

# Esri News

## for State & Local Government

Spring 2021

### The City of Sacramento's Revamped 311 System Uses Location Analytics to Better Serve Residents

Sacramento is best known as California's state capital, where the governor, legislators, and many government employees conduct business. But for its residents, Sacramento is a thriving city in its own right and—by some metrics—the fourth most ethnically diverse city in the United States.

One of the things the city's varied communities have in common is a high engagement with Sacramento's 311 service. 311 is a nonemergency government number that people can call to request general information and city services or report issues, including those related to

animal control, code enforcement, parking, parks, homeless camps, solid waste, and streets.

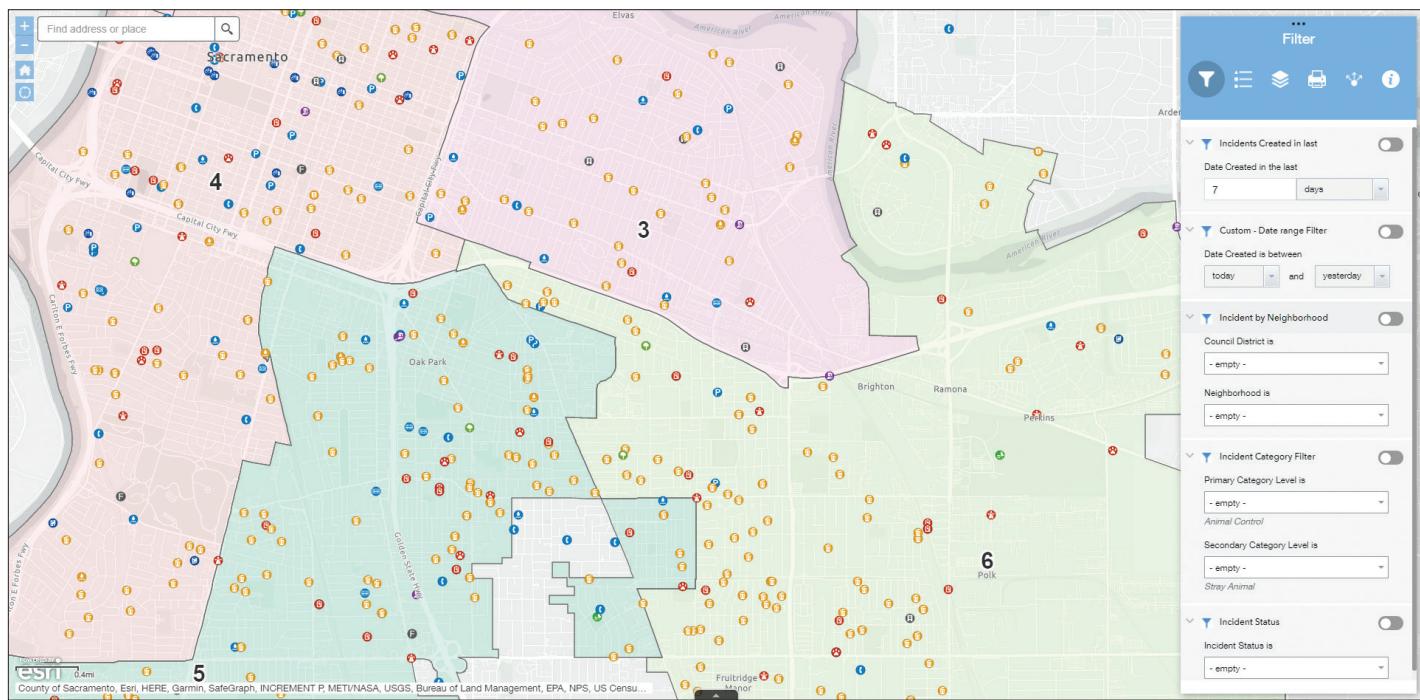
In any given year, the 311 service logs around 500,000 different interactions—or one for every Sacramento resident. While that number reflects a strong sense of community involvement, it also means the 311 system can become strained because of high usage. However, by recently integrating ArcGIS Online with Salesforce so 311 users can see incidents on a map and track their progress toward a resolution, the city has been

### Featured Article

Check out Esri's Police Transparency solution on pages 6–8 and learn how local law enforcement agencies can increase transparency, grow public trust, and improve relationships with the communities they serve.

able to streamline the reporting process and reduce the number of redundant reports by residents.

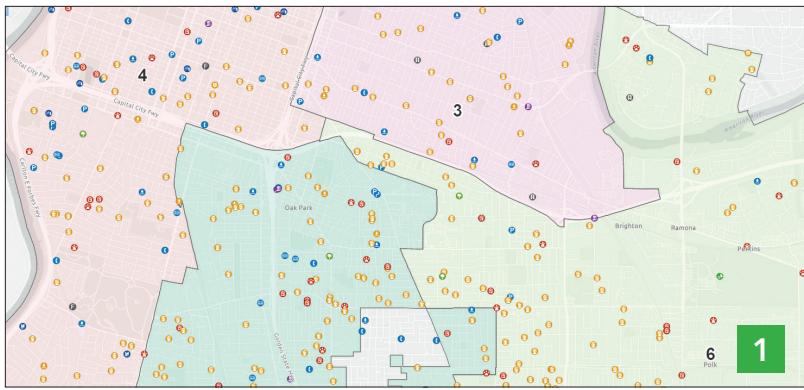
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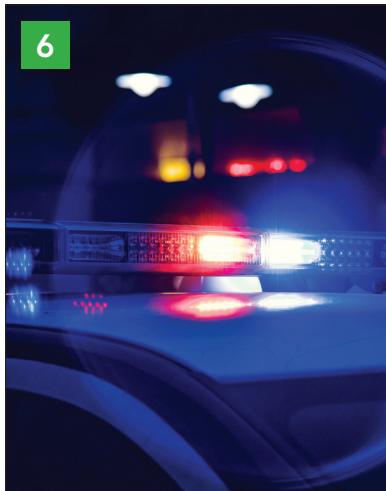
↑ Users of Sacramento's new 311 system can now see incident tickets on a public-facing map.

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Spring 2021

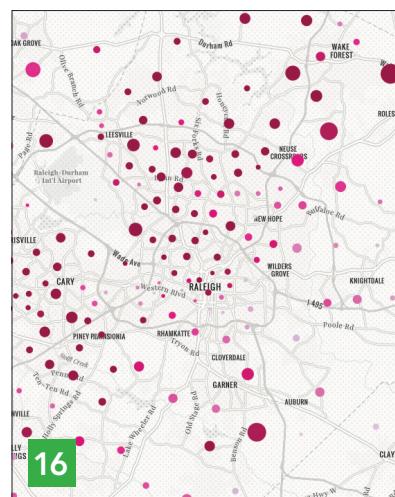


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# SMART RESPONSIVE RESILIENT SAFE

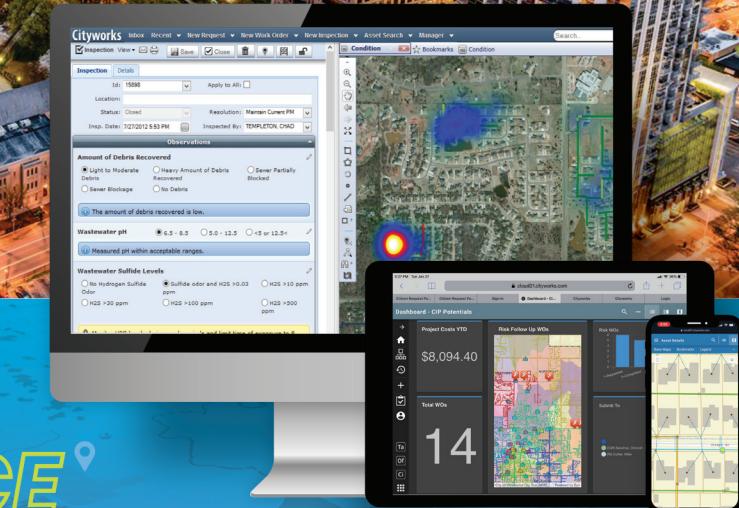


## EMPOWERING GIS INTELLIGENCE

In an "always on" world, local municipalities and utilities are leading a digital transformation by implementing GIS as a smarter foundation to managing their infrastructure and business services.

Built exclusively on the Esri® ArcGIS® platform, the Cityworks enterprise asset management platform helps communities successfully improve management of their public assets and business services—improving civic engagement and economic development.

**Cityworks + ArcGIS Enables the Power of Where™  
For Public Asset Management.**



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# Keeping Parks Clean with Smart Technology in the City of Raleigh, North Carolina

The City of Raleigh, North Carolina, takes a very geographic information system (GIS)-centric approach to asset management.

