MAKING INFRASTRUCTURE CUSTOMERS **SUCCESSFUL**

Providing Solutions for a Changing World

Volume 2 | 2022

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CONTENTS

PROVIDING SOLUTIONS FOR A CHANGING WORLD

Many organizations are striving to be more resilient and sustainable. As a result, their efforts impact all types of infrastructure. The context of location is pivotal to understanding these effects. Therefore, a geospatial approach to infrastructure management dramatically improves business results.

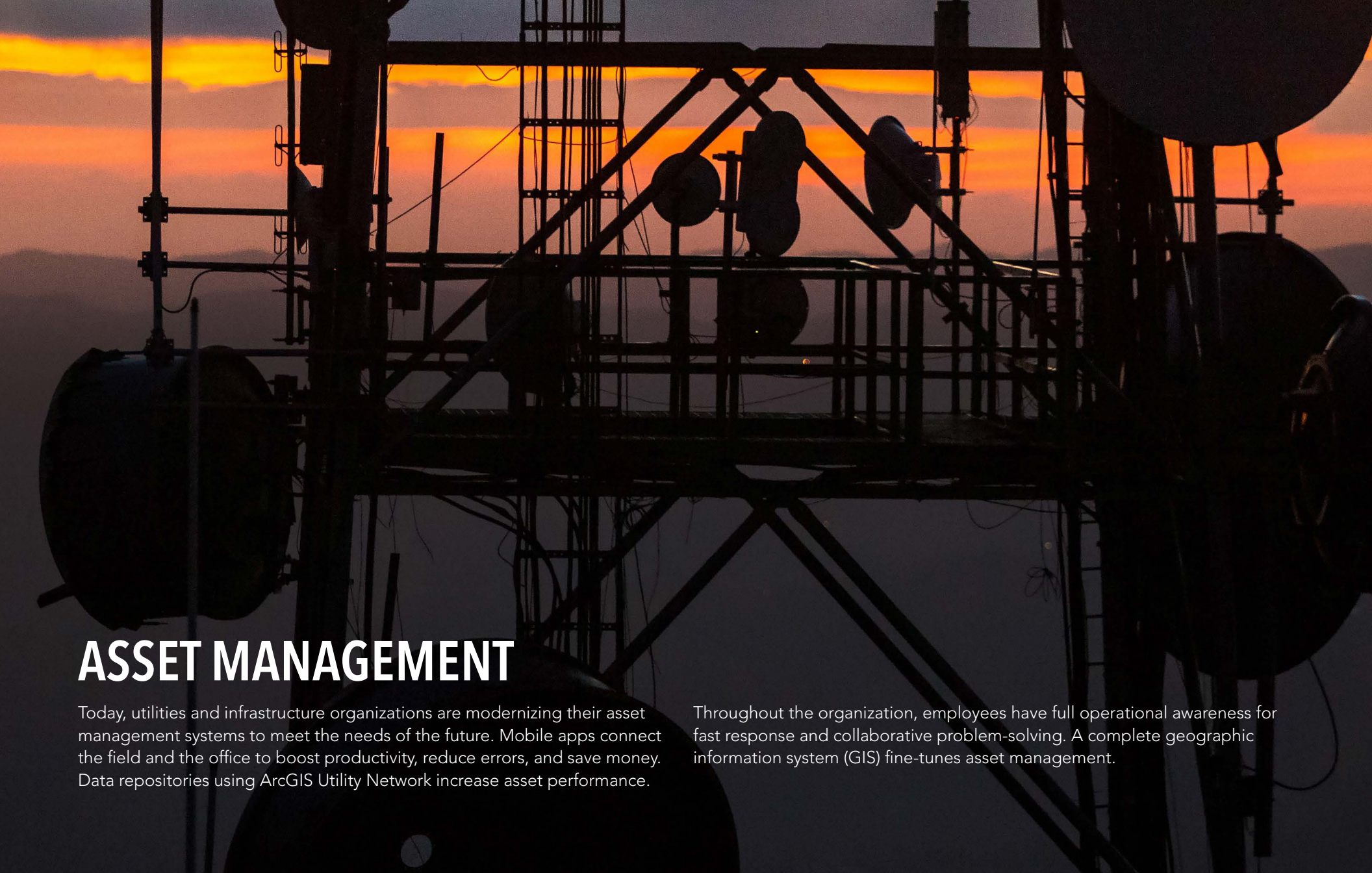
Location-based technology aligns infrastructure with human needs and the environment. When organizations see the whole picture, they anticipate problems and act more strategically. They understand relationships and predict outcomes based on science.

Organizations that support our infrastructure are challenged to deliver services that are safe and sustainable. To be effective, they must share information. They must collaborate as members of the community.

Likewise, Esri and its partners deliver services and proven solutions. These technologies promote efficiency, situational awareness, and superb customer care.

This ebook demonstrates concrete improvements to infrastructure management. You will see many examples from your peer agencies and learn how they applied location-based technology across their organizations. Explore the improvements to asset management, operations, planning and engineering, customer care, and network management.

Business intelligence from Esri's ArcGIS® software leads to smart decisions in the moment and predictive abilities for the future.



ASSET MANAGEMENT

Today, utilities and infrastructure organizations are modernizing their asset management systems to meet the needs of the future. Mobile apps connect the field and the office to boost productivity, reduce errors, and save money. Data repositories using ArcGIS Utility Network increase asset performance.

Throughout the organization, employees have full operational awareness for fast response and collaborative problem-solving. A complete geographic information system (GIS) fine-tunes asset management.

UTILITY PRIORITIZES PIPE REPLACEMENT PROJECTS AND REDUCES PLANNING TIME BY 75 PERCENT USING ADVANCED RISK ANALYTICS

With an extensive network of 2,340 miles of pipeline, composed of more than 88,000 individual pipe segments—some of which date back more than 100 years—efficiently managing risk had become an increasingly difficult challenge at Raleigh Water.

As part of a new, more proactive approach to addressing pipeline risk, Raleigh Water performed analysis to determine the highest-risk group of pipe segments in its network. This work was a key component for selecting a partner to go even deeper by helping Raleigh Water achieve greater visibility into the condition of its pipelines, more accurately predict breaks, and optimize results to prioritize its capital works more efficiently.

Raleigh Water partnered with Xylem's team of industry and technical experts to conduct a probability-of-failure analysis of the utility's entire network, using Xylem Asset Performance Optimization. Xylem combined historical pipeline break data with other infrastructure data from Raleigh Water's Esri® ArcGIS Enterprise system—including pipeline location, size, length, and material—to generate risk levels for every pipe segment.

Combining advanced risk analytics with Esri mapping software provided Raleigh Water with a more accurate, predictive, and targeted view of its network's potential trouble spots than could be achieved through traditional identification methods. Xylem's asset performance services confirmed the utility's original analysis, identifying which pipe cluster had the highest probability of failure.

Read the full story.

Learn more about Xylem.

"This is a game changer for us, and it is something we will be able to use for a wide variety of applications."

—Adam Haggerty,
Water and Sewer Asset Manager for Raleigh Water

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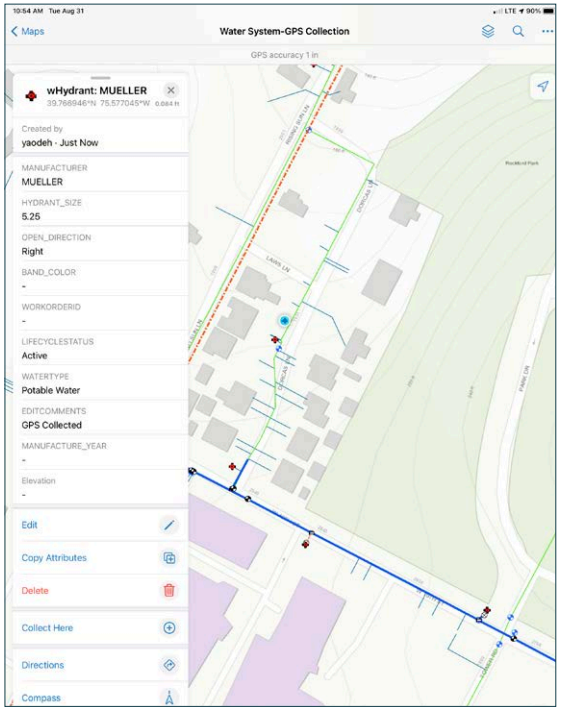
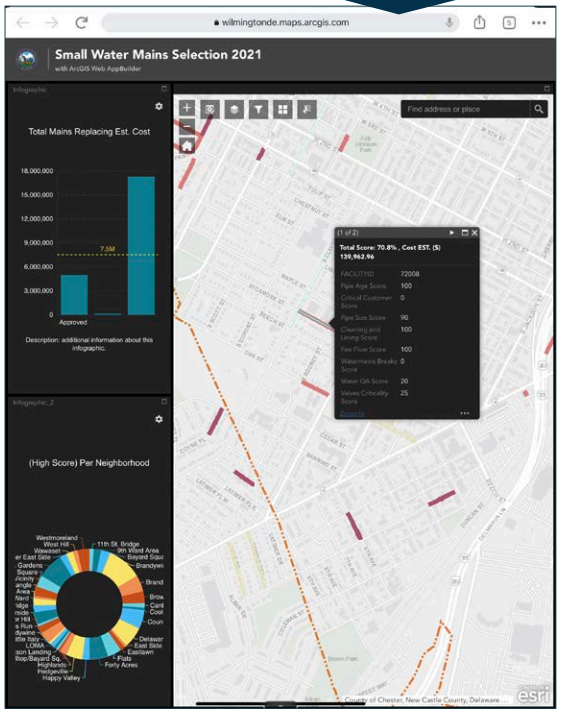
WILMINGTON ACHIEVES REAL-TIME AS-BUILTS WITH ArcGIS FIELD MAPS AND ARROW GOLD GNSS RECEIVERS

The City of Wilmington Department of Public Works provides water, sewer, and stormwater services to over 70,000 residents, contracting out the replacement of small-diameter water mains. During the replacement process, contractors are responsible for documenting installations and creating as-built drawings. This workflow involved a lengthy process that often took more than a year to deliver the as-builts in DXF, DWG, and similar CAD formats.





In 2021, Wilmington issued its largest contract, but this time the department decided to improve the workflow. Staff paired an Eos Positioning Systems Arrow Gold Global Navigation Satellite System (GNSS) receiver with an iPad Pro running Esri's ArcGIS Field Maps data collection app. Although the department had not used ArcGIS Field Maps before, it was straightforward to set up water-specific web maps and then use configurable templates to create smart forms for third-party contractors. Data was captured in the city's existing GIS schema, with the appropriate geometry and default attributes, but with no permission to edit the water network data directly.

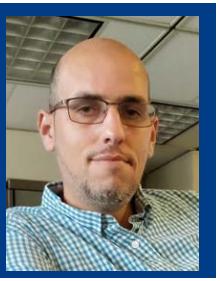
By providing third-party contractors with a way to capture as-builts in GIS feature classes with all the desired GNSS metadata and critical attributes, the need for file conversions, manual attribute mapping, line digitization, and manual handling of missing attributes was eliminated. Turnaround time was cut down, enabling same-day as-builts instead of requiring the 1.5-year wait period.

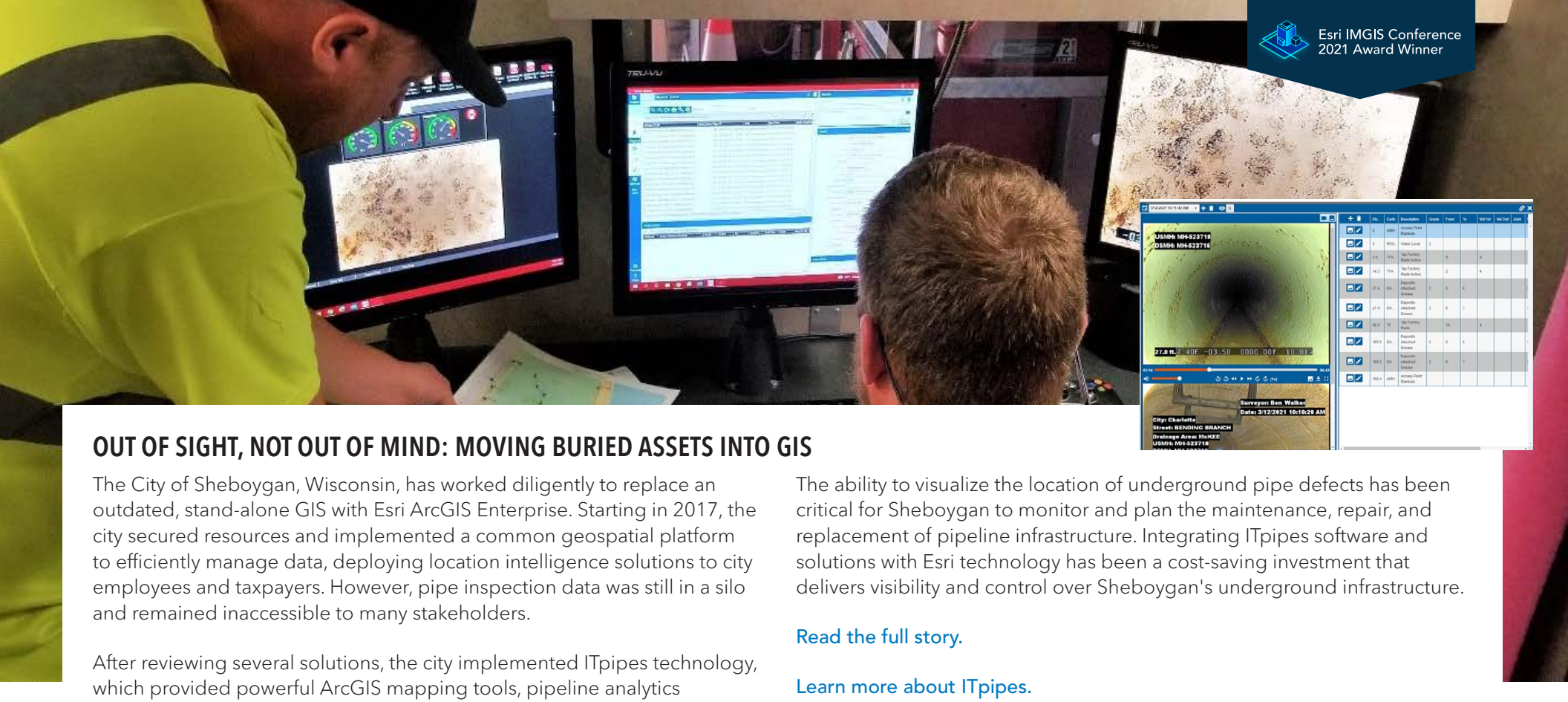
Read the full story.

