City of Corpus Christi, TX

ArcGIS Utility Network Implementation for Water and Wastewater

TX DIR Contract #:
DIR-CPO-4503
Vendor ID:
392044368

Proposal Submitted by:
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August 12, 2024

Rebecca C. Basquez
IT GIS Manager
Information Technology
City of Corpus Christi, TX

Dear Rebecca,

Axim Geospatial, LLC (Axim) is pleased to submit our proposal for the ArcGIS Utility Network Implementation project for your water and wastewater systems. For over 31 years, Axim's core business has been location technology. We are the largest singular provider of end-to-end geospatial services and solutions in the U.S. serving the communities in which we live.

Why Select the Axim Team?

Most Qualified Water Utilities Experience: Axim is an Esri Platinum Partner, currently serving over 50 water utilities and local public works departments today with Esri platform implementations and system integrations. We were one of the first services partners to earn Platinum Business Partner status and we were the first Esri business partner with a water utility focus to earn the Utility Network Management Specialty Designation. Our experience is unparalleled, and we have facilitated the largest UN implementations in the country including Austin Water, Charlotte Water, Houston Water, and others.

Breadth and Depth of Experience: Our core business is everything GIS and with over 400 geospatial professionals on staff, Axim is prepared to handle any aspect of the project that arises. Axim has earned multiple Esri Specialty Designations and when it comes to a full suite of GIS services; Asset Management, Data Services, Integrations, Next Generation GIS Assessments, Application Development, and Cloud Managed Services we are unmatched in the industry.

Proven Methodology and a High level of Confidence for Success: Axim has worked closely with Esri to immerse into and influence the UN for the water domain and we have extended that partnership to bring that same synergy into strategic client engagements. We have a demonstrated and proven methodology to successfully implement the UN for large Water Utilities and an experienced staff dedicated solely to this practice.

Please contact me if you would like additional information. We look forward to working together for the successful accomplishment of this project.

Sincerely,

Greg Hymel
Senior Account Executive, Axim Geospatial
greg.hymel@aximgeo.com

BACKGROUND

Understanding and managing water infrastructure is difficult and requires a dedicated team of professionals, complex processes, and sophisticated technologies. The most successful agencies rely on GIS as the center of the technology landscape, serving as a hub through which other enterprise systems integrate and offering critical data analytics and visualizations to support operations.

GIS constantly evolves to support organizations better, deliver against customer requirements, and help prevent emergencies. Esri's ArcGIS Utility Network (UN) is a significant step forward in the evolution of an enterprise GIS for water utilities in terms of production capabilities and emergency response. Unlike data model migrations of the past, the UN represents a broader technology paradigm shift. The City of Corpus Christi has recognized both the value and the need to implement the UN and has offered a comprehensive and thoughtful requirement to solicit support from a qualified partner.

Axim understands the complexities and nuances of the implementation process and the impact this transition can have on an organization. We were the first Esri Business Partner to earn the Utility Network Management Specialty designation and have completed the largest UN implementations in the country to date, including Austin Water, Charlotte Water, and the City of Houston. We have supported more than 40 clients and 70 systems (e.g., water, wastewater, stormwater, reclaimed) in transitioning to and adopting the UN.

As an Esri business partner since our founding more than 30 years ago and as one of only 17 Platinum partners in the US, Axim has had the opportunity to help shape countless enterprise GIS programs. Within that context, we have provided industry and client-leading data modeling and implementation services ranging from the Federal Spatial Data Standards for Infrastructure and Environment (SDSFIE) to localized adoption of the Esri Local Government Information Model (LGIM) and the ArcGIS for Water (AG4W) initiative. In fact, Axim participated in the beta programs for both the LGIM and the ArcGIS Utility Network (UN) Frameworks (Water Domain). In each case, Axim was among the very first Partners to implement the respective models for functional adoption.

Fortunately, Axim has a dedicated team of professionals who focus on the UN, specifically within the context of water utilities. Relying upon our knowledge of past migrations, we understand the unique challenges for the water industry and have established a successful approach to deliver comprehensive services. We have also adapted our services to each client to address budgetary constraints to leverage client capacity and skill. To that end, we have proposed and performed co-implementation services for some clients, through which we identify workshare opportunities and distribution of technical responsibility with Axim staff providing leadership, guidance, and supplemental capacity along the way. This demonstrates a flexible and innovative perspective on services and may also represent an opportunity for cost savings.

Our experience with UN implementations has also demonstrated and leveraged the full value of our landscape of business partnerships. We introduced our Platinum partnership with Esri above, through which our team has been able to both learn through collaboration with the Esri UN team and influence the trajectory of UN design, functionality, and experience. Esri has partnered with Axim in several UN engagements to provide complementary expertise related to architecture design, deployment patterns, and UN performance. Additionally, Axim is a business partner with Safe Software, developers of the FME data translation and automation engine that has proven valuable to UN implementation and technical strategy. Utilizing the FME data translation process decreases errors and the time to complete the process. Further, Axim is the only partner with SSP Innovations authorized to use and sell SSP Sync, a tool specifically designed to support a transitional adoption period for organizations unable to make a full leap

into the UN. We are also a Platinum Implementation Partner with Cityworks, an industry-leading GIS-centric work and asset management platform compatible with the UN. Again, asset management is not part of the core scope but reflects our commitment to synergistic technologies and a natural alignment with water infrastructure management.

Our corporate mission is grounded in using geospatial solutions to empower our clients to make the world a smarter, safer, and better place to live. In doing so, we aspire to establish lasting partnerships through which our clients, and the City, can confidently pursue organizational goals and vision backed by the entire experience and expertise of Axim Geospatial.

SOLUTION EXPERIENCE

Esri Partnership

Axim is one of only 17 firms globally that have attained the level of Esri Platinum Partner. Less than 1% of Esri partners worldwide have achieved this highest tier of distinction. Working with a Platinum partner gives the City unrivaled access to premium-level support with Esri. We have been an Esri Business Partner for 30 years, and our State and Local Government business unit is closely aligned with their vision and initiatives. In addition to Platinum Partnership, Axim has achieved Esri specialty status for several solutions and Esri product areas:

Utility Network Management Specialty

ArcGIS Utility Network Management Specialty. GIS-based network management for utilities, the new Utility Network (UN) management tool provides more functionality, added flexibility and advanced access to data. Axim is the first Esri partner to receive the UN partner specialty designation for water utilities.

State and Local Government Specialty

Esri State and Local Government Specialty. This specialty is awarded to partners specializing in and have a substantial track record of success with developing and configuring ready-to-use solutions for local and state government clients.

Indoor GIS Specialty

ArcGIS Indoors. A complete indoor mapping system for connecting workspaces with employees and visitors.

ArcGIS Cloud Services Specialty

ArcGIS Cloud Services. With the maturity of business systems comes a need for flexible and agile cloud environments and hybrid environments for business continuity and resiliency.

ArcGIS Hub Specialty

ArcGIS HUB. A community engagement platform that organizes people, data, and tools through information-driven initiatives.

ArcGIS System Ready Specialty

ArcGIS System Ready. Awarded to partners that adopt the latest Esri technology, migrate their offerings in a repeatable practice, and have a well-trained staff to support the latest Esri software releases.

Our Esri Platinum Partnership significantly benefits our clients, including enhanced professional services and industry knowledge. It allows us to provide Esri Certified Professional Trainers and to procure new software licenses for the entire Esri software portfolio and affords Axim premium support to elevate technical requests that other companies cannot access. We have regular interfaces with the Esri Product Teams and Professional Services Team to share experiences, discuss best practices, help define upcoming capabilities, and gain insight into new technologies that will soon be available for public consumption.

Esri ArcGIS Utility Network Experience

Axim has worked with Esri in enhancing and migrating their customers (and ours) into the ArcGIS Utility Network (UN). We were the first partner to achieve Esri's Utility Network Specialty Designation focusing on water domains. In addition, we have significant experience in UN planning and implementation for local government agencies throughout the US, as shown in the table below.