"If it's in ArcGIS Online, it's in Cityworks," explained Chad Foley, enterprise application engineer at the City of Raleigh.

Most recently, the city expanded its deployment of the Cityworks mobile native app—together with Bigbelly smart waste bins—to help the Parks, Recreation, and Cultural Resources (PRCR) Department manage the care of more than 200 parks covering over 10,000 acres of green space.

## Challenge

Unlike building systems, which typically have good industry data on average costs per square foot, grounds maintenance costs are often highly subjective.

"For instance, how much does it cost yearly to maintain a 50-acre park? There's

just no consistent, reliable data on that," explained Ivan Dickey, superintendent of PRCR. "We needed a system that would track what it costs us to maintain these types of properties so we could improve our annual budgets and planning."

After the initial implementation of Cityworks, PRCR continued to rely on legacy processes. Field crews completed paper work orders and came back to the office at the end of the day to enter the data into Cityworks. This was especially cumbersome for the refuse crews who serviced the trash and recycling bins in the parks.

"Most of our work is routine maintenance. Our refuse crews used to have to physically stop at each trash can and check whether it needed to be emptied," said Randolph Johnson, crew supervisor. "It wasn't cost-effective to have crew members sit in the office for two hours at the end of each workday filling out work orders."

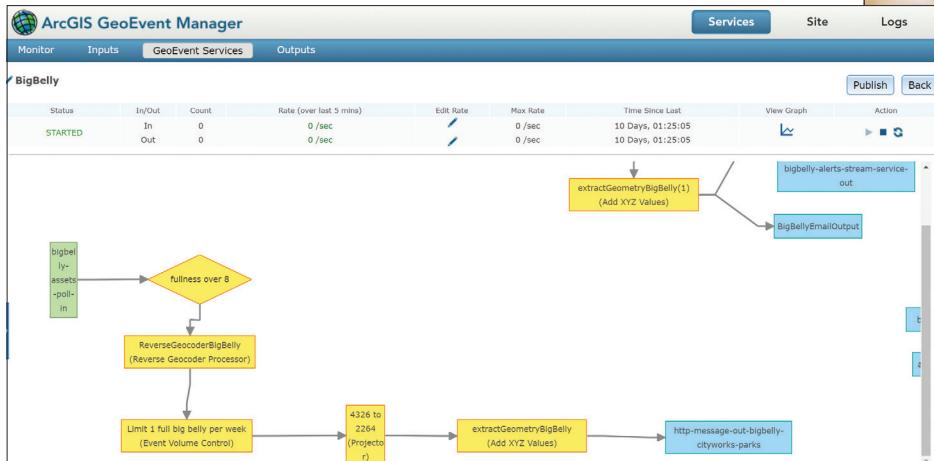
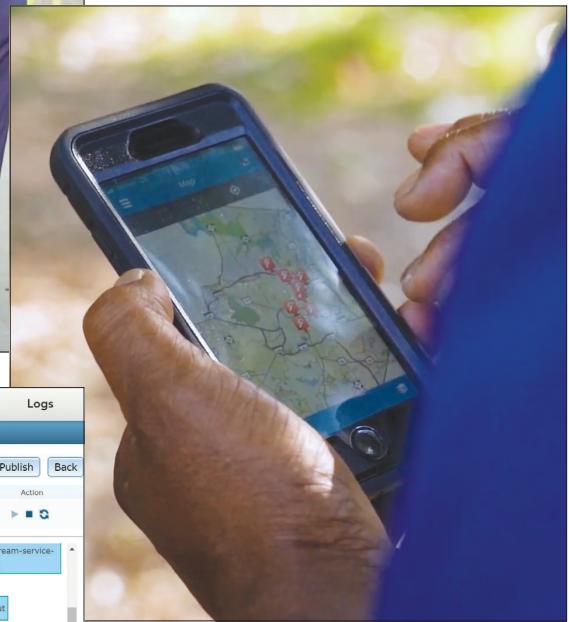
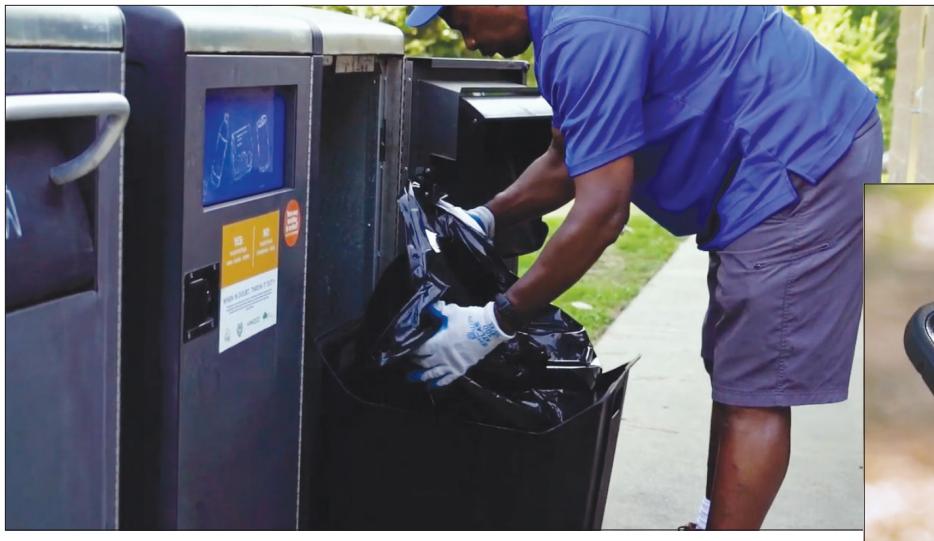
The department managers knew that electronic data tracking and reporting would help with planning, budgeting, and having a broader scope of what was going on throughout city parks. They also needed to create a better workflow to support their field crews.

## Solution

For Johnson and his crews, the solution was twofold. About 10 years ago, the city started installing Bigbelly smart waste and recycling bins, which communicate real-time bin capacity status and notify crews when bins are ready to be emptied.

Each morning, PRCR receives an email with the capacity of each Bigbelly bin, allowing crews to prioritize their daily work. Using the out-of-the-box Cityworks app on iPhones that were assigned to them, crews can now access their work orders and inspections from the field.

"Crews open the app to the current day on their phone, go to the park, and



↑ Raleigh's Bigbelly GeoEvent Server Services

complete their assigned work orders for that day right in the app. It works great," said Dickey.

PRCR also worked with the City of Raleigh's IT department to enhance and modernize crew workflows.

To get crews up to speed with the change, PRCR did some informal training and sent out instructions with screenshots for initial setup. The crews were adaptive and took naturally to the new system.

"A great deal of the mobile app adoption happened organically," said Foley. "The crews just liked using it better."

To close the loop, the IT department is working on an enhancement that uses ArcGIS GeoEvent Server to pull Bigbelly sensor data and automatically create work orders in Cityworks—eliminating yet another manual step in the crew workflows.

## Result

Cityworks mobile native apps, ArcGIS, and smart technology have together helped streamline processes across the city. For PRCR, these solutions have brought crews up-to-date technologically, providing significant time savings and enhanced reporting capabilities.

"Our work is highly seasonal, and a sunny weekend changes our schedule tremendously. Now we can accurately track how many cans we're servicing at each park and how much time we spend at each park," said Dickey. "We can start developing ratios based on trash volume and the time of year. We're building good data so we can justify our seasonal and annual needs."

The department has seen improved attention to detail, data accuracy, and

overall efficiency. It has been able to capture data on equipment, labor, material costs, and more.

"It's clear that we have greatly improved our efficiency using the Cityworks app," stated Foley. "Our employees much prefer using the app to track their work proactively in the field without having to return to the office at the end of the day, providing additional time savings."

With positive results and enthusiasm from its crews, PRCR continues moving forward with the solution and looks forward to enhancements involving the Bigbelly sensor data, which will further streamline processes.



# Police Transparency Solution Released

In communities across the globe, inequitable policing practices have eroded public trust and challenged the legitimacy of local law enforcement agencies. As a result, many seek new ways to improve their relationship with the communities they serve. The larger reform efforts are helping law enforcement agencies improve transparency and demonstrate accountable police policies. At the same time, agencies are also engaging the Community more deeply and using their feedback to drive policing priorities and enforcement policies. Esri's Police Transparency solution is typically implemented by law enforcement agencies that want to increase transparency, grow public trust, and improve relationships with the communities they serve.