Learn more about Eos Positioning Systems.

"My expectations have been exceeded. I have never been more satisfied with the accuracy and convenience of collecting data. This will be the way to move forward and phase out using the traditional as-builts in PDF format."

—Yousre Odeh,
GIS Technician, City of Wilmington Department of Public Works





OUT OF SIGHT, NOT OUT OF MIND: MOVING BURIED ASSETS INTO GIS

The City of Sheboygan, Wisconsin, has worked diligently to replace an outdated, stand-alone GIS with Esri ArcGIS Enterprise. Starting in 2017, the city secured resources and implemented a common geospatial platform to efficiently manage data, deploying location intelligence solutions to city employees and taxpayers. However, pipe inspection data was still in a silo and remained inaccessible to many stakeholders.

After reviewing several solutions, the city implemented ITpipes technology, which provided powerful ArcGIS mapping tools, pipeline analytics visualization, and instant access to comprehensive pipe inspection information. Sheboygan uses Esri's ArcGIS Enterprise as the authoritative source for dozens of datasets, including pipe inspection data. ITpipes' platforms replaced paper maps, increased inspection efficiency and maintenance workflows, connected stakeholders with data, centralized data efforts, removed duplicate workflows, and allowed for easy data connectivity with residents. In addition, field crews benefit from map-asset correlation by directly importing asset information from the GIS.

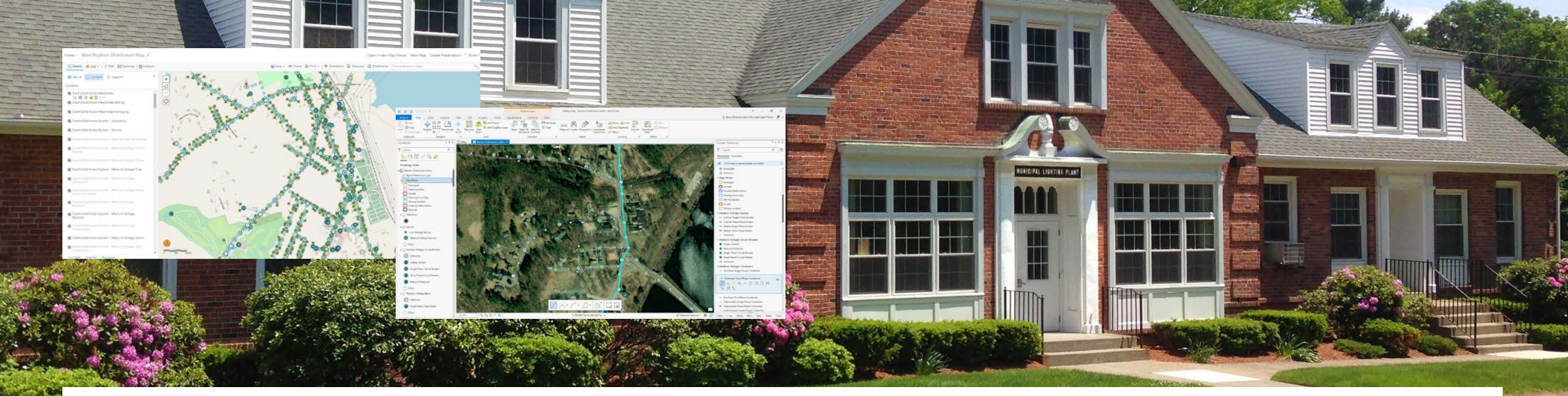
The ability to visualize the location of underground pipe defects has been critical for Sheboygan to monitor and plan the maintenance, repair, and replacement of pipeline infrastructure. Integrating ITpipes software and solutions with Esri technology has been a cost-saving investment that delivers visibility and control over Sheboygan's underground infrastructure.

Read the full story.

Learn more about ITpipes.

"Combining multiple systems and datasets into a collaborative workspace provides a simple, single-click solution for end users to access pipe and inspection information they need from a single, streamlined application."

—Andrew Bartell,
GIS Specialist, City of Sheboygan



MUNICIPAL UTILITY BUILDS AN ASSET MANAGEMENT FOUNDATION IN THE CLOUD

Given West Boylston Municipal Light Plant's (WBMLP) aggressive goals for decarbonization and electrification, the utility needed a better way to anticipate system needs and manage the infrastructure.

The traditional paper-based maps lacked sufficient detail. Moreover, they were challenging to modify, keep current, and reproduce. As a result, field crews struggled to locate some facilities. The utility wanted a more user-friendly way to maintain, understand, and utilize asset information. Looking ahead, the utility was determined to provide employees with state-of-the-art tools.

WBMLP selected the cost-effective ArcGIS Online solution for small utilities. WBMLP teamed with GEO Jobe for additional technical support. GEO Jobe is a long-standing Esri Gold tier partner with a wide variety of services fully leveraging the power of GIS technology.

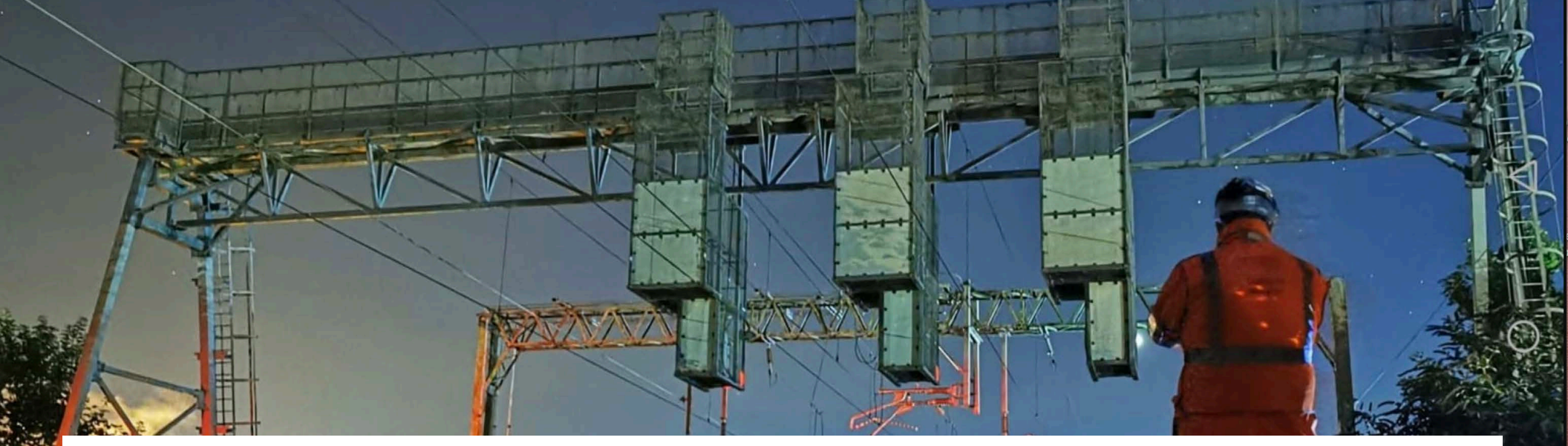
The utility was able to get up and running very quickly with cloud-based ArcGIS software. The solution contains a full data model as well as applications and dashboards to support data collection and the inventory and management of assets in an electric distribution network. WBMLP is rapidly building its digital database via field inspection.

Brian Allen, WBMLP assistant general manager, is pleased with the progress. "This is a project we started at ground zero, and we're seeing it grow," Allen said. "It's not one that has taken 10 years to do. I'm very impressed with that. Everything has worked flawlessly."

> "Our industry is seeing our customers move quickly to electrification. ArcGIS will help us to manage that change."
>
> —Jonathan Fitch, General Manager, West Boylston Municipal Light Plant

Read the full story.

Learn more about GEO Jobe.



TRANSFORMING ASSET SURVEYS ON THE RAILWAY

In a groundbreaking project, Arcadis has used solutions from Esri's ArcGIS to collaborate effectively with its client and deliver a new way of working. Accurate data captured efficiently in a live rail environment is shared with the client in real time and integrated with building information modeling (BIM) technology in one seamless, automated digital workflow.

In the new digital workflow that Arcadis has developed, engineers use ArcGIS Survey123 in the field to capture accurate, geographically located data about electrical assets, their condition, and compliance with standards. Survey123 draws on high-end GPS data from Eos Positioning Systems Arrow receivers to ensure submeter accuracy for the locations of assets.

In addition, Survey123 integrates with Microsoft Power Automate, allowing alerts and emails to be sent automatically from the field. If engineers observe a safety issue, such as an exposed wire, they can use Survey123 to generate a real-time alert, which is sent directly to the health and safety manager. The data collected with Survey123 is automatically backed up and automatically generates regular reports.

Arcadis has been able to use multiple ArcGIS solutions to create a seamless, end-to-end digital workflow for managing the survey project for the company's client, improving efficiency. In the first six months alone, Arcadis successfully surveyed over 9,000 assets across 130 miles. The use of the mobile ArcGIS solution delivered a 10 percent time saving in asset data capture on-site, while the seamless digital workflow improved project management efficiencies by up to 150 percent. The automated flow of data has also halved the effort from the design team to produce the final deliverable product for the client.

Read the full story.

Learn more about Arcadis.

OPERATIONS

Situational awareness drives effective operational performance. System operators use GIS to model their networks and visualize data that shows the immediate state of the network. Moreover, they can see operations in a geospatial context, so they can locate resources, monitor status, and evaluate factors affecting performance. Operations dashboards show temporal data that reveals performance shifts and enable staff to monitor field task status, track workforce locations, trace faults, and much more.

ArcGIS delivers comprehensive operational awareness.

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GWINNETT COUNTY EXPLORES BENEFITS OF DIGITAL TWINS AT PUMP STATION

On top of challenges related to maintaining and upgrading a vast network of mains, pump stations, and treatment facilities, Gwinnett County Department of Water Resources (GCDWR) has an aging operations and maintenance workforce. Outgoing staff often possess decades of institutional knowledge of system operations and asset locations at GCDWR facilities. Managers and new staff need modern tools to operate, monitor, and locate assets for maintenance once personnel with embedded, experienced-based proficiency and awareness retire.

To preserve institutional knowledge and better serve staff, GCDWR and KCI Technologies engaged in a joint pilot project to assess the ArcGIS technology-based digital twin development process and value of the solution.

An ArcGIS technology-based digital twin has enabled operations managers and staff to locate and monitor assets within a rich 3D, spatially accurate environment. It can also be incorporated with work management systems, allowing staff to identify the location and specifications of assets prior to visiting the site. With data available via a web browser, digital twins enable access to the information 24/7 on the user's platform of choice, including desktop, tablet, or mobile devices. Dashboard metrics provide valuable insights that can be used to reduce maintenance issues, extend asset life cycles, and achieve new levels of optimization.

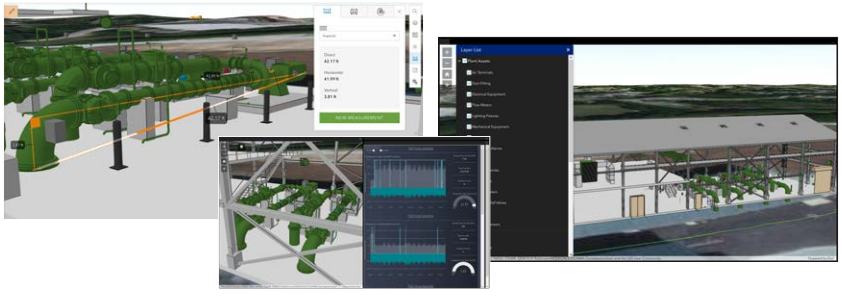
Throughout the pilot project, GCDWR staff members gained insight into how to leverage the benefits of 3D GIS to enhance their asset management programs.

Read the full story.

Learn more about KCI.

"The model that was produced by KCI Technologies during this project proved that this type of information is not just for design engineers anymore. The model, as detailed and as complex as it is, can be made available in the field to frontline employees who benefit from it the most."

—Charlie Roberts, Deputy Director,
Gwinnett County Department of Water Resources



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ENHANCED GIS PERFORMANCE AND INFORMATION TECHNOLOGY PEACE OF MIND

Connecticut Water Company's (CWC) GIS division faced challenges configuring the ArcGIS Enterprise portal to work effectively with the utility's internal network. To overcome these challenges, a large data development initiative was launched to modernize the GIS. Staff were looking for a solution that offered excellent performance from any location, a reliable platform to serve their GIS applications, and a way to reduce GIS demands on the company's internal network and the IT department.

