Esri News
for State & Local Government
Spring 2026

Lawrence, Kansas, Uses ArcGIS to Reduce Unsheltered Homelessness by 63 Percent

In Lawrence, Kansas, the city's annual Point-in-Time (PIT) count found 142 unsheltered individuals among its population of 100,000 residents. These individuals face extreme seasonal weather, from below-freezing winters to dangerously hot summers. The city's rapidly rising housing costs—the fastest in the state—leave many residents just one crisis away from losing their housing, increasing the risk of unsheltered living.

City staff recognized the urgency and made unhoused outreach a citywide priority. They turned to geographic information system (GIS) technology to improve coordination, strengthen data collection, and guide resources more effectively.

Specifically, the Homeless Solutions Division needed a more accurate count through a proactive approach that allowed staff to identify unsheltered populations regularly, rather than once a year. The city turned to ArcGIS Online—a secure, scalable, web-based GIS platform—and ArcGIS Pro, a powerful desktop GIS for advanced mapping, analytics, and data management. With ArcGIS Online, ArcGIS Pro, and other ArcGIS tools, the city efficiently mapped encampments, streamlined outreach to unhoused residents, and delivered housing resources with speed and compassion. These efforts led to a 63 percent reduction in unsheltered living, enhancing community stability.

"Our success is more than a number," said Misty Bosch-Hastings, director of the Homeless Solutions Division for the City of Lawrence. "It's nearly 100 of our neighbors no longer sleeping outside, now connected to care and on the path to stability."

GIS Workflows Move Guesswork to Crowdsourced Insights

To reach people living without shelter, the City of Lawrence needed to understand where they were. Many individuals stayed in informal encampments—temporary locations that often shifted over time. These sites became critical touchpoints for outreach teams, serving as entry points for offering care, building trust, and connecting people to housing resources.

When the Homeless Solutions Division first formed, there was no centralized way for staff to collect information on encampments. Other than the well-established locations that had existed for years, staff only knew the locations of unhoused individuals if they reached out to local organizations for assistance or if a community member reported an issue to emergency dispatch.

To improve data collection, Bosch-Hastings launched an online form on the city's website that the public could use to report campsites. But users often bypassed the map interface or needed to submit a location that didn't have an address or location name. This made it difficult for staff to respond quickly, as they needed exact coordinates from submissions to share directly with outreach teams so that response could be streamlined.

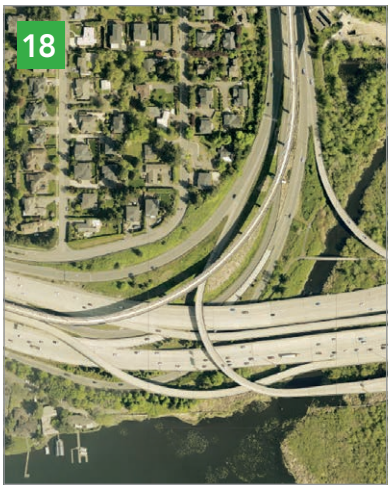
The city replaced the online form with ArcGIS Survey123, a mobile-friendly GIS survey app. The app required users to select a map location before submitting information, ensuring that each report

continued on page 12

↑ The campsite report form built on ArcGIS Survey123 allows residents to report unhoused individuals and encampments.

Inside This Issue

Spring 2026



Subscribe to *Esri News for State and Local Government*

Residents of the United States can subscribe and receive future print editions of *Esri News for State and Local Government* at **go.esri.com/govnews**.

Manage Your *Esri News for State and Local Government* Subscription

Make changes to your subscription information at **go.esri.com/manage-subscriptions**.

Advertise in *Esri News for State and Local Government*

For more information regarding advertising opportunities in *Esri News for State and Local Government*, download the media kit at **go.esri.com/Ads4SLG**.

Submit Your Content

We encourage Esri partners, startups, nonprofits, and customers to submit an article for inclusion in future content. Visit **go.esri.com/ShareStory**.

Esri News for State and Local Government is published quarterly by Esri at 380 New York Street, Redlands, CA 92373-8100 USA. *Esri News for State and Local Government* is written for state and local government users of Esri software and distributed free of charge.

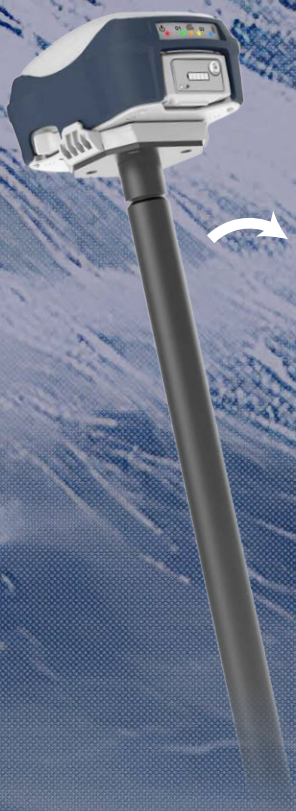
EOS Positioning Systems

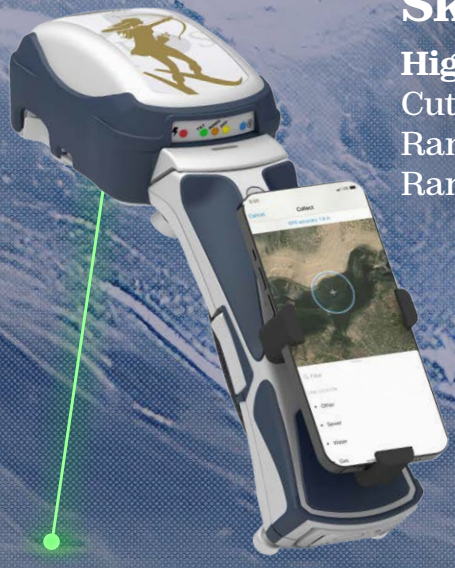
The Skadi Series™

High-Accuracy GNSS Receivers for ArcGIS® Apps

Skadi Tilt Compensation™

No more bubbling up!
Increase your productivity,
by reducing your time on each point.





Skadi Smart Handle™

High Accuracy meets high portability
Cutting-edge sensors put an Invisible Range Pole™ and an Extensible Virtual Range Pole™ in your hand.

Skadi 100™

Skadi 200™

Skadi 300™

Skadi Gold™

esri Partner Network Gold

www.eos-gnss.com

How a Texas Town Is Building the City of the Future by Going Vertical

By Keith Cooke, Community Development

Dickinson, Texas, has nowhere to go but up.

The city, 30 miles south of Houston, covers a mere 10 square miles. Surrounded by other cities, it has no room to expand. "I always say we're 'landlocked,'" said Theo Melancon, Dickinson's city manager.

Greater Houston is exploding. Only one other US metro area—Dallas—Fort Worth, Houston's neighbor to the north—is adding more new residents. Much of that growth has rippled south, to cities like Dickinson along the I-45 freeway.

When Houston grows, it sprawls. Over a recent 19-year period, the metro area added enough concrete and asphalt to fill 187,000 football fields.

Key Takeaways

- Planners use a GIS 3D model and an immersive experience to communicate an urban ideal not typical in Texas.
- The model for growing without sprawl is flexible, allowing officials and developers to experiment.
- GIS tools enable stakeholders to analyze the economic impact of the project.

Sprawl is not an option for landlocked Dickinson. While the populations of the surrounding cities expand at a rate of around 17 percent, Dickinson holds steady at 22,000 people.

"We can't have the suburban sprawl growth," Melancon said. "But we can have something with much more impact per square foot on the property that we do have."

With the help of a GIS, Dickinson is about to grow up—literally.

"Going Vertical, Not Horizontal"

When Melancon and his team of urban planners pondered the situation, they saw only one option.

"We needed to look at going vertical, not horizontal," he said. "Especially if we want a viable city center, we had to talk about increasing density."

Other landlocked cities around the world have reached the same conclusion. Vienna, which regularly tops lists of Europe's most livable cities, is surrounded by Austria's federated states. With no room to grow, Austria's capital is managing population pressures by transforming a disused airfield into one of the continent's most ambitious planned communities.

However, in a place like the Lone Star State, where single-family homes on the range are highly prized, it can be a tough sell.

The team developed a tentative plan to transform 12 square blocks of Dickinson's downtown into a new kind of neighborhood—with mixed-use buildings that are home to both residents and retail.

Planners anticipated a skeptical city council and dubious developers. So they decided to build the city first, in the form of a 3D geospatial model.

An Urban Identity Crisis

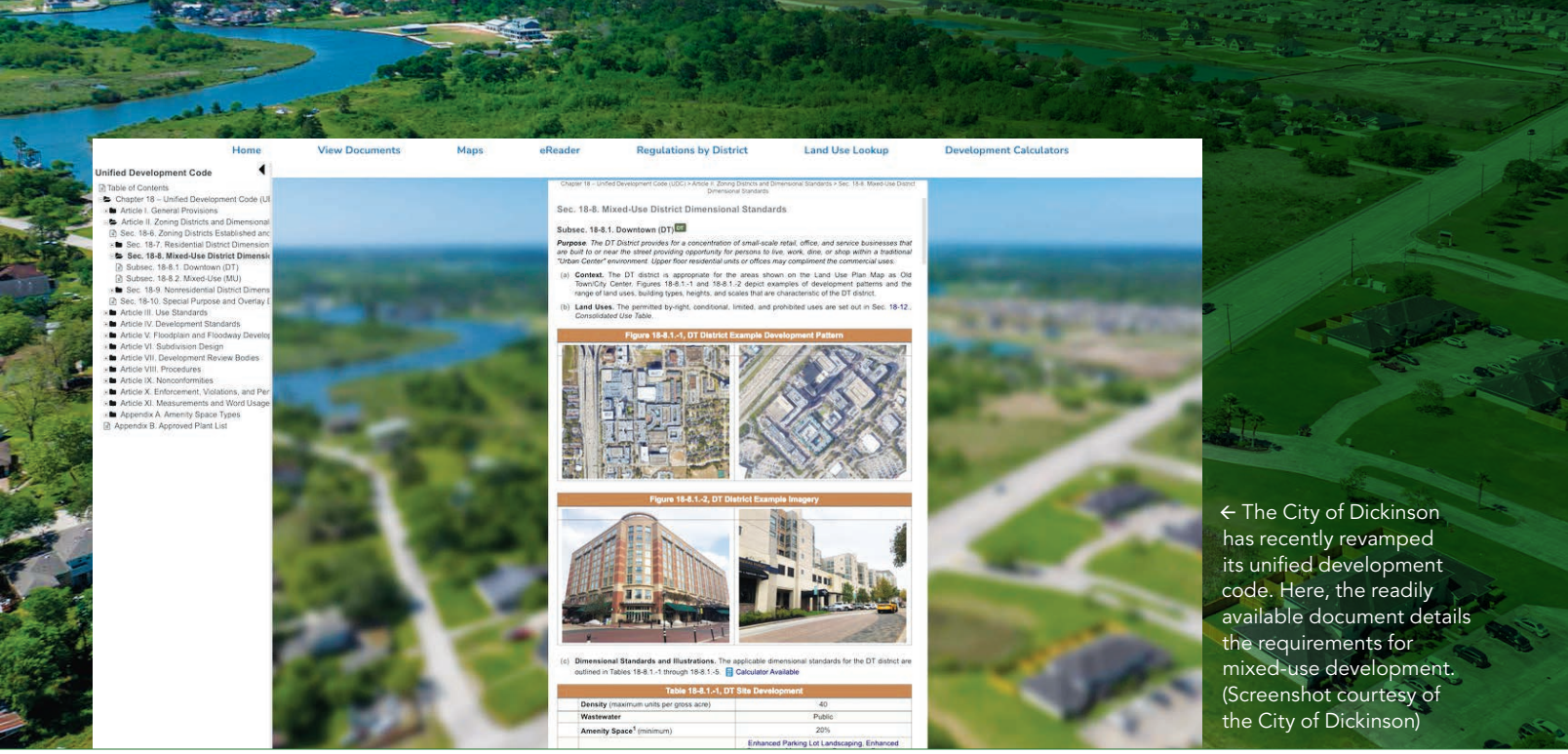
Historically, Dickinson has been seen more as a pit stop than a destination, with travelers bound for Houston or Galveston pausing briefly to refuel along I-45.