The **Police Transparency** solution can be used by law enforcement agencies to deliver a set of capabilities that help share information openly with the public, promote your agency's work, demonstrate accountability when force is used, illustrate how workforce recruiting reflects the diversity of the community, and engage the public to improve policing services and solve problems.

## Promote Your Agency's Work

The Police Transparency solution leverages a hub site created using ArcGIS Hub to promote transparency efforts. The easily accessible and responsive site serves as a destination for key focus areas, for example, community engagement, workforce diversity, crime stats, and use of force.

Police Transparency

Increase trust and legitimacy in the community

Serving with greater transparency, a representative workforce and strategies developed with the community.

Message from the Chief

On behalf of our department, thank you for the privilege of serving you. As part of our efforts to improve transparency to the community and maintain trust with the citizens we serve, this site is intended to help citizens become more aware of our mission, our community, and to grow opportunities for us to connect and collaborate with you. Together, we can solve problems and improve safety for everyone.

Chief of Police

What Are We Doing?

Maintaining open and transparent processes that inspire public confidence in our agency.

Engage Community

Diversify Workforce

Share Crime Conditions

Monitor Use of Force

↑ Members of the public can drop a pin near their location on a web map and see who is the community policing officer.

## Engage the Community

To deliver the equitable, high-quality service required to gain public trust and maintain legitimacy, law enforcement agencies have an obligation to find new ways to understand and respond to community needs. Effective community engagement strategies leverage technology to enable residents and stakeholders to be heard, get involved, and collaborate with police and fellow residents for solutions to community problems.

The Police Transparency solution helps law enforcement agencies improve their ability to engage their communities by helping the public find and connect with the community policing officer in their neighborhood; provide feedback on an interaction with an officer or police employee; and through the use of Hub Premium, discover and sign up for community policing events.

Police Transparency also helps police work with the community to identify and solve crime problems. The Community

↑ Community Crime Problem Reporter application

↑ Community Crime Problem Manager application

Crime Problem Reporter can be used by members of the public to submit information about crime problems in their community. Next, the Community Crime Problem Manager can be used by community policing officers to capture data on a community crime problem-solving project as it proceeds through the SARA problem-solving model. Finally, the Community Crime Problem Dashboard can be used by the public to monitor the status and outcomes of community crime problem-solving projects.

## Illustrate Workforce Diversity

At many law enforcement agencies, rebuilding trust and legitimacy includes a goal to recruit a diverse workforce that reflects the community it serves. Transparent reporting of workforce demography and recruitment initiatives along with monitoring tools for community members helps law enforcement agencies maintain accountability and demonstrate they are meeting established goals.

The Law Enforcement Diversity Dashboard can be used by members of the public to understand the racial, ethnic, and gender diversity of their police force in relation to the composition of the community. Visualize key workforce diversity metrics for the entire agency workforce or rank, compare to the makeup of the community, and understand how workforce diversity may more closely reflect the community over time.

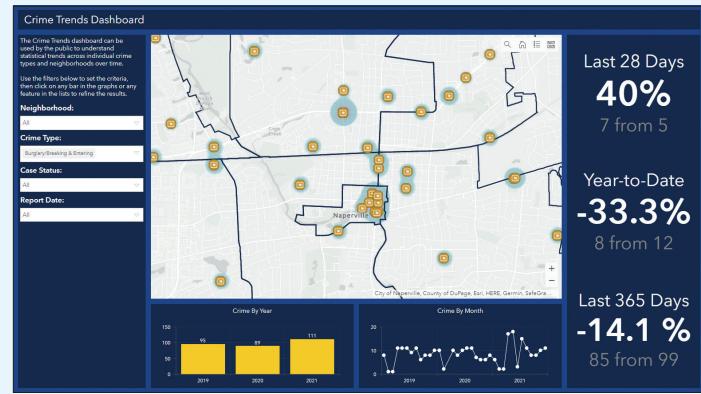
↑ Display law enforcement workforce diversity in a snapshot.

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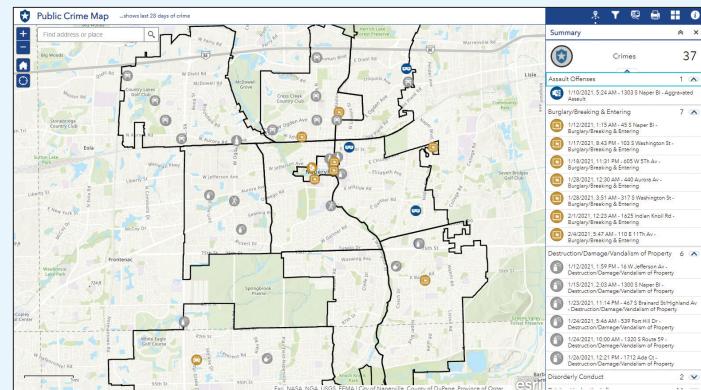
### Share Crime Conditions

Crime prevention is an essential function every law enforcement agency provides to its community. Prevention strategies are driven by problems identified through analysis of crime data. Law enforcement agencies have also faced criticism that certain strategies and tactics have resulted in inequitable treatment of communities of color. To rebuild trust, law enforcement agencies can enable communities to exercise stronger oversight of policing practices through transparency about the crime conditions police are observing, the problems they are responding to, and the prevention and reduction strategies and tactics they employ.

The Police Transparency solution includes a Crime Summary Dashboard that can be used by the public to explore statistical trends across major crime categories, a Crime Trends Dashboard to explore statistical trends and hot spots across individual crime types, and a Public Crime Map to explore recent crime conditions in the community and create reports for an area of interest. All three apps follow the Federal Bureau of Investigation (FBI) National Incident-Based Reporting System (NIBRS) standards—the new United States standard for crime reporting as of January 2021.



▲ Crime Trends Dashboard

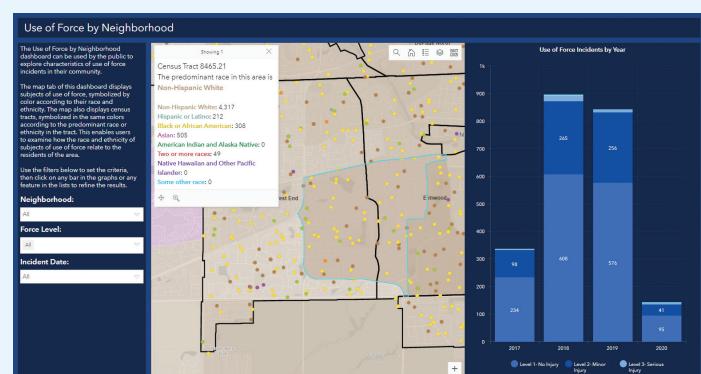


▲ Public Crime Map

### Understand Use of Force

To demonstrate a commitment to transparent community oversight, law enforcement agencies are increasingly sharing information about use of force with the general public. Providing access to this information enables community members and stakeholders to hold law enforcement agencies accountable and justify concerns based on data. Additionally, agencies can educate community members to holistically understand the topic of use of force, from how frequently force is used to the practices and policies that govern its application to its impacts on neighborhoods and community members.

Police Transparency includes a destination with charts and dashboards to help explain why and how often law enforcement agencies use force; help the community understand organizational policies around the use of force; display racial and ethnic disparities in its application; and explore the characteristics of neighborhoods, subjects, and officers involved. The solution helps law enforcement agencies enable their community



▲ The Use of Force by Neighborhood dashboard can be used by the public to explore characteristics of use of force incidents in the community.

members with the contextual knowledge and analytical tools to provide informed oversight.

Learn more about Police Transparency and how you can quickly deploy this solution at [go.esri.com/Transparency4Police](http://go.esri.com/Transparency4Police).

# Connecting You to Esri Partner Resources

New Partner Specialty Designation Announced to Support State and Local Governments



## State and Local Government Specialty

Esri has launched the **State and Local Government Specialty**, a new partner designation that will help you identify and connect with companies that deliver unsurpassed value and expertise to state and local government customers in the deployment, configuration, and implementation of the ArcGIS government solutions.

When you see this logo, it means the following:

- The partner has demonstrated repeatable success in meeting business challenges by using ArcGIS solutions within state and local governments.
- The partner has been vetted by Esri and meets technical, business, and customer reference competencies.
- The partner holds the prerequisite Release Ready Specialty, ensuring that the partner's solutions, services, or content uses the latest ArcGIS products.

### Current List of Partners with the Specialty

(as of February 20, 2021)



**PROWEST**  
& Associates  
GIS CONSULTING • DATA SERVICES • APPLICATIONS

**VIEWPRO**



**NorthLine GIS**

**SymGEO**

**Cartograph**

To see the full list of partners with the State and Local Government Specialty, visit [go.esri.com/SLG-specialty](http://go.esri.com/SLG-specialty).