CWC staff met with ROK Technologies for an initial consultation to explore the utility's options. ROK evaluated CWC's needs and infrastructure and proposed a solution: moving to the cloud. CWC's IT department did an internal review of what it would cost to maintain the GIS-based infrastructure and support GIS staff. The result was that it would cost more to maintain CWC's GIS internally than it would to move to the cloud.

CWC is now able to deploy fast, reliable, and secure web maps to field crew and office staff. The dependability of the GIS has improved, and increased performance has yielded substantial savings in both dollars and working hours. CWC is confidently sitting on the cutting edge of GIS software without straining IT support staff and is now able to provide an exceptional GIS to the company, meet the needs of staff, and ultimately serve customers better.

Read the full story.

Learn more about ROK Technologies.

"Our internal IT staff are incredibly skilled, and I believe they are leaders in their area of expertise, but they weren't experts in the niche of GIS IT. With ROK's managed services, we now have IT experts who specialize in GIS. It makes life easier for our staff because now we can totally focus on GIS and leave the IT tasks to ROK."

—Daniel Goodrich, Senior GIS Analyst, CWC

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YAVAPAI COUNTY INCREASES MOBILE WORK EFFICIENCY BY 210 PERCENT

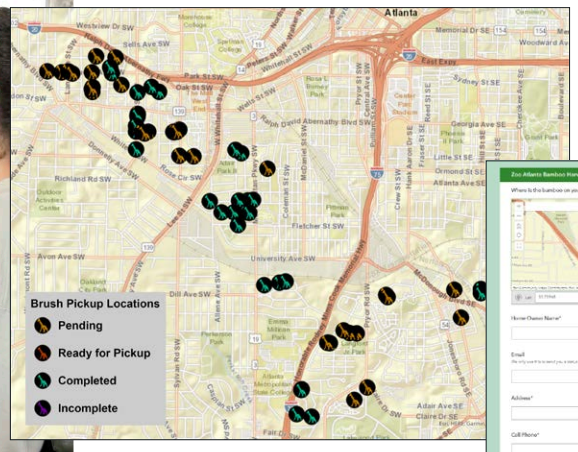
The Yavapai County Flood Control District operates a Phase II small municipal separate storm sewer system (MS4). The district's MS4 boundary is unique in that it comprises 16 nonconjoined segments and contains 148 mapped outfalls along roadside drainages, curbs, gutters, ditches, swales, channels, catch basins, culverts, and storm drains. At least 50 percent of the outfalls must be visually inspected and photographed annually. Additionally, the general Arizona Pollutant Discharge Elimination System stormwater discharge permit requires seasonal collection of water samples for the monitoring of intestinal E. coli bacterial levels. Rather than requiring employees to log work on printed spreadsheets in the field and then update the database upon their return to the office, a more efficient, on-site method of data collection was needed.

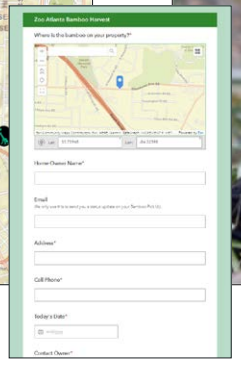
A solution from 2NDNATURE was chosen to digitally transform the county's work. The cloud-based solution enables stormwater engineers to modify plans in real time during changing weather conditions by predicting the outfalls most likely to contain flowing water. Quick data entry plus the built-in photo capability have made site inspections simple and efficient, while downloadable reports have made a simple task of program tracking.

The Yavapai County small MS4 is now running a digital, performance-based compliance program, resulting in a 210 percent increase in visual site inspections, sample collections, and simplified data gathering for annual reporting.

Read the full story.

Learn more about 2NDNATURE.





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LARGE ELECTRIC UTILITY SUPPORTS SUSTAINABILITY AT THE LOCAL ZOO

Georgia Power turned to Clearion to develop two unique workflows that route freshly cut vegetation from the utility's tree-trimming program in order to improve the diets of browser species and giant pandas at Zoo Atlanta. Clearion, a Gold tier member of the Esri Partner Network, empowers utility and infrastructure companies with native Esri GIS solutions to fully automate their vegetation management and asset maintenance programs.

Zoo Atlanta and Georgia Power created an innovative program to deliver woody stems and branches to help feed the animals. The Clearion solution leverages asset data and reflects all vegetation control work across the state. This innovation has allowed Georgia Power to broaden its use of GIS to include all facets of its vegetation management operations.

The utility can now identify the vegetation to retain, and tree crews can mark the site's cut vegetation as being ready for pickup. Zoo personnel access site information via a web portal or mobile app. Going further, zoo staff update the disposition and indicate if the vegetation has been fully or partially picked up.

In addition, Clearion built an online form in which homeowners can identify their bamboo donation. The system pins the location of the bamboo and routes the pickup request to the zoo, where the bamboo is inspected, and the site is put on a harvesting schedule.

Georgia Power now more easily manages a complex workflow while reducing vegetation disposal costs and supporting a worthy cause.

"By building on Georgia Power's existing GIS-based software system, we were able to quickly and easily incorporate this new workflow to improve the browser food program [Georgia Power] had established with the zoo."

—Chris Kelly, CEO at Clearion

Explore the *Transcending Boundaries in Collaboration* story to learn more about this innovative program.

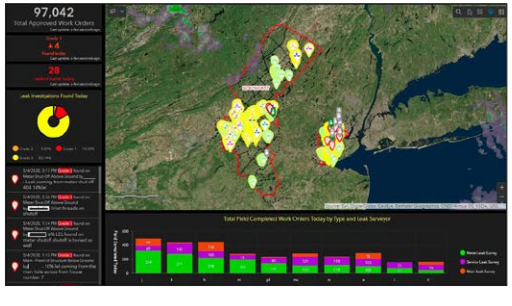
Learn more about Clearion.

GIS IMPROVES NETWORK DATA MANAGEMENT AND FIELD OPERATIONS

South Jersey Industries (SJI) traces its roots back to 1910, when Atlantic City Gas and Water Company merged with Atlantic City Gas Company. In 2018, with the acquisition of Elizabethtown Gas (along with Elkton Gas, located in Maryland) from Southern Company Gas, SJI became the second-largest natural gas provider in New Jersey.

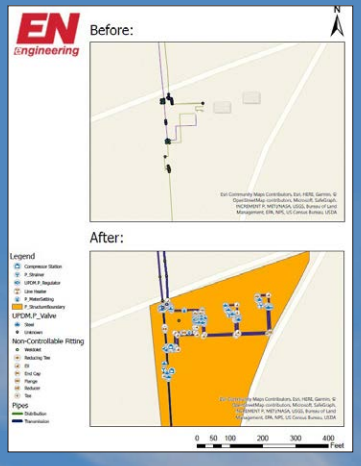
Prior to the acquisition, GIS support had been outsourced by SJI, which had limited company knowledge of the potential of GIS. With Elizabethtown Gas already using GIS daily to manage the utility's assets, SJI realized that in order to get set up for the future, GIS needed to be brought in-house as an enterprise-level application. SJI decided that one GIS would be used by the entire company and selected Esri's ArcGIS. SJI partnered with Critigen to enable ArcGIS across the organization. Among the system capabilities implemented were ArcGIS Utility Network; the Utility and Pipeline Data Model; ArcGIS Monitor; and mobile solutions using the out-of-the-box ArcGIS Collector, ArcGIS Workforce, and ArcGIS Explorer applications.

Implementation of ArcGIS enabled SJI to reenvision its business processes. ArcGIS—in one integrated system—provides all users at each gas utility with the data management and analytics capabilities they need. ArcGIS also provides sharing and collaboration capabilities to enable new ways of working.



Read the full story.

Learn more about Critigen.



BLACK HILLS ENERGY MEETS MAOP REGULATORY NEEDS WITH GIS-UPDATED UPDM

Black Hills Energy (BHE) serves 1.2 million natural gas and electric utility customers in eight states. In July 2020, the Pipeline and Hazardous Materials Safety Administration's (PHMSA) new Gas Mega Rule was implemented, prompting BHE operators to reconfirm its pipeline's maximum allowable operating pressure (MAOP). BHE leadership engaged EN Engineering for a full data model review, which revealed the model's inabilities to capture MAOP requirement nuances like document grading and traceable, verifiable, complete (TVC) data records. However, BHE leadership saw an opportunity to create a verifiable record system for MAOP requirements by capturing document grading and TVC data within GIS.

EN Engineering staff chose to update the existing Utility and Pipeline Data Model (UPDM) with detailed TVC data capture on the attribute level for each asset. The updated model includes two new tables. The first captures an individual document's information, while the second captures the document's relationship to a single asset. The updated data model has created tremendous results, in one instance showcasing over 15 miles of pipeline that did not require MAOP reconfirmation, saving time and money. Capturing TVC data on the attribute level for each asset also helps BHE staff track irregularities in MAOP to origin points in the system.

> "Utilizing and modifying the [Utility and Pipeline] Data Model to manage critical MAOP attributes will improve pipeline safety by providing detailed information on the traceability, verifiability, and completeness of each asset. The updated model and verified data will help BHE to know our system. In addition to increasing the safety of our system, it will make it easier to compile Part Q of the PHMSA annual report and manage Mega Rule requirements."
>
> —Evan Martin, Black Hills Energy

Learn more about EN Engineering.

SOUTHERN COMPANY GAS HARNESSES ACCURACY WITH ENHANCED GIS

The Southern Company Gas (SCG) provides natural gas solutions for approximately 4.3 million customers across four US states. Historically, SCG's time-consuming field assets measurement process generated paper records. The collection of data on paper resulted in inconsistencies and inaccuracies that lead to requests for additional information. It also created not-to-scale as-built drawings that the GIS department had to collect and digitize. Moreover, main and services cards were manually collected and stored on-site and across several management programs. SCG wanted to enhance its field data collection process and needed capabilities to capture accurate geospatial and attribute data for all assets.

SCG partnered with Suburban Consulting Engineers (SCE) to design a new field data collection program called Enhanced GIS Data Collection. Using ArcGIS technology, SCE created a geospatial framework of detailed pipeline information. SCE provided technicians with advanced data collection equipment to gather subcentimeter GPS locations, material attributes, and geotagged images. Data is now centrally stored in SCE databases, including a client-specific database for stakeholders. Data is also synchronized from field to office through a secure VPN connection initiating automated QA/QC and validation scripts.

The results of SCG's enhanced GIS data collection include reduced turnaround time for data collection and the creation of fully traceable, verifiable, and complete data asset records following Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations.

"The reliability and thorough communication exhibited by SCE over the years have been extremely beneficial to the success and continued development of our Enhanced GIS Data Collection program with [SCE]."

—Jacob McGlincy, SCG

"Enhanced GIS implementation into our daily construction operations was a seamless transition. SCE efficiently collaborates with SCG's project coordinators, inspectors, and construction contractors to collect accurate field data and submit all-inclusive GIS data."

—Scott Grogan, SCG

Learn more about Suburban Consulting Engineers.

MOBILE APP OPTIMIZATION IMPROVES WORKFLOWS AND EFFICIENCY AT ENERGIE 360°

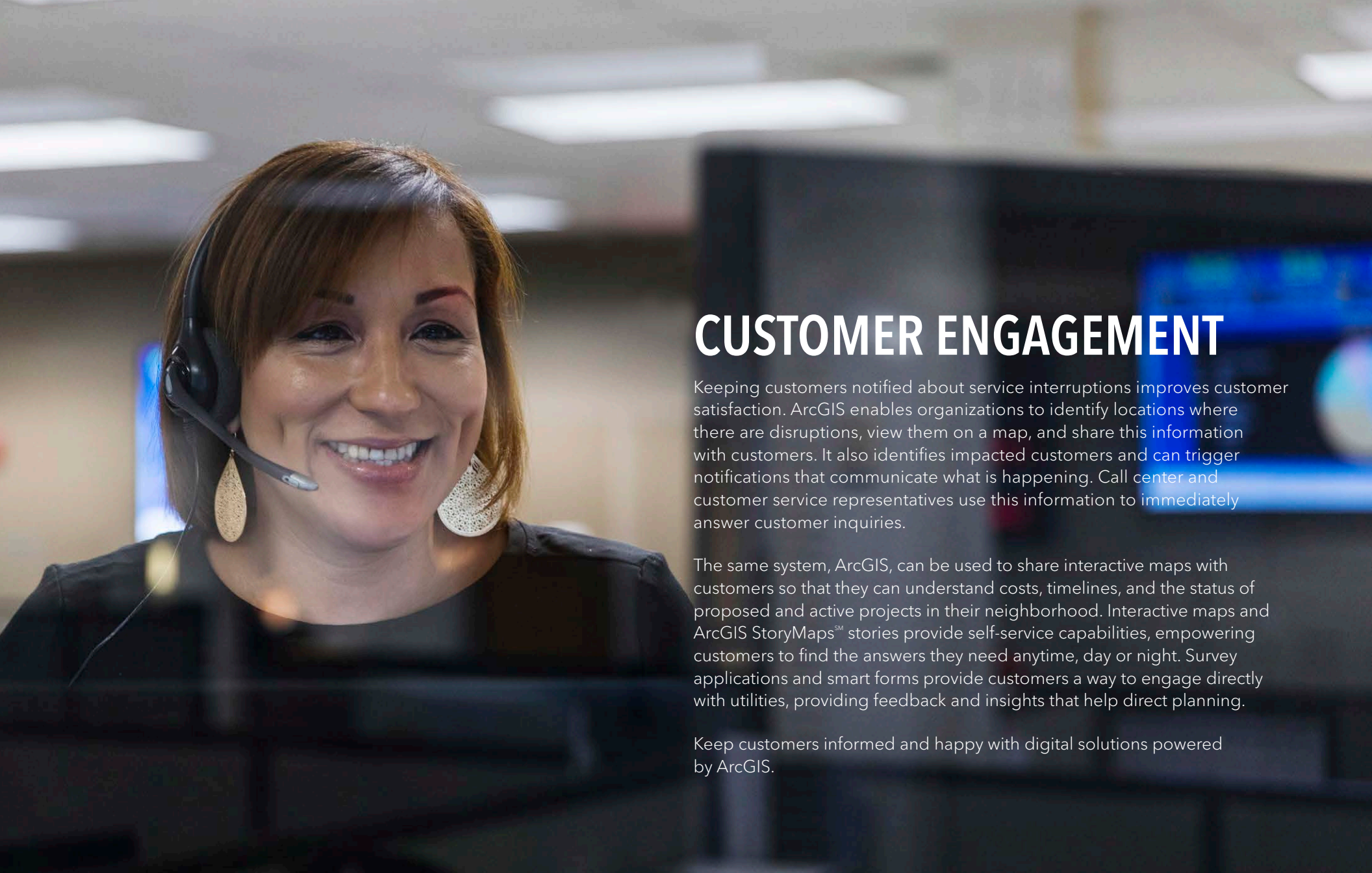
Energie 360° harnesses renewable energy and ecological mobility throughout Switzerland to provide a full range of environmentally friendly energy solutions to Zürich and 40 municipalities. Swiss law requires that every gas pipeline in the network receive regular inspection. Over the last five years, Energie 360° staff had used a mobile network monitoring application that included gas leakage and high gas concentration identification software, pipe inspection data, and GPS tracking. The application had data-synchronization weaknesses, requiring modifications and updates. Also, the next generation of the app needed offline capabilities as well as device and operating system independence.

