

# BAYCOUNTY, FLORIDA





# BAY COUNTY GEOGRAPHIC INFORMATION SYSTEMS

Bay County's Geographic Information Systems (GIS) program enables all staff and the community with a wealth of highly accurate geographic data. Hundreds of map layers combine with descriptive data to allow GIS users to analyze, map, plan, interpret, protect, enhance, and manage their world. GIS is an integrative technology used by local governments that allows staff and the public to visualize data from disparate data sources in a way that is readily understandable.

The Bay County GIS program began in the 1990s and has facilitated the creation of more than 300 data layers, enabling staff and the public with intuitive mapping applications, and serves as a primary decision-making platform of the county.

"GIS has become  
the primary data  
dissemination  
platform in local  
governments nation-  
wide."

"More than 90  
percent of the data  
maintained by  
county governments  
has a geographic  
component ripe for  
mapping and analysis"

# TABLE OF CONTENTS

|                                                          |       |
|----------------------------------------------------------|-------|
| Intro .....                                              | 6     |
| What is GIS? .....                                       | 7     |
| History of GIS at Bay County .....                       | 8     |
| Master Plan Methodology .....                            | 9     |
| Success Stories .....                                    | 10-23 |
| Departmental Geospatial Needs Summary .....              | 24-31 |
| Voice of the Customer Survey .....                       | 32-35 |
| Benchmarking and Key Performance Indicators (KPIs) ..... | 36-43 |
| Enterprise-Wide Goals and Objectives .....               | 44-49 |
| Conclusion .....                                         | 51    |









"If you don't know  
where you are  
going any path will  
take you there."  
- Lewis Carroll



"A failure to plan is  
a plan to fail."  
- Benjamin Franklin

# GIS

**SKILLS** **DATA**  
*information*

**GEO**  
**ANALYSIS**  
*knowledge*

**REGIONAL support**  
*FIELD projects*

**emerging**

**ENVIRONMENTAL**

**APPLY**

**INDUSTRIES**  
**STATISTICAL** *MAPS*  
**INTRODUCTION**

## Intro

A Geographic Information System (GIS) allows Bay County staff and residents to visualize, question, analyze, and interpret data to understand relationships, patterns, and trends contained within location-based information. GIS has become a primary information management tool for Bay County and local governments worldwide. Bay County has been using GIS technology since the late 1990s. Over time, the GIS has matured from a sporadic project-based effort into a pervasive tool used by county staff, other public agencies in Bay County, and the public. The county investment in GIS has been substantial over the past few decades and, as such, the **GIS should be viewed as an enterprise-wide asset**. Hundreds of very accurate and comprehensive data layers have been developed representing the location-based information needs of the organization.

GIS is a collaborative platform that supports the collection, sharing, and exchange of location-based information. As such, **GIS underpins** much of the collective organizational effort devoted towards the strategic priorities identified in the **Bay County 2018-2022 Strategic Plan**, including ensuring a safe county, delivering effective services, management and stewardship of natural resources, informing the public, and supporting economic development. The Strategic Plan recognized the need for the development of a GIS Master Plan (GIS Task 2.1.1). This Master Plan fulfills that directive and establishes a game plan to ensure that the GIS needs of the county are met and sustained.

More than 90 percent of local government services and activities have a geographic location (address or property). Therefore, **GIS is the platform that should be used by county staff to visualize their data**. The usage of GIS technology is now widespread across the organization, and it has transformed into a core information technology at the county for many departments. This underscores the importance that the GIS program should be well planned and well managed. To that end, the county has developed this GIS Master Plan to guide the further implementation of GIS technology and to ensure that the continued investment in GIS service delivery is most effectively managed.





- GIS
- Analysis
- Mapping
- Visualization
- Public Awareness
- Public Input
- Economic Development
- Infrastructure Management
- Property Mapping
- Etc.

## WHAT IS GIS?

A Geographic Information System (GIS) allows a local government to visualize, question, analyze, and interpret data to understand relationships, patterns, and trends contained within location-based information. GIS is an information platform comprised of data, software, and hardware that has become a primary information tool for counties nationwide.

Some people erroneously see GIS as just digital maps – the conversion of paper maps to a digital form. GIS is much more than that. GIS allows users to analyze their world geographically (spatially). Spatial analysis is how we understand our world – mapping where things are, how they relate, what it all means, and what actions to take. From the computational analysis of geographic patterns to finding optimum routes, identifying areas for economic development, site selection, and advanced predictive modeling, spatial analysis is at the very heart of geographic information system (GIS) technology.

GIS takes massive amounts of data and puts them into a context that is readily understandable and actionable. GIS enables residents to quickly and easily understand property-related issues, infrastructure work in their area, prepare and recover from natural disasters, visualize all of the services in their area, and to find the information they need that affects their life.

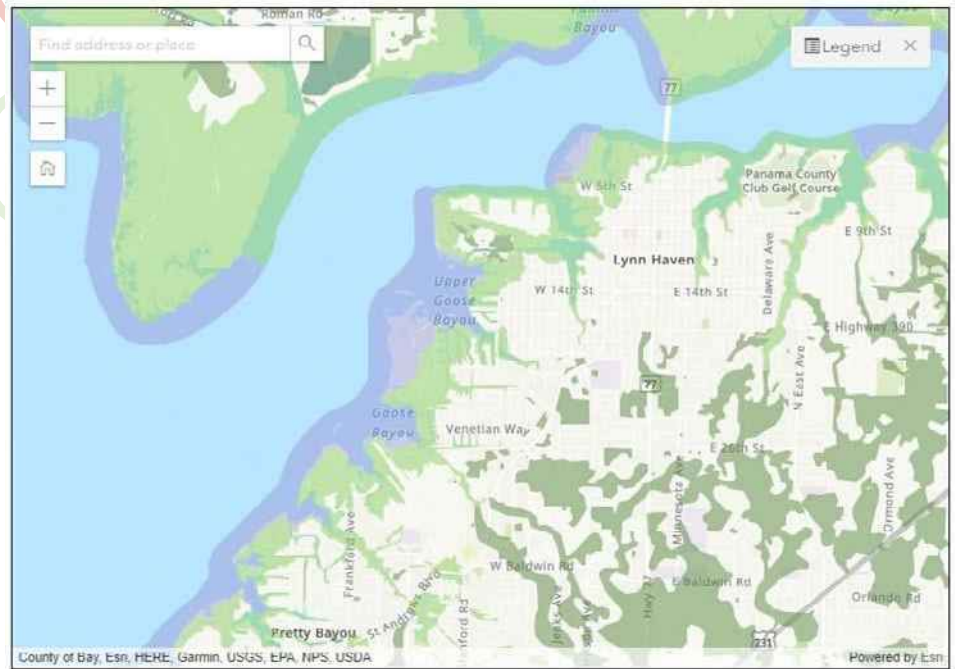
**Enables staff and residents to visualize, interpret, and make decisions about their world.**

**The primary data visualization platform for local governments.**

Bay County GIS staff maintains core GIS services such as base-layer maintenance, GIS application hosting, system administration, data management, imagery acquisition, and user training. Geospatial support services – including customer assistance, mapping, spatial analysis, data integration, application development, and project management – are provided to the public, county departments, municipalities, and other agencies. GIS is focused on application development and deployment of content specific web-mapping solutions for use by internal departments, municipalities, and the public.

More than 300 data layers, GIS-enabled data from IT systems, and a variety of targeted applications enable all county staff and the public.

### FEMA Flood Zones



## HISTORY OF GIS AT BAY COUNTY

Bay County began forming its Geographic Information System (GIS) during the late 1990s. In the summer of 1999, a consultant completed an initial county-wide GIS parcel layer. Once the parcel layer was completed, the county moved on to the development of other layers, including those for disaster planning/emergency management, public safety dispatching, infrastructure, and utilities.

The county then partnered with the municipalities in May 1999, forming an inter-local agreement first with the largest city, Panama City. Between 2001 – 2003, the east-side cities of Callaway, Springfield and Parker joined the effort. In 2004, the cities of Lynn Haven and Panama City Beach were added.

Today GIS is considered a critical asset and is widely used throughout the county and the cities. GIS staff are now responsible for managing and/or maintaining more than 300 data layers. Data is centralized and is available through both traditional GIS software and web-based applications developed by GIS staff based on the Esri software platform. These applications have improved the accessibility, timeliness, and availability of information to both staff and the public.





"A GIS program cannot be run haphazardly. Following best practices and a playbook is key to success."

# MASTER PLAN METHODOLOGY

Multiple data-gathering techniques and assessment methodologies were used to identify Bay County current successes and future needs. Key methodologies included:

- **Six Pillars of Sustainability** – used to evaluate Bay County in regards to gaps and organize action items. The Pillars of GIS Sustainability are as follows:
  - **GIS Governance** – how is GIS managed and maintained
  - **Data and Databases** – key data elements that feed the GIS
  - **Procedures, Workflows, and Integration** – how is the GIS being integrated with other systems and within the workflows of the organization
  - **GIS Software** – the appropriate software for various types of users and needs
  - **Computing Infrastructure** – the appropriate hardware, network, and field tools
  - **Training, Education, and Knowledge Transfer** – ensuring that GIS is understood and that the organization has pervasive knowledge of the power of GIS and how to use it
- **Voice of the Customer (Online Questionnaire)** – questionnaire to solicit the feedback of GIS users in regards to what works, what needs improvements, and unmet needs.
- **GIS Benchmarking** – analysis of Bay County's GIS program as compared to comparable organizations nation-wide.
- **Kickoff Meeting and Seminar** – discussion about the what, how, and why of the Master Plan.
- **Key Performance Indicators** – enabling Bay County with a set of KPIs to track success now and in the future based on the Six Pillars of Sustainability.
- **Departmental Interviews** – on-site interview with key users to determine an optimal move forward strategy and discussion of possible future uses of GIS.