Axim Project Name and Customer	Water (W) Wastewater (WW) Stormwater (SW)	Current Status	Needs Assessment	Implementation Plan	Geodatabase Design	Data Migration	Production	3rd Party Integration
Aiken County, SC (Aiken, SC) **UN Readiness Assessment**	SW	Complete	✓	✓				
City of Ames, IA (Ames, IA) **UN Jumpstart**	W	Ongoing	✓	✓	✓	✓		
Aqua Water Supply Corp (Bastrop, TX) **UN Transition Planning & Implementation**	W	Complete w/Ongoing Support Services	✓	✓	✓	✓	✓	✓
Arapahoe County, CO (Littleton, CO) **UN Readiness Assessment**	W WW	Complete	✓	✓				
Austin Water (Austin, TX) **UN Transition Planning & Implementation**	W WW	Complete w/Ongoing Support Services	✓	✓	✓	✓	✓	✓
Austin Watershed Protection (Austin, TX) **UN Readiness Assessment & Migration**	W	Complete w/Ongoing Support Services	✓	✓	✓	✓		
Calvert County, MD (Prince Frederick, MD) **UN Readiness Assessment**	W, WW	Complete	✓	✓				
Charlotte Water (Charlotte, NC) **UN Implementation**	W WW	Complete w/Ongoing Support Services	✓	✓	✓	✓	✓	✓
Charlotte Storm Water (Charlotte, NC) **UN Implementation**	SW	Ongoing	✓	✓	✓	✓		✓
Clayton County Water Auth. (Morrow, GA) **UN Readiness & Cityworks Integration**	W, WW SW	Complete	✓	✓		✓		✓
Columbus Water Works (Columbus, GA) **UN Planning**	W	Complete	✓	✓				
City of Corpus Christi, TX (Corpus Christi, TX) **UN Readiness Assessment**	W WW	Complete	✓	✓				
Eastern Mun. Water District (Perris, CA) **UN Architecture Review & Imp Planning**	W	Ongoing	✓	✓				
Gainesville Regional Utilities (Gainesville, FL) **UN Readiness Assessment**	W WW	Ongoing	✓	✓				
City of Galveston (Galveston, TX) UN Readiness Assessment and Imp Planning	W, WW, SW	Complete	✓	✓				

City of Goldsboro (Goldsboro, NC) **UN Migration Assistance**	W WW	Complete w/Ongoing Support Services	✓	✓		✓	✓	
City of Hastings (Hastings, NE) **UN Jumpstart & Technical Coaching**	W WW	Complete w/Ongoing Support Services		✓	✓	✓	✓	
City & County of Honolulu Environmental Services (Honolulu, HI) **UN Readiness Assessment & Imp Plan**	WW	Complete w/Ongoing Support Services	✓	✓				✓
City & County of Honolulu Board of Water Supply (Honolulu, HI) **UN Readiness Assessment & Imp Plan**	W	Complete	✓	✓				✓
City of Houston (Houston, TX) **UN Model Migration & Implementation**	SW	Ongoing	✓	✓	✓	✓	✓	✓
Kansas City Water (Kansas City, MO) **UN Planning & Migration**	W	Complete	✓	✓	✓	✓		✓
Lake County (Waukegan, IL) **UN Support**	W WW	Complete w/Ongoing Support Services	✓	✓		✓	✓	✓
McCarran Airport (Las Vegas, NV) **UN Readiness Assessment**	W	Complete	✓					
City of Mercer Island (Mercer Island, WA) **UN Jumpstart**	W, WW	Complete w/ Ongoing Support Services	✓	✓				
City of Midland, TX (Midland, TX) **UN Readiness Assessment**	W	Complete	✓	✓				
New Ulm Public Utilities (New Ulm, MN) **UN Migration Assistance & Troubleshooting**	W WW	Complete	✓	✓		✓	✓	
Village of Niles (Niles, IL) **UN Workshare Implementation**	W	Complete	✓	✓		✓		
Opelika Utilities (Opelika, AL) **UN Transition Planning & Implementation**	W	Complete w/Ongoing Support Services		✓	✓	✓	✓	✓
Providence Water Supply (Providence, RI) UN Readiness Assessment & Imp Plan	W	Complete	✓	✓				
San Antonio Water Supply (San Antonio, TX) **UN Readiness Assessment & Imp Plan**	W, WW, SW	Complete w/ Ongoing Support Services	✓	✓	✓	✓		✓
City of St. Petersburg, FL (St. Petersburg, FL) **UN Readiness Assessment**	W	Ongoing	✓	✓	✓			
SSP/ALLETE (Duluth, MN) **UN Support & Migration**	W	Complete		✓	✓	✓		✓
Veolia North America (Boston, MA) **UN Implementation Study**	W	Complete w/ Ongoing Support Services	✓	✓	✓	✓		✓
Western Muni. Water District (Riverside, CA) **UN Readiness Assessment & Imp Plan**	W, WW, SW	Complete w/Ongoing Support Services	✓	✓				✓

IMPLEMENTATION PLAN AND METHODOLOGY

Statement of Understanding

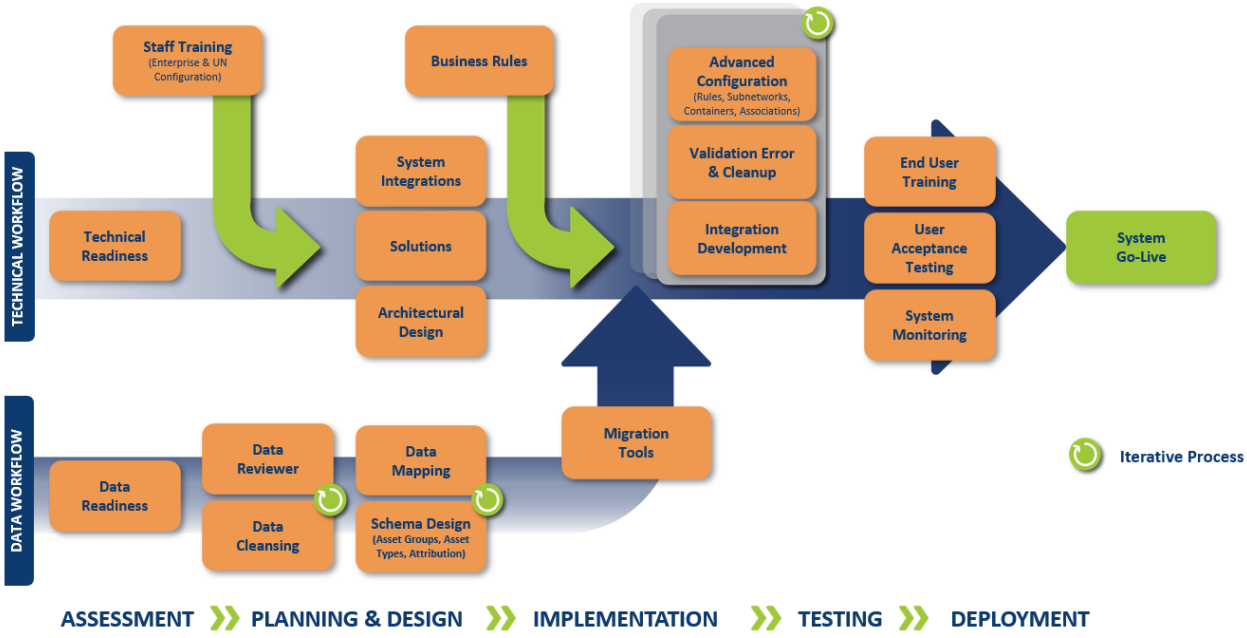
The City of Corpus Christi recognizes the value of investing in location technology to manage, analyze, and visualize data to support business processes and organizational missions. Over time, as location technology platforms and solutions advance, incremental adjustments and updates are periodically replaced by sweeping transformation. Such is the case for implementing the ArcGIS Utility Network (UN). As the foundation of a program and a defining contributor to success, the transition requires a great deal of strategy and planning.

