

Preparing Utility GIS Data for the ArcGIS®

Utility Network Using High-Accuracy GNSS



© 2026 Eos Positioning Systems.
All rights reserved.

Last updated July 2026

Table of Contents

Introduction: Preparing Your GIS for the Utility Network Starts with Accuracy	02
Water: Rockett SUD Builds a High-Accuracy GIS for Its Rural Water System	03
Electric: Coopeguanacaste Transforms Electric Asset Management with ArcGIS and High-Accuracy GNSS	04
Gas: Canada Gas Utility Modernizes Data Collection for Tracking and Traceability	05
Recycled Water: California Utility Maps Recycled Water System with High-Accuracy GNSS and GIS	06
Water & Sewer: Indiana Utility Cuts Turnaround Time with Eos GNSS and Expands GIS Access with ArcGIS Utility Network	07
Local Government: Small City, Big Initiatives: City of Seguin Improves Water and Electric Asset Management with GPS and GIS	08
Local Government: City of Gastonia Prepares for the Future with High-Accuracy Valve Data	10
Conclusion: Building a True Digital Twin, Ready for the Utility Network	11
About Eos Positioning Systems®	12



INTRODUCTION:

Preparing Your GIS for the Utility Network Starts with Accuracy

As utilities prepare to migrate to and adopt the ArcGIS® Utility Network, the quality of their GIS data has never been more important. Accurate asset locations, clean connectivity, and reliable attribute data form the foundation of every successful Utility Network implementation — and high-accuracy GNSS is helping organizations get there faster, safer, and more efficiently.

Across water, wastewater, stormwater, electric, gas, and telecommunications systems, utilities are using survey-grade GNSS to correct legacy maps, streamline as-built collection, and capture field updates in real time. The result is a modern, trustworthy GIS that supports advanced modeling, operational awareness, and the long-term digital transformation that the Utility Network enables.

This ebook highlights real-world case studies from utilities of all sizes that prepared their GIS for the Utility Network by embracing high-accuracy GNSS. Their experiences offer practical workflows, lessons learned, and a clear roadmap for utilities ready to begin their own migration.

Here's how they took the first step ...



Scan for
Full Web Story

Rockett SUD Builds a High-Accuracy GIS for Its Rural Water System

Rockett Special Utility District | 💧 Water Utility

📍 Waxahachie, Texas, United States

Rockett Special Utility District serves 12,000 customers south of Dallas and maintains 570 miles of water lines across rural and semi-rural terrain. Locating valves, meters, and hydrants was difficult because legacy CAD drawings were not tied to true geographic coordinates. Field crews often relied on memory or multiple phone calls to find assets in remote areas. The utility needed an accurate, accessible, and long-term mapping solution.

“When we went into the field to try to locate the assets, it was obvious that the CAD maps were far off. This is expected, because CAD isn’t always tied to a geographic location.”

— Benjamin Griffith, GIS Project Manager, Texian Geospatial

Working with Texian Geospatial, Rockett SUD moved from paper maps to a modern GIS based on ArcGIS Online and the Water Distribution System Foundation template. This ensured that its data structure aligned with Esri’s Utility Network model for future use. For field data collection, the utility adopted ArcGIS Field Maps and deployed an Arrow Gold GNSS base station and two Arrow Gold rovers. This provided real-time centimeter accuracy across the entire service area and eliminated long-term subscription costs. Crews used iPads with cooling cases and ATVs to navigate rural routes and map assets efficiently.

In only seven months, two field workers collected more than 4,000 meters, valves, hydrants, and flush hydrants. The new GIS makes asset locations available to the entire staff, reducing calls to senior workers and speeding response to main breaks. It also preserved institutional knowledge by capturing assets that were missing from paper maps. “Now everyone can see where the assets are located,” said GIS crew lead Benjamin Rucks. “The maps and the knowledge they contain will stay forever.”





Scan for
Full Web Story

Coopeguanacaste Transforms Electric Asset Management with ArcGIS and High-Accuracy GNSS

Coopeguanacaste | ⚡ Electric Utility

📍 Guanacaste Province, Santa Cruz, Barrio Tamarindo, Costa Rica

COOPEGUANACASTE, COSTA RICA'S SECOND-LARGEST ELECTRIC COOPERATIVE, serves more than 90,000 members across a large rural territory. As the system expanded, outdated paper records and imprecise asset locations made operations, engineering analysis, and regulatory reporting increasingly difficult. The cooperative needed an accurate, integrated GIS to support long-term growth.

In 2023, Coopeguanacaste partnered with NimbusTech to deploy a cloud-based ArcGIS environment and train staff on ArcGIS Pro, Dashboards, Survey123, and Field Maps. When designing a new work order system, the need for more precise locations became clear, prompting a project to map all 52,000 electric and telecommunications poles.