To optimize the mobile app, Energie 360° partnered with the VertiGIS professional services team. The team leveraged the existing ArcGIS Enterprise network with VertiGIS Geocortex Mobile to provide Energie 360° with a mobile GIS solution that worked offline. This solution sped up the replacement of necessary workflows and functionalities for seamless data management. Users can track documents related to searched pipeline areas and make updates to survey areas with background synchronization. The solution has provided Energie 360° operators with a cost-effective tool. Operators have praised the updated app functions and are accomplishing work more efficiently in the field.

"We are very satisfied with the handling and usage of our Esri technology-based mobile solution."

—Peter Schneider, Head of Intelligent Systems at Energie 360°

Learn more about VertiGIS.



CUSTOMER ENGAGEMENT

Keeping customers notified about service interruptions improves customer satisfaction. ArcGIS enables organizations to identify locations where there are disruptions, view them on a map, and share this information with customers. It also identifies impacted customers and can trigger notifications that communicate what is happening. Call center and customer service representatives use this information to immediately answer customer inquiries.

The same system, ArcGIS, can be used to share interactive maps with customers so that they can understand costs, timelines, and the status of proposed and active projects in their neighborhood. Interactive maps and ArcGIS StoryMaps℠ stories provide self-service capabilities, empowering customers to find the answers they need anytime, day or night. Survey applications and smart forms provide customers a way to engage directly with utilities, providing feedback and insights that help direct planning.

Keep customers informed and happy with digital solutions powered by ArcGIS.

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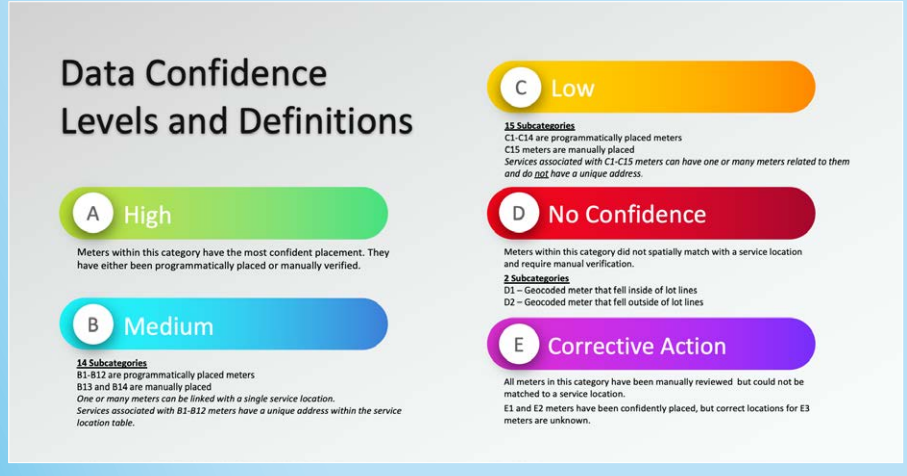


ENHANCED GAS SAFETY AND CUSTOMER SERVICE–ARMS PROJECT AT PG&E

The Accurate Reconciliation of Meters and Services project (ARMS) establishes a relationship between gas services in GIS to customer meter records in Customer Care & Billing (CC&B). The challenge for Pacific Gas and Electric Company (PG&E) that sparked ARMS was the inability to accurately represent gas meter locations within GIS. Without complete mapping and visualization, it was difficult to determine which or how many customers might be impacted by planned maintenance or in the case of an emergency.

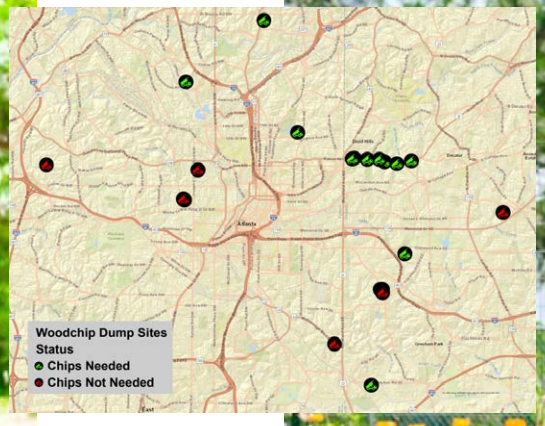
ARMS was initiated within PG&E's Distribution Integrity Management Program (DIMP) Risk Assessment group, who worked with UDC Inc. to develop a script to join GIS and CC&B datasets. With ARMS, staff were able to effectively evaluate 4.6 million meters and 3.5 million service locations in a short period. The team improved meter elevation data to make billing operations more accurate. PG&E can now identify the number of meters connected to a specific service, resulting in reduced truck rolls and making them more cost-effective and efficient. The locational improvement of the meter data was leveraged by Electric Operations staff to make more effective Public Safety Power Shutoff (PSPS) maps.

Above all, ARMS enhanced PG&E's ability to respond to customer requests and reach out to the customers that are affected by an outage or event.

> "The ARMS project [CC&B and GIS information] integration will enable a whole new level of understanding and analytics that weren't possible or easy to achieve. Additionally, it will enhance emergency response, [help us manage] gas outages, and improve our understanding of overall usage and loading. This next level of understanding is exactly what PG&E needs to become a safer, better utility."
>
> —Jesse Jennings, PG&E

Watch the presentation.

Learn more about UDC.



SUPPORTING COMMUNITY AND SUSTAINABILITY WITH LOCATION-BASED TECHNOLOGY

Georgia Power serves 2.4 million customers across the state of Georgia. Georgia Power and Clearion codeveloped an automated workflow using the utility's existing geospatial technology to connect vegetation management crews producing wood chips, with community organizations needing wood chips.

As a leader in mobile solutions for planners, arborists, inspectors, and line clearance crews, Clearion designed a solution built on Georgia Power's work management system.

For urban tree-trimming crews, dumping wood chips often requires a lengthy drive to remote locations. The crews could pass viable sites such as farms where chips were needed.

Georgia Power uses the Clearion vegetation management system. The system, which is based on ArcGIS software and includes a mapping application, enables third parties such as community gardens and parks to map sites where wood chips are needed. Before driving long distances to dump wood chips, tree-trimming contractors use the mapping app to see where organizations have identified a need for wood chips. Adoption by tree-trimming crews is fast and easy because they use the same hardware and software to find chip delivery sites as they do to receive and report their line-clearing work progress.

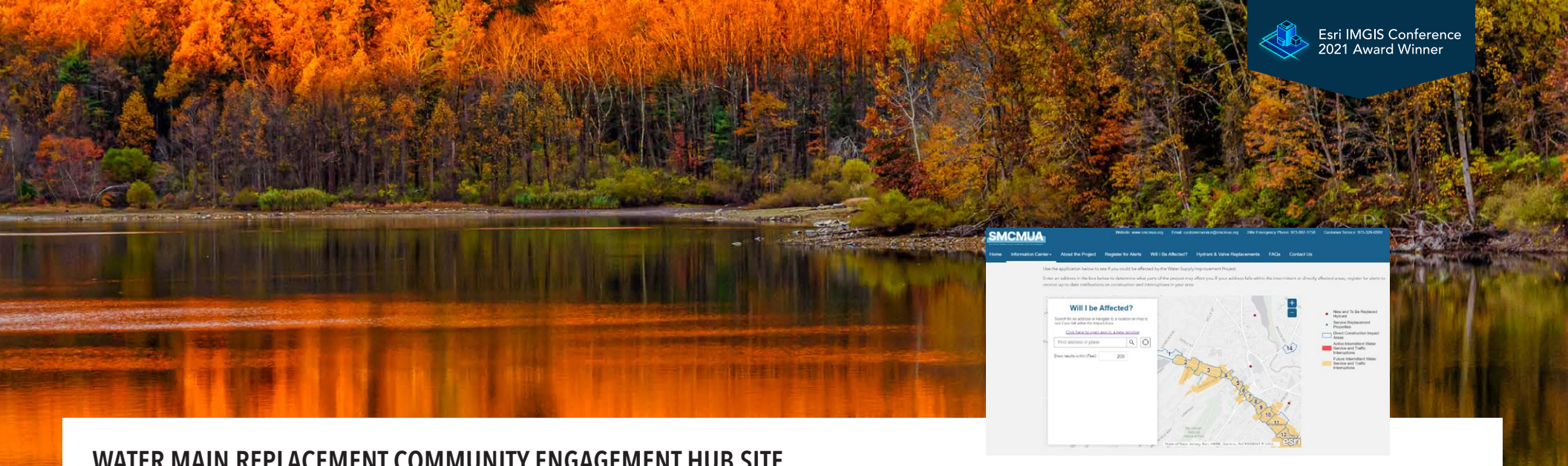
Closing the gap between the supply and demand of wood chips has reduced Georgia Power's costs and carbon footprint. Additionally, it promotes sustainability, positive public relations, and community goodwill.

"Since launching the wood chip program with the farms, this has expanded to parks and other organizations that struggle to find affordable mulch for erosion control and ground maintenance. It's a win-win for us because we've got an abundance of chips, and it doesn't cost us anything to drop these where they're needed in the community."

—Dan Burer, Georgia Power

Read the full story.

Learn more about Clearion.



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WATER MAIN REPLACEMENT COMMUNITY ENGAGEMENT HUB SITE

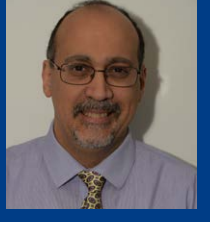
The Southeast Morris County Municipal Utilities Authority (SMCMUA) identified the need to improve communications with its public officials, community leaders, and customers when working on large capital improvement projects. SMCMUA had experienced challenging improvement projects in the past in which expectations, construction schedules, and service disruptions were not fully understood by affected parties due to ineffective and/or lack of communication methods and tools.

In anticipation of a large water main renewal project, better communication methods needed to be developed to effectively convey the details and potential impacts of the project. Larson Design Group (LDG)—which had been supporting SMCMUA on GIS-related tasks around field data collection, enterprise implementation, and operational workflows—suggested the use of Esri technology and the development of a hub site that could be utilized for this purpose.

SMCMUA is halfway through its water main replacement project, and the hub site has been a huge success in keeping the community informed of the project impact and disruptions. In the first six months, the site had 15,000 views by the public. The site continues to be viewed, resulting in very few calls from the public with questions. The hub site clearly answered the needs of the authority, which has been evident from the positive feedback received from the local community.

"The project hub [site] has become a critical asset to the authority. It integrates multiple technologies and delivers a powerful public-facing interface to our customers, with the dynamic content easily managed and updated behind the scenes by our supervisors."

—Nicholas Buono, IT Director, SMCMUA



Read the full story.

Learn more about Larson Design Group.

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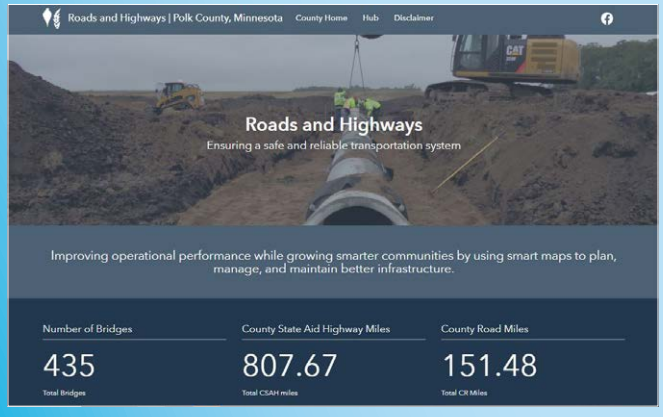


POLK COUNTY POWERS INFRASTRUCTURE MANAGEMENT WITH ArcGIS HUB

With harsh Minnesota winters limiting road construction season to just five to seven months each year, Polk County needed a way to share information and answer questions related to roads and road construction easily and quickly for residents, internal departments, and contractors.

