



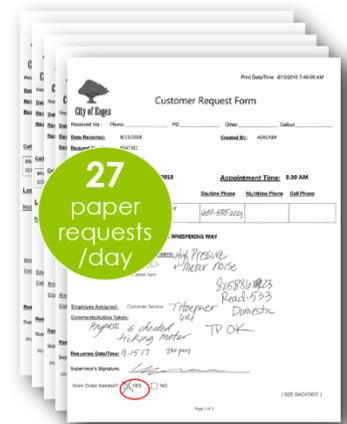
Mobile Workforce

Location based field-to-office Information Systems using GIS. How the City of Eagan uses GIS to improve workflows, communicate and inform the Public

The City of Eagan has collected locations and accompanying data about public infrastructure for over 20 years using Geographic Information Systems (GIS) technology. Recognizing the value of quality historical maintenance information, staff at the city have responded to the need by including all levels of staff in any data collection endeavors. Customizing and implementing ESRI's suite of field and office applications has proven to be an efficient, popular and cost-effective means in which to accomplish this. Our field to office data sequence has also inspired and supported many successful data-based programs and initiatives across City departments.

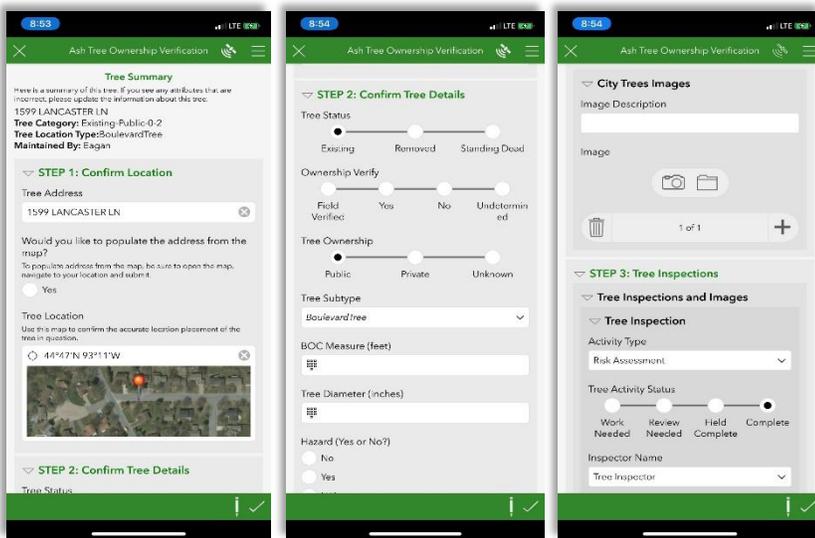
The Problem

Field based work was often kept on paper or was not documented at all. This made information difficult to find or not accessible to staff. The system was not efficient. Paper itself is a vulnerable medium and may be lost or damaged easily. Spilled drinks or inclement weather could wipe out multiple records at once. If multiple departments needed the same information, the data was often hand-written multiple times, which was a slow and imperfect process. Office staff and management couldn't find information or information would not be updated frequently. The process was not an ideal or effective way to use data for future planning for equipment, labor, materials or infrastructure revitalization and replacement.



The GIS Solution

The city already had a significant investment in GIS technology including data, software and staff. GIS is already addressing a variety of needs. Since most of the infrastructure/assets the city maintains already have a spatial location stored in GIS, it makes sense to have a mobile solution that is GIS-based. The city wanted a solution that was flexible enough to use for many unique workflows and a solution that could provide custom data based on the needs of the organization without a lot of coding. We were already using ESRI GIS. Over the past few years, ESRI tools have advanced to meet many of the city's requirements. Specifically, the mobile applications Collector for ArcGIS and Survey123 as well as the Operations Dashboard. The city used these applications and designed the forms with the input of field and office staff. Cyclical testing with end users was performed and improvements were implemented based on feedback and the requirements data collection task.