To improve accuracy, field crews began using Arrow 100+® GNSS receivers, which integrate directly with Survey123 and Field Maps. This replaced unreliable tablet GPS and delivered consistent submeter accuracy, allowing detailed pole attributes to flow directly into ArcGIS without extra processing.

“The integration of Eos Positioning Systems’ equipment with ArcGIS Survey123 and ArcGIS Field Maps has been crucial for updating the network assets. This proved to be the most effective and cost-efficient option for our client to create an accurate digital twin of their electric system.”

— Clara Abellan, Chief Operating Officer (COO), NimbusTech

With more than 52,000 poles mapped, the cooperative has gained major efficiency improvements, faster field response, better load analysis, and more accurate rate alignment. Automation within the GIS now streamlines work assignments for both electric and telecommunications services.

“GIS has made our work better and faster,” said Distribution Network Analysis Engineer Jennifer Camareno.

Coopeguanacaste is now migrating to the ArcGIS Utility Network, continuing its digital transformation and building a more accurate, scalable system for the future.



Scan for
Full Web Story

Canada Gas Utility Modernizes Data Collection for Tracking and Traceability

Apex Utilities |  Gas Utility

 Leduc, Alberta, Canada

Apex Utilities, a Canadian natural gas distributor with more than 21,000 kilometers (13,000 miles) of pipeline, set out to meet industry-wide tracking and traceability requirements defined in the ASTM F2897 standard. To comply, the utility needed a reliable way to capture bar-coded material data during construction as well as link each code to accurate GPS coordinates in its GIS.

Over several years, Apex Utilities upgraded its digital as-built process using ArcGIS® Field Maps and Esri's ArcGIS Utility Network. Bar-coded polyethylene (PE) materials are now scanned during installation, with attributes decoded automatically in the field using ArcGIS Arcade. To support accurate location capture, the utility replaced legacy GPS equipment with Arrow Gold® GNSS receivers paired with rugged Samsung Galaxy tablets. The receivers delivered centimeter-level accuracy in urban areas and submeter accuracy in rural regions and performed reliably in Alberta's harsh climate.

With the new workflow, inspectors and contractors can scan bar codes, capture high-accuracy locations, and sync data directly to the enterprise GIS — thereby cutting inspection time by roughly 50 percent. Drafters then use custom tools in ArcGIS Pro to process the bar-code attributes and populate the Utility Network's tracking-and-traceability fields.

“Two of the other receivers we tested could not withstand the harsh Alberta climate. Now we’ve got 22 Arrow Gold® receivers out there, and they’ve been working flawlessly. And the Eos technical support we required for interfacing with ArcGIS apps was outstanding.”

— Mathew Desbiens, GIS Manager, Apex Utilities

Apex Utilities has since deployed 22 Arrow Gold receivers and installed its own RTK base station to further reduce costs and expand survey-grade access. The utility is now supporting similar workflows at sister company Pacific Northern Gas and is well-positioned for emerging regulatory requirements. As Esri's gas industry team noted, Apex Utilities' early adoption has created a model many gas operators are expected to follow.





Scan for
Full Web Story

California Utility Maps Recycled Water System with High-Accuracy GNSS and GIS

Eastern Municipal Water District | 💧 Recycled Water Network

📍 Perris, California, United States

Eastern Municipal Water District (EMWD), California's sixth-largest water utility, serves nearly one million accounts across 682 square miles in western Riverside and northern San Diego counties. In an arid climate, EMWD relies heavily on its recycled water program, which supplies agriculture, public landscapes, schools, parks, and habitat areas. "Any approved use of recycled water saves raw groundwater and helps us avoid using potable water where recycled will do," Water Operations Manager James Lee said.

Although ArcGIS® was already central to EMWD's operations, accuracy needed improvement. Eight years ago, only two teams used GNSS, and their legacy units required loading files manually, post-processing data, and importing it into ArcGIS. The lack of automation meant field crews sometimes had to revisit sites to verify locations.