The county received many requests for road information from internal and external sources. Members of the public were interested in road closures and road construction projects, engineers needed corner certificates to perform surveying work, and calls about the permit application process were frequent. The county needed a way to organize all resources of valuable information on its infrastructure in a single location that could be accessed by internal and external users. Polk County and Pro-West & Associates implemented a solution using ArcGIS Hub℠.

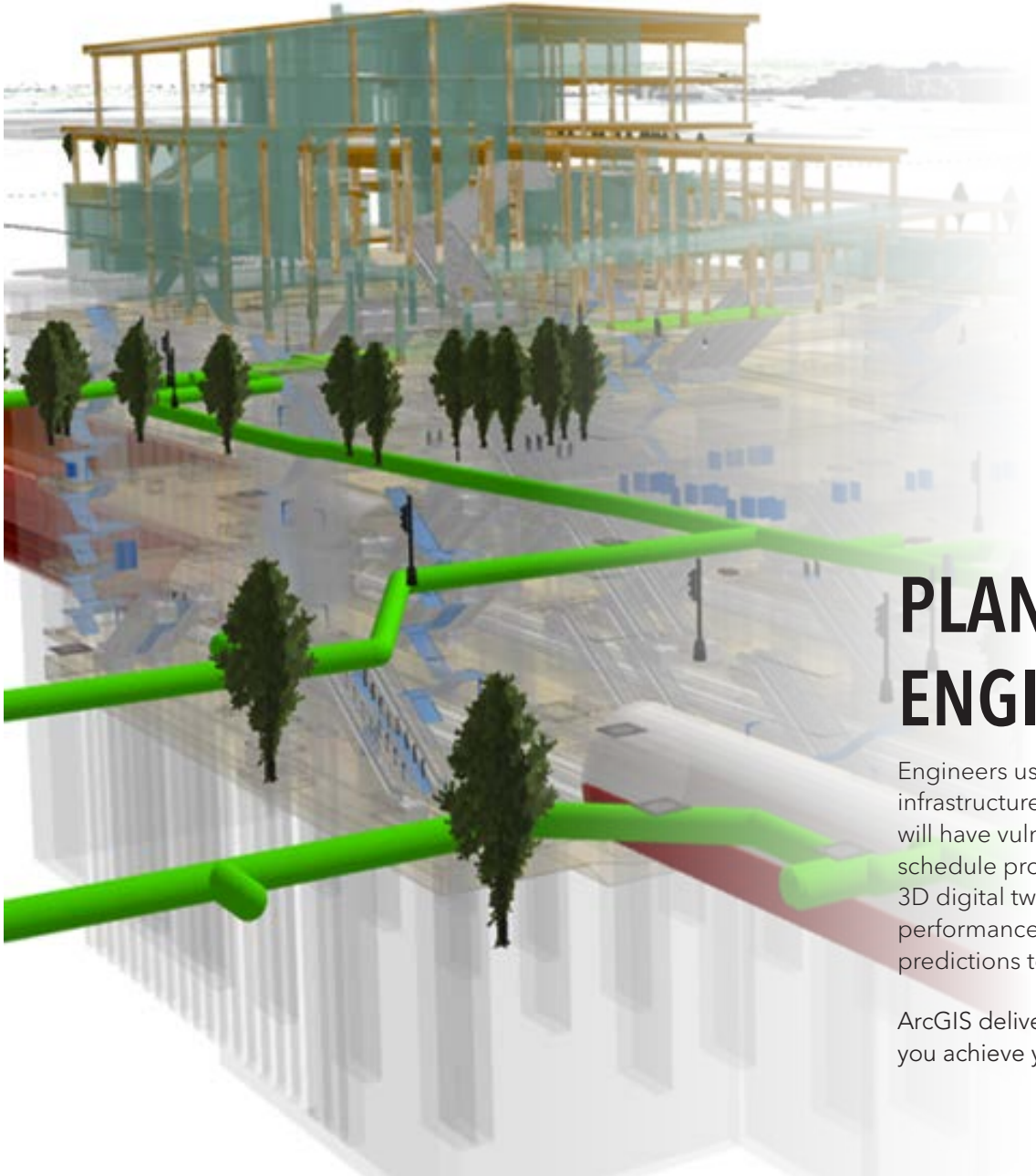
Polk County's Roads and Highways hub site has succeeded in creating a single source for information. The public can learn about upcoming construction projects and detours via their phones. Contractors and consulting firms no longer have to wait for the county to find information for requests. Engineering department staff can find answers without having to visit another office. The assessor's office and the Planning & Zoning Department are also taking advantage of the hub site to find critical information for their work.

The county will be able to use the capabilities of the new hub site for the full project life cycle, from gathering public input and sending updates to community members to serving contractors working on the projects.

"The Roads and Highways hub [site] helps citizens, staff, and contractors find valuable information fast, without having to call or visit our office and wait for us to gather what they need. It's saving time for our users and staff."

—Rick Thompson, GIS Coordinator, Polk County

Learn more about Pro West & Associates.



PLANNING AND ENGINEERING

Engineers use geospatial data, modeling, and analytics to optimize infrastructure planning. Predictive tools show where a proposed project will have vulnerabilities and risks. Prioritization tools help planners schedule project phases. Some companies use ArcGIS to create 3D digital twins of their entire network so that they can easily see performance trends and patterns by location and use population growth predictions to estimate future demand.

ArcGIS delivers information, analytics, and engagement solutions to help you achieve your goals.

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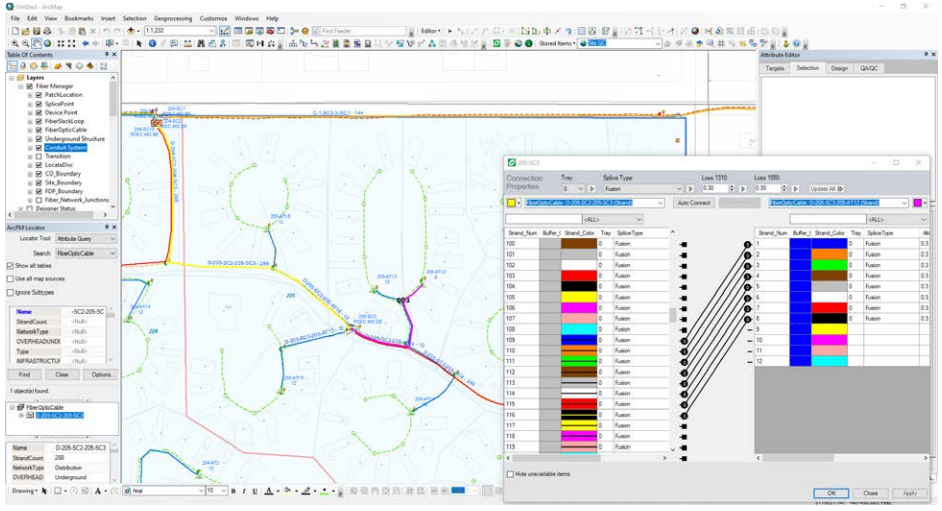


pulse
CITY OF LOVELAND

ArcGIS: SUPPORTING THE DEPLOYMENT OF LOVELAND, COLORADO'S STARTUP BROADBAND UTILITY

Loveland, Colorado, is known as the Sweetheart City and the Gateway to the Rockies. It was founded in 1877 along the newly constructed line of the Colorado Central Railroad. Today, this city on the Front Range of the Rocky Mountains has a population of 78,000 and continues to grow. Loveland had a power utility serving roughly 38,000 customers and a water utility serving roughly 28,000 customers. In early 2018, the City of Loveland decided to investigate creating a fiber utility, ultimately named Pulse.

To meet the needs of its new fiber utility, the city recognized that one of the primary requirements was access to near real-time spatial data to ensure that the various systems and groups were talking to each other throughout the organization while providing remote working capabilities.

To meet its needs, Pulse leverages Schneider Electric ArcFM Fiber Manager to manage the utility's fiber network. The capabilities ArcFM Fiber Manager provides have allowed Pulse to leverage the Esri technology already in use by other City of Loveland departments.

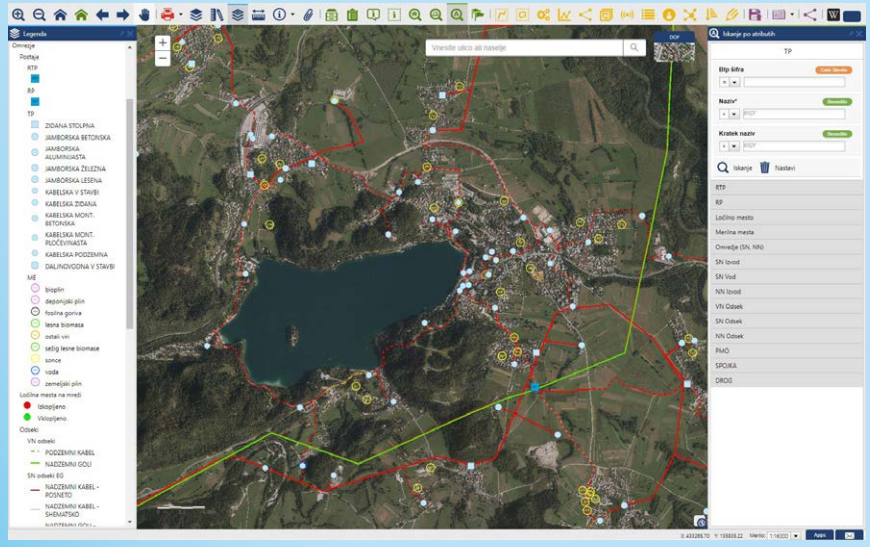
Leveraging ArcFM Fiber Manager and ArcGIS as a foundation of geospatial operations provided a variety of positive results for the newly formed organization.

"There's quite a bit of moving parts and pieces, and using Esri technology allows all those pieces to stay in sync and stay relatively in tune with each other."

—Sara Rose, Senior GIS Specialist, City of Loveland

Read the full story.

Learn more about Schneider Electric.



STATE-OF-THE-ART CIM-BASED GIS SOLUTION FOR UTILITIES

Elektro Gorenjska decided to replace its proprietary system for documenting the location of the company's assets. The system did not meet the company's business and IT requirements anymore. One of its shortcomings was its inability to integrate with other IT systems. In addition, data was stored in files instead of a database, and this did not comply with international standards. Finally, customer support was below expectations.

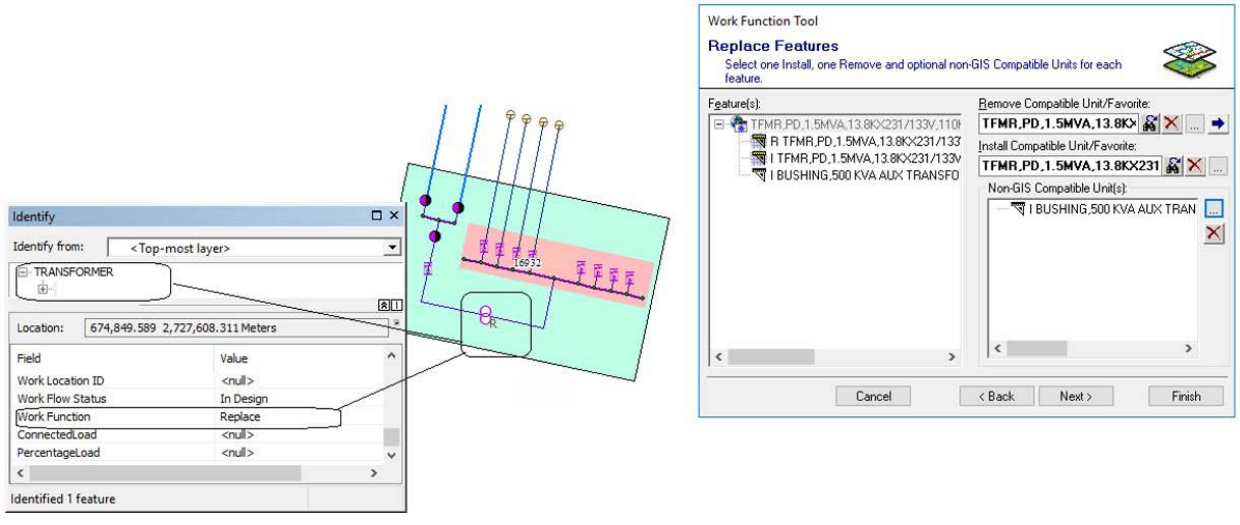
A core element of the new GIS was using International Electrotechnical Commission (IEC) standards 61970 and 61968, referred to as the Common Information Model (CIM). The CIM includes all the elements of an electrical network, including the attributes of each of the assets. The advantage of the CIM is that it does not use any specific vendor nomenclature or format.

GDi, the Esri distributor for Slovenia, successfully implemented the VertiGIS solution for utilities. VertiGIS, with support from the Milan Vidmar Electric Power Research Institute (EIMV) of Ljubljana, also built the interoperability mechanism to export and import network information to other applications such as network analysis outage management systems.

The key result was establishing a professional GIS solution based on one central database, thus overcoming the issue of working with a file-based system. Furthermore, another key requirement was reached: the ability to easily integrate the GIS with other business systems via the establishment of the standard CIM. Data that describes the company's assets is stored in one central, CIM-based repository.

Read the full story.

Learn more about VertiGIS.



SEC'S SMART DIGITAL UTILITY PLATFORM

Cumbersome paper-based design and construction processes with months' worth of backlog have burdened the Saudi Electric Company (SEC). Hard-copy drawings and documents caused significant inefficiencies and redundant design work. Users couldn't easily access the information to design, analyze, schedule, and build changes in the network. Planning teams needed to access siloed information about network configurations and environmental impacts. Engineers and designers did not have accurate location-based information to share confidently with consultants and contractors. As-built information and proper collaboration between office and field teams were also lacking. These fragmented processes at SEC were prone to data degradation, which affected projects' safety, quality, timeliness, and costs.