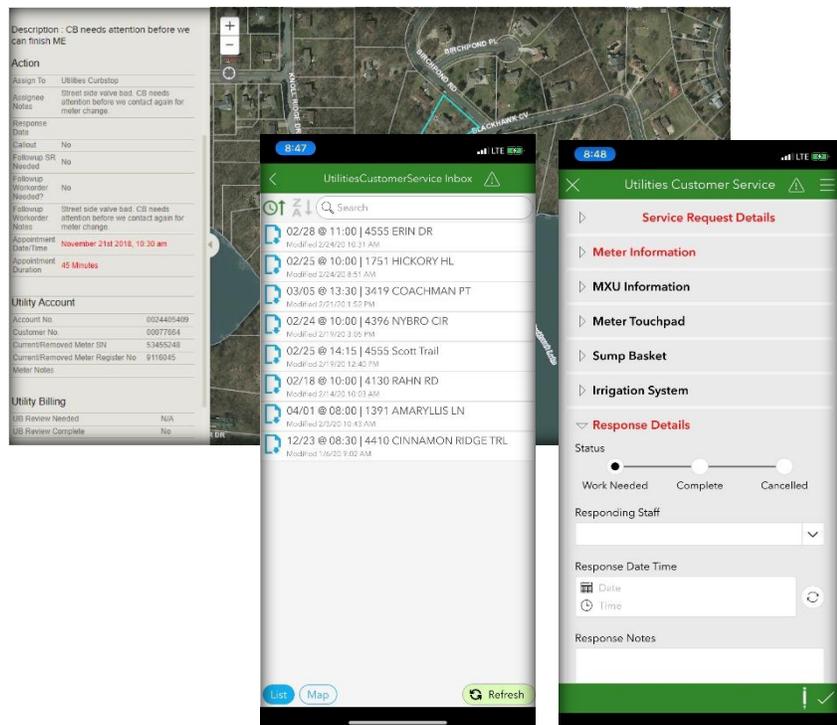


Ash Tree Ownership Verification

The Forestry Department must identify City-owned ash trees in preparation for removal in response to the Emerald Ash Borer infestation. Confirming ownership requires several verification metrics. As an alternative to doing these inspections on paper, GIS staff designed and deployed ESRI's Survey123 application. In two months, staff confirmed 1000 City-owned ash trees.

Customer Requests

Our Public Works Department manages all customer Requests in GIS. Utilizing ESRI's various customizable applications, we have been able to move all paper-based requests into location-based mobile applications. For example, our Meter Exchange Program dispatches 27 appointments per day into a field application. Since transitioning to this digital application, we have saved approximately 17 hours a month on data entry post-visit. Additionally, supervisors can assign and track work for different crews in real-time both in the field or in the office for increased efficiency.





GPS Data Collection

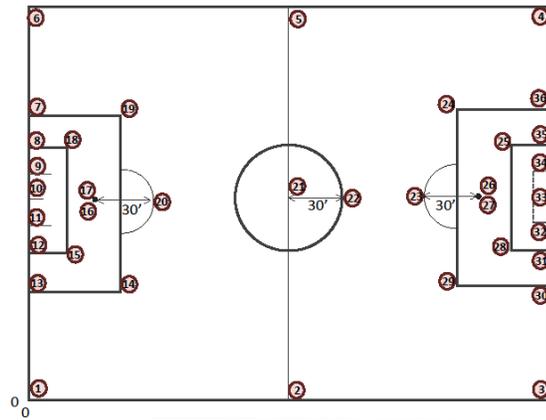
Collection and post-processing is now faster with the EOS Arrow 200 survey-grade receiver and ESRI's Collector for ArcGIS on an iPhone. Field technicians can now collect GPS positions directly into GIS, increasing the speed of data availability across mapping platforms and accuracy of the data collected.

The EOS units are more affordable than traditional mapping grade GPS units allowing for greater distribution among city staff. Technicians can get elevation information immediately from a site across town. Utilities staff can see the newest infrastructure as soon as it is installed and surveyed. Ownership questions are easier to answer based on exact location and current construction agreements.