Dickinson's rep as a way station precedes the freeway. In the early 20th century, the city was the midway stop on the Houston/Galveston interurban rail. The main attraction was a picnic grounds that hosted harrowing horse-and-buggy races on a figure-8 track.

"You'd get off the train with your packed lunch, watch the races, maybe bet on them, and then you get back on and continue to Galveston or Houston," Melancon said.

Reinventing Dickinson meant overcoming this deeply ingrained idea that the city is neither here nor there.

"How do we differentiate ourselves from our sister cities?" Melancon said, summarizing the problem. "Why would



← The City of Dickinson has recently revamped its unified development code. Here, the readily available document details the requirements for mixed-use development. (Screenshot courtesy of the City of Dickinson)

someone go to Dickinson, rather than League City, Texas City, or Webster?"

Reinvention and History

For a Texas city, Dickinson is attempting a radically different approach to urban growth.

League City—where the amount of undeveloped land could fit two Dickinsons—may soon build 4,000 acres of new homes on the edge of town, west of I-45.

Meanwhile, Dickinson's plan to go vertical involves building structures that have retail at the base, topped by a few stories of apartments. Overall, the new downtown will hold between 200 and 400 new apartments, along with some semi-detached single-family townhomes.

The neighborhood will de-emphasize car use, with one parking space per 2,000 square feet of built space. (For single-family rentals in Texas cities, the typical allotment is two spaces per dwelling unit.)

With so many amenities available in the neighborhood, the Dickinson planners expect cars to be less of a necessity. In place of spaces that might otherwise be dedicated to driving, downtown will feature more pedestrian and cycling paths. The team hopes the convenience of downtown will also give those who live in the old neighborhoods near the city center more car-free options.

The team envisions the new downtown as not merely a place to live, but also a place to be, knit together by public spaces. So far, two anchor spaces have emerged.

ELS Construction has purchased a long-vacant former First Baptist church, which it hopes to turn into a brewpub, along with outdoor pickleball courts.

A few blocks away, the city is developing a park near the old interurban tracks, now used by freight trains to haul chemicals to and from the Texas Gulf Coast. Winking at Dickinson's way station past, the park will be called the Picnic Grounds. An on-site figure-eight path will pay homage to the old racetrack.

Show, Don't Tell

This is a lot to convey in writing.

"Historically, planners and city councils have had ideas that they communicate with words," Melancon said. "But it's hard to explain what we're going for with these high-density figures. Everybody knows how Texas cities develop. They're horizontal and they sprawl."

Using GIS, the planners first built a 3D model of the new downtown. Working with ViewPro, an urban planning consulting agency, they used the planning software ArcGIS Urban and the design solution ArcGIS CityEngine. Then they moved the model into the Twinmotion game engine to create a 3D immersive experience.

Now, a five-minute video takes the viewer on a tour of the proposed downtown.

When explaining the model, the planners emphasized that it was a vision of the city, but not the vision. As with many new urban projects, the zoning applies a system called form-based coding. (The church development came about after ELS Construction saw the video, then understood the total context of the project.)

Instead of designating zones based on use, such as residential or commercial, a form-based code establishes some physical parameters to provide a unified look. For Dickinson's downtown, if developers follow those rules and adhere to density-related requirements, they have a large leeway for their projects.

The planners fed these rules into the GIS model. People can explore different ways to structure the downtown by dragging and dropping to create streetscapes. What if we added a floor to this building? Or put more parking there? If a change violates the rules, it turns red on the model.

In this way, the model provides contextual knowledge and shows how every building is part of a larger unified project.

continued on page 6

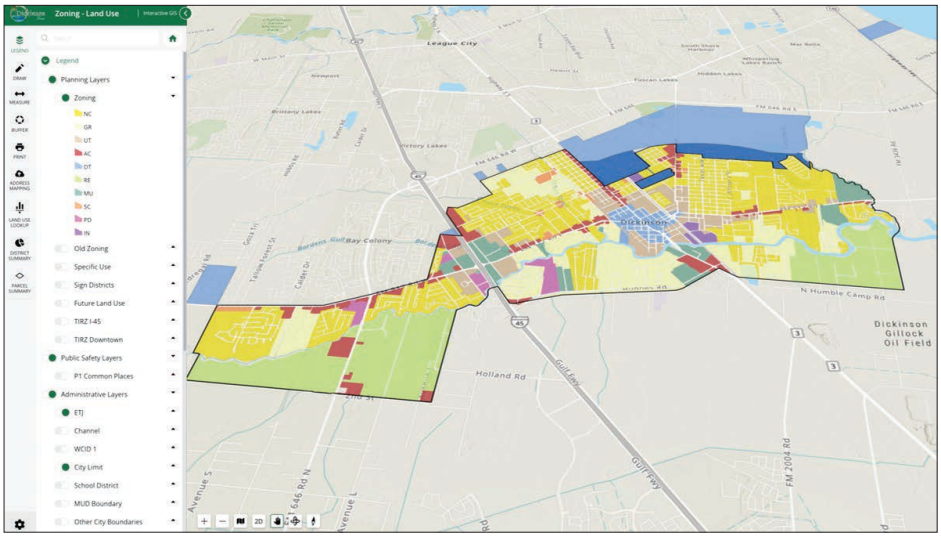
How a Texas Town Is Building the City of the Future by Going Vertical continued from page 5

The Whole Picture

Along with physical context, the model provides economic context. A city manager can plug in figures to determine, for example, how much tax revenue a space is likely to generate, now and in the future.

This will help downtown projects obtain financing. Potential investors in Texas "have no experience with this kind of development," Melancon said. "But when you can show a broader picture of what downtown could be, what we're committed to doing over several city blocks, they realize every parcel is part of a bigger picture."

So far, the plan is working. Dickinson's city council and the city's Economic Development Corporation (EDC) have become enthusiastic converts. ELS Construction has demonstrated its long-term commitment in a major way. The company is transforming the gym in the renovated church downtown into its new corporate headquarters.



↑ The City of Dickinson's GIS viewer, created by ViewPro, allows anyone to interact with zoning codes, planned developments, and other details. (Screenshot courtesy of the City of Dickinson)

↑ Zooming into downtown, with buildings in 3D, reveals many opportunities for more vertical development and increased density. (Screenshot courtesy of the City of Dickinson)

The difficult conversation about a Texas town going vertical has gotten easier. "It's changed the mindset of the council and the EDC," Melancon said. "Instead of seeing Dickinson as landlocked, now it's 'we have very limited space, but we're exclusive.'"

Reborn on the Bayou

With its downtown development project, the city of Dickinson hopes to attract residents who value a new approach to urban living in a location that offers nonurban recreational possibilities. One possible demographic is remote workers who won't mind the distance from Houston and may value the proximity to the outdoor attractions of the Texas Gulf Coast.

Dickinson planners are emphasizing the city's connection with the outdoors. The region lies underneath one of North America's largest bird migration routes. Bird-watchers seek out Dickinson Bayou, which winds through town on its way to Galveston Bay. Statues depicting the great blue heron are displayed in front of several local businesses.

Near the bayou on the far east side of Dickinson, the city is redeveloping a 34-acre piece of property. It will become a mixed-use district and a 20-acre bayou-front park. To prepare for environmental reviews, planners use GIS to map pipelines that cross the property.

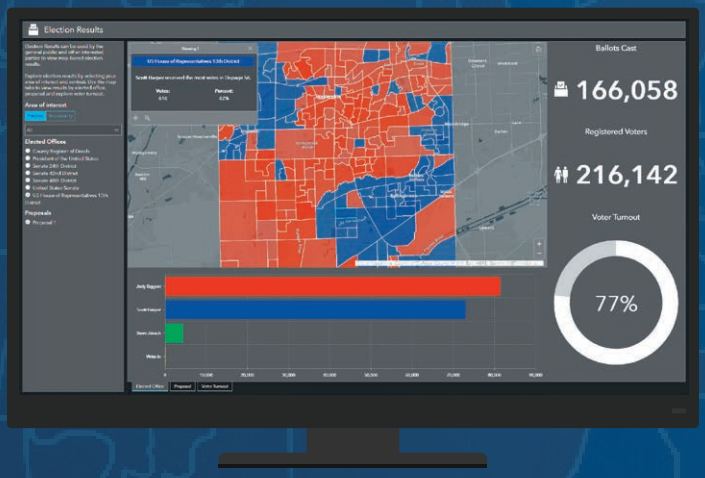
"We have an opportunity to bring in people who only have to commute to Houston once or twice a week, not five," Melancon said. "They might like being so close to the bayou, and love being closer to Galveston than Houston."

Download the Guide to GIS for Urban Planning

Reimagining the Elections Process Through Location

Modernize, optimize, and engage

Transform elections with enterprise GIS



Modernize Election Planning

- Maintain authoritative address data
- Improve precincting with demographic insights
- Streamline voting location selection

Optimize Election Operations

- Monitor Election Day operations with real-time insights
- Gain operational awareness to resolve issues quickly
- Ensure chain of custody for ballots and equipment

Strengthen Stakeholder Engagement

- Share voting locations and elected representatives
- Recruit and manage election workforce
- Publish real-time election results and turnout

Get Your Elections Modernization Guide

Map and Explore Language Data in ArcGIS Living Atlas of the World

By Diana Lavery and Will Poncy, GIS Engineers at Esri

Did you know that the US Census Bureau has asked about language spoken at home since 1890? And did you know that respondents submit over 1,300 languages every year?

Both the public and private sectors have multiple use cases for data on languages spoken. For example,

- To inform where different language media markets might exist for certain television, radio, newspaper, and other communications channels.
- To inform where interest in particular products and services might exist.
- To inform hiring decisions.
- To respond to calls for grant applications.