# Smart Data-Driven Performance

Dashboards

Performance  
Management

Autonomous  
Vehicles

Real Time

IoT

Situational  
Awareness

Analytics

# nce



Sensors

Environmental Monitoring

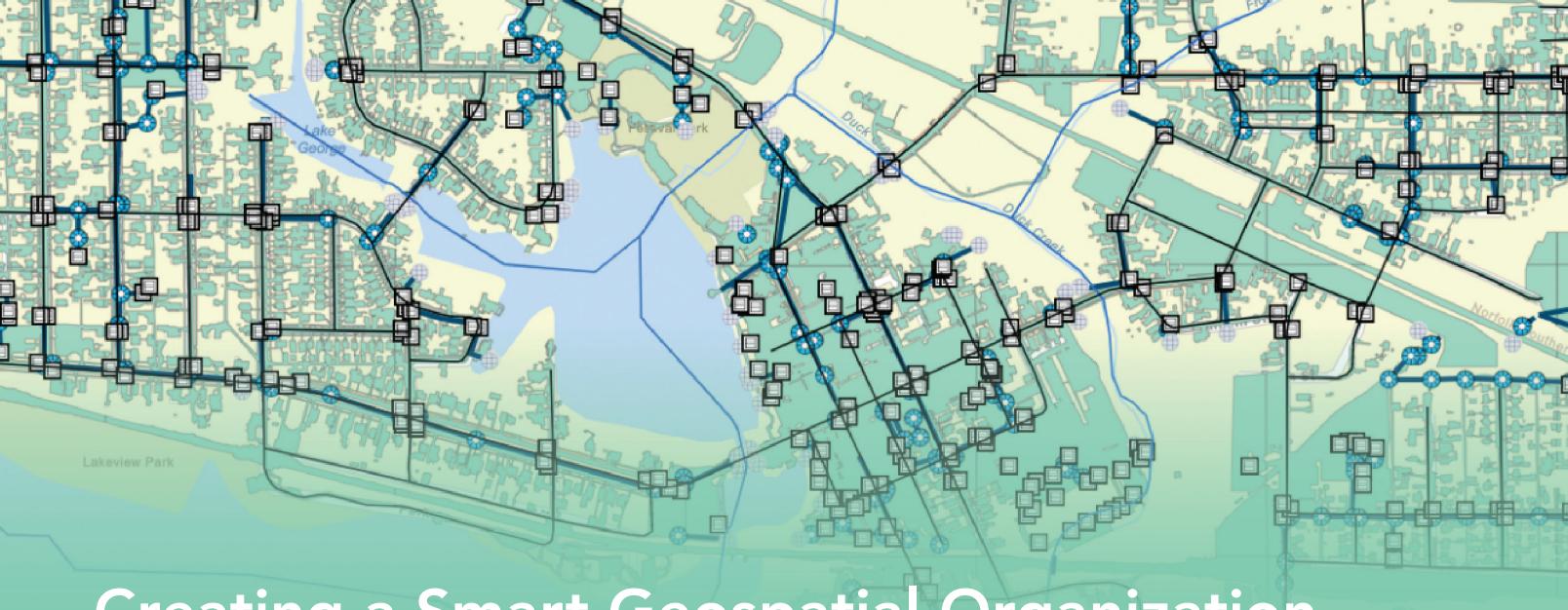
Artificial Intelligence

## Smart Communities Happen When Governments Achieve Data-Driven Performance

By geoenabling data and enterprise systems, governments can drive down costs, reduce time to action, and support policy decisions that improve the overall quality of life, neighborhood by neighborhood.

To see how to achieve data-driven performance, download the new report at: [go.esri.com/SmartData-Driven](http://go.esri.com/SmartData-Driven).

Machine Learning



# Creating a Smart Geospatial Organization

The City of Hobart, Indiana

The City of Hobart, Indiana, is one of Lake County's oldest communities and is situated on the banks of Lake George, a mere 38 miles from Chicago, Illinois. With a population of just over 29,000, residents of this close-knit community enjoy thriving retail opportunities, a lively downtown district, and great schools. As Hobart quickly grew from a small town to a bustling city, a small cadre of experienced visionaries recognized the need to better manage its growth. In early 2019, staff from the City of Hobart Sanitary and Stormwater District (HSD) looked to the science and benefits of geospatial technology and location intelligence as key to transforming the city. As a first step, HSD developed a citywide, multiyear, phased GIS road map; secured buy-in from all stakeholders; dedicated funding for this modernization project; and began successfully building an enterprise-wide, sustainable, resilient, and scalable GIS solution.

## A Comprehensive Strategic Plan

The City of Hobart's geospatial initiative was envisioned to govern, coordinate, and implement a comprehensive, citywide GIS. The solution would serve a growing need for delivery of geospatial data to internal and external customers and enable integration with supported business systems. At the core of this was the need to align the GIS to support the overall vision and goals of the mayor and city council.

With a strategic implementation plan in place, HSD and city staff worked to bring it to fruition. An ArcGIS Online organizational account was deployed along with Microsoft Azure VM as a virtual web server for hosting the custom GIS applications and other media. HSD staff collaborated with Geographic Technologies Group (GTG), an Esri partner, to help implement ArcGIS Hub and deploy internal and external hub sites and a public-facing open data portal. A variety of departmental

viewers, dashboards, and ArcGIS StoryMaps apps were also deployed.

## An Elevated GIS Viewer

Before the strategic plan, HSD had been maintaining a GIS viewer web app from a previously contracted vendor. But because the technology was not user-friendly, the viewer was underutilized. Leaders recognized the need for an interface that would sufficiently serve the district as well as other city departments while being intuitive, adaptable, and easy to navigate.

HSD opted for a solution built using the Esri ArcGIS Web AppBuilder app. The new viewer was equipped with user-friendly controls and was customized to address all the needs of the district team. Customizations included integration with key software databases from Nearmap and RedZone.

Nearmap is an agency that collects high-resolution aerial imagery for the district three times each year. Considering the City of Hobart's investment in this resource and the amount of historical imagery dating back to 2015, it was imperative that the imagery be made available through the viewer. A custom widget was created, allowing staff to expand a window within the viewer to list all accessible imagery by date of the flight.

The ability to integrate RedZone data was also a requirement for the GIS viewer. RedZone is an inspection company that uses robotic cameras to record videos inside pipes during the inspection process. These cameras capture root intrusions, cracks, holes, mineral deposits, and other damages along with the location of each. When integrated into the GIS viewer, a user can click on a section of the pipe on the map and pull up a link to the inspection files from RedZone. This link includes a table with general information about the inspection results, as

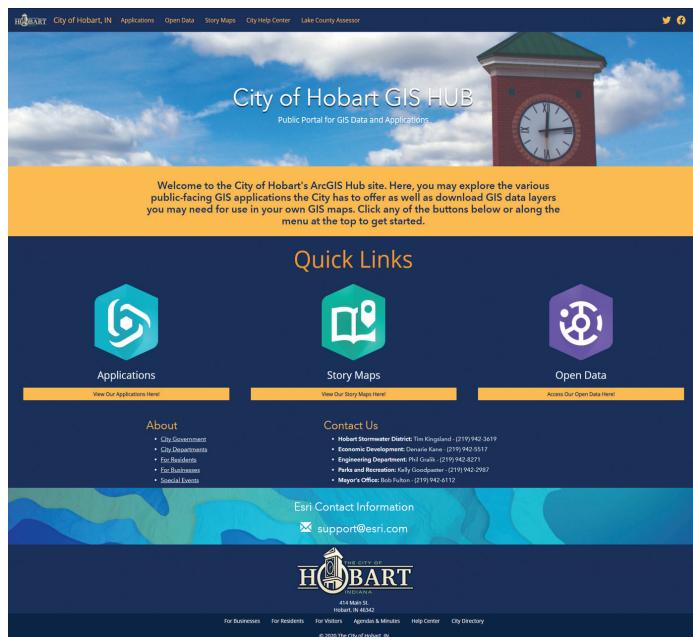
well as a folder with additional details. This feature is incredibly useful for planning repairs and tracking damage over time.

The district's GIS viewer also shows parcel data from the County Assessor's website. The County Assessor maintains official records regarding all city parcels, including historical ownership information, engineering sketches, and photos. This is a valuable source of information for the Planning and Development Departments, and the integration made it possible to easily view all data from within the GIS viewer. The user can simply locate a parcel on the map and click on it to automatically open the associated County Assessor web page.

