs a unique app, customizing an existing template or creating a new solution are possibilities.

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