Khatib & Alami (K&A), a Platinum tier Esri partner, and Schneider Electric implemented, operated, and maintained SEC's ArcFM-based GIS platform in Riyadh and later in the remaining parts of the Kingdom of Saudi Arabia.

Services included enhanced data modeling and the migration of SEC data in all regions into ArcFM. In addition, K&A developed and deployed several desktop, web, and mobile solutions to expand GIS reach and usability at SEC. Esri's ArcGIS software and Schneider Electric's ArcFM established an intelligent and digital engineering system that is highly adaptable to SEC's business processes.

The system supports the daily business of all sectors of the company. It has modernized the entire design life cycle and accelerated the tasks of design and planning engineers by more than 50 percent by using an intuitive and user-friendly interface instead of manual, paper-based design. In addition, the system has reduced backlog data conversion by 60 percent.

Read the full story.

Learn more about K&A and Scheider Electric.

GIS MOVES TO THE CORE OF WATER INFRASTRUCTURE FRAMEWORK

The Caledonia Water Alliance (CWA), formed between AECOM and Morrison Water Services, is supporting the delivery of Scottish Water's water infrastructure element of its capital investment program. The program's six-year framework requires building information modeling (BIM) compliance and digital technologies. In order to meet expected future investment planning needs and leverage available tools, BIM was established within the design process.

The native data integration capabilities of ArcGIS Online and ArcGIS Pro with the Autodesk Construction Cloud and Civil 3D/Revit became the main enablers to the workflow. The ability for Civil 3D to use the ArcGIS connectors, publish alignment and network data in ArcGIS Online, and overlay site information to place a project into environmental and social context was met with excitement. Having GIS and BIM data in a single 3D web viewer, with the ability to share this content for discussions with the client and shareholders directly, greatly improves transparency of the design and delivery process. GIS and BIM data can be accessed on-site or from the home office via laptop, tablet, or the phone, reducing the need to travel or even be in the office, and helping the project achieve Environmental, Social, and Governance (ESG) and safety goals.

The improved workflows resulted in numerous benefits: improved data accuracy, streamlined workflows, data integration between Esri and Autodesk solutions, and improved transparency with all stakeholders.

"We use Esri technology to upload project content, site surveys and photos, [and] site constraints and blend it with design content, providing a single source of truth for Scottish Water."

—Dave Dukes, BIM Manager, AECOM

Read the full story.

Learn more about AECOM.

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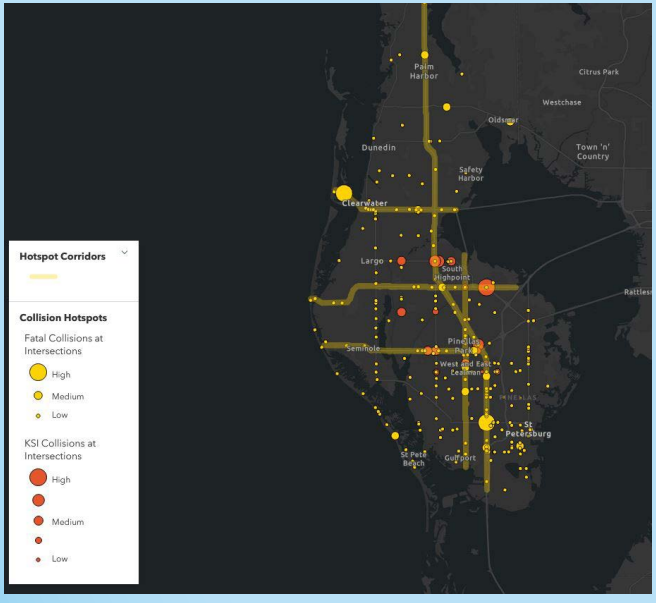


PINELLAS COUNTY'S SAFE STREETS PINELLAS ACTION PLAN

Safe Streets Pinellas is a collaborative effort to create a transportation system that is safe for everyone. To do this, a countywide data analysis was performed by Fehr & Peers to create the High Injury Network.

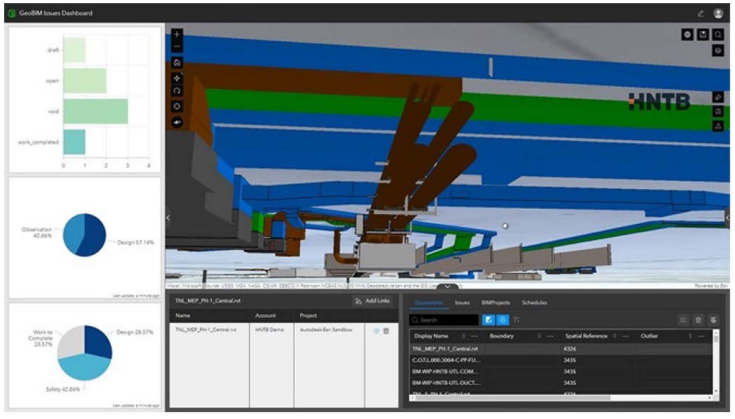
Forward Pinellas, a land-use and transportation planning agency, has adopted the Safe Streets Pinellas Action Plan, committing to a goal of zero deaths and serious injuries in Pinellas County by 2045. Over the last year, Forward Pinellas studied roadways and the reasons why crashes are happening. The project team used collision data and roadway attributes to identify locations of collisions that caused death or severe injury.

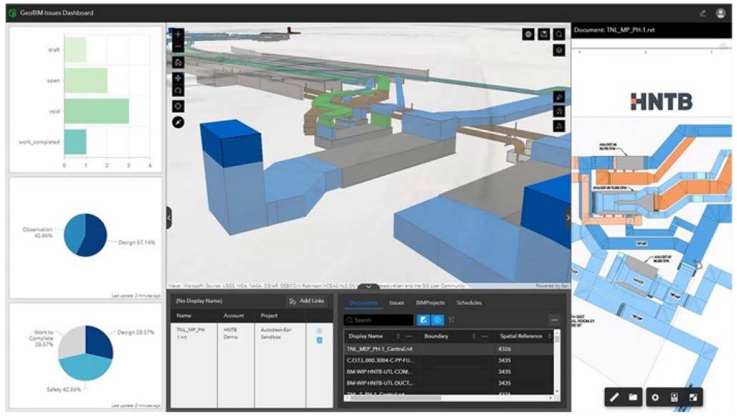
Enabling data review through web services allows results to be filtered by collision type (Killed or Severely Injured [KSI], Property Damage Only), mode (auto, bike, pedestrian, motorcycle, truck), and factors (time of day, speed, driving while intoxicated). The benefit of analyzing collision data allowed the project team to examine contextual factors around collision hot spots, including speed limit, turn movements, and number of lanes. The analysis and sharing of information were critical in the development of the High Injury Network (HIN) and subsequent action plans, which will include infrastructure improvements to create a safer roadway network.

Community feedback was critical and achieved through crowdsourced comments, and final analysis and details were shared in an ArcGIS StoryMaps story.

Explore *Collision Analytics*, a StoryMaps story.

Learn more about Fehr & Peers.





INFRASTRUCTURE DESIGN FIRM EMPLOYS GEOSPATIALLY ENABLED BUILDING INFORMATION MODELING SOLUTION FOR MASSIVE AIRPORT IMPROVEMENT PROJECT

A multibillion-dollar infrastructure project aimed at improving the overall passenger experience recently got under way at one of the largest international airports in the US. The project involved expansion and redevelopment of an existing passenger terminal with a variety of enhancements, including adding concourses and replacing or expanding aircraft gates.

From the outset, a key part of HNTB's strategy involved the production of a digital twin that helped initiate a model-first design. The HNTB team needed to allow for dynamic and agile changes as the design progressed, which meant standards and processes would need to be established across multiple systems.

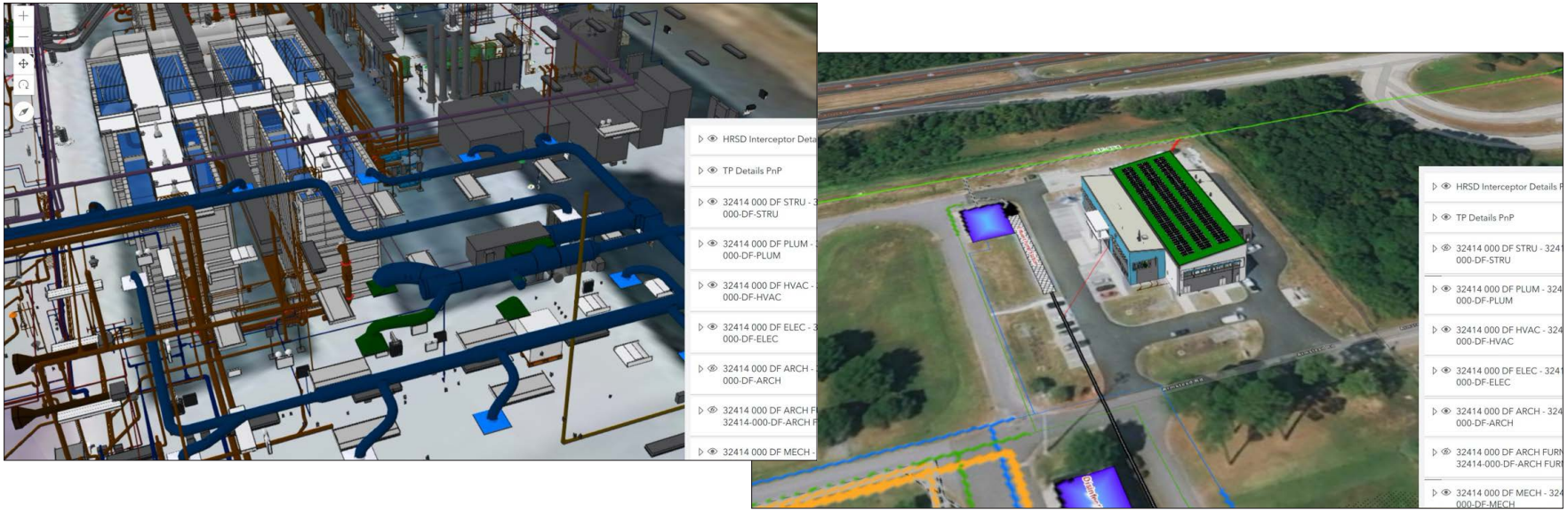
Darin Welch, associate vice president for Geospatial and Virtual Engagement Solutions at HNTB, says that ArcGIS GeoBIM℠ was the perfect fit because it is a significant step in a web setting to achieve "integration without translation," which enables faster workflows and is core to what his team is trying to accomplish. He believes ArcGIS GeoBIM and Autodesk BIM 360 can bridge the gap in accessing data from one system to another without translating data between systems.

"A big piece of [this strategy involves] solid and reliable integration across our technology framework. This is an Autodesk-based deliverable project, but [it] also [has] a lot of geographic information system data involved. [With] GIS being very good at visualizing, we knew that the digital twin strategy on this work had to include [different] systems."

—Darin Welch, Associate Vice President for Geospatial and Virtual Engagement Solutions, HNTB Technology Solutions Center

Read the full story.

Learn more about HNTB.



HRSD GAINS A NEW OPERATIONAL AWARENESS TO IMPROVE WASTEWATER OPERATIONS

Sea level rise, unusually high tides, and extreme storms prompted a $1.2 billion program—the Sustainable Water Initiative for Tomorrow (SWIFT). The program involves replenishing the Potomac aquifer with up to 100 million gallons of SWIFT water per day, an action that may slow or reduce the impact of sea level rise by slowing land settling, or subsidence.

As a cutting-edge climate action project, SWIFT provided the impetus for Hampton Roads Sanitation District (HRSD) to employ new technologies, working with engineering firm Hazen and Sawyer. First, staff combined building information modeling (BIM) designs with GIS maps, workflows, and analyses. Together BIM and GIS data helped the district establish a feature-rich model, known as a digital twin, of the SWIFT Research Center that provides the proof of concept for the program. Over the next 10 years, HRSD will build at least four more facilities to resupply the aquifer with up to 100 million gallons of water per day.

When storms hit, the HRSD team works to reduce wastewater overflows and monitor infrastructure. With increasing storm intensity and the compounding factors of subsidence and sea level rise, there's greater urgency to protect wastewater drainage systems from spills. For this effort, the district will again lean on its GIS and digital twin technology.

Read the full story.

Learn more about Hazen and Sawyer.

FERBER ENGINEERING COMPANY HELPS IMPROVE ROADWAY SAFETY WITH GIS TECHNOLOGY

South Dakota Department of Transportation (SDDOT) and Pennington County Highway Department aimed to bring all roadway signing and delineation up to current standards to improve consistency and help prevent road-departure crashes. To accomplish this goal, Ferber Engineering Company (FEC) was tasked with surveying countywide roadway signage and delivering a biddable set of design plans that could improve driver safety by conforming to the current Federal Highway Administration's *Manual on Uniform Traffic Control Devices* and SDDOT design criteria.

The first step in the project life cycle was to conduct a comprehensive evaluation of over 1,000 miles of existing roadways throughout Pennington County–from every paved highway to every small gravel road. The field survey would require FEC to inventory and assess all 2,740 horizontal curves as well as the condition and placement of over 20,000 signs and delineators.