## Education and Data Sharing with ArcGIS Hub

Another key piece of the City of Hobart's GIS strategy was the creation of two hub sites—one for internal teams and one for public engagement and awareness. The internal hub site is an informational web page that is fully customizable. It includes links to all available GIS applications as well as any additional departmental information the city wants to centralize. The city's hub site consists of a main page, which serves citywide initiatives with the primary GIS viewer, and subpages for each department. These include the Sanitary and Stormwater District, Planning and Development, Police, Fire, Parks and Recreation, Economic Development, and any other departments that utilize GIS.

The intent is that Geographic Technologies Group will continue to develop solutions and applications and place them on each department-specific page as internal tools for each team. When staff need to view their department's applications, they



↑ The City of Hobart's public-facing site, created using ArcGIS Hub, quickly directs users to the maps and data they need.

need simply to go to the Hobart, Indiana hub site subpage to access all the direct links to available data and interfaces. The hub site also increases transparency and communication between teams, as each department can view other departmental subpages and the linked applications.

Hobart's hub site is an external, open data portal. Visitors to the site can download any GIS files the city has identified as open data. For example, a resident may choose to retrieve city park shapefiles for a school project or report. Community members are also able to view a variety of GIS applications, such as a GIS viewer (that omits any confidential information) and ArcGIS StoryMaps apps to increase GIS awareness and an understanding of city initiatives. For instance, the HSD has invested over \$1.25 million in green infrastructure projects around the city. The "Stormwater Management and Green Infrastructure Projects" map narrative helps the HSD educate the public about some of its efforts to reduce runoff pollution and improve local water quality.

## A Thriving Smart City

With all these tools in place and the quickly growing GIS infrastructure, the City of Hobart is well on its way to creating a thriving smart city, based on the following core principles:

- Improved awareness of location intelligence throughout the organization
- Development of departmental-specific business applications
- A ratified GIS governance and management model that will guide the growth of the city's geospatial capabilities
- Expanded access to and effective use of accurate, reliable, and well-maintained digital data
- A phased integration and focus on interoperability between all systems—a system of systems
- Deployment of a modern cloud-based framework for software and IT infrastructure
- Promotion of economic, environmental, and social development

In 2020, HSD focused on data updates and data creation, and its GIS strategic plan includes recommendations to create additional GIS applications for specific departments in the years to come. Completed projects in 2020 include a utility dashboard for stormwater and sanitary sewer, an asset viewer for parks and recreation, and an interactive map highlighting the city's parks. City officials and HSD staff are excited to continue focusing their efforts on growth and innovation with the goal of building a truly smart city.

For more information about this project, contact Timothy Kingsland, HSD coordinator, at [tkingsland@cityofhobart.org](mailto:tkingsland@cityofhobart.org) or Rives Deuterman, of the GTG, at [rdeuterman@geotg.com](mailto:rdeuterman@geotg.com). You can learn more about Esri implementation and GIS services and solutions from GTG by visiting [www.geotg.com](http://www.geotg.com).

## The City of Sacramento's Revamped 311 System Uses Location Analytics to Better Serve Residents

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### An Ambitious Idea

Since Sacramento launched the 311 service in 2008, the city has been adamant about what the program should achieve. While most large- or medium-sized cities maintain a 311 program, many of them are structured as adjunct city agencies that perform a kind of ombudsman role. In Sacramento, however, 311 is perceived as a civic connective tissue, a digital hub that links many city departments.

"It's the front door to Sacramento—the highest touch point for all the interactions the city has with the community," said Maria MacGunigal, the city's chief information officer (CIO).

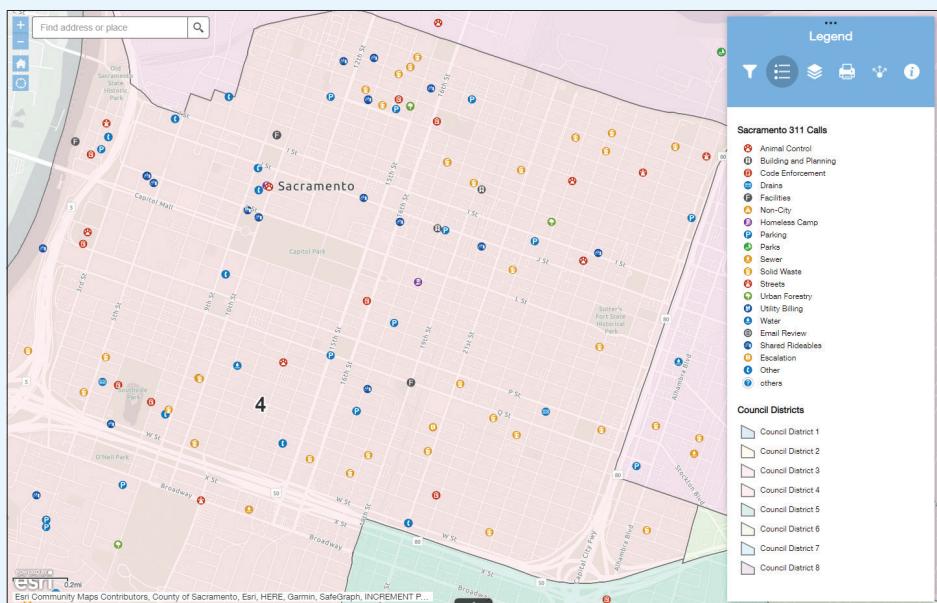
The 311 service was placed under MacGunigal's purview in 2013, shortly after she accepted the job as Sacramento's CIO. "That [role] isn't typical for a city's IT department, but the 311 system was struggling under heavy demand," MacGunigal said.

Much of the challenge involved the ambitious scope of Sacramento's 311 program, which has used GIS to route requests for many years.

"We've always had . . . ArcGIS Server [on the back end] that supported geocoding and some overlay values," said Dara O'Beirne, the city's GIS developer. "Whenever someone submits a ticket and enters an address into the interface, it validates against our internal geocoder to ensure that it actually is a valid address within the city of Sacramento. Then it conducts an overlay and pulls attribute information from 35 different layers, such as the correct council district or police beat."

A report of a stray dog, for example, would automatically note the relevant animal care district and notify animal care officers in the area. The ticket also generates automatic updates on the problem for the public and any agencies involved.

"Right now, that's occurring from Salesforce, through our firewall, and into . . . ArcGIS Server," O'Beirne explained.



Clicking on a specific incident on the map lets users access more information about it in Salesforce.

"Most cities don't have that kind of back end integration through all those business lines," MacGunigal added. "It doesn't have nearly as much of an impact on the community if we're just taking notes and handing off the requests."

When MacGunigal was tasked with overhauling Sacramento's 311 service, she wanted to broaden the program's scope even further so it would eventually become "a foundation upon which we can build all other portal access to the public," she said. That meant retaining the system's GIS-enabled back end while also using GIS to improve the real-time interface. With the new setup, 311 users interact with maps, via Salesforce, that are built using ArcGIS API for JavaScript.

Consider that stray dog mentioned earlier. The first person to report it will see the ticket displayed on a map in ArcGIS Online. If someone else sees the dog and logs on to 311 a few seconds later, that person will see the same ticket and realize there's no need to report it.

"Managing multiple reports [of the same issue or incident] was one of the challenges we were trying to overcome with this integration between Salesforce

and ArcGIS Online," O'Beirne said. "As soon as someone submits the ticket, it goes to ArcGIS Online, so it'll be reflected on the map. The next person can see the same incident at the same location. If they click on it, they open the ticket in Salesforce to find out more information."

People can "follow" the ticket, receiving notifications when updated information is added to the ticket.

"It's a more encompassing experience for the user," O'Beirne said.

The system also helps city agencies better serve their constituents.

"We now have data from GIS maps and layers, and we take the Salesforce data and start building dashboards around it," said Ivan Castellanos, Sacramento's 311 manager. "There's even more value in the data now because it can be used to help various city departments drive their strategies and make data-driven decisions."

### The Final Challenge

The City of Sacramento is a pioneer in this type of ArcGIS Online and Salesforce integration for a 311 service.

"From my perspective, one of the most important aspects of this implementation is not that any one of the components of the GIS integration is brand new, but that they're as comprehensive as they are across all the different levels of integration with the map or with the geography," MacGunigal said. "For example, the idea that you would try to geographically understand if something had already existed or it had already been reported has been around for a long time, but we just used to do it mathematically. We didn't actually use GIS. We used an approximation of what might be in proximity, but it became so burdensome in the system that we actually removed it at one point. So the concept was there, but the full implementation wasn't quite there until now."