"Don't confuse activity with accomplishment. Have a plan for success."

"Success not recognized nor celebrated is an opportunity wasted."

# BAY COUNTY GIS SUCCESS STORIES

What constitutes a successful GIS? This question has been a topic of debate for decades. Some people argue that success is a robust database of GIS layers. Others contend success is the implementation of software and hardware that enables users to use GIS. However, the ultimate success of a county-wide GIS program is how the GIS is being successfully used to impact the organization and the lives of residents. Quantifying and articulating return on investment is very important for an organization. A GIS program might have very successful projects, but without visibility to these successes the GIS might be under appreciated. Therefore, one of the key responsibilities of the GIS leaders in an organization is documenting successes and giving visibility to these organization wide. One of the recommendations of this Master Plan is to document successes annually and offer them as a white-paper and presentation to the organization. This visibility will ensure, a) that staff thinks in terms of success (and documenting them) and b) that support remains strong throughout the organization because successes are understood. Additionally, quantification of the success stories is recommended. The return-on-investment (ROI) graphic below identifies categories for consideration when documenting ROI. The next few pages document a few of the many successes of the Bay County GIS program.



**31**  
**TOTAL PARKS**



**CREATED FOR  
CITIZENS  
TO LOCATE PARKS  
BY TYPE.**

**46**  
**BEACH ACCESS  
POINTS**

**10**  
**SMALL CRAFT  
LAUNCHES**

## INFORMING THE PUBLIC ABOUT BAY COUNTY'S PARK SYSTEM

**WHY:** One of the failings of local government is enabling and informing the public about their world. Bay County has extensive parks and recreation opportunities. However, many residents and visitors do not have an adequate way to understand the location of opportunities available to them. Traditional web sites with PDFs of park locations are insufficient. GIS is a perfect way to inform the public about the wealth of recreational activities and parks.

**WHAT:** A public facing web-based application allowing the citizens to search for parks by type, providing location photos, and other basic information about any selected park or facility identified.

**HOW:** The GIS Division, working in coordination with the Bay County Parks and Recreation, designed and developed a public-facing, web-based application utilizing ArcGIS Online. The result is an intuitive application that is available on any computing platform (PCs and smart devices).

**"Parks throughout the United States are underutilized. This is due in large part to lack of awareness by residents and visitors."**

**"Parks and playgrounds are the soul of a community."**

**- Marty Rubin**



# HURRICANE MICHAEL DEBRIS REMOVAL

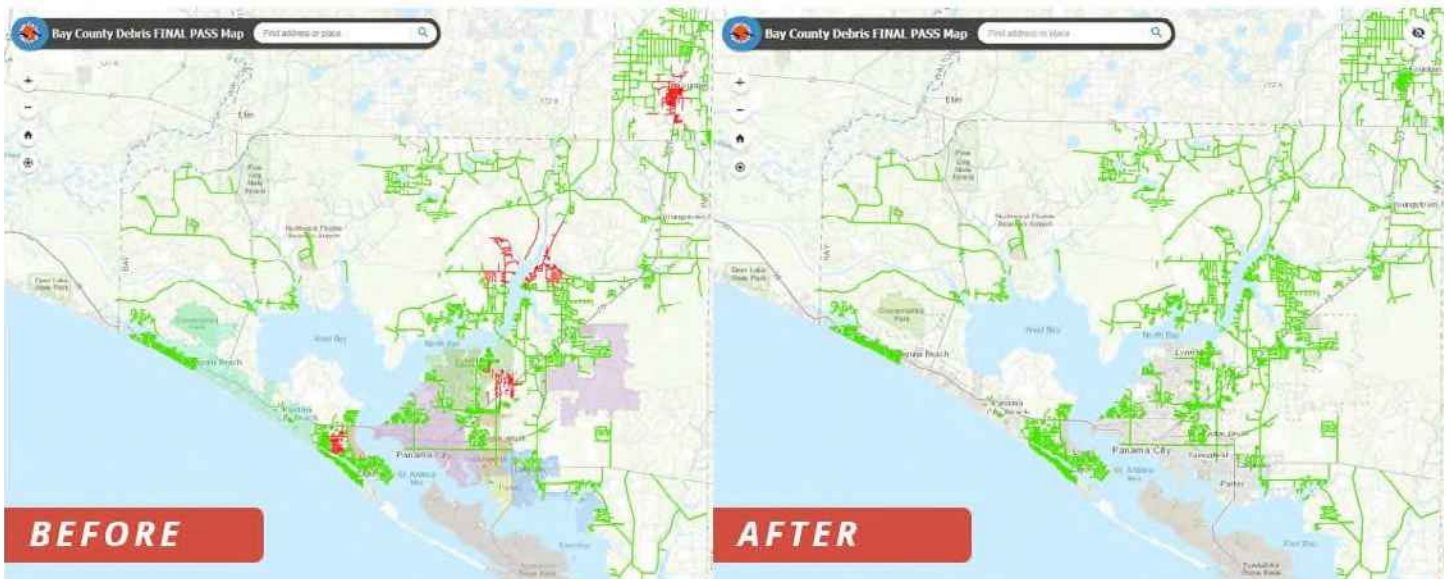


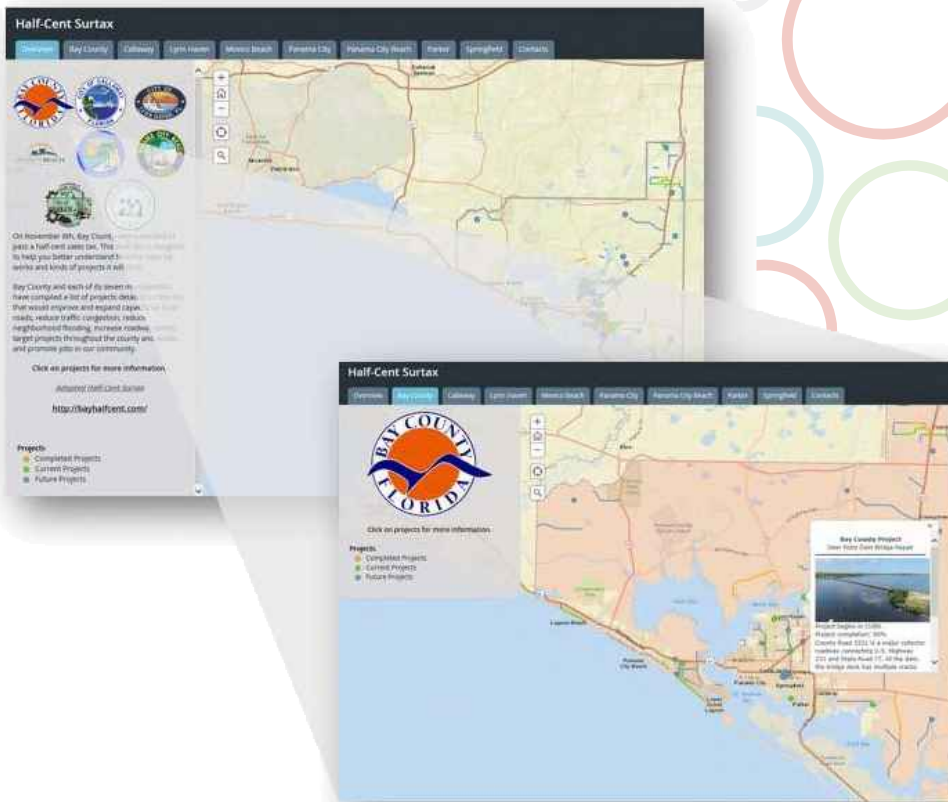
**WHY:** One of the challenges after a natural disaster is the clean-up of debris. Bay County faced a daunting task of ensuring that all areas of unincorporated Bay County were served with debris pickup. This process creates a logistical and communication nightmare. Residents wanted to know when pickup would occur and how clean-up was progressing. GIS offered a way to share this information visually.

**WHAT:** GIS developed a tool to monitor the status of debris pickup and to keep the public informed. The county's Public Information Officer did a press campaign on the application. Citizens used the app to see real-time progress of the final pass. Areas completed and pending were color-coded on the map.

**HOW:** This app was created to be updated by the debris contractor. As they completed a road section, they used the Collector app to update that the road was completed. The contractors then attached pictures proving the debris was clear from the road. Signs were then placed on each end of the road segment declaring the last pass was complete, advising citizens not to place any further debris on the roadside.