The Feature Layer

For all those who kept asking for more specific language data, we heard you! Thank you for bringing this up at the booth at Esri User Conferences, in questions during webinars, and in other channels. We are proud to announce that one of the newest items available in ArcGIS Living Atlas of the World is a feature layer of over 100 languages spoken across the United States.

How Is This Different from the ACS Language Layers Already in ArcGIS Living Atlas?

The existing American Community Survey (ACS) layers in ArcGIS Living Atlas go down to the county and tract levels, whereas this new one does not. Also, the existing ACS layers have counts for the most common languages only, and single counts for groups of languages—French, Haitian, or Cajun, for instance. In order to gain resolution in terms of languages (three counts for those three languages), we lose geographic resolution (hence, the state and PUMA [Public Use Microdata Area] levels only).

What the Heck Is a PUMA?

A Public Use Microdata Area (PUMA) is a collection of census tracts that have a minimum of 100,000 people. Tracts are nested within PUMAs, and PUMAs are nested within states—but not necessarily within counties. Just as we do when we process our annual tract-level data, we clipped out the water for cartographic purposes here too.

Preconfigured Maps in ArcGIS Living Atlas

In addition to the feature layer, there are a number of preconfigured web maps available for those who want to work directly with them. Incorporate these web maps into your workflows by adding them in ArcGIS Instant Apps, dashboards, ArcGIS StoryMaps stories, or hub sites. Additionally, you can use these web maps as a starting point and add your own organization's data.

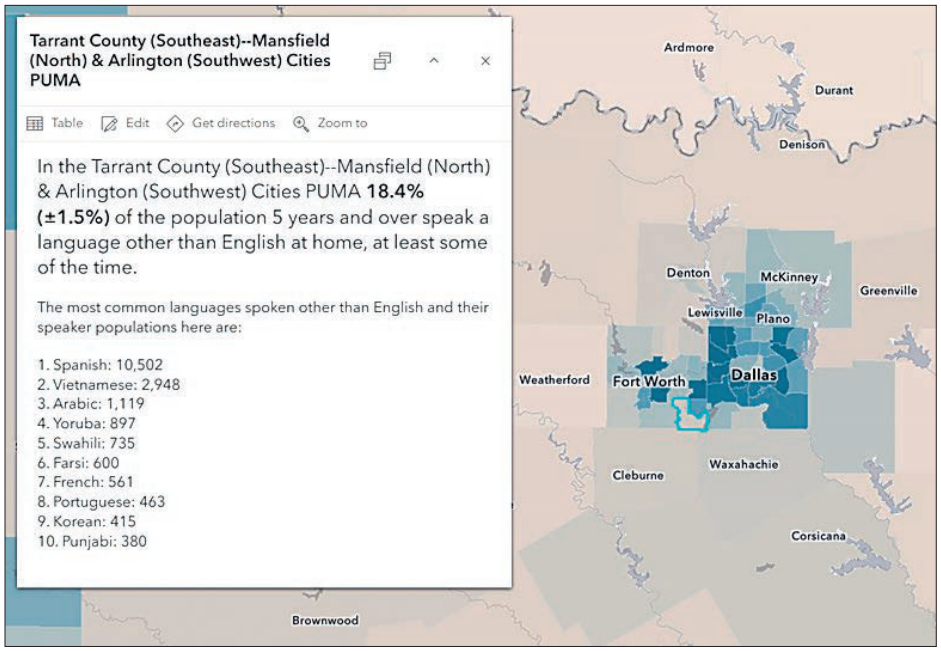
There are web maps available from the newly contributed feature layer that have data at the state and PUMA levels only:

- Where are people who speak Somali?
- Where are people who speak Hindi?
- Where are people who speak Navajo?
- Where are people who speak French?
- Where are people who speak Haitian?
- What is the most common language from the Philippines spoken in my community?
- What is the most common language from India spoken in my community?
- What is the most common Native North American language spoken in my community?

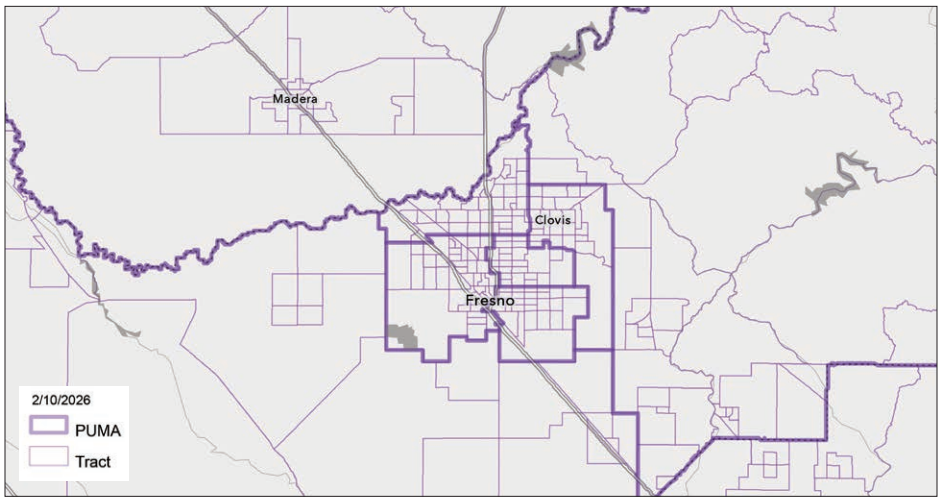
More Available Content

These web maps join others in ArcGIS Living Atlas that are updated annually, along with our ACS layers, which include data at the state, county, and tract levels:

- Where do people speak Spanish at home?
- Where are adults who are bilingual in English and any other language?
- Where are adults with limited English ability?



↑ The most common languages spoken other than English and their speaker populations shown visually.



↑ PUMA vs. Tract level.

- What languages are spoken by people with limited English ability?
- Where do people speak French, Haitian, or Cajun at home?
- Where do people speak Vietnamese at home?
- Where do people speak Korean at home?
- Where do people speak Arabic at home?

View all 16 web maps in the available capstone gallery app.

Modify These Ones, or Make Your Own

As with all web maps in ArcGIS Living Atlas, you are free to adjust these nationwide maps to better suit your local context. Or, create your own from a blank map. You can create dozens more web maps from the layer. We encourage you to create maps that make sense for your community.

You can also combine this layer with others for even more insights. For example, we created a map of French, Haitian, or Cajun speakers using the layers available at the tract level (hence the grouping of these languages). The pop-up uses Arcade to pull data from the new PUMA-level layer to provide more information with on-the-fly calculations.

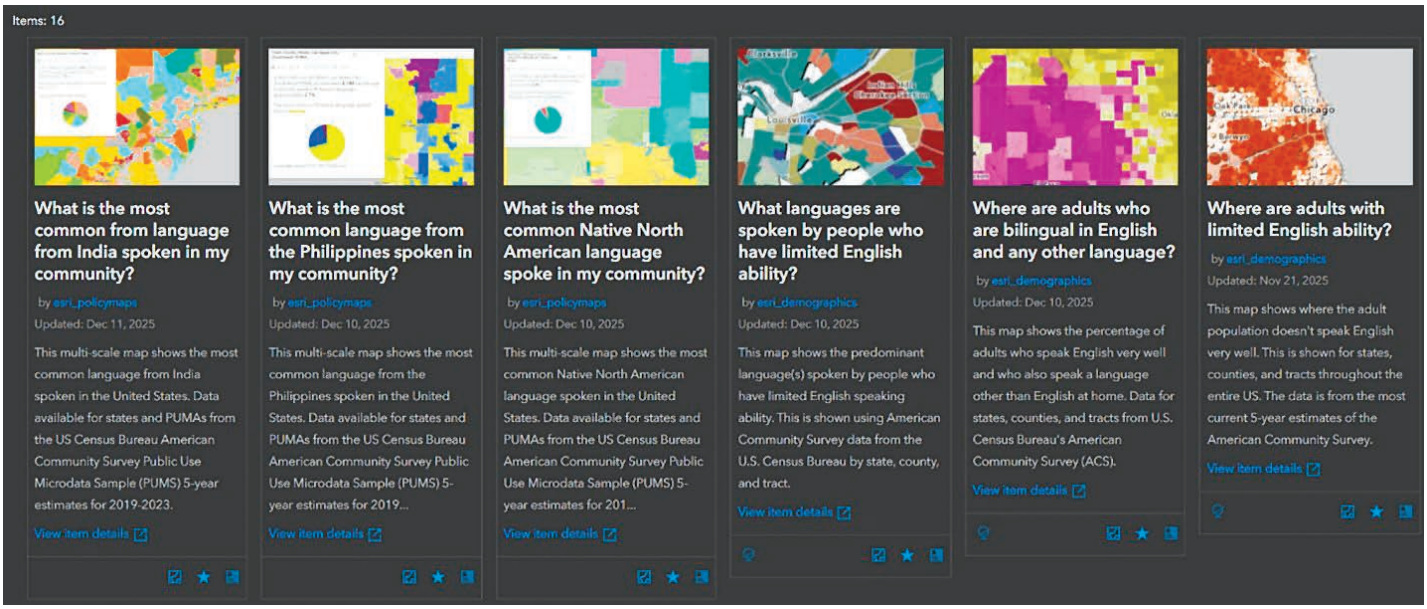
Many thanks to the American Community Survey respondents. You are the reason we have this type of data.

Wrap Up

If you are interested in having this item updated on an annual basis when new ACS Public Use Microdata Sample (PUMS) data is available, let us know in Esri Community. In general, the Census Bureau releases the five-year PUMS data file a month or two after the summary tables. For example, if the summary tables are released in early December, the PUMS file usually comes out in late January.

How do you use maps about language in your work? Which languages are most relevant to your organization? Share your projects and ask questions of other ArcGIS Living Atlas users in Esri Community.

Check out the PUMA layer by visiting **link.esri.com/PUMA**



↑ Web map gallery on the ArcGIS Living Atlas website.

City of Columbus CLOSE Application Delivers Smart Right-of-Way Management for Safe Mobility and Compliance

By Kim Baillieul, Data Solutions Manager, City of Columbus Department of Public Service

Columbus, Ohio, is a growing, dynamic city experiencing frequent activity in the public right-of-way downtown and across the community—from permitted infrastructure improvement projects to private utility work and development construction.

The Columbus Department of Public Service manages the city's right-of-way and transportation infrastructure. It was often challenging to fully understand when and where construction, along with other permitted activity, was impacting public space, residents, and commuters.

The department's data solutions and compliance team sought to meet this challenge with innovative GIS technology capable of streamlining the reporting and management of street lane closures and steel plate placements associated with work in the right-of-way.

"We discussed coming up with a solution developed in-house to be able to capture all these closures and where steel plates were placed so we could intelligently know the where, the why, the who, and the impact to the community," said Drew Williams, public service assistant director who leads the department's data solutions and compliance team.