The City adopted the geometric network with ArcGIS Desktop (ArcMap) and third-party systems developed to facilitate and streamline network editing, supporting operations, and maintenance workflows. The geometric network was an effective model for many years and technically remains so today. Still, the structure has also been slated for deprecation, triggering organizations nationwide to consider the eventual replacement by the ArcGIS Utility Network.

The UN's structural, functional, and operational design genuinely represents a significant transformation in the technological paradigm that supports utilities and infrastructure GIS programs. The magnitude of this transformation is expected to be as impactful and powerful as those from paper-to-digital and CAD-to-GIS. The underlying geodatabase model will change fundamentally, but the shift from a database-focused architecture to a service-oriented architecture will provide the foundation for contemporary GIS best practices and solution innovations for years to come. Present desktop solutions will be replaced by ArcGIS Pro, requiring users to reorient to software interfaces and standardize operating procedures, and configurations/integrations with asset management systems will need to be updated.

We understand the City of Corpus Christi is looking for a partner to help facilitate and define the pathway for successfully adopting the ArcGIS Utility Network. Through a UN Readiness Assessment, Axim has already engaged City staff to understand the current technology and data landscape through a data and system architecture review to produce documentation to guide subsequent UN implementation. Our approach will be holistic and encompass architecture and environment, not strictly data, to help ensure the resulting system is responsive and capable of performing to standards and expectations. Axim will also focus on the data, schema, and transformation process in preparing for the translation processes and target structure to support existing data and ongoing business processes. To validate our understanding and the resulting output, we will facilitate a pilot implementation targeting a subset of the data and evaluating migrated data, workflows, and technical architecture. After completing a successful pilot initiative, Axim will facilitate the City's transition and deployment of SSP Sync to support a publication version of the ArcGIS Utility Network. This transition includes the implementation, adoption, training, data migration, and corresponding production release support.

Conceptual Approach



At a high level, all implementations of the ArcGIS Utility Network follow the pattern above. Data and readiness assessments lead to data preparation, database design, data mapping, and migration tool configuration. Technical readiness assessments lead to staff preparation, architecture design, integration planning, and asset business rules. As these two paths merge, a series of one or more pilot implementations include advanced configuration, network validation, integration development, and potential design refinements. Finally, user acceptance testing must be established before final data migrations and the system go-live. This pattern has proven successful for Axim clients from a wide variety of scales and vendor support strategies.

Detailed Approach

Corpus Christi has thoughtfully articulated the desired outcome for project deliverables and documentation. To describe how Axim will execute the project, our proposal follows a chronological narrative of our project approach. Each phase is essentially dependent on the successful completion of the predecessor and, as such, will be considered to occur in strict sequence unless otherwise coordinated and mutually agreed upon.

Planning and Analysis

The Planning and Analysis phase is an umbrella of project management and coordination tasks throughout each phase of the project's lifecycle.

Project Management Approach

Axim employs two interwoven tracks to help ensure success. First, we bring a proven project management approach that establishes controls and ensures communications and delivery. Second, we offer a technical approach tailored to the scope of services through which our expertise is translated into solutions. The following sections provide an overview of our project management approach and a task-level breakdown of the technical approach.

Each project engagement with Axim is structured according to five phases that have proven adaptable and repeatable and can reliably produce successful results. In the case of the proposed project with the City of Corpus Christi, we will leverage the established five phases to manage the overarching project and provide the structured approach necessary to guide the successful execution of each task.

- *Planning & Analysis:* The Planning & Analysis phase starts our project lifecycle and sets the broad execution parameters. It is communication-centric, beginning with the project kickoff meeting and scheduling the project reviews. Axim will review the project's budget and schedule and establish project controls, including a client satisfaction survey when the project is complete.
- *Design:* The Design phase is the point in the project during which our UN team gathers information and documentation to guide the course of the effort. We will focus on establishing the background that will drive the project forward, which is a critical step before moving on to the development process. We work on relevant considerations such as functional requirements, database design, configuration requirements, system architecture, and compiling or creating all associated documentation.
- *Development:* Although this is not a traditional *development* project, in the sense of coding or programming, we consider Development to encompass more generically the core effort of a project that centers on the primary deliverables. Development can also be considered a reference to the environment, in a way, since much of the work completed within this phase would be carried out in a lower tier from any production system to mitigate the potential for end-user disruption.
- *Testing & Acceptance:* Testing and Acceptance will imply a narrower development-centric perspective. This phase addresses all aspects of QA/QC, deliverable review, and acceptance. This includes time to orient power users to the new system for adequate testing. This phase is vital and distributed into each task, with each core deliverable undergoing an internal and external review before eventual acceptance.
- *Implementation:* Implementation is incorporated into each phase and refers to finalizing, presenting, and distributing all deliverables. Certain aspects or tasks of the Development Phase may be repeated to construct the necessary target environment. Still, much of the core deployment effort will be specific to the system or product(s) being released. A vital part of the Implementation phase may be a more formalized orientation for users to the new environment.

Project Initiation

One of the first steps in the proposed project is a kickoff meeting between Axim and the City of Corpus Christi project management team intended to facilitate introductions, briefly review the scope, and initiate coordination for the project. Axim will prepare a meeting agenda, outline a project management plan, and draft initial documentation regarding communications, responsibilities, and protocols governing the project. Summary documentation and a detailed project plan will be provided to the City of Corpus Christi Project Manager following the kickoff meeting.

We will establish monthly recurring status meetings at the kickoff meeting to identify upcoming tasks, review decision points, and discuss the project's overall status. Technical calls will be scheduled separately with the appropriate stakeholders as needed. Axim will provide a monthly written status report detailing information on schedule and budget progress, tasks completed, risks, upcoming milestones, etc.

Project Schedule

Axim anticipates an overall duration of approximately 24 months to complete this project scope. While the schedule is flexible, testing, user training, and final implementation tasks generally occur in a short sequence to complete the project. This project narrative will primarily describe the process for the water system, though the same process applies to the wastewater system. Important points of differentiation will be noted. Generally, while hosting a combined kickoff meeting, Axim expects to initiate tasking for the wastewater system approximately 9-12 months after the water system. The project team may collectively decide to adjust the schedule during the project kickoff meeting.

Significant milestones and project activities for each system can generally be summarized as follows:

- Project Initiation (2-4 weeks)
- Requirements Workshops and Documentation (1-2 months)
- Geodatabase Design (2-3 months)
- Environment Support (2-4 weeks)
- Data Migration Planning and Configuration (2-3 months)
- Implementation Testing and Training (2-3 months)
- Final Implementation (1-2 months)

Deliverables

- Project kickoff meeting
- Project management plan
- Communication plan
- Project status reporting

Design Phase

The Design phase serves as the point in the project during which the team gathers information and documentation that will guide the core effort to follow. The Design phase generally includes initial data mapping, data readiness assessment, system architecture review, database design, and detailed data mapping.

Readiness Assessment and Implementation Plan

As part of a previous project engagement, Axim reviewed the City's data and technical environment, resulting in a Data Readiness Assessment report. The City has since been referencing the report to guide its initial data cleanup efforts. Additionally, in collaboration with City staff, Axim prepared an Implementation Plan providing high-level direction on the sequence of events, general processes, and technical considerations for implementation.