**"Accurate and reliable information is critical before, during, and after a disaster."**





**"Informing the public as to the benefit of taxation is good governance."**

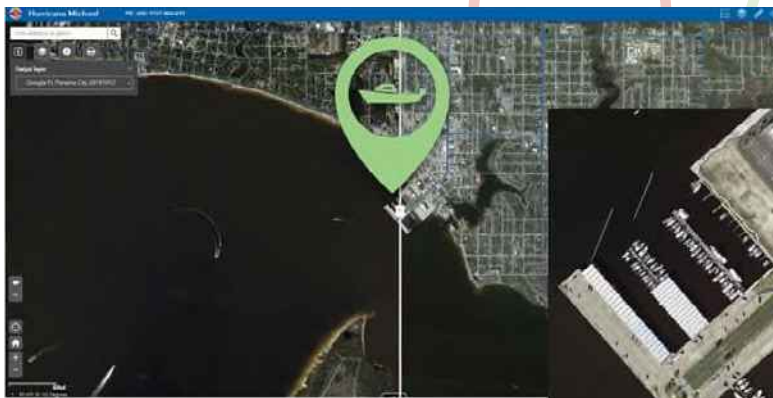
Public facing applications should adhere to the two-click rule (key information should be accessible within two mouse clicks).

# INFORMING THE PUBLIC ABOUT PROJECTS FUNDED BY A HALF CENT SURTAX

**WHY:** Bay County passed a referendum that would impose a surtax on all purchases county-wide. As with any change in taxation, it is important to communicate how and why. The result of the additional revenue was the completion of a number of critical projects around the county. Sharing information about the benefit derived from the additional revenue was important to the county.

**WHAT:** An innovative GIS-based story map (a GIS tool that tells a story) was deployed for use as an informational tool to the public, used in many public meetings where the topic of the new referendum was discussed. This application showed each of the projects around the county based on their location and status.

**HOW:** The GIS Division, working in coordination with county and municipal administrations, designed and implemented this public outreach map to be intuitive and include a wealth of key information about each project. The application needs no training and key information can be found with minimal interaction.



## VIEWS OF PANAMA CITY MARINA



Pre Storm



Post Storm

# HURRICANE MICHAEL - ASSESSING AND VISUALIZING THE DAMAGE

**WHY:** Coastal communities understand that hurricanes are inevitable. GIS is a key tool in preparedness, response, and recovery. The county has a wealth of aerial imagery that can be used to visualize an area through time. GIS and aerial imagery were needed to understand and quantify the impact of the damage from Hurricane Michael.

**WHAT:** A public-facing GIS application was implemented that allowed users to access pre- and post-hurricane imagery to understand the breadth and extent of the damage for any area in the county. This "change detection" technology can be used to view any changes over time (growth forecasting, environmental concerns, damage assessment, population shifts).

**HOW:** The Bay County Public Information office deployed this ArcGIS Online application with design/development being handled by the GIS Division. End users can zoom into any area to compare an area of concern.



**"GIS is one of the most innovative technologies  
for visualizing our world."**





# INFORMING THE PUBLIC WITH REAL-TIME TRAFFIC DATA

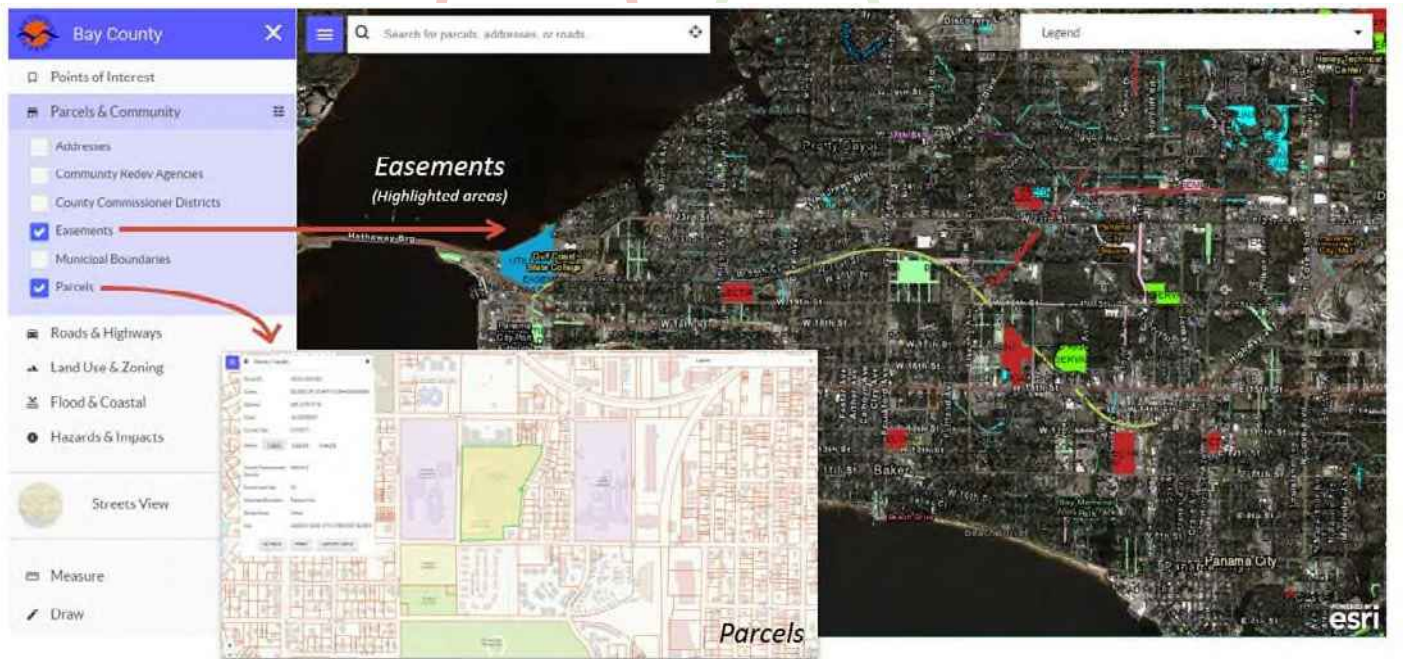
**WHY:** Bay County's Traffic Center utilizes a network of real-time traffic cameras. Staff understood this wealth of real-time information would be beneficial to the public. Easy access to real-time traffic data would allow citizens to make informed decisions about travel and potentially help mitigate traffic issues.

**WHAT:** A GIS application was deployed to allow the public to select and see the current traffic via a number of strategically placed traffic cameras around the county.

**HOW:** Working with the Real-Time Traffic Center, the GIS Division designed and developed a public-facing GIS application that combined maps with live links to the traffic cameras.

"An informed public is one of the greatest assets of any local government."

"Information is power."



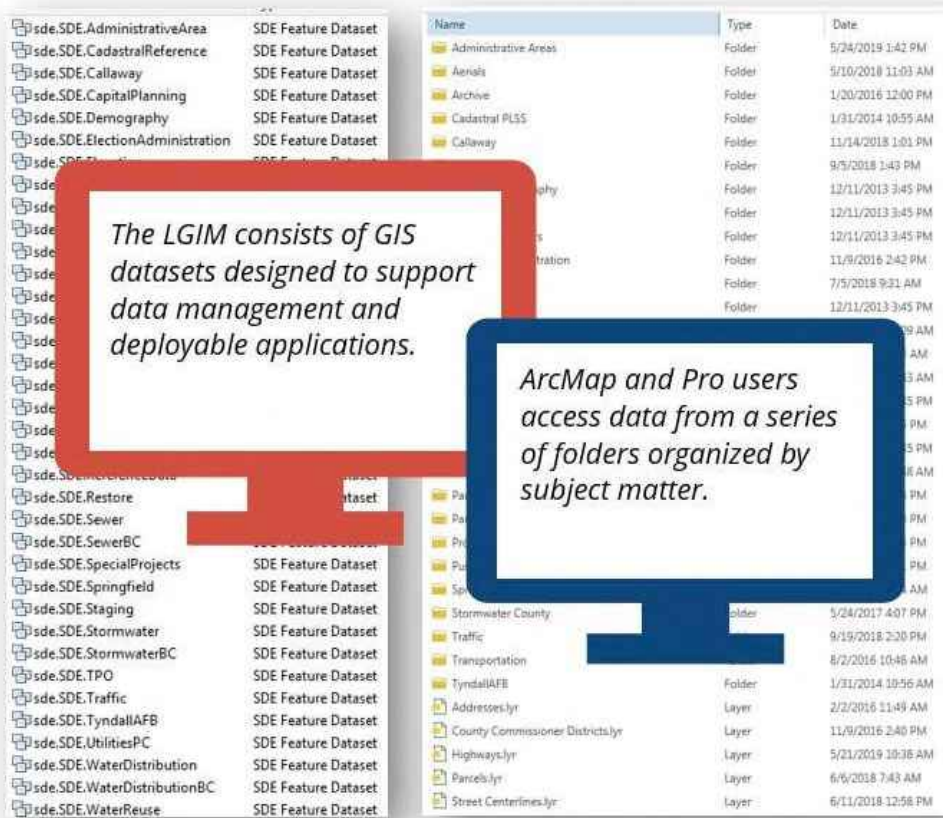
"The Power of Incrementalism – minutes saved each day by the public and staff add up to hours and weeks that can be better spent on other things."