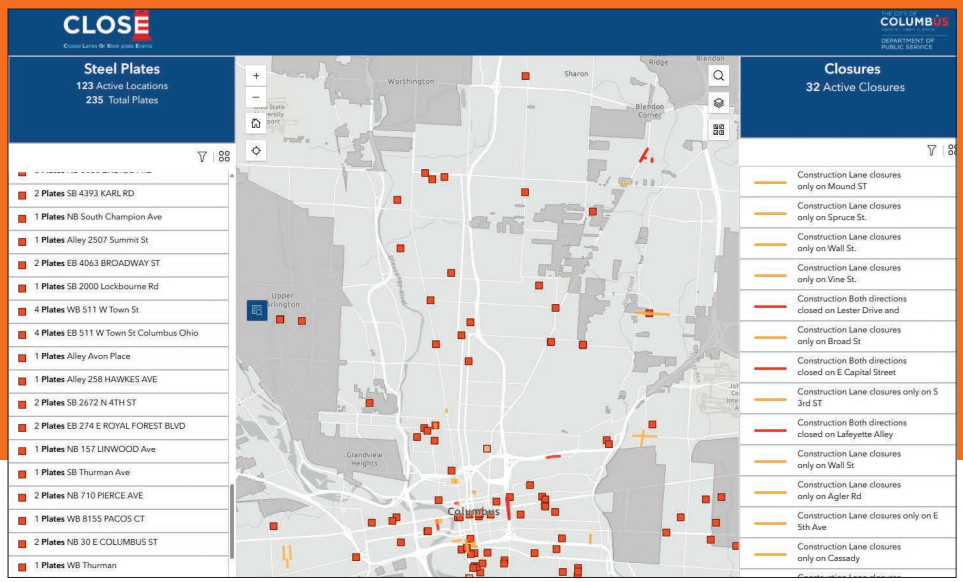
Previously, communication from right-of-way permit holders occurred across various city departments; it wasn't consolidated to provide real-time information and mapped locations. Data solutions and compliance focused on designing an application for a single point of entry to allow—and ultimately require—permit holders to timely report street closures and steel plate locations needed for their work.

Their solution? The development of the CLOSE Program—Closed Lanes or Steel-plate Events—a geospatial-enabled system that is flexible, accessible, and designed to consolidate data while encouraging participation and compliance. The user-friendly tool allows permit holders to submit lane closure and steel plate locations with the CLOSE form, feeding a series of Esri ArcGIS Online applications leveraged to display right-of-way activity to stakeholders.

CLOSE uses ArcGIS Survey123 to offer a centralized reporting system for closures and steel plates, with a user-friendly, accessible design. This data, with schema

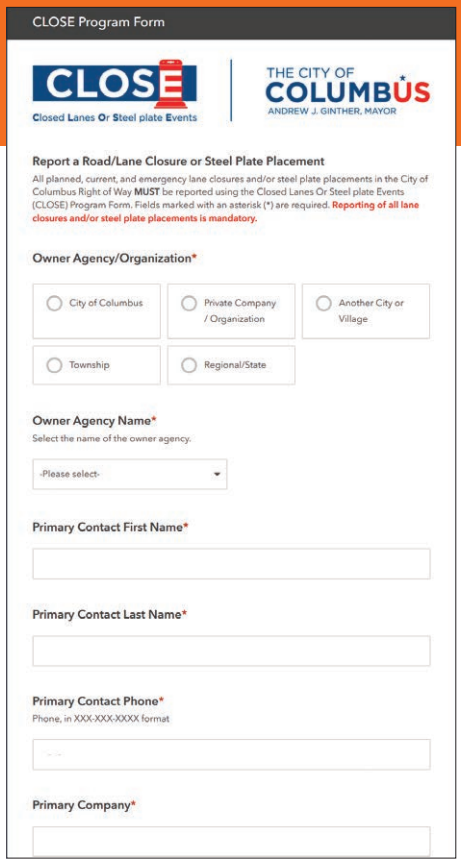
↑ Using ArcGIS QuickCapture, staff verify and inspect steel plate installations in the field, improving situational awareness and data reliability.

← Road closures and temporary surface treatments, such as steel plates, help protect drivers and workers during essential infrastructure repairs across Columbus.



← The CLOSE platform, using ArcGIS Experience Builder, is regularly accessed by Public Service employees to identify roadway activity.

↓ All CLOSE information begins with the required CLOSE form, built in ArcGIS Survey123, where permit holders can input their upcoming closure and steel plate activity.



intentionally structured to support ongoing operations, is vetted and confirmed using an ArcGIS Experience Builder application prior to staff dissemination. Inspectors use an ArcGIS QuickCapture application for fast viewing of CLOSE data in addition to reporting issues and conflicts in the field, increasing efficiency in right-of-way operations and investigations.

Other program components include near real-time viewing of right-of-way activity using Operations Dashboards, automated notifications for stakeholders, and integration with Columbus city code for compliance enforcement.

Overall, said Williams, "CLOSE captures data in a way that allows us to better understand where lane closures are, and traffic impacts to mobility and safety for the public."

Prior to CLOSE, unsecured roadway plates created safety risks and potential vehicle damage. Now, using the CLOSE dashboard built in Experience Builder, Public Service can quickly identify the party responsible for hazardous plates and address safety issues.

Data solutions and compliance began a soft launch of CLOSE in late 2022, encouraging permit holders to submit their roadway activity using the app. Concurrently, Public Service proposed right-of-way city code updates to require the use of CLOSE for reporting lane closures and steel plate placements, and to provide enhanced citation authority to city investigators enforcing the code, including participation in CLOSE.

Following approval of the code changes' legislation, CLOSE was officially launched in January 2024 and made mandatory for permit holders.

In two years, permit compliance increased from 48 percent to 84 percent and prompted nearly 300 investigations to safeguard the public right-of-way and prevent misuse by permit holders.

CLOSE has also enhanced efficiency and safety in other city operations and with external partners. For example, the Traffic Management Center and Division of Fire receive automated CLOSE alerts for significant roadway closures to reroute emergency response, if necessary. The Central Ohio Transit Authority and local school districts can alter bus routes as needed.

Public Service snow and ice control operations citywide have benefited, too. With steel plate locations now accessible in plow trucks' in-cab devices through CLOSE via an ArcGIS Online secure published service, the risk is reduced for plow blade damage and related downtime. Prior to CLOSE, an average of 40 plate locations were documented per season. In 2024 operations with CLOSE, plow drivers were alerted to 1,017 closures and 4,276 steel plate locations while servicing city streets in winter conditions.

CLOSE earned the Geospatial Professional Network's Exemplary Systems in Geospatial Award, Enterprise System in 2025. CLOSE is a testament to how the Public Service data governance program successfully built a sustainable and practical product for all users. It has inspired data solutions and compliance to pursue greater efficiencies using the application.

"The linking of everybody together and coalescing around an application that monitors lane closures and steel plates has been a game changer for us in terms of making us more efficient, more mobile, and safer," Williams said.

included verified spatial data. Residents could also search by address using countywide-verified addresses, improving the accuracy of location placement.

"ArcGIS Survey123 allowed us to collect clear, up-to-date information from our community and quickly relay it to a team of professionals who can provide immediate assistance," said Amy Roust, GIS administrator II.

Encampments can be short-lived, so the homeless response team (HRT) staff needed an alert as soon as a campsite report was submitted so that they could respond by providing resources and services to the individuals before they relocated. The city used Microsoft Power Automate to build an automated process that was tied to the survey and sent real-time alerts to the outreach staff, transforming guesswork into coordinated, community-driven responses. Optionally, the community member who reported the campsite could also request a follow-up from staff via phone or email to confirm that their report had been addressed.

These location-verified reports from the public enabled the team to engage far more effectively and frequently with unhoused individuals. Often, convincing a person to accept help takes several encounters to build trust and relationships. The HRT members became the friendly faces of the city, from offering bottles of water on a hot day to helping a person access the services they needed to find stable housing.

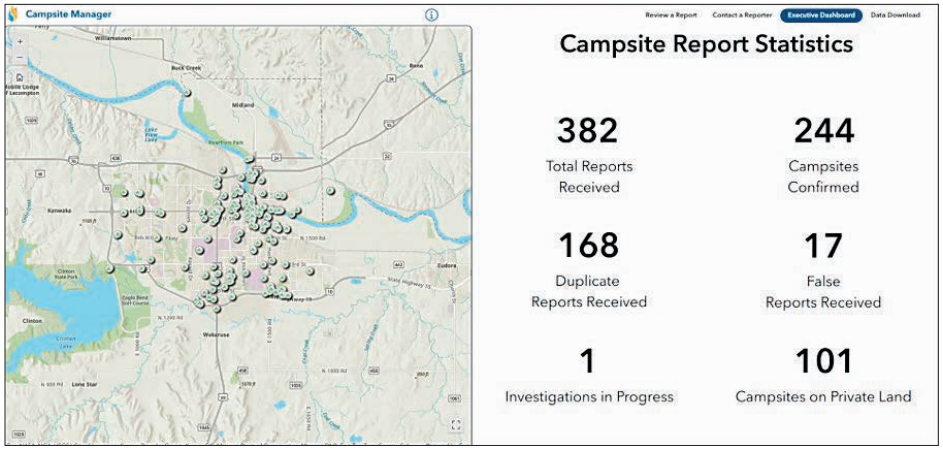
ArcGIS Tools Streamline Routing and Connect More People to Services

To prepare for the next PIT count, the city used ArcGIS Network Analyst—an extension that enables advanced vehicle routing—to divide the county into zones and create optimized travel routes that included the known encampments. Each PIT count team received a map with a list of places to visit, numbered to ensure that they reached each location using the most efficient path.

This shift in approach made a noticeable difference. According to Bosch-Hastings, what had previously taken outreach teams 12–14 hours was completed in just five hours. Having precise locations plotted on the map reduced overlap, improved coordination, and ensured that every area was covered efficiently.

↓ Meeting people where they are, Lawrence's homeless response team brings support and connection to those in need.

> "Our success is more than a number. It's nearly 100 of our neighbors no longer sleeping outside, now connected to care and on the path to stability."
>
> **Misty Bosch-Hastings**
> Director of the Homeless Solutions Division of the City of Lawrence



↑ The City of Lawrence's Executive Dashboard delivers real-time data to help city leaders monitor progress, allocate resources, and respond to emerging needs.

"HRT is doing the very hard work of meeting people where they are and building trust. We are grateful that we can use our skills with ArcGIS products to support their mission and increase efficiencies," said Roust.

With spatial data centralized in GIS, city staff then used ArcGIS Experience Builder to create a web-based application that allowed outreach teams to track and manage campsite reports, ensuring that every concern was investigated and addressed.

The team also used ArcGIS Experience Builder to create an executive dashboard that gives city leadership real-time updates on unhoused outreach efforts. In a fast-moving environment, quick access to accurate data was essential. The dashboard allowed the team to track weekly progress, shift resources in response to trends, and provide transparent updates to city leadership and residents. It also helped forecast staffing needs, identify where resources were most effective, and provide evidence for grant reporting and future funding proposals, making it a critical tool for both operational and strategic decision-making.