As noted in the Plan, schematic adoption and data migration efforts do not commonly impose a software update on organizations directly. There are, however, sometimes indirect or peripheral impacts that force a system upgrade. For example, adopting the ArcGIS Utility Network may affect the software and hardware. Unlike more traditional structures, such as Esri's water model with a geometric network, the official release of the ArcGIS Utility Network requires that users interface with the model at the desktop tier using a minimum of ArcGIS Pro 2.9 and ArcGIS Enterprise 10.9.1 (Server, Portal, Data Store, and Web Adaptor). Therefore, Axim strongly recommends implementation on the official Utility Network Management Release (NMR) for the most stable and long-term support. Notably, NMR 2 was released in early 2023, requiring ArcGIS Enterprise 11.1 and ArcGIS Pro 3.1. Axim has recommended this foundation for the City.

Local Development Environments

Until the Testing phase, Axim will work primarily within our local server environment and file geodatabases (FGDB). The City of Corpus Christi will provide a complete export of the current water and wastewater geodatabases. This source data will be deployed to our servers for review, design, and migration activities. While the pilot implementation activities will focus on a subset of the data, Axim needs to be able to review the complete database schema and holistically test for and anticipate migration scenarios that may occur outside the designated pilot area.

The City of Corpus Christi will continue to edit and maintain its source data while Axim works against this static data version. This static dataset will be used until the final Implementation phase when the City will cease production editing activities and provide Axim with a complete, current export of the geodatabase. At specific points throughout, Axim may request a refreshed export of source data for more effective testing or configuration efforts. The intermediate data migration output and end-user products will be deployed to the City of Corpus Christi servers at appropriate times for the pilot, testing, and final implementation phases.

Database Design

Database design is facilitated through data modeling workshops, design documentation, database building, and final data mapping.

Data Modelling and Design Workshops

After completing the Data Readiness Assessment, the City began its data cleanup work. In parallel with that effort, the City is now ready to start designing its UN database schema. Axim will first map the City's existing source geodatabase features, attribute fields, and attribute values to the base UN asset package provided by Esri for the water domain. We assume this will be at Esri's official Network Management Release (NMR) available at the time of implementation. Presently, that is ArcGIS Enterprise 11.1, ArcGIS Pro 3.1, and version 6 of the UN.

In preparation for a Design Workshop, Axim will begin mapping the City water and wastewater data to the respective ArcGIS Utility Network data models through feature class and attribute crosswalks. Usually, this is performed through standardized spreadsheets, often used directly as the configuration for the extract, transform, and load (ETL) migration tools. These Data Mapping crosswalks map the source data to the new design at both the feature class and attribute levels, even so far as mapping specific domain values. Axim will prepare the draft mappings to facilitate the data modeling workshop discussions. These discussions will allow Axim and the City to focus on verifying the feature, attribute, and domain mappings while identifying items requiring extension from the base model. After the workshops, Axim will finalize these Data Mapping crosswalks and provide them for client review and approval. Axim will initially populate these spreadsheets according to our experience and then anticipates a good amount of discussion during this phase to revise in preparation for the migration. Before the workshop, Axim will also host a brief UN Overview meeting to provide City staff with introductory information, allowing additional City staff to get oriented to the ArcGIS Utility Network. This initial overview is essential to lay the groundwork for understanding some of the technical and business drivers of the UN framework that may influence later data design and mapping decisions.

Once the initial Data Mapping crosswalk spreadsheets are prepared, Axim proposes sending two of our staff members intimate with the data modeling process, contemporary data models, and, most importantly, the ArcGIS Utility Network framework to facilitate a 1½-day onsite Data Modeling and Design Workshop. Axim will coordinate with the City project management to identify and schedule the

participating stakeholders. Still, we assume that local access to calendars will allow City staff to take a lead role in the logistics. The agenda for the onsite workshop will be finalized collaboratively with the City and will be considerate of schedules and availability. Note that the water and wastewater systems will each have separate onsite workshops.

We expect to discuss data-related technical requirements surrounding the water and wastewater utility systems during the workshop, including business system dependencies. These discussions also include desired UN functionality, including business rules, tracing, and diagrams. Based on experience, we recognize that not all groups require equal time, and the agenda will be adjusted accordingly. After completing these initial requirement discussions, the remaining time will be spent on the database design requirements and detailed data mapping. The detailed data mapping is intended to identify and address places where the base Esri model must be extended for City use, including additional feature types, attributes, and domain values. Any openings in the schedule will be leveraged to conduct summary conversations or can be used to facilitate broader conversations on technology conventions and standards that span all units. After the workshop, Axim will prepare a brief Workshop Summary document to review the meeting agenda and key findings, allowing the City to confirm we adequately captured the most important points of the discussions.

Design Documentation

The steps following the delivery of the workshop results are interpreting and translating those observations into the data model. Some requirements that result from the discussions will not immediately impact the eventual data model but may require process considerations. As we review data and processes with many clients, the existing structure can readily accommodate some perceived data model limitations with a deviation in workflow or process. Likewise, standard operating procedures and database management practices often emerge during any discussion regarding data. These topics and their impact on the City will be noted in the design documentation, with a potential reference to remediation. Still, if the effect does not directly influence the data model, we will not elaborate extensively. Designing the specifics for business system integrations is not within this project's scope. Instead, general requirements to support those integrations will be noted while avoiding the specific technical implementation needs.

At this stage, Axim is ready to create a Database Design document detailing the proposed database schema resulting from the data modeling workshops. This documentation will primarily be an Excel spreadsheet detailing all features, attribute fields, attribute values, and domains. In addition, a supporting Word document narrative will explain key points and aid the spreadsheet's navigation. Axim will provide a review meeting to walk through the Database Design documentation. The City must thoroughly review the design and provide any comments to Axim within five working days. Upon conclusion of the review period, the City will provide Axim with a single source of consolidated feedback. Axim will track, review, and address the City's feedback as appropriate in Jira and prepare finalized versions of the Data Mapping Crosswalk spreadsheets and Database Design document. When revisions are complete, Axim will coordinate with the City to begin the database build and migration processes.

We have helped numerous utilities undertake similar implementations and ultimately approach the projects from a location technology and enterprise GIS perspective. As a result, we see our projects as partnerships with our clients rather than client-vendor contracts. Our domain expertise and understanding of best practices provide for strong collaborations when combined with our clients' expertise in their respective industries. This creates a strong relationship that has generated much of our success and has allowed us to retain a singular, company-wide focus on GIS. In addition, we will rely on

the City's expertise in other specialized areas, such as engineering principles, to articulate related underlying requirements, which we can help encapsulate within the data model.

Deliverables

- Initial Data Mapping Crosswalk spreadsheets
- UN Overview meeting
- Onsite Data Modelling and Design Workshop (1½-day, two Axim Solutions Engineers): water data, technical environment
- Onsite Data Modelling and Design Workshop (1½-day, two Axim Solutions Engineers): wastewater data, technical environment
- Workshop Summary documentation
- DRAFT Database Design documentation
- Client Review meeting
- FINAL Database Design documentation
- FINAL Data Mapping Crosswalk spreadsheets
- Client acceptance