## INTUITIVE GIS FOR ALL OF BAY COUNTY

**WHY:** Historically, public-facing GIS applications have been cumbersome, difficult to use, and lacking in purpose. Many counties published public GIS portals because they knew they should. However, many of these portals were nothing more than a hodgepodge of data wrapped in a non-intuitive user interface. Bay County GIS staff understood that the county had a wealth of GIS data that would be of benefit to the public. They knew that allowing residents to answer their own questions without having to make phone calls or come to public offices would be beneficial and save time for staff. Additionally, a GIS application is available 24 hours a day not just during office hours.

**WHAT:** A GIS application was deployed to allow the public to self-serve information. The application focused on the most voluminous queries from the public which often were about properties. The application was developed on information provided by Bay County staff, the general public, realtors, engineering firms, mortgage underwriters, bankers, and insurance firms. Key information elements were zoning, wetlands, evacuation zones, ownership of roads, and distance to fire hydrants.

**HOW:** A target audience was identified and received a survey to solicit user input as to the design and functionality of the GIS application. This iterative process resulted in an application that is accessed hundreds of times daily. Feedback has been overwhelmingly positive. Additionally, the application has saved hundreds of staff hours per year through a reduction in inquiries from the public and quicker retrieval of key information by staff.



"Data should be seen as an asset to an organization just like a park, building, or vehicle fleet."

## ENSURING SUCCESS THROUGH DATA ORGANIZATION

**WHY:** Many organizations do not realize maximum benefit because of ill-managed and poorly organized data. A common statement at local governments throughout the United States is "I am unsure of where to find the data I need nor if it is accurate. Other organizations have lost a key staff person and due to lack of data organization, the organization was unsure of data location, origin, and veracity. In an effort to ensure sustainability and standardization, the GIS team at Bay County decided to implement a redesign of the database.

**WHAT:** The GIS implemented a local government data model, Esri's Local Government Information Model, to further standardize, centralize, and manage Bay County's GIS data asset. Throughout the county, not only are users now referencing the same data, but the data is also uniformly symbolized, eliminating the previously encountered inconsistencies in mapping products.

**HOW:** In 2013, the GIS team completed the migration of the county's data from shape files to Esri's Local Government Information Model (LGIM). This ensures the continuity of the GIS. New staff can readily understand where to find data and thus prevent costly data regeneration projects.

"A GIS data model ensures that the county's investment in GIS data meets a standard and is sustainable."





"A progressive GIS team always asks how can we do things better, how can GIS make our world better."

## BUILDING FOOTPRINTS

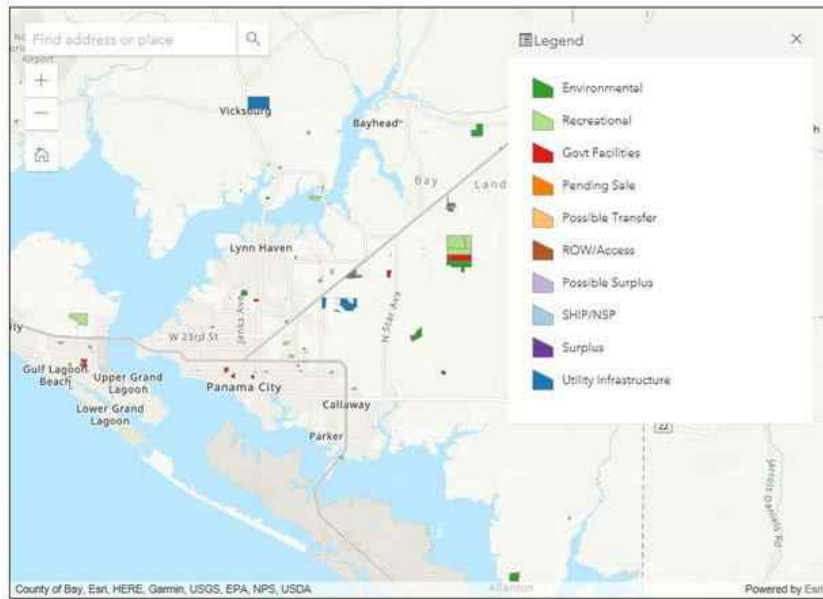
**WHY:** Bay County maintains a layer of building footprints for a variety of purposes. Bay County GIS staff were creating building footprints manually as a result of a lack of any automated processes. This was a laborious and time-consuming process. The GIS team at Bay County understood that building schematic data and dimensions were tracked in the county's Computer Aided Mass Appraisal (CAMA) System. The team undertook a project to automate the footprint generation from the CAMA data.

**WHAT:** Chris Mathers, a programmer analyst for Bay County GIS, created a routine utilizing data from the Property Appraiser's data that draws the shape of the structure and then places it onto the correct parcel. In-house, the GIS Department has developed more than 115,000 building footprints using this process, saving countless hours of manual digitizing.

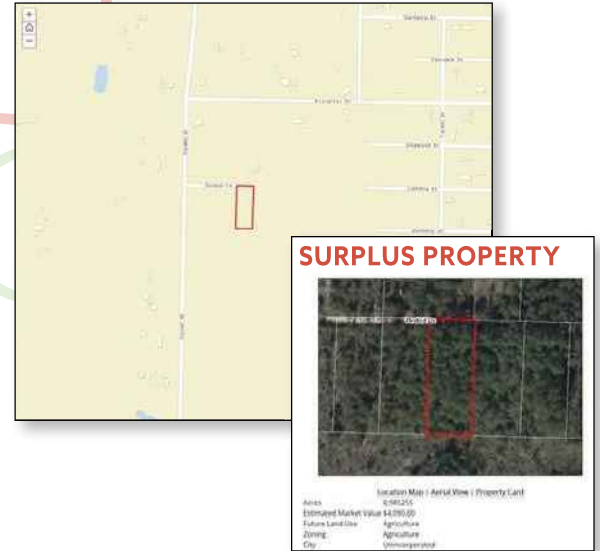
**HOW:** Using data exported from the Property Appraiser's CAMA system, replicas of appraised structures were created using Python. Data from the CAMA system generated a correctly proportioned structure as measured by field appraisers. A feature class was created using the structure replicas by spatially associating them to their related parcel. Once completed, the building footprints were submitted to Esri's Community Maps program and have been integrated into Esri's Topographic and Streets base map. This data is made available worldwide.

"Saving time is one of the most powerful ROI's afforded by GIS."

## BAY COUNTY BOCC OWNED PROPERTY



## SURPLUS PROPERTIES



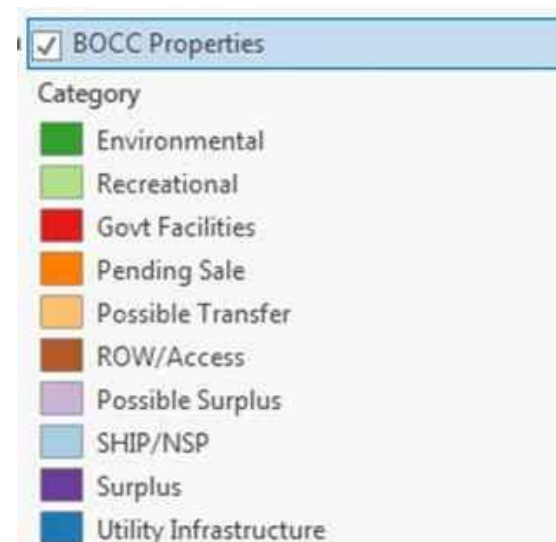
# USING GIS TO BE A GOOD STEWARD OF RESOURCES - COUNTY OWNED PROPERTIES

**WHY:** Bay County owns a number of properties acquired through various sources and for different reasons. An authoritative, centralized repository was needed to track each property and its disposition. In 2017, Bay County GIS staff worked with county administration on a joint project to identify and quantify every Board of County Commissioner's (BOCC)-owned property.

**WHAT:** The result of this project is an authoritative property layer and a set of applications for viewing and managing the properties. Additionally, a public-facing surplus properties application allows the county to socialize surplus county properties available for sale. Through this process, the county identified properties that they desired to transfer to other local government jurisdictions. Working in coordination with these other local governments, the transfer of property ownership was completed. Properties were also found that had reverted to the county due to non-payment of taxes. Some properties for which the county had no current or future use were declared surplus and are available for sale to the public.