O'Beirne said the work was difficult at first because Sacramento was among the first cities to attempt this type of project.

"There weren't that many people out there who had already done this," O'Beirne said. "There were one or two other cities, but not to the level that we were trying to implement."

The final challenge was unexpected. When California governor Gavin Newsom issued the state's first stay-at-home order in response to the COVID-19 crisis, MacGunigal's team was nearing the end of several months of planning for the 311 transition. After all the work they'd put in, was the effort to push the project over the finish line while the team was scattered worth jeopardizing it?

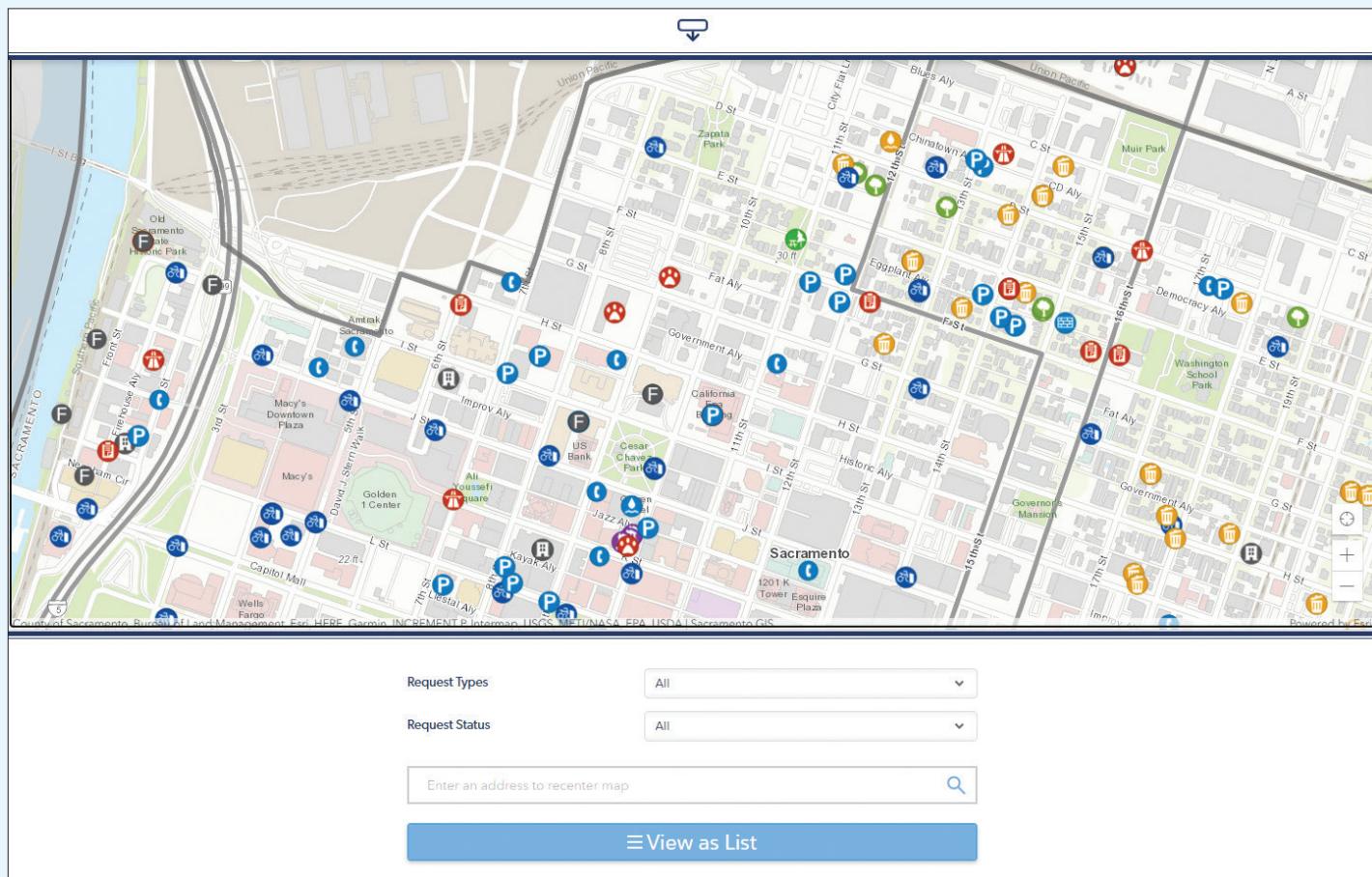
MacGunigal decided to power through. The new 311 debuted on April 15, 2020, only one month behind schedule. All feedback suggested that any hiccups, inevitable in this kind of launch, were minor.

The new technology worked so well that the team was able to surmount an unforeseen hurdle. Operators trained to answer calls in the 311 call center were

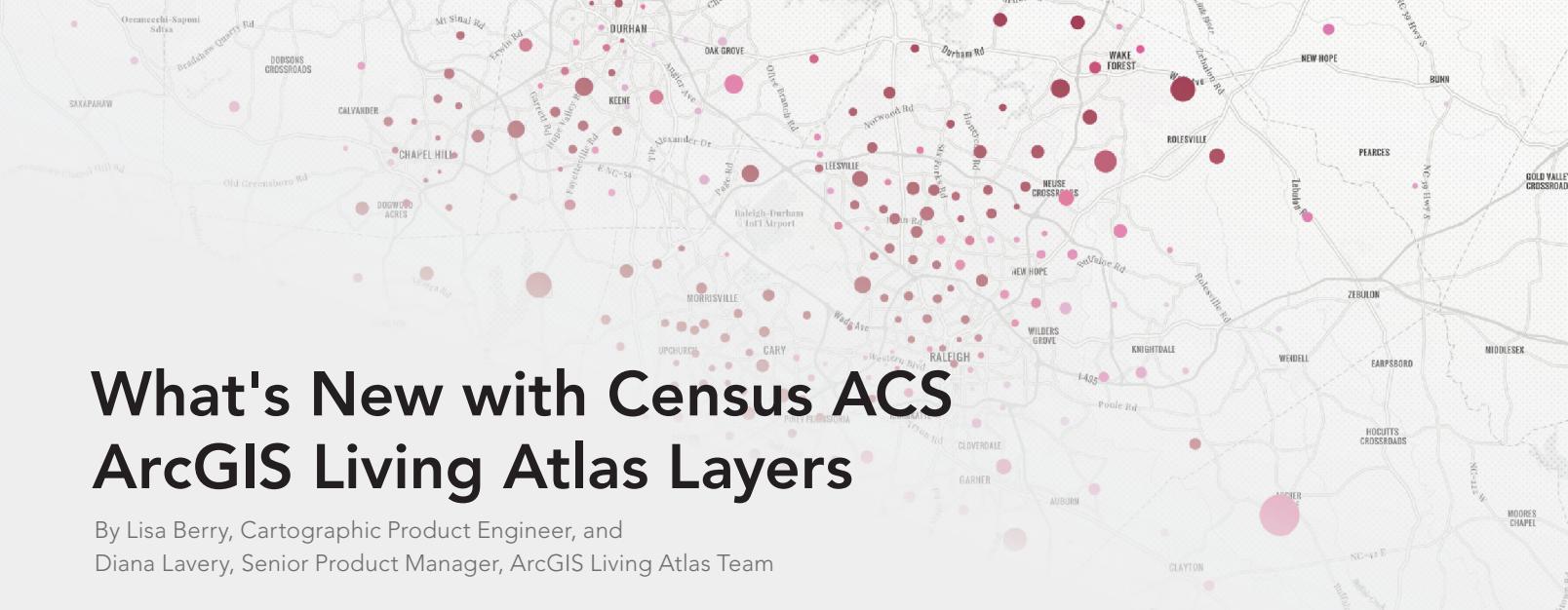
among city employees who had been sent home. In addition to launching the new system remotely, the team also had to figure out how to make the 311 call center function remotely, a daunting task made simpler by the cloud-based architecture of Salesforce and ArcGIS Online.

"It's not unheard of in the private sector to have call centers that have a lot of distributed locations, whether that's at people's homes or just multiple locations for call taking, but we're one of the first public agencies to have a mostly remote call center," MacGunigal said. "Everyone was remote—the development team, the GIS team, the infrastructure team—and we pulled it off without a hitch. So that was pretty awesome."

For more information on how to deliver a set of capabilities that help you solicit reports from the public, manage the response to each report, and solicit feedback from the public, visit [go.esri.com/GIS311Now](http://go.esri.com/GIS311Now).



↑ When residents report an incident—such as a code enforcement, solid waste, or water issue—to 311, the system automatically notifies the relevant city agency.