Beyond the Homeless Solutions Division, other departments—including parks, public works, and sanitation—used the data to plan cleanups and monitor high-impact areas. Police and fire department staff accessed it to identify safety concerns, while city leadership used the aggregated statistics to inform policy and budget decisions. Partner agencies also relied on shared data to coordinate services and reduce duplication. The dashboard became a vital tool for operational and strategic thinking.

Becoming a Nationally Recognized Team

With the help of ArcGIS technologies, HRT's efforts paid off significantly. The City of Lawrence achieved one of the most significant reductions in unsheltered homelessness nationwide. According to the US Department of Housing and Urban Development (HUD), the city reduced unsheltered homelessness by 63 percent between January 2024 and January 2025.

"This milestone reflects a community-wide effort, featuring strong partnerships across agencies participating in multidisciplinary outreach," said Bosch-Hastings.

In just 12 months, the city also saw a 30 percent decrease in overall homelessness, dropping from 414 to 290 individuals. This progress put the city ahead of other major cities. The City of Lawrence is now on the path toward reaching functional zero—a benchmark to show that the community's housing capacity is greater than the number of people experiencing homelessness.

ArcGIS played a central role in this transformation. The City of Lawrence used GIS to collect and report data required for various federal programs and funding. For example, it helped the city comply with data standards and reporting requirements from HUD to maintain Homeless Management Information System (HMIS) participation. GIS also fulfilled Coronavirus Aid, Relief, and Economic Security (CARES) Act requirements for tracking how federal relief funds were used for outreach and emergency sheltering efforts. These capabilities not only help keep the City of Lawrence eligible for funding but also increase transparency and credibility with partners such as local nonprofits, other public health agencies in the region, and the public.

In 2025, Bosch-Hastings was recognized as a Douglas County Health Champion for her leadership in driving this coordinated, data-informed approach.

Looking ahead, the city plans to build on its success by replacing its 21-page manual of homelessness resources with an interactive GIS survey. It will include filter options based on each person's unique needs, ascertained as the HRT is engaging with them. Answers to questions such as "Have you ever served in the military?", "Do you have a physical or mental health condition?", or "Do you have pets?", will generate a custom list of services that the outreach coordinator can quickly implement to get each individual enrolled in services that will move them toward stability. With these innovative approaches, the City of Lawrence is an example of how an organization can leverage GIS to improve the lives of all of the community's residents.

To learn how GIS helps address homelessness, visit **link.esri.com/HHS**

Tioga County's Leap to Accurate and Efficient Parcel Management

Tioga County, located in north-central Pennsylvania, is known for its lush forests and landscape of hills and valleys. The Tioga County Assessment Office manages tax maps to support property assessments, benefiting people and industries ranging from hunters to real estate developers and oil and gas companies. Central to this effort was maintaining a set of hard-copy tax maps to support assessment operations, which were crucial for industries that rely on accurate property boundary data for daily operations.

Esri partner Sidwell, a geospatial services and solutions provider, completed a project for Tioga County, Pennsylvania, reconstructing a new countywide layer of 26,000 parcels from original source land records. Since then, the county has seen significant improvements in data accuracy and operational efficiency.

However, the county faced a critical challenge: It maintained an obsolete and inaccurate parcel layer in its GIS. This slowed workflows, frustrated users, and reduced the accuracy of property-related decisions. It also made it difficult to integrate new data with existing systems.

To address this, county staff worked with Esri partner Sidwell to implement ArcGIS Parcel Fabric and ArcGIS Pro. These tools enabled Tioga County to modernize its parcel management system—delivering greater accuracy, streamlined operations, and a more reliable foundation for property assessments and public services.

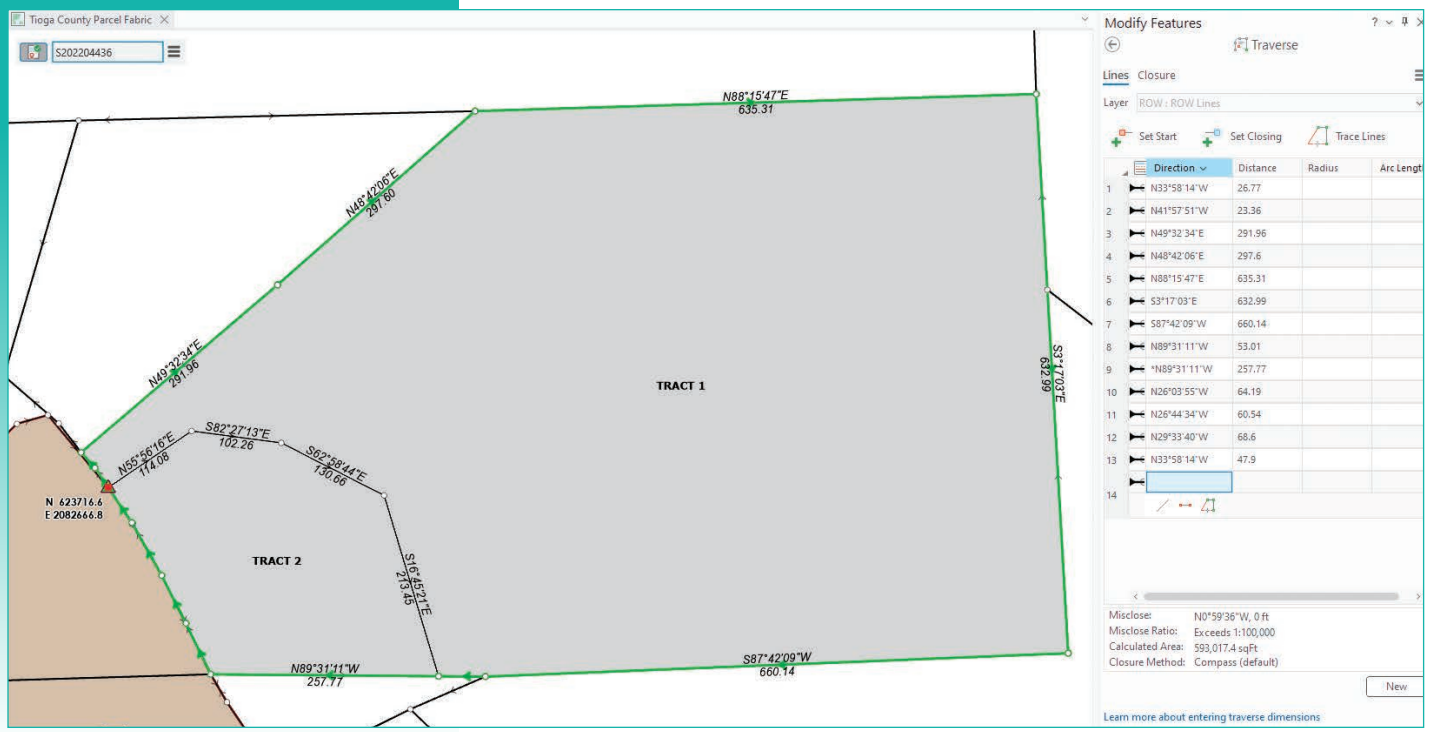
Seeking a More Efficient GIS Solution

In the years leading up to the project, GIS coordinator Scott Zubek and chief assessor Josh Zeyn faced mounting challenges due to inaccuracies in the county's tax maps. Their office received frequent calls from real estate developers, hunters, and other researchers reporting parcel discrepancies. The Marcellus Shale boom—a surge in natural gas exploration and drilling across Pennsylvania—further intensified demand, as oil and gas companies increased property boundary research.

Data-quality issues with the parcel data also made it highly problematic to display the tax maps on a public-facing GIS web application. At the same time, the assessor's office was preparing to implement a new computer-assisted mass appraisal (CAMA) system that required complete and accurate parcel data.

The county also needed a solution that would align with the state's Clean and Green program and support a countywide reassessment. This included calculating acreage by soil type based on accurate parcel boundaries and conducting slope rating analysis using lidar-derived 3D models.

Ultimately, Tioga County sought a modern GIS solution that could collect



↑ Tioga County parcels are shown by using the parcel fabric in ArcGIS Pro.

← This GIS data viewer is a public-facing map that shows the parcels in Tioga County, Pennsylvania.

and deliver accurate, up-to-date parcel data; reduce call volume at the office; and allow staff to focus on higher-priority tasks. Improving operational efficiency and enhancing the customer experience were top priorities.

The Right Solution: Implementing ArcGIS Parcel Fabric

To address its parcel data challenges, Tioga County and Sidwell jointly assessed the county's existing system to identify the best solution. Through this assessment, Sidwell confirmed several reported issues, including parcels incorrectly associated with houses or lots—errors that had led to delinquent sales.

Recognizing the need for improvement, the county moved forward with Sidwell's recommendation to implement Esri's ArcGIS Parcel Fabric. Using original source documents—including recorded survey data with geodetic coordinates—the project team delivered data in the latest version of ArcGIS Parcel Fabric. This allowed the county to visualize accurate parcel data and seamlessly integrate it with the county's CAMA system.

Throughout the project, Sidwell incorporated over 60,000 documents, including recorded surveys, plats, historical maps, legal documents, and over 2,500 Global Navigation Satellite System (GNSS) control points. These materials were essential for accurately mapping parcels and establishing a consistent framework across the county.

The newly constructed countywide parcel layer was delivered as an ArcGIS Parcel Fabric dataset compatible with Tioga County's enterprise GIS environment. To ensure long-term success, Sidwell provided comprehensive end-user training for the assessor's office.

Tioga County's Improved Parcel Data Management System Delivers Results

The implementation of ArcGIS Parcel Fabric led to significant improvement in Tioga County's parcel data quality and accuracy. Issues with parcels misaligned to houses and lots were resolved, preventing future errors in property sales. With more accurate public-facing data, the county saw a noticeable reduction in phone inquiries, allowing staff to focus on critical tasks.

Day-to-day parcel maintenance also became more streamlined, increasing the overall operational efficiency. The improved data accuracy reduced staff workload and increased public confidence.

To quantify the impact, the county conducted parcel acreage validation—a common quality control process that compares GIS-calculated acreage to deeded acreage. Even in the initial assessment, the results were striking: The percentage of parcels where the mapped acreage matched the deeded acreage (within 0.5 acres) rose from 58 percent to 80 percent. Currently, 90 percent of parcels are within two acres of the deeded acreage in the CAMA system.

Accurate parcel boundaries also enhanced the county's reassessment of soil and land-use types, enabling more precise acreage calculations. The county launched a slope mapping project to identify parcels with a slope of 25 percent or higher as unbuildable—an analysis made possible by accurate parcel data.

Additionally, reassessment field staff were visiting the correct properties with greater confidence, improving the efficiency of property visits.

Zeyn presented these findings in a letter to the county commissioners, who agreed that the project successfully delivered tangible operational benefits that justified the investment.