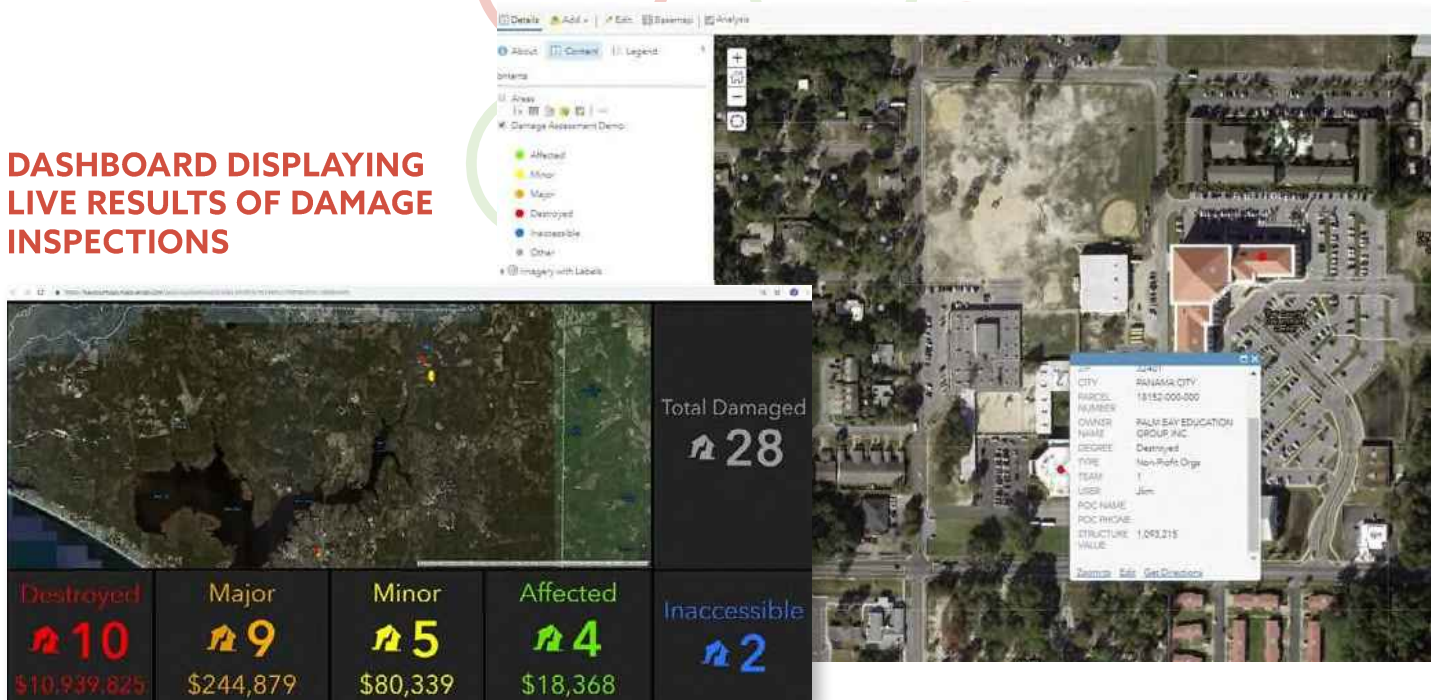
**HOW:** Properties were identified through a search of the parcel data. Properties had been deeded and recorded over many years with very little standardization of the grantee name. First, a list of all county BOCC grantee names was compiled and then used to query out county-owned properties from the parcel data. Once the list was compiled, each property was categorized by type (see graphic).

GIS has allowed Bay County to track and manage all county-owned properties ensuring good stewardship of county assets.



## COMMON OPERATIONAL PICTURE USED IN THE EOC

### DASHBOARD DISPLAYING LIVE RESULTS OF DAMAGE INSPECTIONS



## ENABLING BAY COUNTY IN CASE OF A DISASTER

**WHY:** Following Hurricane Michael, county officials became aware of how unprepared they were to handle damage assessment. The county owned damage assessment software but had not tested the software in years. Through the lessons learned, the county decided to implement GIS tools that are ready for use and are tested in the event of future disasters.

**WHAT:** The county has leveraged the existing investment in data in GIS software to implement a suite of damage assessment tools.

**HOW:** The GIS team was tasked with implementing field tools for damage assessment (Esri's Collector App). Field damage assessors (county and city staff) can move through damaged areas and quickly assess and report on damaged structures by the degree of damage (major, minor, destroyed, affected, or inaccessible). Any number of data elements can be collected as well as photos of the properties all in a live environment. The data can be fed live to a common operation picture so staff in the Emergency Operations Center (EOC) can view data as it is collected. Additionally, an executive dashboard is implemented to track key metrics.



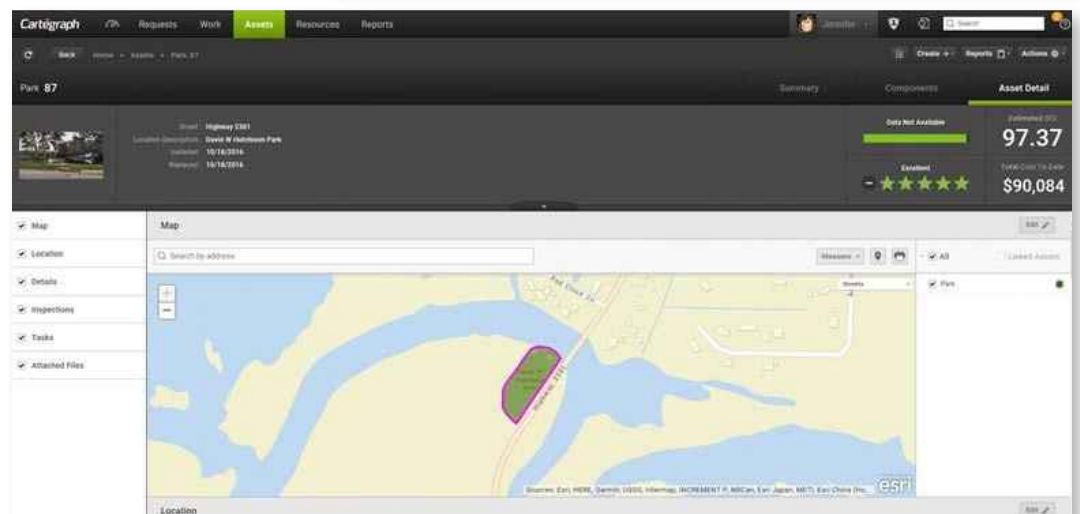
# INTEGRATING GIS WITH KEY INFORMATION SYSTEMS (CARTEGRAPH OMS)

**WHY:** Bay County faced a challenge of integrating multiple work order systems with a centralized asset management system that would work seamlessly with the county's Enterprise GIS. Over the years, various divisions within Public Works had independently adopted work order systems with varying methodologies, none of which were directly connected to the county's GIS. Although each of the systems was of value to the supporting division, inefficiencies existed as these multiple systems were not interconnected. Lack of a centralized system affected the county's ability to get the big picture from an operational viewpoint. It was often notably difficult to get the information needed to best support decision-making. These independent systems ranged from custom software, Access databases, Excel spreadsheets, and paper/filing-based systems. Across multiple divisions, the independent systems were capable of producing a variety of reports and analysis. However, they all lacked the ability for the user to visualize on a multi-departmental spatial level. This missing mapping component impeded the user's ability to capitalize on recognizable geographical associations and trends.

**WHAT:** By moving from multiple work systems into a centralized asset management system that is directly connected to the Enterprise GIS, Public Works now has the resources to make efficient data-driven decisions. For senior management, Cartegraph's OMS dashboard makes available a high-level snapshot of where the money is going, allowing for visualization of where the work is being done, and review of the overall group condition of the assets. OMS's ability to track costs is significant, putting in the hands of management a tool to make comparisons between budgeted and actual costs.

**HOW:** The GIS Team has worked closely with Public Works to ensure that they have the tools, connectivity, support, and training to optimally use GIS in conjunction with Cartegraph.

*Examples of some of the easily configured widgets and dashboards of the users.*



# GIS FOR EVERYONE – SIMPLIFYING GIS FOR ALL DEPARTMENTS

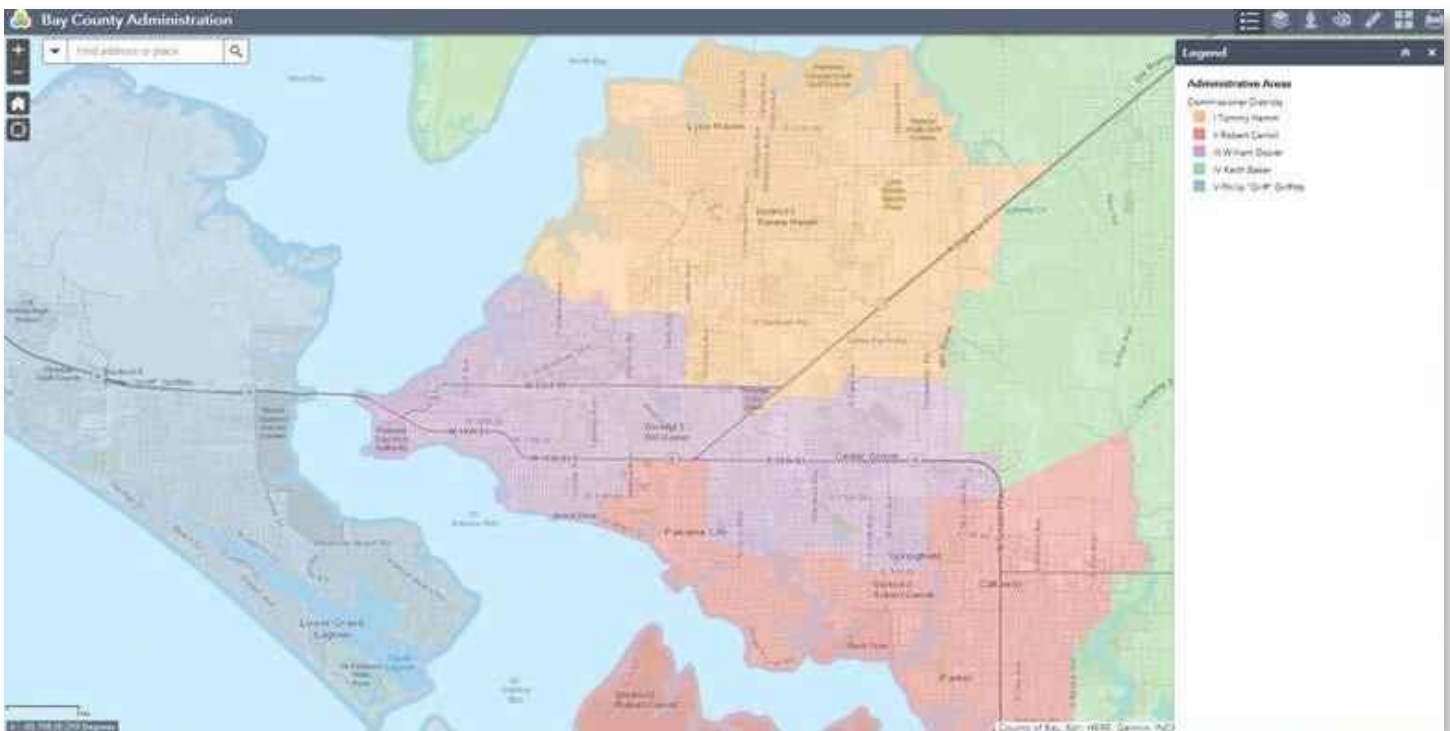
**“Advanced GIS implementations create GIS portals for groups of staff with common job functions and the need for common data, reports, and analytics.”**