# What's New with Census ACS ArcGIS Living Atlas Layers

By Lisa Berry, Cartographic Product Engineer, and Diana Lavery, Senior Product Manager, ArcGIS Living Atlas Team

Traditionally, accessing American Community Survey (ACS) data required days to weeks of processing the newest estimates from the US Census Bureau each year. Since 2018, many ACS tables have been readily available within ArcGIS Living Atlas of the World to use within your GIS workflows. These Census ACS ArcGIS Living Atlas layers are updated automatically each year when the US Census Bureau releases its annual estimates, and as of December 11, 2020, they contain the newest five-year estimates for 2015–2019.

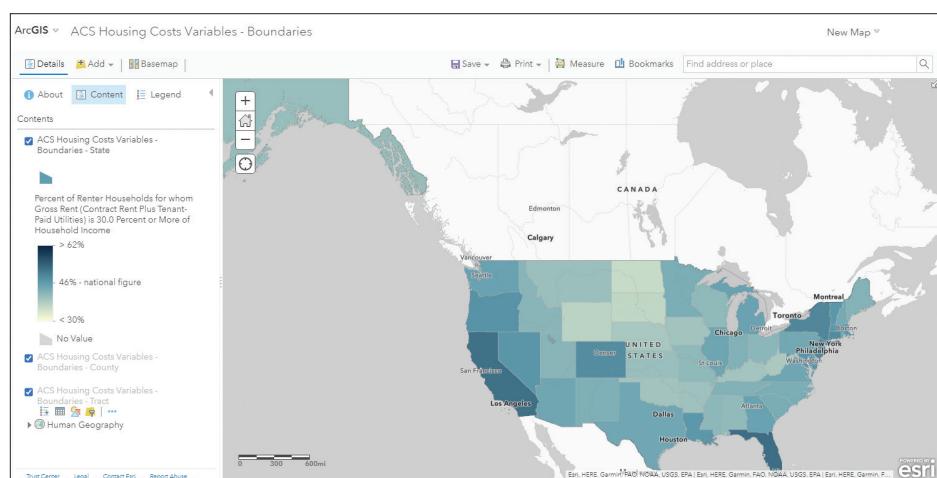
**Access the newest ACS data, now**  
 Quickly map more than 1,700 ACS attributes covering a wide range of demographic topics such as income, housing, age, race, and education. Each layer already shows an interesting subject on the map, with an informative pop-up so that you can immediately see important patterns anywhere within the US or Puerto Rico. You can also easily use the layers to create your own customized web maps and applications to tell an endless number of stories about the population or housing in your area. Here are some other benefits of these layers:

- They are sourced directly from the US Census Bureau API.
- They are free to use and require no login or credits.
- The boundaries have coastlines cut out for improved mapping.

- They are accessible in ArcGIS software.
- Additional attributes are already calculated for your convenience, such as percentages and their related margins of error.
- Each is provided as a polygon layer as well as a centroids layer.

## Enhancements just released

- New data—The layers now contain the most current five-year estimates offered by the US Census Bureau. They now show 2015–2019 vintage estimates.
- New boundaries—The boundaries layers always reflect the TIGER boundaries that are appropriate for the newest ACS figures.
- Enhanced legends—Many of the layers had their cartography adjusted to highlight the national rate of the attribute being mapped. For layers with this update, the legend will clearly state the national figure, helping create a reference for the map reader.
- Aliases updated—The alias names describing race and ethnicity attributes are updated to be consistent with the American Community Survey race and ethnicity categories as published by the US Census Bureau.
- Refined margins of error—Some attributes in these layers are precalculated percentages, which now have a revised calculation based on feedback from the US Census Bureau. These attributes help you map a normalized attribute quickly and easily without needing to research what the denominator should be.



↑ In just a few clicks, you can import the latest Census ACS layers into your existing work on ArcGIS Online.

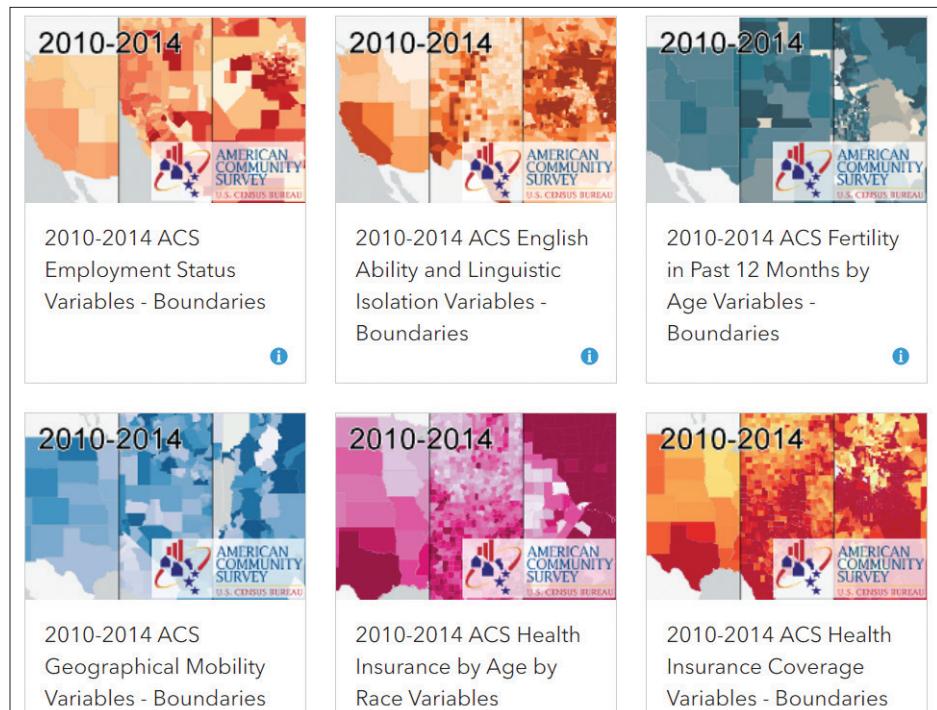
## New layers allow for more mapping possibilities

ACS layers in ArcGIS Living Atlas cover a whole host of topics around housing, income, internet access, education, disability, and more. We've heard your requests for more attributes to support your work. This past December, there were a few new additions to the layers that are available in ArcGIS Living Atlas:

- Disability by Type—Map the functional needs of your community, based on hearing, vision, and cognitive assessment; whether people are ambulatory and have self-care ability; and where the prevalence of independent living difficulties is high.
- Health Insurance by Race and Age—See where disparities are in rates of those who are uninsured. Find places where there aren't large gaps.
- Household Size—Find communities with many one-person households, two-person households, and more. See how this differs among owners and renters. Map the average household size anywhere in the country.
- Housing Units Vacancy Status—Learn where there are many seasonal/recreational homes. Also, explore the rental and homeownership vacancy rates to see where these markets have been tight.
- Housing Units in Structure—Map different housing unit types in your community: single-family detached, small multifamily units, high-rise apartments, mobile homes, and more.
- Housing Units by Year Built—Where are newer housing units in your neighborhood? Where are older units? Does this differ for owners and renters?
- Internet Access by Income—See what the digital divide is like in your community.

## New 2010–2014 layers allow for comparisons over time

Many users have requested historical ACS vintages so that they can compare



how patterns have changed over time. With this release of data, there are now 2010–2014 vintage layers available to compare with the most recent 2015–2019 data. Since these vintages have no overlapping years of surveys, they are possible to compare.

The 2010–2014 layers are symbolized in the same way as their corresponding 2015–2019 layers, allowing for direct comparison of patterns within a map. Use the Compare app or create a swipe comparison within ArcGIS StoryMaps, classic Esri Story Maps, or ArcGIS Web AppBuilder to showcase the 2010–2014 map alongside the 2015–2019 version. Bring the two layers into ArcGIS Pro to join, analyze, and map the change itself.

Above are a few 2010–2014 layers that you could compare with 2015–2019 layers.

## Get started today

### Find the layers

Learn where to find these Census ACS layers and start using them within your mapping and analysis workflows. Check out this story ([arcg.is/1i5DbC](https://arcg.is/1i5DbC)) to learn

how. You can also check out this ArcGIS Online group ([arcg.is/114Lqj](https://arcg.is/114Lqj)) or find the layers by searching in ArcGIS Living Atlas of the World.

## Map your community

Learn how to make a map about your community in four easy steps in this blog post ([go.esri.com/ACSMapFast](https://go.esri.com/ACSMapFast)). You'll have your own custom web map in minutes!