By partnering with Sidwell, Tioga County was able to identify and address the needs of its residents and businesses, make its assessor's office more efficient, and improve customer satisfaction. The real-world consequences of inaccurate parcel data can be significant, so ensuring that the data is accurate, timely, and easily accessed by the public is essential.

To get started managing your parcels with ArcGIS, visit **link.esri.com/ParcelMgmt26**

Visualize Your Enterprise GIS Asset Dependencies with ArcGIS Monitor

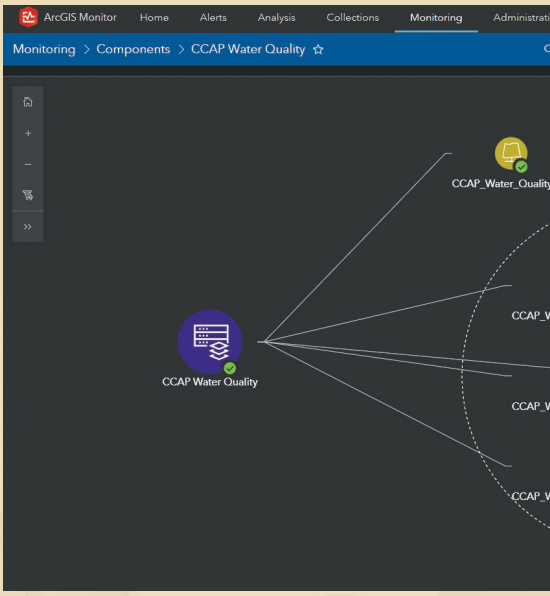
For government agencies in which GIS services support critical business functions—such as permitting, 911 dispatch, and utilities management—minimizing system downtime is essential. Operating with tight budgets, these agencies need to ensure that their IT resources are optimized and reduce costs associated with system failures and emergency troubleshooting. Many agencies also manage multiple ArcGIS Enterprise deployments—such as development, staging, and production environments, often in different locations and across different release versions—all of which require proactive system management of their enterprise GIS to ensure it reliably supports critical government operations.

Ensuring Reliable GIS for Government Operations

ArcGIS Monitor provides observability for ArcGIS systems and their underlying infrastructure. It collects and reports metrics for multiple ArcGIS Enterprise deployments and supports different release versions. It also provides a single console for viewing metrics across multiple systems and different environments like development, staging, and production. Monitor collects metrics on enterprise GIS assets such as the enterprise portal, ArcGIS Server, web services, the ArcGIS relational data store, databases, geodatabases, and host machines. It can also report metrics for web services from ArcGIS Online organizations and third-party ArcGIS Server sites. Monitor also enables you to set alerts and notifications on metrics to enable proactive enterprise GIS management.

The 2025.1 release introduces a capability called component relationship graphs, which enables you to better understand how different enterprise GIS assets are related to each other. You can select an asset, then visualize its dependencies and other enterprise GIS assets associated with it.

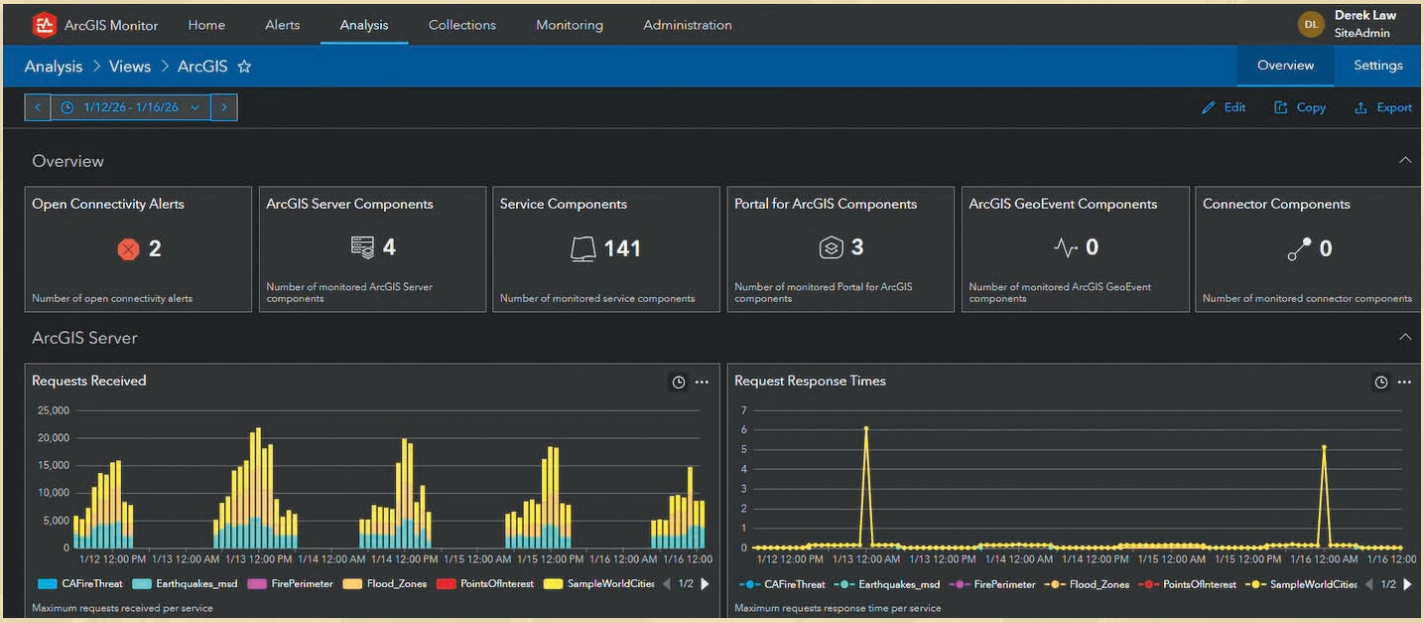
This capability identifies relationships between ArcGIS components and their supporting infrastructure, which can help minimize system downtime and plan for system maintenance. The graphs can show "upstream" dependencies of web applications and web maps to quickly isolate outages and/or bottlenecks that may impact system availability and performance.



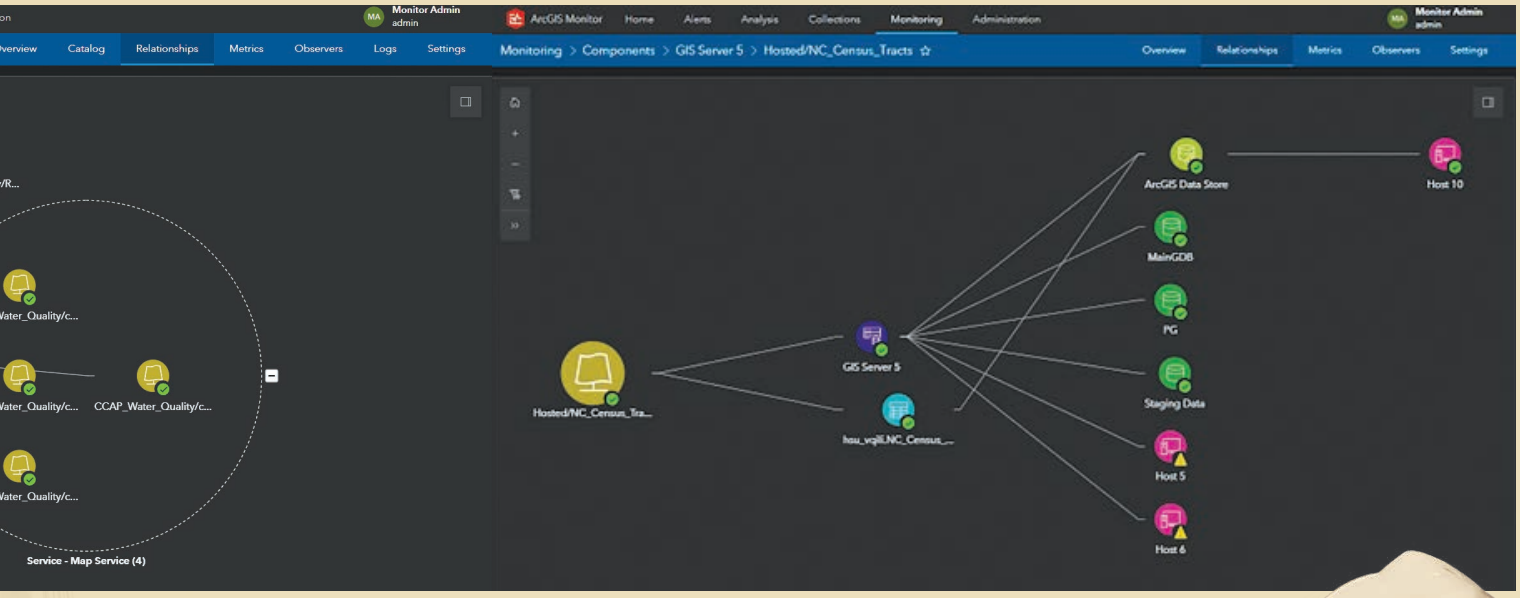
↑ Relationship graph of an ArcGIS Server site and its services.

Understanding Component Relationship Graphs

ArcGIS Monitor renders component relationships in a tree diagram. In this style of tree diagram, the selected enterprise GIS asset serves as a "base" while associated



↑ ArcGIS Monitor analysis view.



↑ Relationship graph of the NC_Census_Tracts hosted feature service.

items "branch out" from it. This graphical representation provides a hierarchical view of enterprise GIS assets and makes it easier to identify component dependencies. Each node in the graph represents a component (different component types have different icons), and each link in the graph represents one level of association between components. Monitor renders the tree diagram with its base item on the left and branching items towards the right, with incrementing "levels" as you navigate links from left to right in the graph. The component status (e.g., nominal, warning, and critical) is also shown (in the lower-right corner of each component icon), so you can quickly review and assess the health of each component.

You can interact with the component relationship graph by filtering on properties such as component status or type. And also trace back "upstream" to understand how web apps and web maps are affected when there are changes to some of their dependent components.