Development Phase

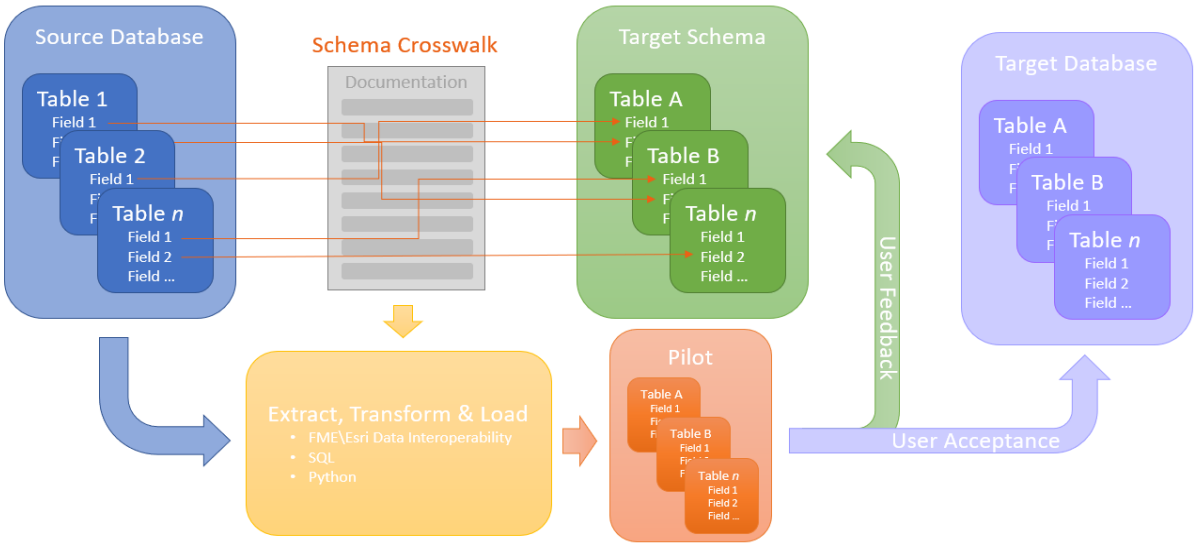
The Development phase is the initial implementation of the technical design. This phase consists primarily of data migration and pilot UN configuration for the water and wastewater systems, with opportunities for the City to review and approve the database builds. This work will be completed primarily through distributing file geodatabases and providing knowledge transfer to the City's core GIS users. The phase concludes with preparing the City's Enterprise development environment with SSP Sync and the ArcGIS Utility Network.

It is imperative the City plan for adequate time and focus during the client review periods of the Development phase. The schema design and configured UN functionality must be thoroughly tested and approved through iterative pilot implementations while the UN is still in an FGDB format. In this manner, the UN is tested, and users become accustomed to its use through a single-user ArcGIS Pro deployment. Here, design adjustments must be made and verified before deployment into an Enterprise environment during the Testing phase. In some sense, the UN configuration is tested and verified in a file geodatabase before the workflows and services are tested during the Enterprise deployment.

Data Migration

Data Migration consists primarily of the database mapping, database build, configuration of the SSP Sync extract, translate, and load (ETL) tool, and initial runs of the tool. The data migration process will result in the first of two intermediate migrations in file geodatabase format during the Development phase before a complete migration to Enterprise environments supporting the final Testing and Implementation phases.

Database Mapping and Build



The geodatabase design task is a relatively straightforward, if time-consuming, task. First, Axim will craft the foundational UN schema and modify or extend it as directed by the finalized Database Design and Data Mapping crosswalk documents.

Axim will modify Esri's base water and wastewater-domain asset package schemas to build a UN asset package specific to the City's design. This step allows us to adequately capture and address all data design elements determined through the preceding design activities. The schema changes are expected to include adding new asset groups, asset types, domain values, and custom attribute fields. In addition, initial UN network management and attribute rules are configured to aid migration. Changes to the UN schema are made in the separate asset package and then applied to the final UN geodatabase. This asset package, essentially a file geodatabase, is more portable and easier to work with than an Enterprise geodatabase.

Configuration of ETL Tools

Once the database design is built into the asset package, Axim will configure the SSP Sync migration tool in our environment to perform the data migration. This step marks the transition between planning efforts and realizing those plans. While other migration tools exist (e.g., Esri's Data Loading Tools and FME/ArcGIS Data Interoperability), Axim recommend in the Implementation Plan using SSP Sync to perform the data migration.

Axim will use a local copy of the City geodatabase as the source and the new asset package as the target, ensuring all feature class, attribute, and value mappings match those directed in the Data Mapping spreadsheets. The ETL configuration will also include creating the associations necessary for UN functionality, where appropriate. Axim will perform interim internal test migrations to confirm the proper functioning and configuration of the ETL tools before City review and approval.

When all database changes have been applied and ETL tools configured, Axim will export a draft Data Dictionary from the resulting database build for the City review and approval. Our team will also provide the SSP Sync Mapper File configuration as a finalized ETL Configuration documentation to serve as technical documentation and as an external reference for the City to verify the ETL configuration. Axim will host a client review meeting to orient City staff to the database build and documentation. The Data

Dictionary is essentially a text-based webpage representation of the data model. If necessary, the team may elaborate on the Data Dictionary in a supplementary narrative to clarify design elements and intentions as part of the technical documentation. The City will have five days to review the Data Dictionary and ETL Configuration documentation and provide a single source of consolidated feedback to Axim. We will then consider any changes and adjust our database mappings and ETL configuration as necessary. Migration of the actual source data into the target schema will continue in the subsequent steps.

Deliverables

- Built ArcGIS Utility Network asset package
- Local configuration of the SSP Sync data migration tool
- DRAFT Data Dictionary
- DRAFT Data Mapping documentation (SSP Sync Mapper file)
- Data Mapping documentation client review meeting
- Finalized Data Dictionary
- Finalized Data Mapping documentation (SSP Sync Mapper file)

Pilot Implementation

Initial Data Migration and Testing

Throughout the ETL configuration process, Axim will perform intermittent data migrations on our local servers to confirm the proper function of the ETL tool and make every effort to address any migration errors along the way.

For the Pilot Implementation, Axim will create a file geodatabase (FGDB) UN, localized to the City area, and apply the City service territory. This boundary is required to encompass all utility features while allowing potential growth expansion. We will then run SSP Sync to perform a data migration into the asset package of the full source database to identify a complete set of potential migration issues. We will review the output data to confirm feature counts match and that the asset groups, asset types, and attributes are populated correctly. After postprocessing the UN to enable network topology, Axim will prepare a Build Error Report summarizing those errors encountered during the migration and topology validation. Sometimes, these errors may require resolution in the source data, while others may reveal opportunities to modify UN connectivity rules. The City will be responsible for addressing errors resulting from source data issues. Axim will address those issues resulting from tool configuration or departures from the database design. Finally, we will test that associations, including any containers, have been created correctly via SSP Sync.

In preparation for testing and knowledge transfer, Axim will update the default Esri ArcGIS Pro templates to match the schema changes in the final database design. Axim will clean the migrated data within a small test area (e.g., a pressure zone) to remove any dirty areas and errors necessary to properly test the UN subnetwork and tracing functionality. This step is meant only within the context of configuring the behavior of the UN and not to clean any source data. Axim expects the City to continue to clean source data to improve migration results in future iterations. Axim will configure a single subnetwork and related subnetwork controllers before configuring a named trace configuration with an updated trace locations feature class. We will test for proper UN functionality within the cleaned area.

Knowledge Transfer and Client Review

Once Axim has completed our initial data migration and testing, we will prepare to deliver a functioning FGDB UN for City users. We will begin by providing the City's core GIS users with knowledge transfer on using and editing the UN. Knowledge transfer will explicitly focus on orienting City staff on the City's specific UN implementation. Training sessions are not intended to be all-encompassing and replace the need for formal Esri training. Instead, they are meant to supplement and build upon that formal training. Users are highly recommended to attend offerings on using ArcGIS Pro and the UN provided through the Esri Academy, particularly those within the Utility Network Fundamentals Learning Plan. This training is especially important for those key technical stakeholders who will aid in the database design and pilot testing phases.

As mentioned above, intentional testing of complete UN functionality early in the process while still in the file geodatabase is crucial for a successful implementation. Furthermore, knowledge transfer at this point provides an extended period for users to acclimate to the UN rather than waiting until near the project's end. Adopting the UN is essentially reimplementing the City's GIS system, and that process is more successful when staff is allowed a longer period to transition.

In up to 12 hours of remote workshops, Axim will introduce the UN's essential functions and configuration changes completed. This introduction will serve as the handoff for the City to test and approve the data migration and UN functional configuration. Axim will prepare a Test Plan outlining all functions the City should test and document as part of the acceptance process. Axim will also complete an initial technical Editing Best Practices documentation for editing tools and workflow. At the end of the workshops, we will provide the FGDB UN, ArcGIS Pro project templates, and Test Plan for City use in acceptance.