**WHY:** Many organizations have made the mistake of provisioning GIS users and potential users with the wrong software. The bottom line is that everyone at Bay County has a job to do and most do not have the time to learn intricate software. Therefore, the GIS team has implemented easy-to-use targeted portals that enable staff with little or no training to use GIS.

**WHAT:** The GIS team used software that was already owned by Bay County to create targeted GIS portals.

**HOW:** The GIS Division met with individual departments to determine data needs and created department specific web maps to meet their needs. Each portal has a purpose and is created to meet the needs of a group of users. Use of the departmental web maps has greatly increased the use of GIS throughout the county, which was previously limited to those who either had GIS software or used the public-facing application.

## WEB APPLICATION TARGETED FOR ADMINISTRATION STAFF



# ENSURING AN ACCURATE PORTRAYAL OF BAY COUNTY THROUGH COMMUNITY MAPS

**WHY:** Through one method or another, GIS is used weekly by nearly everyone. While readily available, some sources may have data that is inaccurate or incomplete resulting in misinformed decisions. Bay County has decided to share their data with many of these organizations to do their part in increasing the quality of data used in these tools.

**WHAT:** Bay County is contributing to the Esri Community Maps project (since 2012). This allows Bay County to be the local authoritative data that is included within many commercial applications. Bay County contributes parcels, roads, building footprints, municipal boundaries, cemeteries, parks, golf courses, industries, medical facilities, educational facilities, railways, trails, transportation, bodies of water, and imagery. In turn, this data is now in the Esri base maps consumed by Bay County users.

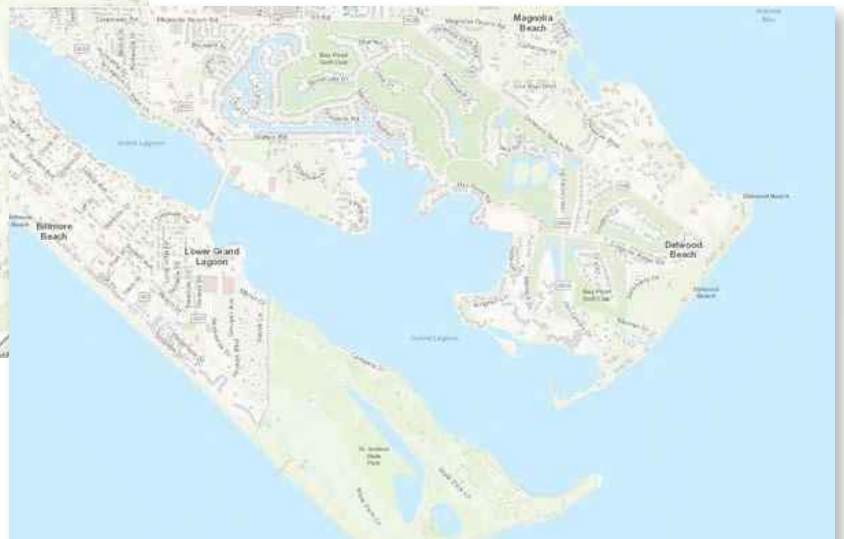
**HOW:** The GIS Division provides incremental updates via the Esri Community Maps program. This requires a nominal amount of time but ensures data continuity and accuracy.

GIS is becoming more and more prominent. It is in the best interest of a community that data used for decision making is accurate and up-to-date.

## EXAMPLE OF EDUCATIONAL FACILITIES



## EXAMPLE OF RECREATION AREAS





The GIS industry continues to mature and advance. Likewise, the needs of users continue to mature and advance.

GIS is becoming more and more prominent in local governments. Data driven decisions are integral to the successful operations of a county and the empowerment of the public.



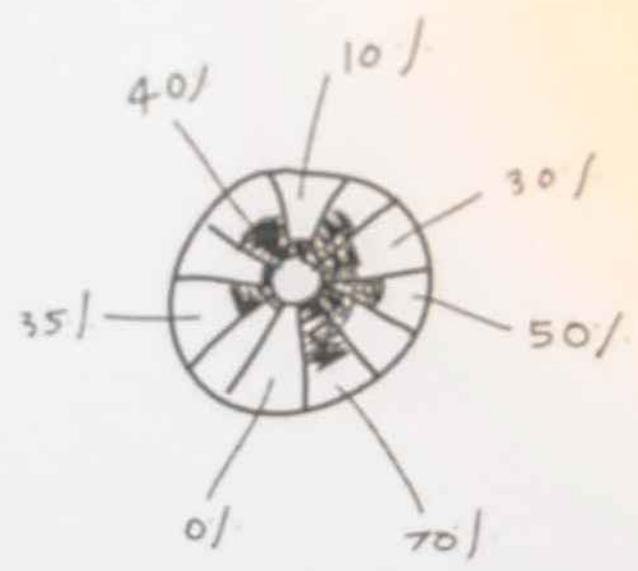
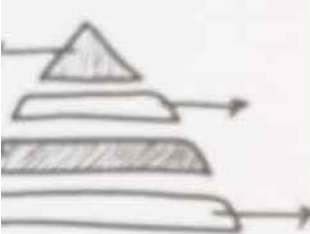
## DEPARTMENTAL GEOSPATIAL NEEDS INTRODUCTION

An enterprise geographic information system (E-GIS) is an organization-wide asset and collaborative platform that supports the collection, sharing, and exchange of geographic information. It allows an organization to visualize, question, analyze, and interpret data to identify relationships, patterns, and trends contained within location-based data. An established E-GIS may contain several hundred data layers that represent the collective needs, responsibilities, and considerations of departments throughout an organization.

E-GIS technology can support many diverse functions including but not limited to asset and capital project plan management, planning, public safety, assessments, managing infrastructure, and a host of other department-specific duties. E-GIS is a key enabler of map production and other location-based information products that can be provided to staff, contractors, stakeholders, and the general public, all of which are derived from information stored and managed in enterprise geo-databases that support the E-GIS and related systems.

GIS technology facilitates data-driven decision making, playing a key role in strategic service management and tactical service delivery. GIS is an integral component of computerized maintenance management systems (CMMS), work order management systems (WOM), computer-aided mass appraisal systems (CAMA), and an array of other information technology (IT) systems used throughout local government organizations.

Sustainable E-GIS requires a considerable amount of discovery and deliberation. A documented assessment of existing conditions is a logical undertaking, as it allows for informed decision-making regarding the needs of each operating unit and the organization as a whole. The next section is the departmental needs discovered through on-site interviews with departments. Each page contains a summary and a graphic depicting the needs of each department.