Athletic Field Striping

Athletic Field Striping is a skilled task provided by Parks Maintenance Staff. With 31 different layout configurations between Soccer, Football, Lacrosse, and Rugby fields of different dimensions, a process has evolved and improved to include the use of survey grade GPS equipment to effectively save time and improve accuracy of striping in the field.

Past practice required 2 crew members and paper maps with various field dimension information. Today staff use GIS/GPS to stripe all fields with 1 crew member in half the time.



Cost and Time Savings

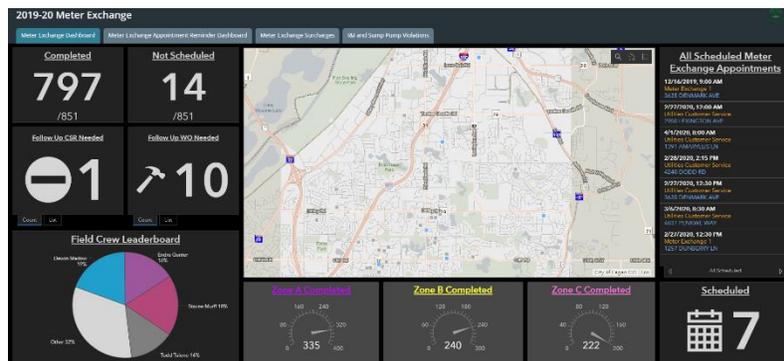
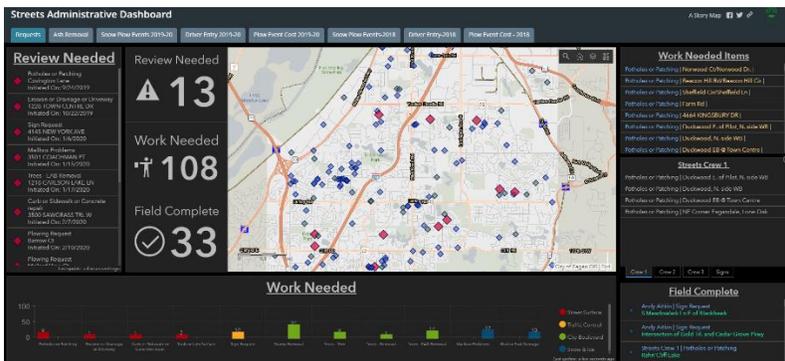
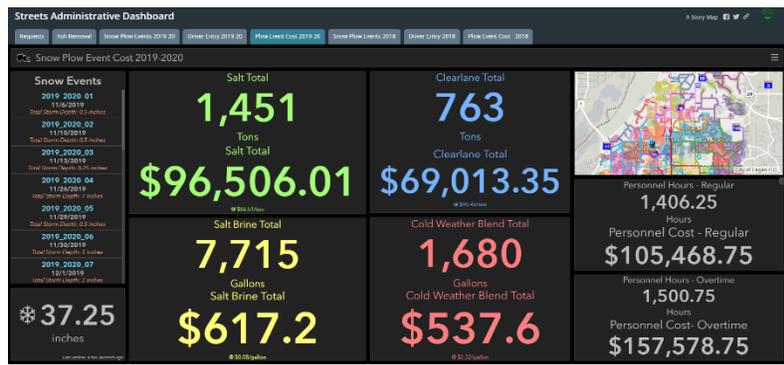
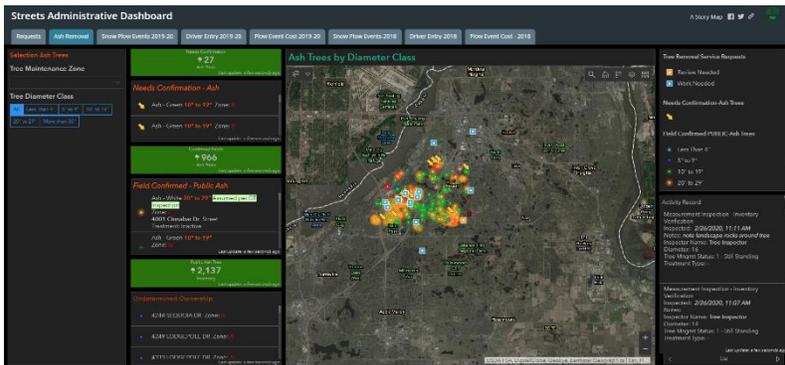
<p>Customer Requests</p> <p>Eliminating 520+ Paper requests per month</p> <p>Eliminates ~17 hours of data entry per month</p>	<p>Tree Ownership Verification</p> <p>Eliminating 500+ Paper inspections per month</p> <p>Eliminates ~20 hours of data entry for staff</p>	<p>GPS Data Collection</p> <p>3 = 1</p> <p>EOS GPS Units Cost = Traditional GPS Unit Cost</p>	<p>Athletic Field Striping</p> <p>Total Field Time per year</p> <p>BEFORE GPS 82 hours</p> <p>AFTER GPS 27 hours</p>
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The Field Outcome