The FGDB UN is a fully functioning, single-user deployment easily distributed to users and requires only ArcGIS Pro licensing. No UN license is necessary within the file geodatabase for these reviews. The City will verify that all items in the database design were configured, the data was migrated as expected, and basic editing workflows, including attribute rules, subnetworks, and network tracing, all function as expected.

Again, the importance of these testing steps cannot be overstated. City staff will confirm that all source features were migrated into the proper UN asset type and that the attribution has completely migrated as expected. Additionally, basic editing workflows should be tested to ensure feature templates, configurations, and network management rules function as expected. While Axim will make every effort to review the data during our initial pilot testing processes, City staff are more familiar with the specific data and are in a better position to identify potential data migration errors. Beyond feature classes, confirming that each source attribute was migrated into the correct target attribute, including the translation of any domain values, will be essential. Data migration errors or UN functional configuration issues must be addressed before final data migration and deployment to the City environment. Once migrated into the UN, bulk calculations to update attributes are notably more delicate and time-consuming.

The purpose of the FGDB pilot implementation and knowledge transfer is for the City to confidently determine that the UN is fully configured and operational as designed before deployment into an Enterprise environment. The City should intentionally plan for ten business days to confirm proper data migration and test all UN functionality. Upon conclusion of the review period, the City will provide Axim with a single source of consolidated feedback documented in the Test Plan. Axim will track, review, and address the City's feedback as appropriate in Jira and prepare updates to the SSP Sync migration tool, the UN configuration, and the Database Design document.

After this testing period, Axim will make necessary adjustments, remigrate source data, and build the UN for a second file geodatabase. We will provide the updates to the City for another five business day testing period and acceptance.

Underscoring the importance of City testing and feedback, please note that Axim will not proceed to the Enterprise deployment without written acceptance of the deliverables within the Pilot Implementation.

Deliverables

- Full FGDB Pilot data migration with a cleaned test area
- Build Error Report
- ArcGIS Pro project template updates
- Pilot FGDB UN configuration test (complete source migration, cleaned test area, subnetwork configuration, named trace configuration)
- Editing Best Practices documentation
- Remote knowledge transfer sessions for core GIS staff/editors (up to 12 hours)
- Test Plan
- First City review (10-days)
- Revisions from Pilot client feedback (database, ETL, and UN configuration)
- Updated database schema
- Updated Database Design document
- Second City review (5-days)
- Written City approval of Database Design, data migration, and UN configuration

Client Enterprise Deployment

After acceptance of the Pilot Implementation deliverables, Axim will begin preparing for ArcGIS Enterprise deployment by staging the UN in our local Enterprise environment. The process continues with applying the asset package and postprocessing the UN to enable branch versioning and network topology. With a fully intact and staged Enterprise UN, Axim will publish test map services in our local Enterprise environment to test the deployment works before exporting to an FGDB for transfer to the City environment.

Axim will prepare the Deployment Plan documentation to direct the deployment of the UN within the City's environment. This document will include technical information such as server names and URL paths, administrative accounts, file locations, template filenames, and map service names. The Deployment Plan documentation is later converted into final technical configuration documentation at the end of Implementation.

During the client Enterprise deployment, Axim will support City IT in preparing the Enterprise geodatabase and deploying the exported database. City staff will provide the necessary development and production environments. Axim will be responsible for installing and configuring the SSP Sync software. Axim will be responsible for deploying and configuring the final ArcGIS Utility Network and SSP Sync within the architecture provided by City staff.

Axim will configure the UN editors, administrative users, roles, and groups. This configuration will be limited to the core power users necessary for acceptance testing. Once Portal is configured, Axim will update the UN configuration of attribute rules, subnetworks, and traces as required to reference sources within the City environment. As part of the final database setup, we will establish branch versioning for the core power users. Axim will update the City's ArcGIS Pro template for the new database paths, field

visibility settings, and feature editing templates. We will publish two map services for the UN – one for editing and another simple feature service used for general reference types of activities. An initial validation that the environment and UN are working will mark that the UN is nearly ready for final knowledge transfer to City staff and acceptance testing in an Enterprise environment. Finally, Axim will prepare a set of database administrative tasks in the form of a Python script to validate the network in the default version, recalculate subnetworks, and update database indexes.

Knowledge Transfer

At this point, additional knowledge transfer sessions are necessary to prepare City staff to adequately test the UN functionality and workflows within an Enterprise environment. In preparation, Axim will provide other documentation, including an updated Best Practices Workflow and Administrative documentation.

Here, Axim will provide up to two days total of remote knowledge transfer sessions for editors and administrative staff. We plan to provide up to four hours of knowledge transfer for end-users covering Enterprise editing workflows, QA/QC processes, reconciling and posting, and tracing. These sessions are scheduled at this point of the project to allow staff to test the complete UN in the Enterprise environment and, later, a rapid transition between the Testing Phase and the final Implementation Phase activities. After completing all initial data migration activities, users will become familiar with and test the system. This knowledge transfer will reduce downtime during the final data migration and enable users to fully transition to the new production system immediately when that data is loaded.

For the UN administrators, we plan to deliver up to twelve hours on managing the system, including publishing services, setting Portal user permissions, and database management. We assume administrators will have completed formal Esri's ArcGIS Enterprise training in addition to the ArcGIS Pro and ArcGIS UN training.

The City is ready to begin acceptance testing once knowledge transfer sessions for editors and administrators are complete.

Deliverables

- ArcGIS Enterprise preparation
- Deployment Plan documentation
- City database preparation
- Deploy and configure SSP Sync
- Configure core power users, roles, and groups in ArcGIS Portal
- Update attribute rules, subnetworks, and traces for the City environment
- Establish branch versioning
- Update ArcGIS Pro template for City environment
- Publish two map services (editing, simple feature service)
- Database administrative tasks
- Updated Best Practices Workflow documentation
- Administrative documentation
- Remote knowledge transfer for editors (up to 4 hours)
- Remote knowledge transfer for administrators (up to 12 hours)

Testing Phase

The Testing phase serves as the first full Enterprise implementation of the UN, including a complete data migration of all source data, deployment of all software to the City's development environment, user acceptance testing, and potentially server performance tuning.

Testing Guidelines

After completing the pilot data migration and knowledge transfer, Axim will provide the City with a second Test Plan document outlining all items that must be tested for the fully migrated database and the technical Enterprise environment. Axim will host a Client Testing Handoff meeting to discuss the testing guidelines and clearly identify what the City should be testing.

Testing and Issue Tracking

After a Client Testing Handoff meeting, City staff will perform implementation testing activities, supported by Axim, including the data migrations (any outstanding errors), technical environment (system performance, user permissions, Portal configuration, licensing), and UN functionality (connectivity and attribute rules, associations). Subnetworks and network tracing testing will also be limited to a small, cleaned area. Axim has reserved time to support testing and resolve issues in these areas. Until the UN is fully adopted in production, editing will continue in the present geometric network with incremental changes applied through SSP Sync. This workflow will also need to be tested.

Once the testing environment has been established, the City will perform system testing over ten consecutive business days and provide consolidated feedback in the Test Plan after each five business days. Axim and City will meet as needed to clarify comments or demonstrate potential issues. Staff will test database configurations, system functionality and performance, ArcGIS Pro core UN functionality, and SSP Sync incremental changes. Axim will track the City's consolidated feedback within our issue-tracking system (Jira), where each report will be evaluated. All issues will be reviewed, and those determined to be within the project's scope will be resolved as appropriate before the final implementation. Any issues determined to be out-of-scope may be considered part of a future enhancement or general GIS support tasking. Once all tracked items are resolved, Axim will consider the Testing Phase complete.