The set of plans that FEC would eventually develop comprised 638 pages, 520 of which consisted of tabled data records. That equated to approximately 40,000 records of data that FEC would need to manage and analyze in the set of plans the company was asked to deliver to SDDOT. To deliver the requested design plans, FEC turned to ArcGIS to help capture, analyze, and visualize this vast amount of spatial data.

Without ArcGIS in its toolkit, FEC would have been required to manually input each of the 40,000 data records into Excel spreadsheets to produce the design plans.

"The efficiency we gained in so many places . . . With data collection [and] analysis and the design process, and then with plans preparation and quantity takeoffs—those three areas—we had huge cost savings and efficiencies by having [the roadway signage data] spatially, having it in a database, and being able to easily analyze and access the data."

—John Van Beek, President, Ferber Engineering Company

Read the full story.

Learn more about Ferber Engineering Company.

BUILDING CONSENSUS FOR A £6 MILLION WETLANDS SCHEME

In an award-winning project in Staffordshire, Black & Veatch used ArcGIS to work collaboratively with partners and design a multimillion-pound wetlands development project. The company then built consensus for the scheme, using an ArcGIS StoryMaps story to engage the public in consultations, attract funding, and gain support from diverse stakeholders.

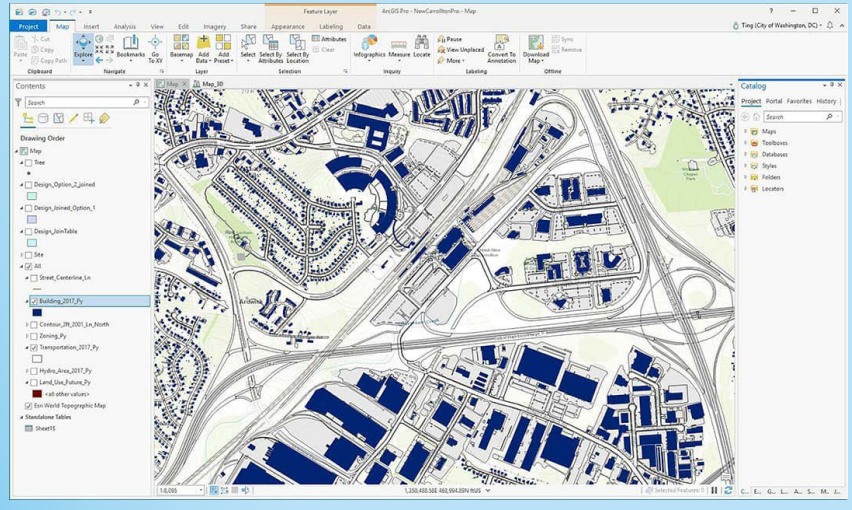
Through the use of ArcGIS Online, Black & Veatch was able to create a landscape vision for the Burton and Trent Washlands project that took into account the data and earlier proposals from a wide range of other organizations and conservation groups. The Black & Veatch team could also more effectively consider existing landscape features, buildings, and areas of historical significance, as information on all these pertinent factors was available within ArcGIS Online.

In November 2018, Black & Veatch won a prestigious Landscape Institute Award for the Burton and Trent Washlands project, with judges praising the company for the way in which it engaged with the public. "ArcGIS played a big part in the success of the project," Mark Boothroyd says. "ArcGIS helped us to produce and share a vision for the Burton and Trent Washlands that everyone could feel excited about."

> "ArcGIS helped us to consolidate the views of a wide range of organizations and groups when developing the new landscape vision for the washlands and ensure that our designs complemented the existing features of the area."
>
> —Paul Hart, GIS Manager, Black & Veatch

Read the full story.

Learn more about Black & Veatch.



3D GIS SUPPORTS DECISION-MAKING FOR SMART URBAN PLANNING AND DESIGN

Gensler, the largest architecture, design, and planning firm in the world, designs unique, large-scale, mixed-use urban communities that are inviting places for people to live, work, and play. These communities are designed to create a synergy for the residents and provide economic activities to sustain them. The long-standing approach for architecture firms to present their design visualizations to clients has been through PowerPoint presentations or printed drawings. Unfortunately, these methods provide only static illustrations. Gensler was interested in new ways to digitally transform its workflow with tools that could provide a more engaging and immersive experience for its clients.

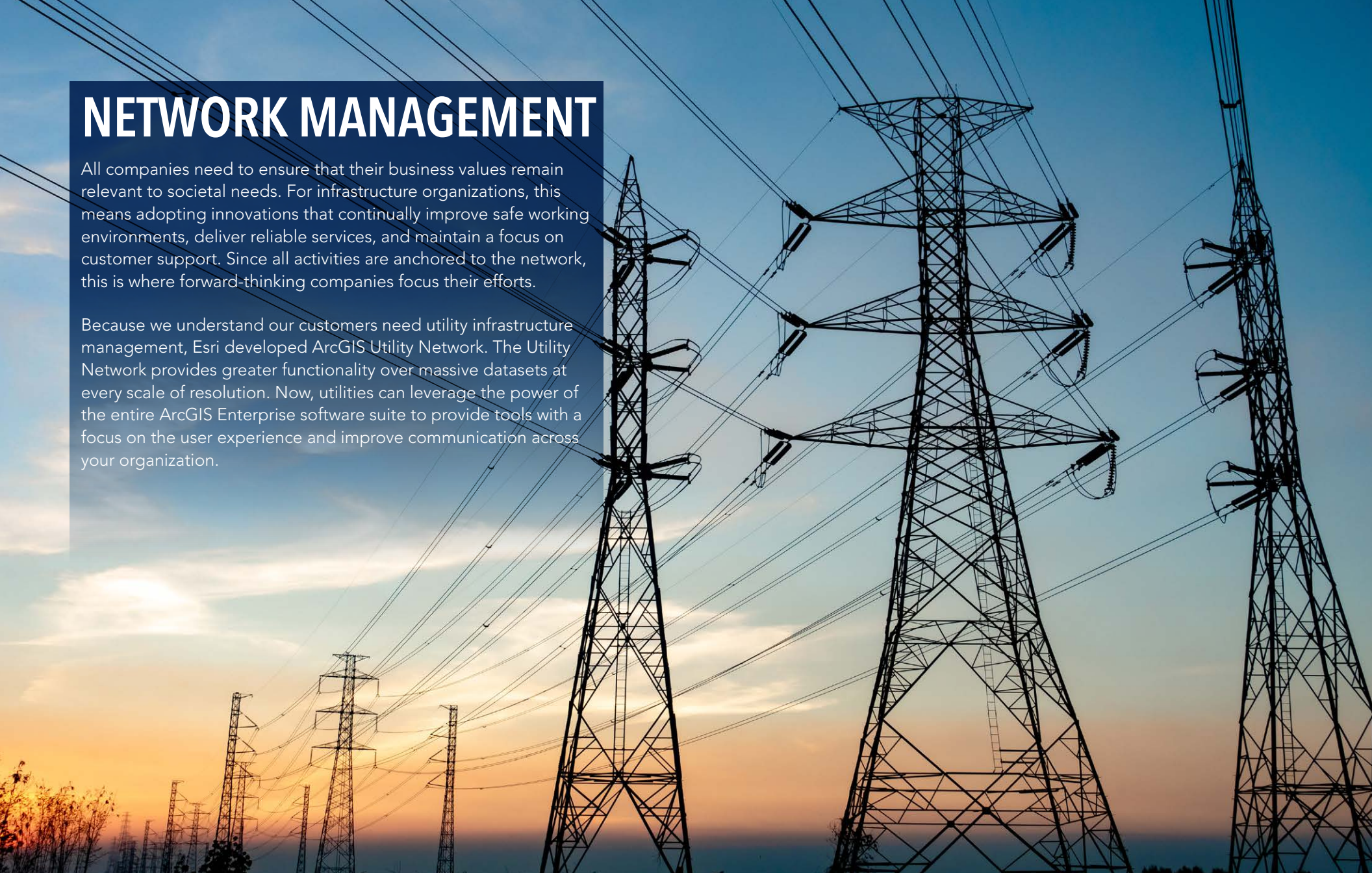
"Urban planning and design is a complex process that involves considerable effort in data collection, analysis, and visualization, which is used to support decision-making," said Le An, senior urban planner and designer at Gensler's Washington, DC, office. Gensler's city and urban design team has recently explored the capabilities of GIS technology to create plans, visualize scenarios, and support collaboration and decision-making.

Three-dimensional GIS is allowing users to view detailed information about the proposed design, as every element in the 3D web application is clickable. The approved 3D models and the related plans can be seamlessly handed off by the urban designers to the architects. This allows the design to be further developed in the building information modeling (BIM) environment.

> "We can export a 3D web scene from ArcGIS CityEngine and publish it online so that it can be viewed by our clients and other stakeholders. This really helps support better communication and more informed decision-making."
>
> —Le An, Senior Urban Planner and Designer, Gensler

Read the full story.

Learn more about Gensler.



NETWORK MANAGEMENT

All companies need to ensure that their business values remain relevant to societal needs. For infrastructure organizations, this means adopting innovations that continually improve safe working environments, deliver reliable services, and maintain a focus on customer support. Since all activities are anchored to the network, this is where forward-thinking companies focus their efforts.

Because we understand our customers need utility infrastructure management, Esri developed ArcGIS Utility Network. The Utility Network provides greater functionality over massive datasets at every scale of resolution. Now, utilities can leverage the power of the entire ArcGIS Enterprise software suite to provide tools with a focus on the user experience and improve communication across your organization.

SET FOR THE FUTURE–SAN JUAN WATER IMPLEMENTS ESRI ArcGIS UTILITY NETWORK AND CITYWORKS COMPUTER MAINTENANCE MANAGEMENT SYSTEM

San Juan Water District (SJWD) partnered with HDR and Cityworks to use ArcGIS Utility Network as a foundation for the organization's computer maintenance management system (CMMS) implementation. The Utility Network and the CMMS work from one centralized database for water distribution. Field crews can access the latest information and use the networking analysis capabilities for outage events via tablets in the field or a web browser in the office.

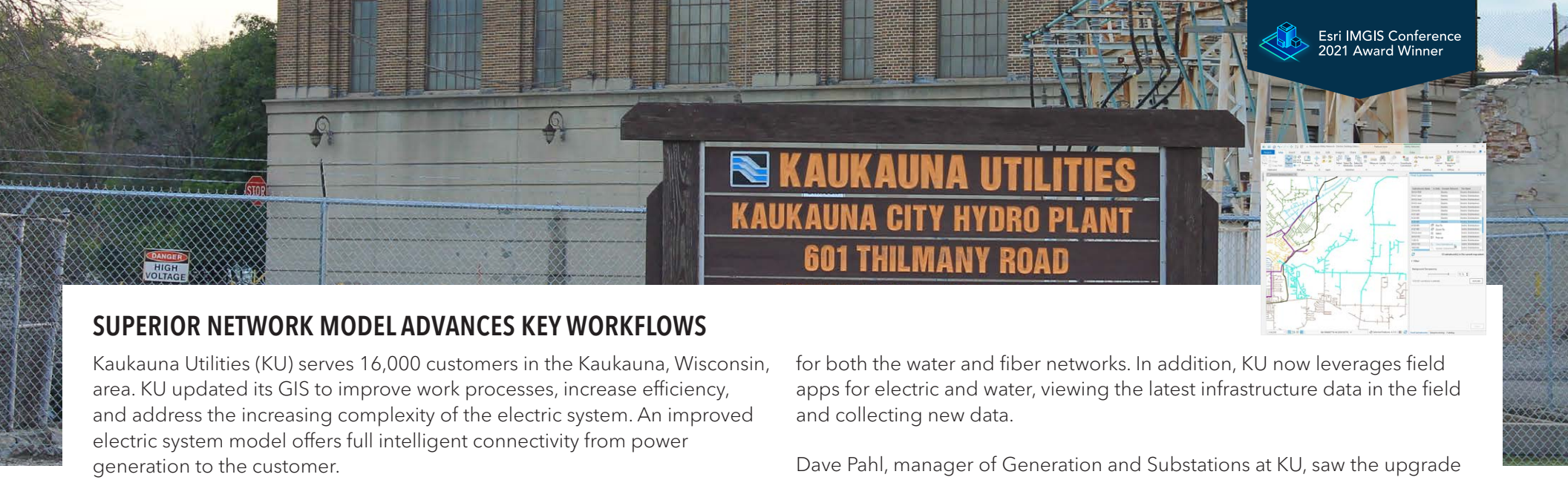
In addition, staff can view and edit production GIS features in Cityworks, eliminating duplicate data and workflows. A streamlined workflow between the SJWD Customer Service Group and the Field Service Group allows near real-time notification about issues within the district. This empowers service technicians to respond quickly to problems, which is critical in California, where water is such a precious commodity due to the drought. The integration of these systems has improved reporting and inspection workflows while providing a single, authoritative source of truth.

"Cityworks offers much more capability over conventional CMMS systems because it was built on top of ArcGIS, which lets it take advantage of the geospatial capabilities of the GIS. This is especially important for managing assets across a large geographic area."

—David Long, CMMS/GIS Coordinator

Read the full story.

Learn more about HDR and Cityworks.



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SUPERIOR NETWORK MODEL ADVANCES KEY WORKFLOWS

Kaukauna Utilities (KU) serves 16,000 customers in the Kaukauna, Wisconsin, area. KU updated its GIS to improve work processes, increase efficiency, and address the increasing complexity of the electric system. An improved electric system model offers full intelligent connectivity from power generation to the customer.

The utility's capital budget planning relies heavily on an engineering analysis of the electric system. However, the analysis model was difficult to maintain because the manual steps lagged updates to ArcGIS, the system of record.