The employees using the applications and/or the data collected were involved in the design process from the beginning. This helped make the adoption of the technology a smooth transition. Employees no longer take stacks of paper into or out of the office, just a smart phone or tablet computer. Utilizing data collection tools like drop down menus, required field entry, voice to text input, bar code scanners and photos of parts has helped improve the quality of the data collected. The system is easy to use and promotes better documentation in the form of notes, step-by-step inspections and photos attached to the assets. The applications are task-based so staff see only what they need to see. End users can request changes or additions to the forms, and typically the application can accommodate changes. Overall, the data collection workflow is much more efficient and is a time savings for staff.

The Office Outcome & Planning the Future

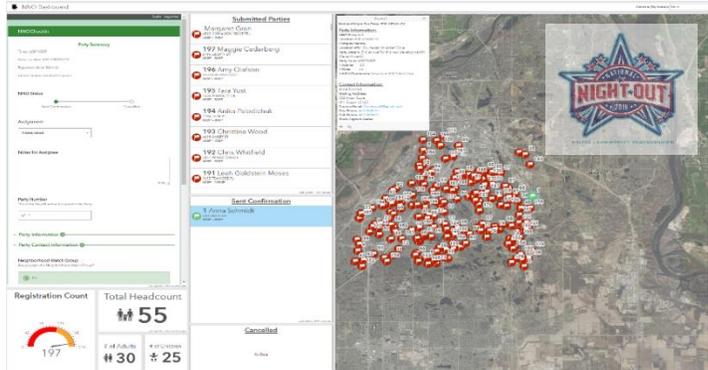
Back at the office, field data collection is immediately available to office staff. Call-takers are more informed when answering questions from the public and internal staff. Managers and planners use data that is fresh to assist in decision making and communicating with City Council and the public. Field staff can also access data they have collected or that is collected by others as needed either in the field or in the office. Access to data is flexible and available as a traditional paper report, an Excel spreadsheet, a customized dashboard, as a paper or interactive map, or utilizing GIS tools. The success of the system has inspired ideas and requests for more GIS based applications using Collector for ArcGIS, Survey123 and the Operations Dashboard.



Citizen Tools

Staff's creative use of ESRI tools has led to additional benefits for the City and its citizens for multiple purposes in all departments, including the following two examples.

The desired replacement of an existing Customer Relationship Management (CRM) system was made easy and cost effective by staff's use of ESRI's Survey123 on the City's website. This enhances the ease of use for customers and streamlines tracking tasks for staff.



The screenshot shows a web form titled 'City of Eagan Customer Requests'. It includes a 'Contact Preference' section with radio buttons for 'Phone', 'Email', 'Phone or Email', and 'No Follow up needed'. Below are input fields for 'First Name' and 'Last Name or Business Name'. There is a 'Request, Question or Comment' section with a 'Request Type' dropdown and a text area for the request. At the bottom, there is an 'Additional Location Description' field.

The City coordinates more than 200 neighborhood parties on one night, National Night Out. GIS-based party registration improves the flexibility of hosting parties for residents and simplifies scheduling the visiting police officers.