If any reported issues are determined to result from Esri product bugs or similar, Axim will notify Esri on behalf of the City during testing. Suppose resolution is unavailable until after project completion or requires an upgrade to the environment. In that case, the City will be responsible for deploying those independently and after the conclusion of this project.

Deliverables

- Test Plan document
- Client Testing Handoff meeting
- Client Testing Review meetings
- Testing support
- Feedback tracked in Jira issue tracking system
- Environment adjustments (ArcGIS Enterprise, ArcGIS Portal users/groups, services, SSP Sync)

Implementation Phase

After the Testing Phase is complete, the City will coordinate with Axim to perform the final Enterprise implementation tasks when ready. These include preparing the production environment, a data editing freeze, last data migration, production system testing, and final documentation. Additional general GIS consultation may follow here or be provided in other project phases.

Environment

As testing nears completion, the City staff will prepare the production environment to match the development environment. Axim may consult with the City to deploy and configure any necessary GIS architecture gaps, including ArcGIS Enterprise (Server, Portal, Data Store, and Web Adaptor). The official Esri Network Management Release for long-term support is ArcGIS Enterprise 11.1 and ArcGIS Pro 3.1. Axim has provided up to 12 hours for consultation and direct implementation support to establish the production environment to these specifications. Axim will be responsible for deploying and configuring the final ArcGIS Utility Network and SSP Sync within the architecture provided by City staff.

System integrations are expected to be the responsibility of City staff.

Final Data Migration

Following an opportunity to address any system performance tuning items resulting from the Testing Phase, the City will notify Axim of its readiness for the final Enterprise implementation process.

At this point, the City must ensure its licensing for SSP Sync is active for production use. This milestone will begin with the City declaring a freeze on the current production editing data and preparing a complete database backup. Upon receiving this backup, Axim is expected to complete a full database migration into the approved Utility Network database schema with SSP Sync and provide a backup to the City within seven calendar days. This database contains the City's latest complete production utility data migrated into the Utility Network schema. The City will deploy this backup to the production servers. Axim will provide final configuration items (attribute rules, Pro project, trace location feature class, database versioning) to reference the City's production environment and preliminary validation that the database migration was completed successfully and the environment is operational. Once declared operational, this environment will be considered the City's production Utility Network environment.

Production Go-Live

Immediately after the production environment is declared ready, a member of Axim's team will arrive onsite for two days of production Go-Live support. Axim will be on site to aid the City's transition to the production environment as they release SSP Sync and the ArcGIS Utility Network for general use. Our onsite team, supported by additional remote team members as may be necessary, will immediately address any issues noted by City staff. From the production environment declaration, the City will have ten business days to report any issues encountered with the final acceptance testing of the production environment. Axim will track, immediately review, and address those items determined to be defects in the implementation. Once all reported issues are resolved, Axim will consider the production environment fully implemented and ready for project acceptance.

Post-Implementation Support

After SSP Sync and the ArcGIS Utility Network are released for general production use, the City will transition existing applications to consume the new UN services. During this time, Axim has planned for up to 24 hours of post-implementation support within thirty (60) days of system release by Axim to

address minor configuration adjustments or provide supplemental knowledge transfer on the ArcGIS Utility Network.

Final Technical Documentation

With SSP Sync and the UN fully implemented, Axim will finalize the Data Dictionary, Best Practices Workflow, and Administrative documents to reflect the collective Development and Production environments.

Deliverables

- Assist preparation of Production environment (up to 12 hours)
- Prepare ArcGIS Utility Network in Production environment
- Prepare SSP Sync in Production environment
- Production environment validation
- City production database editing freeze
- Final complete database migration into ArcGIS Utility Network
- Production database deployment
- Onsite Go-Live support for release of SSP Sync and ArcGIS Utility Network
- Production issue tracking and resolution
- Up to 24 hours of post-implementation support (60 days)
- Final Data Dictionary
- Final Best Practices Workflow documentation
- Final Administrative documentation

Assumptions

- All work will be performed remotely unless otherwise stated.
- Project scope includes both water and wastewater systems. These shall have a single project kickoff before wastewater being implemented approximately 9-12 months after the water system. All other aspects of the technical scope are similar.
- The City has or will acquire adequate licensing for ArcGIS Enterprise, ArcGIS Utility Network, Microsoft SQL Server, and SSP Sync software.
- SSP Sync software will be used for the data migration. The City will need to acquire SSP Sync subscription licensing prior to final Enterprise implementation.
- Axim will implement the official Esri Network Management Release of the ArcGIS Utility Network available at the time of implementation, presently ArcGIS Enterprise 11.1 and ArcGIS Pro 3.1.
- Software versions related to the implementation of the UN (e.g., Esri, SQL Server) will remain static from the point of project kickoff through final acceptance unless mutually agreed upon.
- Axim assumes that the City will leverage SQL Server as the final relational database and that the City will establish and provide the SQL Server environment and database.
- The City will be responsible for administration of the SQL Server environment and database, including, but not limited to, access control and backups consistent with the City's preference or convention.
- The City stakeholders have suitable familiarity with business and functional requirements to provide input that can accurately shape the design of the geodatabase.

- The City GIS technical architecture for the Development and Production environments will meet or exceed the minimum technical specifications required for ArcGIS Enterprise and ArcGIS Utility Network before implementation.
- The City will be responsible for any data aggregation, cleanup, or reconciliation before providing input or reference data to Axim.
- While Axim will make every effort to review the data during our initial pilot testing processes, City staff will confirm that all source features were migrated into the proper UN asset type and that the attribution has completely migrated as expected.
- At the final transition point, the City will facilitate a data freeze to exclude editing for a mutually agreed-upon time window during which final migration will occur.
- The City will be responsible for communicating business system dependencies based on local knowledge. Dependencies not shared or known by the City will not be addressed as part of this scope.
- Design and development related to specific business system integrations are not within the proposed project scope. Instead, general requirements to support those integrations will be noted while avoiding the specific technical implementation needs.
- The City will address business system integrations after the production release of the UN.
- Axim is not responsible for resolving issues determined to result from Esri or other third-party solutions, product or platform-related defects, or similar.
- Training and knowledge transfer are meant to provide contextual knowledge on the Client environment rather than replace formal Esri training on ArcGIS Pro and the ArcGIS Utility Network.
- Post implementation support hours are planned for use within a 60-day period but can be extended with approval from Axim Program Manager.

Pricing

The following table summarizes the firm fixed price (invoiced monthly based on percent complete against the scope tasks) for the implementation of the ArcGIS Utility Network for water and wastewater, which includes a 5% discount of MSRP by leveraging the Texas DIR rate schedule*:*

Category	DIR Rates
MSRP for Labor Commercial Rate Schedule	$539,894.17
DIR Discount Applied to Axim Labor	(-$26,994.70)
Labor Subtotal	**$512,899.47**
Estimated Travel Expenses	$13,060
Axim Grand Total	**$525,959.47**

The following table also lists the Texas DIR rates for core labor categories, which may be applied to work outside of the designated scope proposed above:

Labor Category	Estimated Hours	DIR Rates	Labor Category Subtotal
Staff Geospatial Project Manager	422.5	$231.13	$97,652.43
Sr Technical Architect	363.5	$257.43	$93,575.81
Staff Solutions Engineer	1010.0	$213.88	$216,018.80
Staff Geospatial Analyst	328.0	$143.75	$47,150.00
Sr Solutions Engineer	113.5	$256.65	$29,129.78
Consultant Enterprise Architect	113.5	$258.79	$29,372.67
		Labor Subtotal:	**$512,899.47**
Travel Expenses	N/A	N/A	$13,060.00
		Expenses Subtotal:	**$13,060.00**
		Grand Total	**$525,959.47**

You may indicate your acceptance of the above proposal with a signature from authorized personnel at the City of Corpus Christi.