## Update your existing ACS maps

Once ACS figures are released by the Census Bureau, we encourage you to check the breakpoints being used in your existing web maps that use the Census ACS ArcGIS Living Atlas layers. Make sure your web map's existing symbology still makes sense with the updated data. Start exploring the new ACS data at [go.esri.com/NewACSDData](https://go.esri.com/NewACSDData).



# Florida Property Appraiser Enhances Analysis with Data Analytics Solution

The Lee County Property Appraiser, a government office in Lee County, Florida (pop. 770,000), serves residents of Lee County by offering fair and accurate property valuation services. Appraisals are conducted to determine the appropriate value of properties in the county, which ultimately sets the basis for determining the amount of property taxes a property owner will pay annually. In addition to property appraisals, the office also tracks property ownership changes, maintains tax maps of parcel boundaries, and approves tax exemptions. The office also provides the results of approximately 550,000 real estate valuations to taxing authorities.

Report generation was cumbersome and occasionally not timely because accurate data analysis involved collaboration among multiple staff members, which caused delays and made the process lengthy. The need for a new way for staff to collaborate and engage with data more efficiently was clear.

The Lee County Property Appraiser's office implemented data analytics software that has enabled staff to more quickly

communicate results and improve data analysis, helping them better serve county residents and provide exceptional service.

## Challenge

The property appraiser has the legal responsibility to determine the market value of a property based on activity in the real estate marketplace and to appraise property accordingly. This helps create a fair and equitable ad valorem tax roll (taxes based on the assessed value of the real estate) in compliance with Florida statutes. As such, the collection and analysis of data are central to providing accurate, reliable results for property valuations.

According to the Honorable Kenneth M. Wilkinson, Lee County Property Appraiser, "I've learned a lot over my 40 years in office. The primary concern in the mass appraisal business is to be equitable. Treating similarly situated homes and parcels of land differently is a good way to have your values and credibility questioned."

Wilkinson explains that the traditional way of evaluating results has been to

analyze property data, request a report from the IT/Data Services team, and collaborate until the final data report was both reliable and valid. Throughout the process, data was sent to the GIS Department to produce a static value map. If additional analysis was needed, the process began again.

This process made collaboration among the different departments challenging and time-consuming. Wilkinson wanted a new solution to not only improve analysis but facilitate faster, more accurate results. Wilkinson tasked Chief Deputy James A. Sherron for the project.

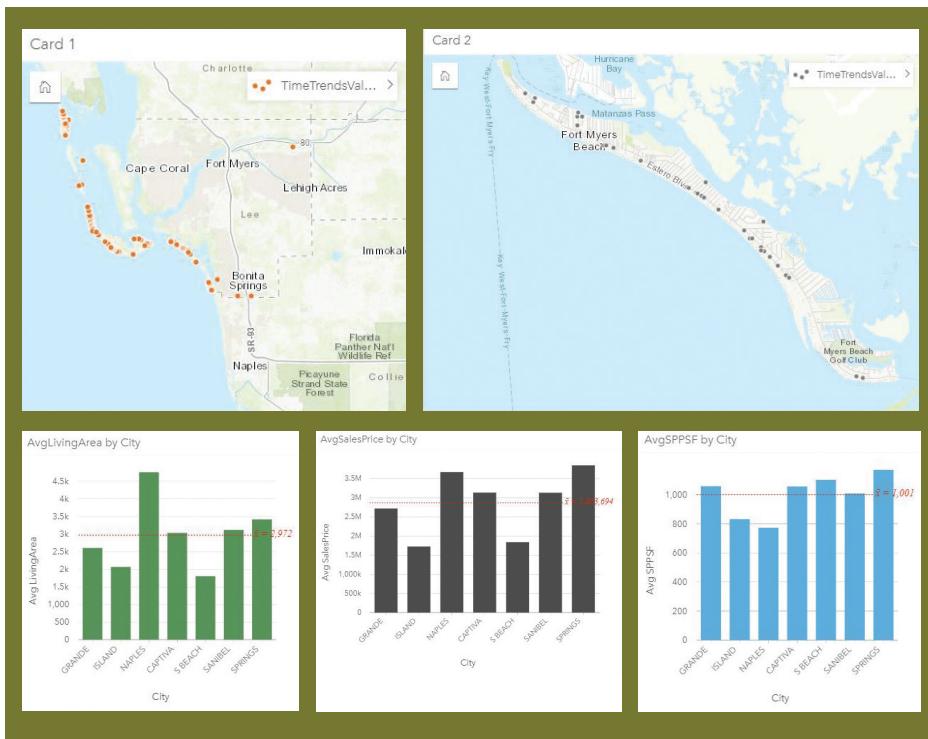
"Traditionally, it could take an hour to figure out what we need. A request is sent to the help desk for a report, the help desk sends the request to the data person, and the data person and I have numerous exchanges. Then, the data services person sends me a spreadsheet, I approve it, and I send the spreadsheet to the GIS department to make a map," says Sherron. "We needed a process that made things more efficient."

## Solution

An Esri customer since the late '90s, it was only natural that Sherron selected ArcGIS Insights to help improve data analysis and report generation. ArcGIS Insights is software designed for iterative and exploratory data analysis. Sherron believed the solution would make analysis and collaboration much simpler, allowing staff to more easily review different types of data.

**"We always had the ability to prepare maps after we analyze tabular data, but now we can do the analysis on the map with the data. There is not a long or expanded period of figuring out what data to use or put on the map. ArcGIS Insights allows it all to be available."**

—James A. Sherron, Lee County Property Appraiser's Office



↑ Maps show home sale locations. Bar charts depict average living area, average sale price, and average sale price per square foot by city.

"There was never an initial expectation other than we wanted to examine and learn about the data from a spatial perspective. I was excited to see how it could help us with our work," says Sherron.

The county appraiser's office frequently uses time trending for property valuation, which is a method that allows them to use sales that are more distant from their assessment date by adjusting the sale price to reflect the impact of time. Sherron explains that the analysis allows his team to review multiple areas, including the impact on the sales prices per square foot.

"In valuation, we typically break the components down to the simplest term, in this case, sales price per square foot of living area. We then can compare properties using any number of groupings," says Sherron. "For this analysis [with ArcGIS Insights], the question we were solving for was a simple one. When I stratify time trended sales prices per square foot, do we maintain equity by location?"

He adds, "There isn't an incorrect answer. If there's some unintended bias

in the review, we can now address it immediately with ArcGIS Insights."

## Result

The use of ArcGIS Insights has streamlined the data analysis process and given the appraiser's office the ability to better explore its data, yielding more accurate results. According to Sherron, ArcGIS Insights allows staff to do on-the-fly analysis that lets them be more proactive in verifying and reviewing valuations, rather than waiting for the traditional reported results.

"I liken it to taking a test and waiting for the results. With ArcGIS Insights, we have analysis, explanations, and answers prior to getting the results. It introduces an iterative process that will ultimately allow us to change the inputs where necessary to get a better end result," says Sherron. "Instead of just 'passing' the test, we know we can aim for an 'A' each time."

The visual display of ArcGIS Insights also helps staff better view, interpret, and analyze data. Sherron says that displaying data spatially allows staff to zoom in and view individual records as well as

see an overview of all areas. They can also investigate down to the individual transaction level.

"[Viewing data on ArcGIS Insights] is incredibly more efficient than looking at tabular data, column by column, row by row, field by field," says Sherron. "We have the direction to go to the particular areas that seemed to be 'different' and figure out why and if there were changes needed."

The overall data analysis process is now more efficient. First, Sherron says, the ease in which staff can get started with ArcGIS Insights is much simpler with its drag-and-drop functionality. Users can simply drag data into ArcGIS Insights, pick a metric to analyze, figure out how to best present it, and go.

Also, with more streamlined analysis, ArcGIS Insights shortens the iterative process because feedback is instant with the maps, charts, and graphs available. According to Sherron, providing feedback and changes was previously days of effort; now, it's only hours of individual staff time.

"It's always about the turnaround time and the opportunity cost lost by having other staff doing the work. Now, a single individual can react and respond to the analysis rather than having to wait for four to five people to review their individual areas and respond," says Sherron. "I can directly import data into ArcGIS Insights and self-serve, and the rest of the staff have time to devote to other projects."

The overall feedback has been very positive since the implementation of ArcGIS Insights, and the Lee County Property Appraiser's office is enjoying the ease of collaboration among staff.

"That's one of the best parts of ArcGIS Insights. I can share the project and results of the analysis, and we can discuss it either face to face or over the telephone. That goes a long way to getting updates and changes to business processes," says Sherron.



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