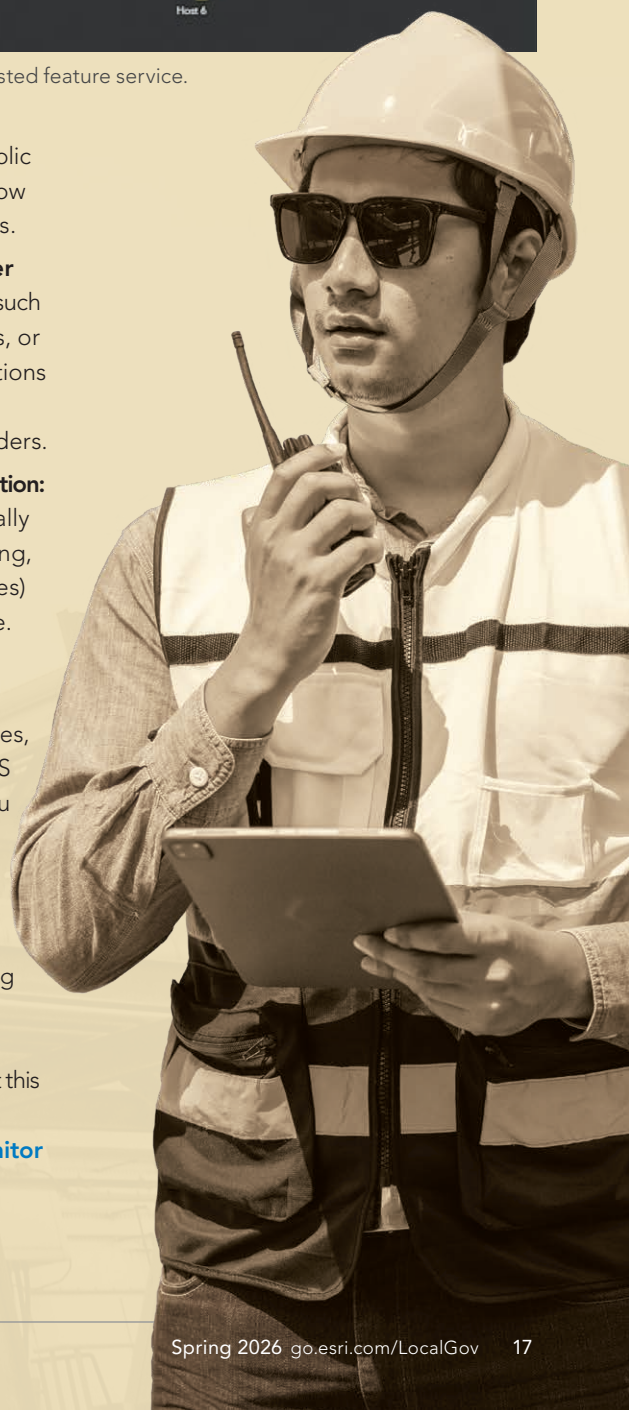
Practical Applications of Component Relationship Graphs

Component relationship graphs are invaluable in various scenarios, such as:

- **Maintaining critical public-facing apps:** State and local governments often run essential public-facing applications like permit tracking dashboards, public works reporting tools (e.g., snowplow trackers), or resident service portals.
- **Emergency response and disaster management:** During emergencies such as severe weather, natural disasters, or public safety incidents, GIS applications are mission-critical for emergency operations centers and first responders.
- **Infrastructure planning and optimization:** State and local governments typically have multiple departments (planning, public works, transportation, utilities) sharing the same GIS infrastructure.

In all these cases, component relationship graphs help identify dependencies, can help isolate outages, and proactively monitor enterprise GIS infrastructure health. For example, you can see which web maps would be affected if a hosted feature service needs to be updated and identify the consumers of a particular service who might be impacted while planning maintenance or software upgrades.

To learn more about this capability, visit **link.esri.com/Monitor**



King County Modernizes Imagery Access with a Self-Service Application

Spanning more than 2,000 square miles and home to the city of Seattle and 2.4 million people, King County is the most populous county in Washington state. With its vast forests and strong tech culture, the county has become a leader in integrating imagery with GIS technology, empowering everything from conservation and urban planning to infrastructure and public policy. At the core of this work is ArcGIS Enterprise—a powerful system for managing, storing, and analyzing geospatial data.

Leading these efforts is the King County GIS Center. The GIS Center is King County's centralized GIS services team that manages the countywide GIS in collaboration with county departments and outside agencies. Their collaboration helps departments and agencies share data, plan smarter, and make better decisions. In King County, GIS and imagery do more than support operations—the technology connects people with action.

Building a Countywide Aerial Imagery Program

King County has used aerial imagery in its GIS work for decades. Valerie Bright, senior GIS imaging engineer, recounted how early GIS efforts focused on finding the best available data—no matter the format.

"As soon as the technology existed to digitize and georeference imagery, the county GIS management figured, 'Why not? We can use this for so much,'" Bright said.

The county began collecting aerial imagery as early as 1936. But in 1998, imagery became crucial when two species of Chinook salmon—a species native and highly valued to the area—were listed as endangered under the Endangered Species Act. This prompted the King County GIS Center to build a long-term strategy for managing large and continuous imagery datasets to support environmental monitoring—especially for the Chinook salmon.

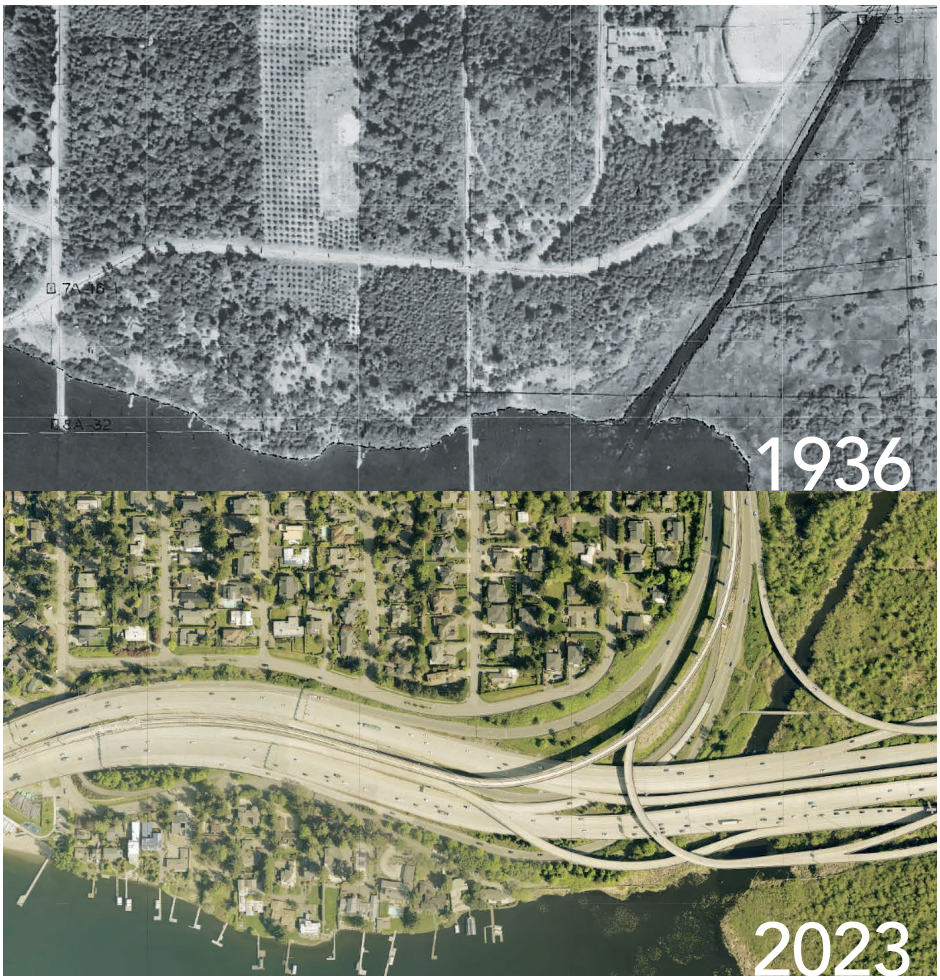
Instead of funding project-by-project surveys for this work, the GIS Center launched Many Maps One Landscape—a centralized data sharing effort that outlined a framework and process for county departments to pool resources and share critical geographic data.

This initiative built the foundation for a future imagery program at the county because it showed the team how collective data management could work.

As the GIS Center team acquired imagery data, staff recognized the value of consistent investment in aerial imagery for future projects. In 2006, the center created a reserve fund to support aerial photogrammetry of the county every two years. The budget reserve fund

← Aerial images of the location of the Microsoft campus. From top: 1936,1998, 2007, 2012, 2017, and 2023.

→ Aerial image comparison of 1936 (top) versus 2023 (bottom) of Mercer Slough in Bellevue before and after the development of Interstate 90.



enabled the King County GIS Center to pool money from its own annual budget, as well as from other county agencies who wanted access to the imagery, to reduce imagery acquisition costs for all partners. What began as a shared data pool evolved into a full Aerial Imagery Program where external jurisdictions like cities, utility districts, tribes, and airports could also pay into the program and receive updated imagery at an effective cost. The goal: enhance GIS projects across county departments and jurisdictions with high-resolution, repeatable, and accurate imagery data.

"The real driver was the county had previously been cobbling together publicly available imagery, from federal datasets to data the state collected," Bright explained. "But what we really wanted was higher resolution, dependable repeatability, better accuracy. It's a lot easier to plan your projects if you know the data is continuing to come."

From Manual Imagery to Self-Serve: Transforming Access with a GIS App

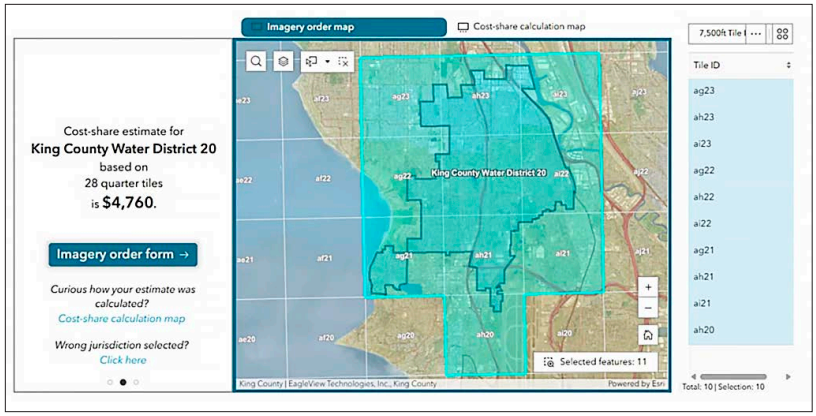
After decades of managing the Aerial Imagery Program manually, Bright and her team saw an opportunity to modernize. The Aerial Imagery Program had become a powerful asset for the county, and its cost-sharing strategy brought external agencies together, offering consistent imagery data for the region at a more affordable price. But while the program gathered valuable imagery data for its cost-share partners, the process needed optimization. In 2023, the team proposed a new solution: an interactive map application that would let jurisdictions select and order imagery directly.

Before this, distributing the imagery to external jurisdictions was a manual and tedious process for the GIS Center team. Participants in the Aerial Imagery Program would submit a shapefile request for an area of interest. The GIS Center team would then

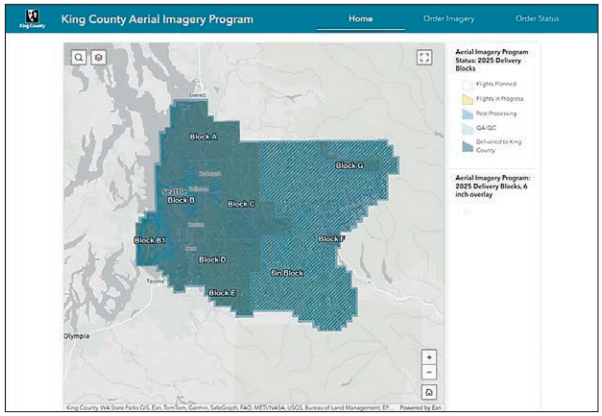
continued on page 20

↓ Aerial panoramic image of Portage Bay, Union Bay, and neighborhoods in Seattle, King County, Washington.