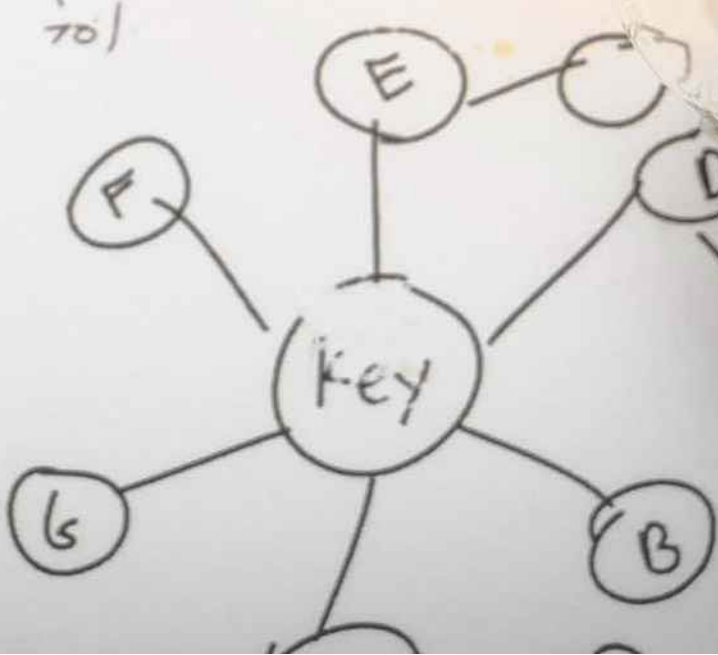


Solution

IDEA



uction



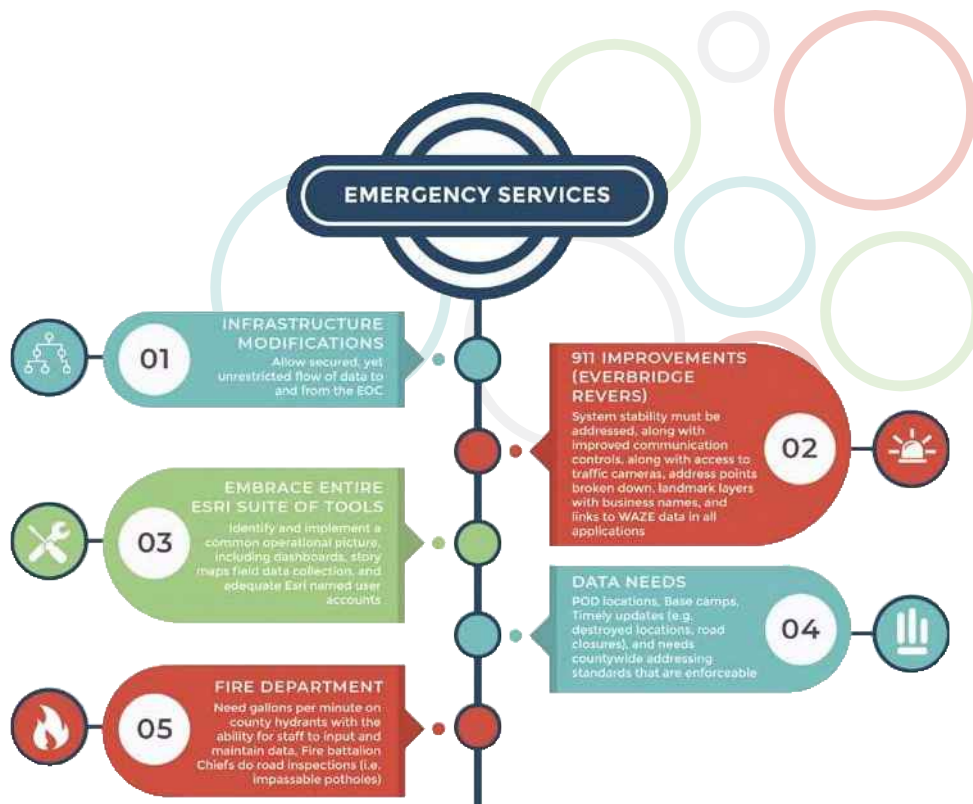


## INFORMATION TECHNOLOGIES/ GEOGRAPHIC INFORMATION SYSTEMS

One of the accepted best practices in local government is to have the GIS Division housed within IT. Inherently Information Technologies and a GIS team within IT are service groups for the organization. For the most part, they do not do GIS for themselves. They are provisioning GIS for the organization. Therefore, any of the needs identified in interviews with them are actually needs for the organization. The GIS team has a focus on GIS enablement. They provision the GIS platform, train staff on GIS usage, and lead all aspects of GIS growth. By default, all of the needs identified for other departments have to involve the GIS team. Here are the key needs identified through the various data gathering exercises that may not be included in other departments:

- Implement internal project tracking with visibility for all users. This list should include priority tracking.
- Need to create a Standard Operating Procedure (SOP) and refine the workflow for addressing.
- Annually (at a minimum) update the project successes portfolio.
- Implement additional citizen engagement tools working closely with the county's Public Information Office. This should include crowdsourcing tools.
- Consider the implementation of ArcGIS Hub (next generation portal for data sharing and data socialization).
- Need to acquire a third-party, back-end data mining tool.
- Need to further integrate with IT systems like TrackIt (for building permits, certificates of occupancy, inspections, etc.), Chameleon (Animal Control), Black Mountain.
- Implement an annual training and education plan.
- Prioritize and have quarterly user group meetings.
- Further assist the Emergency Operations Center (EOC) for a suite of Emergency Management tools and participate in drills.
- Assist the Property Appraiser's Office in implementing a systematic procedure for improving tax mapping accuracy.
- Create SOPs for key processes.



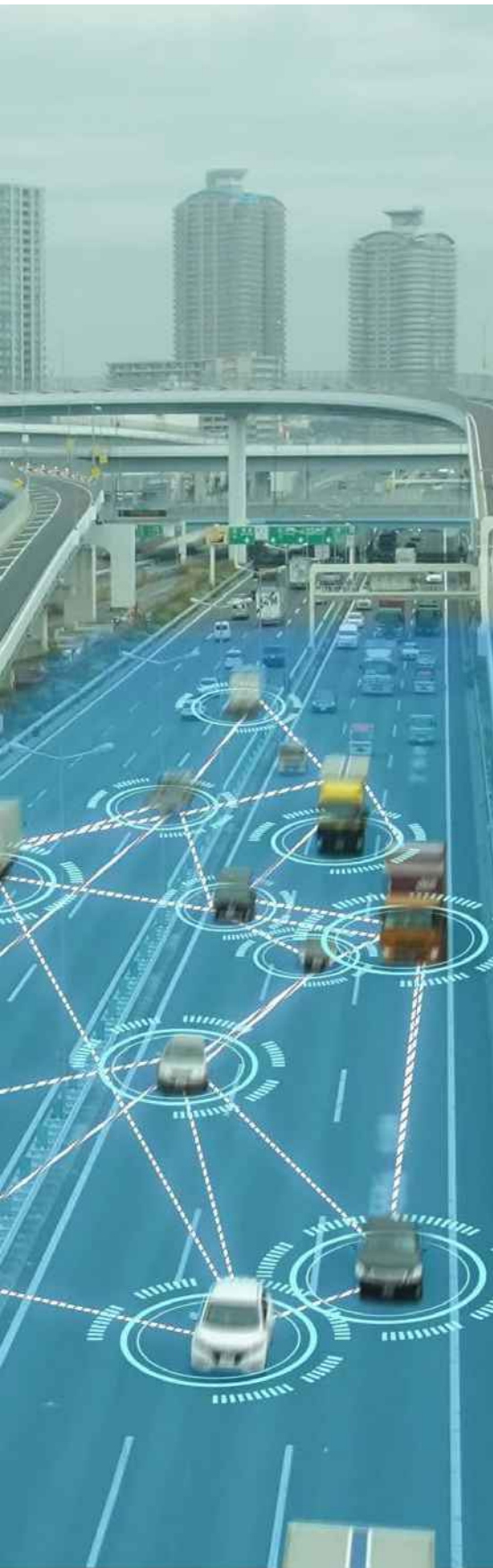


## EMERGENCY SERVICES

The Emergency Services department in Bay County, Florida is comprised of Fire Services, Emergency Management, Emergency Medical Services (EMS), and the Communications Divisions. Emergency Services is a heavy user of GIS data and GIS tools. The department employs a GIS/911 specialist who works closely with the IT/GIS team. The EOC conducts tabletop exercises to prepare for a disaster. These exercises have a number of GIS tools and workflows. The department uses a number of software tools that have GIS tools/links to include GeoJot, Google, Bing, Pictometry, WebEOC, Intrado (MapFlex), MapSAG, Hazus, and Active911. The following are key GIS needs identified during on-site interviews:

- Infrastructure modifications sop that there is an easy flow of data to and from the EOC.
- Improve the Everbridge Reverse 911 flow and geocoding.
- Further implement a full suite of Esri EOC tools to include a Common Operational Picture, Dashboards, Public Awareness (road closure status, known hazards, etc.), collector enablement (more hardware), and more ArcGIS Online (named user) accounts
- System stability and improvement must be addressed, along with improved communication controls, along with access to traffic cameras, address points broken down, landmark layers with business names, and links to WAZE data in all applications
- Data needs to include; POD locations, base camps, timely updates (e.g. destroyed locations, road closures), and needs county-wide addressing standards that are enforceable
- Fire Department needs gallons per minute on county hydrants.
- Outfit Fire battalion chiefs with the collector application for road inspections (i.e. impassable potholes) and other data maintenance.





## PUBLIC WORKS MANAGEMENT

The Public Works department in Bay County has diverse responsibilities, some of which involve maintaining, preserving, and protecting the infrastructure resources of the county. The goal is to accomplish these important tasks in the most efficient and effective manner possible. Public Works is a prolific user of GIS. Cartegraph is a primary tool used for asset management, work orders and is integrated into most daily tasks. Cartegraph relies heavily on GIS integration. Key staff are GIS power users in the department. They are responsible for maintaining Public Works related GIS data and work closely with the IT/GIS team on the interplay between Cartegraph and GIS. During the interviews various Public Works staff identified some GIS needs as follows:

- Develop a comprehensive set of 3D above ground data, including both private and public landscaping areas.
- Want to be able to consume the Automated Vehicle Location (AVL) feed within other GIS applications.
- Clarification on roles and responsibilities both within Public Works as well as across departments.
- Want to participate in a comprehensive Capital Improvement Plan (CIP) creation and public-facing application process.
- Need further education on what GIS can do, especially as it relates to GIS in the field.