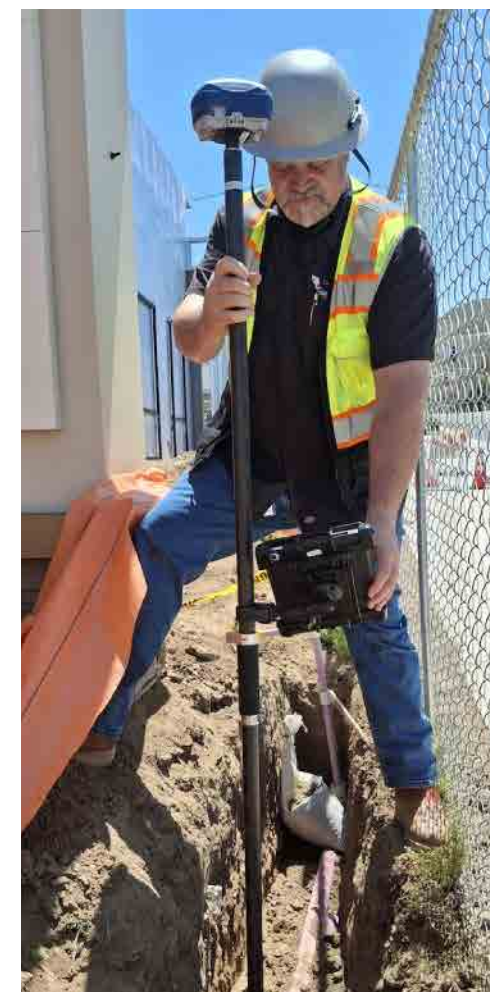
The district adopted Eos Positioning Systems® GNSS receivers — including Arrow Gold® and Skadi Gold™ — which integrated seamlessly with existing maps and the district's base station to deliver 1-centimeter accuracy without post-processing. Paired with iOS® devices and ArcGIS Field Maps, crews now collect and update as-builts in real time, with data flowing directly into ArcGIS Online and the enterprise GIS viewer, HydroMapper.

"At EMWD, safety is always our top priority. With this technology, our crews can capture asset data from a safe distance, such as using a laser instead of working close to a trench. The smart handle allows our technicians to map valves in intersections without initiating traffic control, keeping both our team and the public safe while maintaining efficiency."

— **Andrea Regalado**, Enterprise GIS Manager, Eastern Municipal Water District (EMWD)

Teams across the district now use this accurate data to locate assets, analyze system conditions, and respond to issues. The Recycled Water Group maps as-builts immediately. "We see pipes going into the ground right away," inspector Bobby Toomey said. Water Operations uses high-accuracy GNSS to update valve locations and return to buried valves quickly. "You can go back to exactly where it's at, even once it's paved over," Valve Technician II Brandon Harlacher said. Crews have also deployed the Skadi Smart Handle™ for safer mapping at a distance.

In early 2025, EMWD began migrating to the Utility Network to support network modeling and deeper system insights — another step in advancing their mission as stewards of California's resources. "Water is too precious to use only once," Lee said.





Scan for
Full Web Story

Indiana Utility Cuts Turnaround Time with Eos GNSS and Expands GIS Access with ArcGIS Utility Network

Evansville Water and Sewer Utility | 💧 Water & Wastewater Utility

📍 Evansville, Indiana, United States

Located along the Ohio River, the City of Evansville serves more than 115,000 residents with water and sewer services through Evansville Water and Sewer Utility (EWSU). As the utility prepared to migrate from ArcMap and the Geometric Network to ArcGIS® Pro and the ArcGIS Utility Network, staff saw an opportunity to correct long-standing location inaccuracies in their asset data. “We knew our source data had to be squeaky clean,” said GIS Manager Ryan Key.

EWSU launched a six-month effort to recapture infrastructure with high accuracy, focusing on areas where clusters of meters, valves, and other assets were difficult to locate during maintenance and inspections. Legacy inaccuracies also slowed customer service and delayed capital-refresh design work, making accurate, real-time GIS essential ahead of the Utility Network migration.

After evaluating multiple GNSS options, EWSU adopted Arrow GNSS receivers from Eos Positioning Systems®. The receivers paired easily with the iOS® devices crews already used and delivered centimeter-level accuracy through ArcGIS Field Maps. To support precise mapping across the county, EWSU’s surveyor deployed two RTK base stations for real-time corrections. Field crews — many new to GIS — adapted quickly. “A lot of these guys had no GIS experience, and they transitioned to collecting data like ducks to water,” Key said.

With accurate locations captured in the field, updates flowed instantly into ArcGIS Online. Staff monitored progress through ArcGIS Dashboards and used the corrected data to modernize maps, resolve outdated records, and streamline inspections. EWSU also built U-Net, a custom Utility Network web app that gives non-GIS teams access to asset information, service histories, CCTV data, and customer records from a single map.

The new workflow dramatically improved accuracy and efficiency. EWSU collected roughly 9,000 assets in two years, completing as-builts in near real time rather than months later. The clean data will also power future Utility Network capabilities, including automated tracing for boil-water advisories and capital projects. “Having this type of accuracy allows for greater response, reaction, and repair,” Key said. “It all translates to a better customer experience.”



“As we were thinking about moving to and taking advantage of [ArcGIS] Utility Network, we knew our source data had to be squeaky clean.”