Recognition

Most recently, the GIS team at Eagan was recognized for their efforts with several awards. Tami Maddio, the City's GIS Coordinator, was among the first GIS team members, and she received a statewide award based on her strong leadership, awarded the [MN GIS/LIS Polaris Leadership Award](#). This was awarded based on her strategies on innovation, implementation of GIS, and willingness to share insights with others. Additionally, the Eagan GIS team was recognized by ESRI, a leading international GIS software company, with a [Special Achievement in GIS Award](#) (SAG) for their work on using GIS for automating workflows in public works that resulted in cost savings, higher customer satisfaction, and smart community initiatives.



Special Achievement in GIS
2020 Award Winner

Summary

The City of Eagan has implemented new technologies for more advanced, efficient, and effective services by City Staff. These efforts have resulted in new methods for easy access to government information for residents. The City has utilized the power of GIS for over two decades. Increasing the data collection and analytical capabilities through mobile applications is satisfying one of the City's more challenging goals of launching a mobile workforce. The enhanced data has provided mobile access to infrastructure information in a way that is easy to understand and use for all employees. These advancements in the City's GIS technology has empowered a much fuller utilization of the data collected over the past twenty years and enabled a significant increase in the type of data collected. These changes are further enhancing the asset management capabilities of the City and ensuring the ability to increase the service level, while decreasing the cost.



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To whom it may concern:

I strongly recommend the City of Eagan for Technology Innovation Award for the American Public Works Association (APWA). The City of Eagan has been a leader in the creation and administration of numerous GIS applications that have benefited the departments at the City and its constituents- from easy-to-use mobile applications for field workers to dashboards and GIS applications for managers. The City of Eagan has been acknowledged by not only its GIS peers in Dakota County, but also the entire Twin Cities metropolitan area. These applications have gained wide acceptance from staff and management for streamlining workflows and processes and have paid dividends in efficiencies for the workforce. They also have developed asset data creation and maintenance processes that ensure the quality of information collected while also supplying the tools for analyzing the information.

Specifically, The City of Eagan GIS team are leaders in the embracing of mobile application development for staff to report immediately on conditions of assets in real-time facilitating immediate situation awareness. Forms, surveys, interactive data collection, and dynamic maps are now integrated with the use of GIS. The GIS team at Eagan is driven and innovative and can translate a business problem into a technology solution. They have also developed interactive applications that allow the citizens of Eagan easy access to snow plowing information, street maintenance activities, community activities and others.

In summary, I believe that a Technology Innovation Award from APWA is highly deserved. I have been working with the staff at the City of Eagan for several years and can attest to their dedication and ethic in continuing to improve the quality-of-life for the citizens of Eagan through re-imagined business processes that are streamlined, cost-effective, and innovative.

Cordially,

Dan Falbo- Esri



February 26, 2021

To Whom It May Concern:

It is my pleasure to strongly recommend Eagan's GIS team for the APWA Technical Innovation award.

The Eagan GIS team leads the organization with their creative and innovative problem-solving skills. I have witnessed their ingenuity most recently as they recreated our online citizen request tool. We previously were paid subscribers of a system referred to as GovQA, allocating nearly \$15,000 per year to the program. Gov QA was a portal for residents to share feedback, ask questions, and request services. In short, it was similar to a 311 program or a See Click Fix model. Over the past several years, the program had become increasingly obsolete and less user-friendly for both residents and the employees who manage the back end of the system.

As the City concluded that GovQA needed to be replaced, we immediately started looking at replacement vendors. Through that exploration and thanks to the GIS team advocating for itself, we realized that we had the internal expertise to create our own online tool for residents. Over several months, using tools such as Survey 1-2-3, the GIS team created a new online citizen support program. Not only has the program proven to be more user-friendly for residents, it also integrates with our internal work order systems, saving significant time for our staff responding to the inquiries. The new system includes a dashboard where leaders can view the commonly asked questions and requests from our community so we can allocate service delivery accordingly. Lastly, the City has realized an annual cost savings of \$15,000 by utilizing the phenomenal skill set of our GIS staff members and our existing software programs.