POWER Engineers, Incorporated, developed the POWER Network Extractor tool to integrate third-party applications with ArcGIS Utility Network. The POWER Network Extractor enabled KU to consume the utility's GIS distribution, transmission, and subtransmission networks in the Milsoft WindMil engineering analysis package and the outage management system.

As a result, KU is now benefiting from more accurate data about its electric system. This step has dramatically advanced information currency. Furthermore, engineering staff save work hours and eliminate manual errors. ArcGIS Utility Network lays the groundwork to make similar improvements for both the water and fiber networks. In addition, KU now leverages field apps for electric and water, viewing the latest infrastructure data in the field and collecting new data.

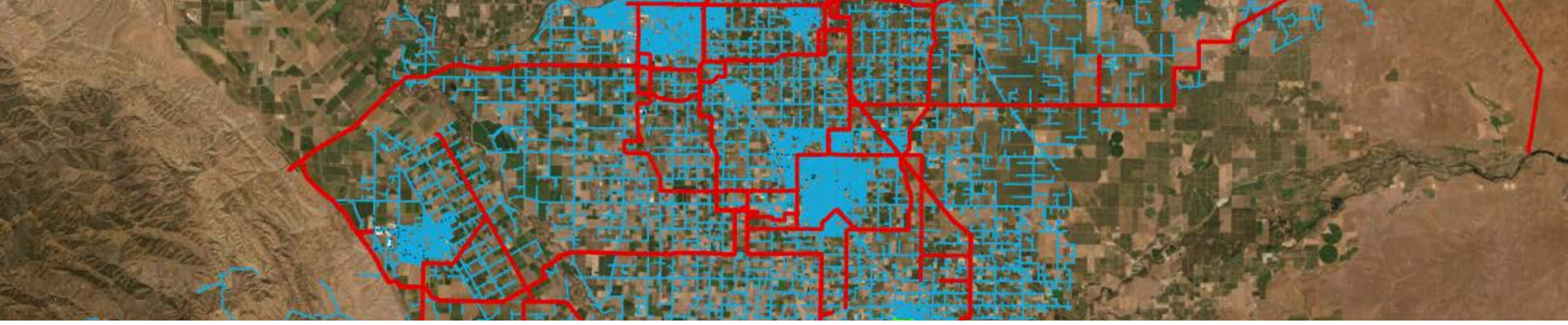
Dave Pahl, manager of Generation and Substations at KU, saw the upgrade to ArcGIS Utility Network as a "key requirement to the success of many other systems at Kaukauna Utilities." Leveraging the network topology and integrations, he says, "anticipates efficiencies in distribution design, system operations, and outage management—all of which provide more reliable service to customers."

"The choice to upgrade to Esri's ArcGIS Utility Network was based on the realization that future integrations of systems depend on a solid connectivity model, which this network provides. With the solution only in production for a short period of time, Kaukauna Utilities is realizing efficiencies not only in mapping but also engineering and operations. POWER's Network Extractor for Milsoft is one tool that has saved us hours of work."

—David Pahl, Manager of Generation and Substations, Kaukauna Utilities.

Read the full story.

Learn more about POWER Engineers.



ArcGIS UTILITY NETWORK LEADS GRID MODERNIZATION

Turlock Irrigation District (TID) provides the Central Valley of California with reliable irrigation water and electric power. The utility is focused on reliability and preparation for the future. TID wanted a grid modernization road map to address growing factors affecting utility load.

The utility needed to analyze load flows more effectively to better predict future water and power network conditions. Engineers spent months preparing accurate data models for subsequent system analysis. TID needed better insight into its networks to support advanced grid modernization applications.

TID selected POWER Engineers, Incorporated, to upgrade its technology infrastructure and help develop a grid modernization road map. The global consulting engineering company also specializes in helping utilities achieve their grid modernization goals.

TID chose ArcGIS Utility Network as the basis for its modernization efforts. ArcGIS Utility Network provides a firm foundation capable of integrations with other vital systems. An extractor tool, developed by POWER, will allow the utility to quickly use network data in third-party applications such as engineering analysis software and the outage management system (OMS).

ArcGIS Utility Network provides the necessary foundation to create the integrations for TID's grid modernization needs. Furthermore, it will allow TID to fully model all aspects of its electric and water networks. As a result, the utility will have greater visibility into system behavior with accurate, up-to-date information. This data will support TID's engineering analysis software, OMS, and other advanced grid applications.

"POWER Engineers assisted TID in diagnosing the shortfalls of our data networks and guided us in developing a road map to grid modernization. We appreciate POWER Engineers' proven track record of leading utilities to fulfill their grid modernization goals. We believe the ArcGIS Utility Network will serve as the best foundation to support our push for system modernization."

—Manjot Gill, Assistant General Manager of Electrical Engineering and Operations, Turlock Irrigation District

Read the full story.

Learn more about POWER Engineers.

PROVO BENEFITS FROM ENHANCED CONNECTIVITY OF UTILITY NETWORK

The City of Provo Public Works Department is responsible for delivering safe and reliable water, wastewater, and stormwater services to its more than 18,000 customers. With the requirement to update Provo's comprehensive plan, staff needed to replace manual, time-consuming processes with modern solutions that enable streamlined, efficient workflows.

The City of Provo partnered with POWER Engineers to implement the ArcGIS Utility Network model for water, wastewater, and stormwater. The Public Works Department's data is now accurately modeled within the Utility Network, and all networks and tracing functionality are 100 percent operational. The move to the Utility Network is allowing Provo to achieve more accurate modeling and automated data validation. The automated data validation process and the increased access to accurate network information provide benefits at every level of the organization. By using the foundational tools provided by Esri, Utility Network base templates lay the foundation for enhanced functionality to accommodate Provo's future growth.

ArcGIS Utility Network provided modern solutions to replace manual processes and gave Provo confidence that its GIS model for all assets is accurately modeling the real-world features within its systems.

Read the full story.

Learn more about POWER Engineers.

OPTIMIZING OPERATIONS WITH ArcGIS UTILITY NETWORK

Brookings Municipal Utilities (BMU) supplies power to approximately 7,500 customers in Brookings, South Dakota. BMU also operates the telephone, water, and wastewater utilities for the city. BMU recently migrated its electric GIS data to ArcGIS Utility Network to better support the company's operational needs.

For many years, BMU used a CAD-based mapping system to generate paper maps. This approach necessitated various databases to track the numerous system details. Using multiple systems duplicated work, consumed excessive staff time, and became a source of potential errors. The company lacked a single source that provided a complete view of the network and its characteristics.

BMU implemented ArcGIS Utility Network and ArcGIS Pro. The utility worked with Critigen to accomplish its goals. Critigen has more than 30 years' experience in spatially enabling businesses using ArcGIS. Critigen helps government, electric, gas, and water/wastewater organizations modernize their IT with cutting-edge services and decision-support tools.

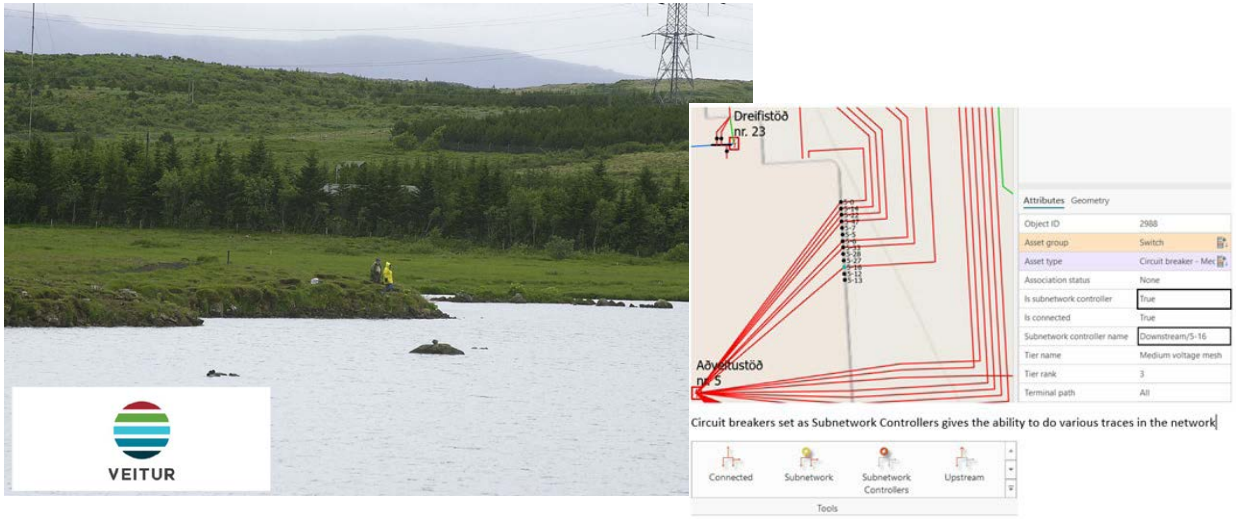
Critigen migrated the electric data using new container and other association functions to accurately represent the system. BMU now has a consistent modelcentric approach to managing its network. A solid system model enables staff to perform powerful analytics that gleans insight from the system information.

ArcGIS Utility Network offers attractive data integrity and tracing capabilities. BMU has a traceable network model with high data integrity to perform vital business functions. BMU is building on its success with mobile and web-based apps that leverage the robust data model for routine operational needs.

"We really appreciate Critigen's help and expertise as we made the transition to a utility network. I thought it was a fun project . . . and that was mainly because of Critigen's involvement and guidance. We still have some work to do, but I think it was a great success overall."

—Russ Halgerson, Electric Department Manager, Brookings Municipal Utilities

Learn more about Critigen.



THE GIS TEAM AT VEITUR TAKES CHARGE OF MIGRATING TO UTILITY NETWORK

Veitur wanted its GIS to hold the single source of truth on assets and connectivity. The company also needed to provide that information to its GE PowerOn Advanced Distribution Management Systems (ADMS). The problem was that the company was recording the same data more than once. Staff needed to share the data with other systems to improve both efficiency and safety.

Similix provided technological expertise on the data model, migration, and process changes to the project. The Similix software products Utility Network Migration Suite and CIM Adaptor for ArcGIS were used heavily. Similix also conducted the project analysis, including the proof of concept (PoC) and data assessment, providing support for Veitur when needed. A successful PoC triggered the decision to start the ArcGIS Utility Network migration project. It proved that data could be easily migrated while at the same time building the foundation for new integrations.

Running this migration project as a utility-internal exercise paves the way for a Utility Network journey that might be attractive and even necessary to many other small and midsize electric utilities. Based on the subnetwork export, the Similix CIM Adaptor for ArcGIS successfully delivered Esri GIS data to the GE ADMS. Integrating ArcGIS increases the value of GIS data and removes redundant data maintenance. Veitur has adopted the European Utility Network Community (UNC) target data model. Veitur's GIS team has taken on the challenge to do the identified data cleansing and has also received recommendations for data enrichments.

The next task will be to integrate smart meter data and the GIS to maximize their value.

Read the full story.

Learn more about Similix.

UTILITY NETWORK MIGRATION PLANNING SPRINGBOARDS BUSINESS TRANSFORMATION

Montana-Dakota Utilities Co. (MDU) wanted to use its migration to ArcGIS Utility Network as a catalyst for transforming the company's current operations. MDU's vision is to bring all three of its gas businesses into alignment. This includes standardizing with the same tools and technology, data model, and business processes. Standardizing enables MDU to optimize its processes more efficiently. It also helps manage operational costs. Also, MDU needed to align its Utility Network program with other technology projects and transformation initiatives.

MDU partnered with SSP Innovations to develop a vision and comprehensive plan to guide its Utility Network project to success. With over 27 Utility Network projects under its belt, SSP brings a wealth of technical knowledge and practical experience to large-scale Utility Network programs. In addition, SSP's Utility Network Advantage Program provided a framework for defining MDU's program road map. MDU created a single data model based on the Utility Network for the company's five operating brands. Over five months, SSP helped MDU develop a clear vision, detailed scope and budget, and realistic timeline for moving to the Utility Network.

MDU's plan provides clear direction for its Utility Network program. Business leaders understand what they can and should do before moving forward, what the effort looks like, and where future opportunities lie. Staff have everything they need to acquire a budget, mitigate risk, and launch their program successfully. MDU believes return on investment (ROI) will come from significantly improving the company's workflows by taking advantage of all the tools and functionality that are part of the Utility Network.

Read the full story.

Learn more about SSP Innovations.

unap Utility Network Advantage Program

CONCLUSION

Over the years, Esri has worked alongside our infrastructure customers to build and evolve software that meets the industry's dynamic needs. Despite the changing environments during these uncertain times, our mission remains the same: to help you unlock the potential of your data so that you can better serve your customers. We share your vision for sustainability, so we focus on developing systems that accommodate your present needs and will prove foundational to your sustainable operations. Our staff and partners have hands-on industry expertise to help you along this journey.

THANKS TO OUR PARTNERS

Consider Esri partners when you want to accelerate ArcGIS implementations, customize solutions, or fine-tune your systems.

ABOUT ESRI

Esri, the global market leader in geographic information system (GIS) software, location intelligence, and mapping, helps customers unlock the full potential of data to improve operational and business results.

Founded in 1969 in Redlands, California, USA, Esri software is deployed in more than 350,000 organizations globally and in over 200,000 institutions in the Americas, Asia and the Pacific, Europe, Africa, and the Middle East.

Esri has partners and local distributors in over 100 countries on six continents, including Fortune 500 companies, government agencies, nonprofits, and universities. With its pioneering commitment to geospatial information technology, Esri engineers the most innovative solutions for digital transformation, the Internet of Things (IoT), and advanced analytics.

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