— Ryan Key, GIS Manager, Evansville Water and Sewer Utility (EWSU)



Scan for
Full Web Story

Small City, Big Initiatives: City of Seguin Improves Water and Electric Asset Management with GPS and GIS

City of Seguin |  Local Government with Electric, Water and Wastewater Utilities

 Seguin, Texas, United States

The City of Seguin, Texas, is experiencing rapid development as it expands toward neighboring communities. To keep pace, the Utility Services Department began modernizing how it maps and manages water, wastewater, and electric assets.

To replace inconsistent paper drawings and improve construction safety, Saldana equipped staff with ArcGIS® Field Maps and Arrow Gold® GNSS receivers, supported by a city-owned Arrow Gold base station for reliable RTK corrections. Crews now capture centimeter-level locations for existing infrastructure and new installations directly in the field using iPads®, ensuring data is accurate before development occurs. “By validating it ourselves, we know for sure where our assets are,” Saldana said.

“The assets are all very close in proximity to each other, so it’s important that we have the best accuracy we can. We’re trying to prevent accidents with water and electricity.”

— **John Saldana**, Solutions Manager, Smart Grid Team, City of Seguin

Seguin now maps water, wastewater, and electric assets in real time, with Utility Data Analyst Felecia Helms performing quality control and leading the city’s migration to the ArcGIS Utility Network. The system also supports AMI smart-meter replacements and helps the city meet lead service line compliance requirements by pairing precise locations with photo documentation.

With a growing GIS team and survey-grade accuracy across all networks, Seguin is building a reliable, future-ready asset database. “Good asset management starts with collecting good data as step one,” Saldana said.





Scan for
Full Web Story

City of Gastonia Prepares for the Future with High-Accuracy Valve Data

Two Rivers Utilities |  Local Government with Water Utility

 Gastonia, North Carolina, United States

Two Rivers Utilities (TRU), part of the City of Gastonia, serves more than 100,000 customers across 600 miles of water mains. As the utility prepared for modern valve-isolation tracing and future migration to the ArcGIS® Utility Network, staff recognized that their existing valve locations were often close — but not accurate enough for reliable modeling or emergency response.

“Most of the locations were OK. But they weren’t pinpoint accurate.”

— **Brian Hart**, GIS Analyst, Two Rivers Utilities

To modernize their system, TRU launched its first valve-exercising program and paired the effort with high-accuracy GNSS. GIS Analyst Brian Hart selected the Arrow 100® receiver for its simplicity, affordability, and ability to deliver submeter accuracy out of the box. Mounted directly to the valve-exercising trailer, the Arrow 100 enabled field crews to update valve positions as they worked. In later zones, TRU added a second Arrow 100 paired with ArcGIS Collector (now ArcGIS Field Maps), allowing technicians to locate and map valves even faster and to discover previously unmapped assets.

The results were immediate: In one service zone alone, crews found and added 400 valves missing from the GIS. Updated positions now flow directly into ArcGIS Online, strengthening TRU’s ability to trace valves, isolate breaks, and protect customer service. With more accurate data and refined field workflows, TRU is building a stronger foundation for the Utility Network and future operational efficiency.

“Being able to isolate smaller sections of the system will let us keep more customers online during emergencies,” Hart said. “Accuracy makes all the difference.”





CONCLUSION:

Building a True Digital Twin, Ready for the Utility Network

Across the utility sector, one truth continues to surface: When teams can't trust the data on their maps, field work slows down — and costs go up. Inaccurate legacy records, outdated paper drawings, and missing field updates create a cycle of rework that affects everything from design to construction to customer service. The result isn't a digital twin at all. It's a digital mutant.

But the digital twin is possible. Every case study in this ebook shows that a clear path forward. Utilities that embrace high-accuracy GNSS, modern mobile GIS workflows, and strong quality-control processes are breaking that cycle. They're replacing guesswork with confidence, reducing field visits, improving safety, and preparing their systems for the future, including the ArcGIS® Utility Network and 3D GIS.

Building a true digital twin starts with one commitment: collect better data. When utilities pair accurate locations with modern workflows, their entire organization benefits — from field crews and engineers to customer service and leadership. Your GIS becomes the system of record your utility depends on.

About Eos Positioning Systems®

Eos Positioning Systems®, Inc., (Eos) is a leading global designer and manufacturer of high-accuracy GNSS receivers for GIS and mapping applications. Founded in 2014 with a mission to make high-accuracy location technology accessible to all, Eos offers GNSS solutions that are easy to use, affordable, and compatible with any device or software. Flagship Eos GNSS product lines include the Skadi Series™ and Arrow Series® plus models, which provide high-accuracy location data to any device or app. Eos is an Esri Gold Partner.

Learn more at www.eos-gnss.com.



Eos Positioning Systems, Inc.

1181 Rue de l'Express, Terrebonne QC, J6W 0A2, Canada
+1 (450) 824-3325