King County Modernizes Imagery Access with a Self-Service Application continued from page 19



↑ The Aerial Imagery Program app was designed to enable jurisdictions to see project progress and easily select and order imagery from areas of interest for their projects.



↑ Users are then able to select an area of interest, select the year of the data collection they are interested in, and receive a cost estimate for their imagery order.

overlay the request on a tile system, send the overlay back to the requester for review, and finalize the imagery selections. This back-and-forth was slow and hands-on.

Bright's interactive map idea would create greater awareness of the county's imagery acquisitions and make the data accessible to external jurisdictions in a single platform. It shifted imagery access from a manual request process to a user-driven experience—one that would normalize imagery data as a valuable asset in GIS projects across the county.

To bring the self-serve application to life, Bright and her team used ArcGIS Experience Builder, a configurable web app tool that lets users combine maps, data, and widgets into custom online experiences without writing code. Experience Builder allowed the team to create the Aerial Imagery Program's public-facing application, where users could explore available imagery, learn about the program, and place orders—all in one place.

"The ability to make the Aerial Imagery Program a public platform where we could have a landing page with information about our program was an advantage for us," said Bright. "It was the first time we really publicly advertised it. Before, it was a lot more word of mouth."

The King County Aerial Imagery Program app uses a map of the county with tiles of collected imagery overlaid on it. Users can select an area of interest, choose the year of the data collection they need, and receive a cost estimate for their imagery order. Once placed, users can track the status of their imagery orders—making the entire process more transparent and efficient.

While reducing administrative workload was a key driver for the app, transparency around program costs was just as important. The app also streamlined request management and made the program's pricing and process more visible. This transparency helps partners who use the Aerial Imagery Program—like cities, towns, utility districts, tribes, and airports—better plan and budget for their geospatial work with imagery.

"Our partners need to be able to budget," Bright explained. "Governments often have biennial budgets, if not longer, so they need to be able to budget [what] their imagery is going to cost. The cut down on the administrative time on the back end was the primary driver for the app, but transparency about the program and its cost were also important."

With the imagery program, partners in King County have access to actionable intelligence to guide their investments and projects. Developers can visualize site conditions before construction projects, cities can optimize their planning and fieldwork with up-to-date information, utility districts can more effectively monitor parcels and infrastructure, conservation districts can assess water and soil health, and more. The Aerial Imagery Program app has made imagery a practical, everyday tool for decision-making across King County.

Trust and Impact: The Power of Accessible Imagery in GIS

By streamlining how imagery is requested, the app has done more than save time—it's enhanced how GIS projects are planned and executed across the county. This shift in access has helped King County's partners work more efficiently and collaboratively, laying the groundwork for something even more impactful: trust.

"There's a big culture of trust at the King County GIS Center," Bright said. "I think the Experience Builder application and launching that really helped boost that to the next level because it increased the transparency."

By centralizing imagery and streamlining access, King County has made it easier for people to get the data they need—quickly and reliably. More than just a technical upgrade, the app brings people and imagery together, empowering the county to plan, protect, and serve more effectively.

To learn how ArcGIS can unlock the full potential of your imagery, visit **link.esri.com/Imagery**

Expanding Access to Home Repairs in Atlanta

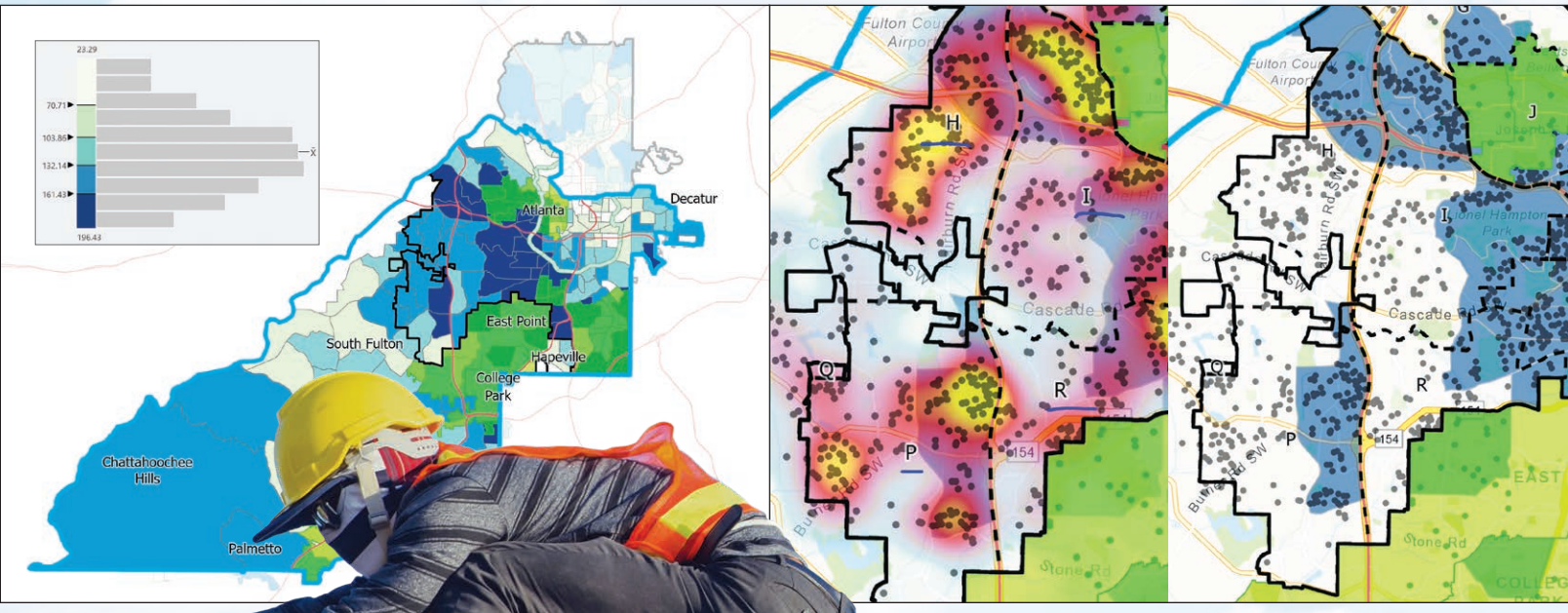
Atlanta Habitat for Humanity's Repair with Kindness program provides five-year forgivable home repair loans that help low-income homeowners by addressing costly repairs such as roofs, HVAC systems, accessibility upgrades, and maintenance repairs—often exceeding a homeowner's annual income. The need across the service area is high, but opening the program to the entire City of Atlanta and southern Fulton County would overwhelm staff capacity, create waitlists, and jeopardize the organization's reputation for fast, high-quality service. The challenge was determining where to expand services in a way that aligned capacity with the highest concentrations of need.

Previously, inquiry counts or funding partnerships guided expansion, but neighborhood boundaries vary widely, and inquiry volume did not reflect true underlying needs. Using ArcGIS, Atlanta Habitat adopted a geographic, data-driven approach that empowered the home preservation team to make confident, proactive decisions to expand its program. By enriching census data and clustering internal prospect locations at the census-tract level, staff created a composite score map combining multiple indicators, including the senior population, disability rates, income, homeownership, and the age of the housing stock. This revealed hot spots of need and highlighted areas with high need but low demand, signaling gaps in community awareness.

A composite score map guided expansion into four South Fulton census tracts, adding 70 eligible homeowners—and $1.4 million in potential forgivable home repair loans—to the pipeline. The resulting analysis ensures that Atlanta Habitat for Humanity can scale their program, avoid waitlists, and continue delivering timely, impactful repair services to homeowners who need them most.

"This level of spatial analysis has changed the way we serve communities. It's not just about making homes safer; it's about giving families a renewed sense of pride and comfort." —Amber Keller, Senior Data Manager, Atlanta Habitat for Humanity

↓ The composite score map displays areas in darker blue that show a higher need for help, based on demographic and contextual data weighted by senior data manager Amber Keller. Areas in dark green represent Atlanta Habitat for Humanity's existing service area.



↑ The two map images display the neighborhoods Atlanta Habitat for Humanity is expanding its service areas into—areas that have a high number of prospects and a high composite score.

4 Reasons to Migrate Your Parcels to ArcGIS Parcel Fabric

Does your organization have complete land information readily available to inform critical decisions? Are your parcel maps always up to date, accurate, and accessible to all stakeholders? Can you easily see a parcel's history and legal transactions without extensive research? If you answered "no" to any of these questions, it is time to migrate to ArcGIS Parcel Fabric.

1

Future-Proof Your Parcels

Land is complex, and its transactions are cumulative. Why keep throwing away all your work by only managing a snapshot in time?

Sutter County, California, migrated to ArcGIS Parcel Fabric and is future-proofing its parcels by leveraging features such as historical parcel tracking and storage of the legal record for a complete land records solution.

2

Increase Revenue

Don't let inaccurate or incomplete data cost your organization money. By maintaining accurate and complete representations of your parcels, you can fully realize the value they bring to your organization.

For example, by leveraging the 3D capability of ArcGIS Parcel Fabric, appraisers can more accurately determine characteristics of a property that may affect its value.

> When the wildfires hit, the critical nature of parcel data immediately became clear. Recovery would be impossible without it.
>
> **Ellen Deleissegues**
> GIS Analyst for Maui County

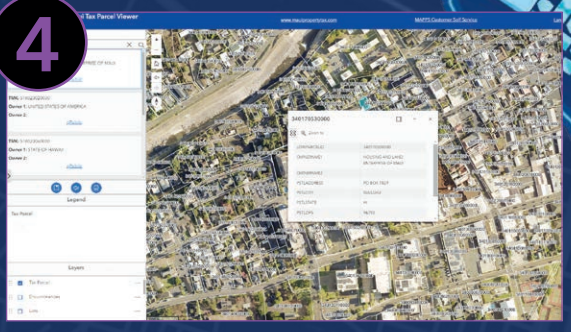
3

Maximize Your Resources

Take advantage of the built-in efficiencies of ArcGIS Parcel Fabric to reduce editing time and minimize errors.

For instance, the Harris Central Appraisal District (HCAD) in Texas, which manages over one million parcels, has seen up to a 75 percent time savings in addressing common data challenges through the use of ArcGIS Parcel Fabric.

4



Better Serve Stakeholders

Have confidence that your land information is accurate and accessible to all stakeholders. Know that if disaster strikes, your parcels are ready to respond as part of your resilience plan.

Are You Ready to Migrate? Coming in 2026!

ArcGIS Parcel Fabric for ArcGIS Online

380 New York Street
Redlands, California 92373-8100 USA

Presorted
Standard
US Postage
Paid
Esri

Don't miss out on news, insights, resources, and alerts.
Sign up for updates at **go.esri.com/subscribe**.

199093 G7594000