The replacement of GovQA is one of many examples of our GIS team leading the industry with their ability to connect GIS services to meet operational needs of the City. Thank you for considering the City of Eagan's GIS team for such a prestigious honor. The award would be a tangible way to honor and recognize this team's daily contributions to the City. Please feel free to contact me directly at (651) 675-5014 with any follow up questions.

Sincerely,

Dianne Miller
Assistant City Administrator



February 26, 2020

Dear Award Committee:

I am writing this letter of commendation on behalf of the City of Eagan's GIS team and some of the highly innovative work they have performed for Parks and Recreation.

First, field maintenance for athletic field management, across a large city including multiple youth and adult sports organizations with thousands of members, becomes a high maintenance, high cost task and never seems to be done on time and to user's expectations. With the help of our GIS team, using available equipment, athletic field striping was taken to a whole new level of innovation, accuracy and efficiency. We now get comments every season about how great our field maintenance and striping is, and the best part is that we know we are doing it with less staff power and equipment than before.

Emerald Ash Borer are quickly changing the landscape of our urban canopy and others across the United States. As we enter into a strategized seven-year emergency management plan to remove all city owned Ash Trees throughout the city, our GIS team members have made this daunting task much easier with their assistance and mapping technologies. Now staff can easily verify tree locations much more effectively than before using this GIS coordinated help, which ultimately allows our forestry team to focus more on the external customer service side of this plan.

I hope you strongly consider this team for the award being evaluated. They are always looking at the next new, creative way to problem solve with this effective, and efficient mechanism.

Please don't hesitate to reach out for any additional details.

Sincerely,

Andrew Pimental, Director of Parks and Recreation
651-675-5506

Testimonials from City of Eagan Staff

“The City of Eagan has a long history of participating in National Night Out, a nationwide celebration highlighting Police-Community partnerships. National Night Out enhances the relationship between neighbors and law enforcement while bringing back a true sense of community. It provides a great opportunity to bring police and neighbors together under positive circumstances. The Eagan Police Department has hosted an annual celebration since the late 1990’s where approximately 20 Eagan neighborhoods participated. In 2019, the Eagan Police Department registered 214 Eagan neighborhoods to celebrate National Night (and had to close registration as we had reached our maximum capacity to visit neighborhoods.)

Over the years, as National Night Out grew in popularity, our way to manage and support our neighborhood celebrations changed. For many years, the Eagan Police Department took handwritten paper registrations, often requiring people to physically come to the Police Department and print off brochures to register their neighborhood and request visits from City of Eagan staff. This system of registration worked in our earliest years but required a change as technology developed and National Night grew in size. We eventually move to an online form that people could fill out and submit from the comforts of their home or work. These registrations were housed in the backend of our website and only accessible to a few people in the City of Eagan. They needed to be manually downloaded by a person and then exported to a workable spreadsheet. The spreadsheet had to then be reconfigured into a working form, which was time and labor intensive as it needed to be done on a daily basis. Once registration was closed, we then had to manually map all party locations for residents to view and to make sure Police visits were scheduled for all party locations. While this system was step in the right direction, it still didn’t fit our true needs, and required a significant amount of staff attention.

In 2019, our GIS specialists Tami Maddio and Leah Sperduto brought us to the next level. They created an online form and database that was simple to access for residents and updated in real time onto a map on our web site. For the Police Department, the database was easily searchable by name and location (to make updates and changes to party information: time, locations etc..) and accessible from any computer with internet access. I had the ability to answer questions, change start and end times, and relocate party locations from any computer, at any time. This new platform no longer required multiple daily downloads and form reconfiguring, saving me an enormous amount of time. Once residents registered their neighborhoods, their party information was immediately placed on the map, and new residents could find their neighborhood gathering spots. This new format has changed the way we operate and had streamlined National Night Out registration for residents and staff alike. This new database has made our National Night Out celebration more inclusive to all that call Eagan home. I was blown away at how efficient this new platform made coordinating National Night Out and how simple the program made it for residents to navigate and plan their own neighborhood celebrations. This was an incredible project that has significantly benefited Eagan residents and police department staff. We are so grateful for the time, energy, and guidance Tami and Leah put into this project!”