City of Corpus Christi, TX

Signature: _____

Name: _____

Title: _____

Date: _____

Signature: _____

Name: _____

Title: Corpus Christi City Assistant Attorney

Date: _____

Axim Geospatial
100 QBE Way, Suite 1225
Sun Prairie, WI 53590

Signature: _____

Name: _____

Title: _____

Date: _____

Quotation Terms and Conditions

This confidential quotation is valid for thirty (30) days unless otherwise stated and does not include shipping or tax unless otherwise stated. This quotation information is proprietary and may not be copied or released other than for the express purpose of system and service selection and purchase. The information shall be considered confidential, unless requested through a Public Information Act (PIA) Request per Tex. Gov't Code §552.001 et seq. However, Axim shall be given the opportunity to respond to the PIA request to protect the information as listed exceptions.

Standard Terms and Conditions

These standard terms and conditions ("Terms and Conditions") apply to any proposal, quotation and the resultant agreement relating to products and services sold by Axim Geospatial (herein after, "Axim") to a customer ("Customer"). These Terms and Conditions, together with the proposal, quotation and contract, including any statement of work, herein SOW, shall constitute the entire agreement ("Agreement") between the parties.

These Terms and Conditions are governed by the terms of the applicable License Agreement for any incorporated software ("License Agreement"). Capitalized terms used and not otherwise defined herein shall have the respective meaning set forth in the License Agreement.

1. GENERAL PROVISIONS.

This proposal including the SOW and all Terms and Conditions set forth herein, constitutes the entire agreement between Axim and Customer. The Terms and Conditions of the proposal shall govern and control the terms of any purchase order or purchase confirmation form from the Customer. Customer acknowledges that Axim has not authorized any of its sales agents or representatives to make any representations, warranties or agreements on behalf of, or to bind Axim in any way. This confidential proposal is valid for thirty (30) days and unless otherwise stated.

2. SCOPE OF SERVICES.

During the term of the Agreement, Axim shall furnish the services in accordance with the SOW set forth in the proposal.

3. WORK PERFORMANCE.

Axim agrees that all work performed hereunder shall be performed on a best effort basis by Axim's staff having an appropriate experience and skill level, and in compliance with the SOW.

4. TAXES.

Unless this Agreement specifies otherwise, the price included in the proposal does not include, and Customer is liable for and shall pay, all taxes, impositions, charges, and exactions imposed on or measured by this Agreement. Prices shall not include any taxes, impositions, charges, or exactions for which Customer has furnished a valid exemption certificate or evidence of exemption.

5. CHANGES.

No changes, modification, amendment shall be binding upon Axim unless otherwise agreed to in writing. Customer's authorized representative may in writing, direct changes within the general scope of the Agreement. If such change increases or decreases the cost or time required to perform this Agreement, Customer and Axim shall negotiate an equitable adjustment in the price and schedule to reflect the appropriate change. Axim shall adjust the proposal to reflect the change. Customer shall modify any purchase order or confirmation form and reissue to Axim accordingly.

6. INVOICE AND PAYMENT.

Customer shall pay Axim within thirty (30) days after receipt of invoice or as per the terms indicated in the proposal. Axim will bill Customer monthly for all travel expenses and labor costs based on percent complete against the scope tasks.

7. CANCELLATION.

Customer shall provide thirty (30) days written notice to Axim prior to canceling an order. Customer will compensate Axim for all authorized services satisfactorily performed through the cancellation date under the payment terms in section 6 of these Terms and Conditions.

8. ASSIGNMENT.

Neither party shall assign any of its rights or interest in this Agreement or subcontract all or substantially all of its performance of this Agreement without the other party's prior written consent.

9. WARRANTY.

Axim warrants that it will perform the services in good faith and in conformance with professional industry standards. All Axim employees, that work on the project, shall have the knowledge, education, training, skills and experience of the subject matter to which they will be performing services.

Axim warrants the completed application against bugs and defects for a period of 30 days after acceptance. Ongoing support, functional enhancements, or performance issues caused by a change in the customer's IT environment are not included in the warranty. Coverage for these items will require a separate agreement.

10. LIMITATION OF LIABILITY.

NOTWITHSTANDING ANY OTHER PROVISION HEREOF, AXIM SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR EXEMPLARY LOSS, DAMAGE, COST OR EXPENSE (INCLUDING, WITHOUT LIMITATION, LOST PROFITS AND OPPORTUNITY COSTS), EVEN IF THE CUSTOMER HAS BEEN ADVISED, OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES. AXIM'S AGGREGATE LIABILITY FOR DAMAGES ARISING OUT OF, RELATING TO OR IN ANY WAY CONNECTED WITH THE RELATIONSHIP OF THE PARTIES, THIS AGREEMENT, ITS NEGOTIATION OR TERMINATION, OR PURSUANT TO ANY SOW (WHETHER IN CONTRACT OR TORT) SHALL IN NO EVENT EXCEED THE AMOUNT OF FEES RECEIVED BY AXIM FROM CUSTOMER PURSUANT TO THE APPLICABLE SOW UNDER WHICH THE ALLEGED LIABILITY AROSE.

11. FORCE MAJEURE.

Neither party will be liable to the other for delays in performing any obligations under the Agreement due to circumstances beyond its reasonable control, including but not limited to revolts, insurrections, riots, wars, acts of enemies, national emergency, strikes, floods, earthquake, embargo, inability to secure materials or transportation, and acts of God, and other events beyond the reasonable control of the parties caused by nature or governmental authorities.

12. SEVERABILITY.

If any provision of the Agreement is found to be invalid, illegal or unenforceable, then, notwithstanding such invalidity, illegality or unenforceability, the Agreement and the remaining provisions shall continue in full force and effect. In this event the parties will agree upon a valid, binding and enforceable substitute provision which shall be as close as possible to the commercial interests of the invalid or unenforceable provision.

13. GENERAL SERVICES ADMINISTRATION SCHEDULE.

As indicated in the proposal, if applicable, this Agreement incorporates and shall be governed by the terms of a General Services Administration (GSA) Schedule entered by Axim and the U.S. Government. Axim's GSA Schedule number: GS-35F-682R.

14. GOVERNING LAW.

This Agreement and any disputes arising out of, or relating to, this Agreement shall be governed by the laws of the State of Texas without regard to the conflict of law rules thereof, provided that (i) contract provisions that have been incorporated directly from or by express reference to the Federal Acquisition Regulations ("FAR"), FAR supplements or GSA schedule terms, (ii) contract provisions that have been flowed down from a contract with the U.S. Government, and (iii) the Changes and Termination for Convenience articles, shall be construed and interpreted according to the federal common law of government contracts, as enunciated and applied by federal judicial bodies, boards of contract appeals, and quasi-judicial agencies of the federal government.

15. DISPUTE RESOLUTION.

Customer and Axim shall endeavor to resolve any controversy, claim or dispute arising out of or relating to the Agreement, or the performance or breach thereof, by negotiation. Any claim that is not resolved by negotiation within thirty (30) days of notification shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof. The hearing locale will be held in the AAA office closest to Axim corporate headquarters.

16. OTHER.

This Agreement shall be governed by and constructed in accordance with the laws of the State of Texas without regard to conflicts of laws provisions thereof.

Both Axim and Customer will comply with all laws applicable to the Agreement.

All notices given under the Agreement will be effective when received in writing. Notices to the Customer and Axim will be sent to the address provided in the proposal.

Changes to the Agreement must be in writing and must be signed by both parties.

17. COMPLETE AGREEMENT.

Customer acknowledges it has read the Agreement, understands it and agrees to be bound by its Terms and Conditions. This contract contains the entire agreement of the parties and supersedes any and all prior agreements, understandings and communications between Customer and Axim related to the subject matter of this contract. No amendment or modification of this contract shall bind either party unless it is in writing and is signed by Customer's authorized representative and an authorized representative of Axim.