– Jill Ondrey – City of Eagan, Crime Prevention Specialist

“I want to share a couple of quick thoughts about how the City of Eagan Forestry Department capitalizes on GIS and the Eagan GIS team.

The Forestry Department uses GIS extensively to geo-locate and analyze current tree inventories. The use of GIS allows us to manage our tree assets more effectively and to administer tree disease control programs.

The GIS Team does an excellent job of capturing data through thoughtfully created user applications and then parsing the complex data into easily understandable graphical displays or dashboards. The GIS team excels in making complex data understandable. Having GIS technologies and a capable team is an excellent asset to the city!”

– Adam Schnaible – City of Eagan, Forestry Supervisor

“We use MapIt and the customized GIS web applications nearly daily. It is a very user-friendly tool that helps us get information we need in a timely manner. We also find it to be a great way to communicate between the GIS team, Utilities, and Finance – it gives us one central place to get and pass along necessary information.”

– Jen Boelter & Denice Muccio Grout – City of Eagan, Utility Billing Specialists



February 26, 2021

Dear Committee Members(s),

Please accept this letter as my strong recommendation of the City of Eagan's GIS Mobile Workforce endeavor for the American Public Works Association's Professional Award - Technology Innovation.

Through the guidance of its team leaders, Tami Maddio and Leah Sperduto, the City of Eagan's GIS technologies have consistently provided positive results for the Public Works Department and have created efficient, cost effective delivery services to the public and other city departments. Through more recent efforts, the City of Eagan has implemented new technologies for more advanced, efficient and effective services for city staff. In addition, the City has excelled with utilizing GIS as a system of engagement for providing access to community information for residents and those visiting the City.

Eagan's utilization of GIS is also a core tenant of how Eagan embraces Smart Community characteristics. The City uses its GIS and related systems to enforce data-driven decision making, provide real-time awareness, collaboration across departments and engagement with the community.

One prime example of how the City uses GIS for engagement is for National Night Out, a nationwide celebration highlighting Police-Community partnerships. The Eagan Police Department has coordinated this event for almost 20 years, recently with more than 200 neighborhoods. In 2019, a maximum capacity appeared to have been reached. Thanks to GIS technology, an online, real-time data base for mapping parties was created. As well as eliminating the inefficient paper registration, it provided easy access for residents to make changes to time, location, etc. This new format has changed the Police operations and streamlined National Night Out. Eagan residents and the police department staff can now navigate and plan through a simple program thanks to Leah and Tami and a wonderful GIS technology system.

The City has also developed additional new civic engagement tools for the citizens to easily access snow plowing information, street maintenance actions and community activities. The community is embracing the GIS technologies and GIS staff are eager to continue to create new applications for their benefit.

For city staff, mobile GIS applications have been developed to report on the condition of assets in real-time, facilitating immediate situation awareness. Staff have implemented GIS to streamline workflows and processes that have allowed the City the ability to provide better service to its residents. After creating a specialized GIS application based on the Utility Workers' needs, all paperwork was eliminated for the associated task, completely removing the likelihood of human error or loss of collected data. The City of Eagan's GIS systems has proven to be a cost effective and sustainable success.

Another staff example involves Eagan's Forestry Division's extensive use of GIS to geo-locate and analyze current tree inventories. The use of GIS eliminated paperwork and allows forestry staff to manage tree assets more effectively and to better administer tree disease control programs.

The City of Eagan has successfully implemented and sustained a GIS Mobile Workforce with the guidance of Tami and Leah and their GIS staff. This has created provided positive impacts for both public and private customers resulting in exceptional delivery of public works services that has improved the quality of life for Eagan. The GIS applications have proven to be cost effective and have showcased the City's investment in technology. It is with great pleasure that I submit this letter of recommendation for the nomination of the City of Eagan's GIS Mobile Workforce for the APWA 2021 Professional Award, Technology Innovation category.

Sincerely,

WSB

A handwritten signature in black ink, appearing to read "Justin Hansen". The signature is fluid and cursive, with a large initial "J" and "H".

Justin Hansen
Director of GIS Services