# TRANSIT TRAFFIC



## TRAFFIC ENGINEERING DIVISION OF PUBLIC WORKS

Traffic Engineering is responsible for a number of activities to include signal maintenance, signage, striping, traffic studies, street lights, plan reviews, accident studies, and a variety of other tasks. Two staff in the division are GIS power users and coordinate closely with the GIS team in IT. The division uses ArcGIS for crash studies and other traffic-related issues. The following are additional functionalities desired by Traffic Engineering:

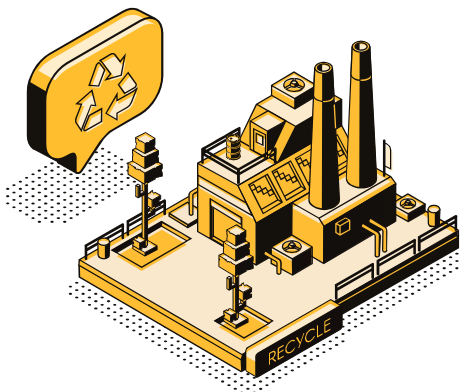
- Viewing heat maps of crash locations.
- Auto-generation of a Tweet for accidents (non-GIS).
- Export travel time to a web app.
- Display locations and content of dynamic message signs.
- Heat Maps depicting traffic data by linking with real-time information from WAZE.







## UTILITY SERVICES



The Utility Services section includes Payment Services, Water & Wastewater, Permitting, and Laboratory Services. Cartegraph, an asset management system has been implemented. Two staff in Utilities are GIS power users. One of their key functions is data collection in the field using survey grade GPS equipment. Staff have identified several needs, as seen below, in order to improve on their ability to support these valuable resources.

- Need to migrate to the current Esri geometric network model.
- Need to be able to develop browser-based GIS applications from a variety of mediums, including WebApp Builder via iPad.
- Development of Story Maps for utility-specific Capital Improvement Plans (CIP), and to educate the public as to the overall function and processes of Bay County Utilities.

01



## GEO-ENABLED DATABASES

Linkage of Non-GIS data to a location will allow spatial analysis of historically non-spatial information

02



## STORY MAPS

Easy to follow map based tools that tell a story of community development projects, successes, challenges, etc.

03



## WEB-BASED PLANNING TOOL

A tool like this can provide the necessary platform for visualization, modeling, analysis, and collaboration.

\*See Mississauga Economic Data Centre as an example.



## PLANNING AND ZONING

Planning and Zoning reviews all development within unincorporated Bay County (excluding single-family homes) to ensure consistency with land development regulations. They provide planning-related services to include permitting, code enforcement, project oversight, comprehensive planning, and other duties. The following were identified as needs during onsite interviews:

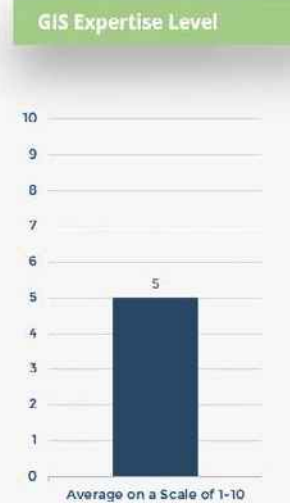
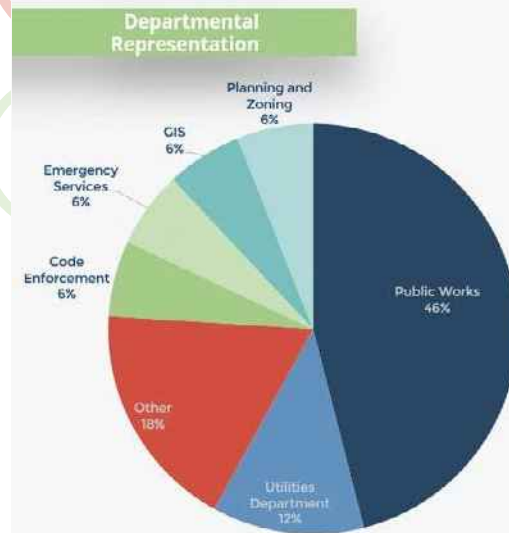
- Creation of data layers from Planning related IT systems like TrakIt (or its replacement).
- Share key information about these planning datasets with the public.
- Implement the Esri Land Use Public Comment application tailored for specific uses.
- Create a Story Map to show the highlights of the Comprehensive Plan.
- Participate in a county-wide Capital Improvement Project mapping program.
- Have a buildable area analysis application showing areas that can be built upon at a screening level.
- Training on Community Analyst
- Dashboard of key planning information

## ECONOMIC DEVELOPMENT ALLIANCE

The Economic Development Alliance (EDA) is not a part of the Bay County government. However, economic development is a priority for Bay County and thus Bay County has a role in supporting the EDA's activities. The EDA uses GIS today. They use ZoomProspector for managing available properties and have a license of Esri's Community Analyst. Possible further uses of GIS include:

- Geo-enablement of the database of existing businesses.
- Story map of existing businesses.
- A variety of supplemental GIS layers to include: vacant properties, drone imagery of key sites, economic incentives, Capital Improvement Projects (CIP) in the county, ports, universities, etc.
- A more comprehensive suite of GIS tools to include:
  - Intranet browser of key data sets (Web AppBuilder).
  - Story Map of the county from an economic development perspective.

"The ultimate success of an enterprise-wide GIS is how it is being used by the customers. Their opinions, concerns, and needs should be solicited and acted upon."



## VOICE OF THE CUSTOMER SURVEY

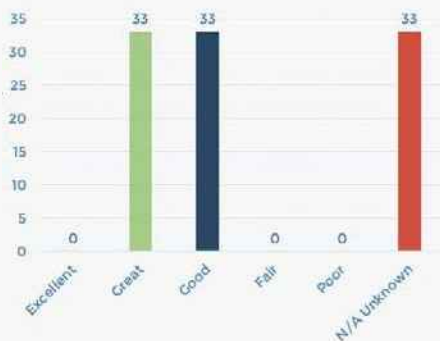


Bay County, Florida has realized various successes in the process of developing a Geographic Information System (GIS) program. A solid foundation and tremendous opportunity exists for Bay County to expand GIS further throughout the county and to external customers.

A variety of departments use the technology for a diverse set of needs. It is important that the customers have a venue and a mechanism to share their needs, concerns, and opinions about the technology. Many GIS implementations do not reach full adoption and some even fail altogether because the customer's voice is not heard. Therefore, it is important that the county's GIS customers feel they have various mechanisms for being heard.

A Voice of the Customer (VOC) survey is used in business and information technology fields to describe the in-depth process of capturing a customer's expectations, preferences, and aversions. It is a market research tool to help identify needs and satisfaction so that priorities can be set to satisfy those needs. In this case, the market being researched is the market of current and prospective users and beneficiaries of the county's GIS.

As part of the county-wide Enterprise GIS Strategic Plan initiative, a Voice of the Customer survey was administered as an online survey. The purpose of the survey is to help assess the current state of GIS and help determine the next steps in creating a successful GIS roadmap for Bay County, Florida. Anonymous ratings and comments were gathered on GIS needs, constraints, and opportunities. Some of the key results are captured on the following pages. A separate document has been provided of the full Voice of the Customer results.



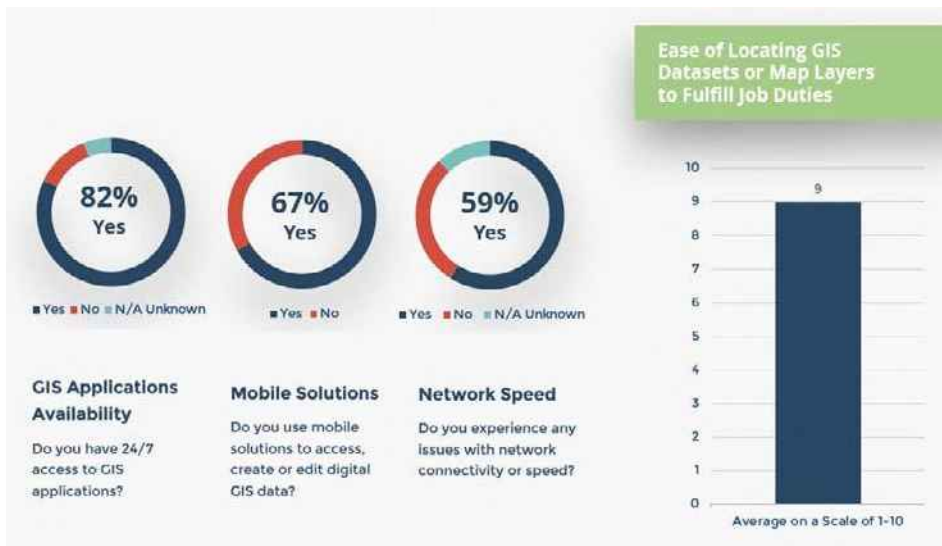
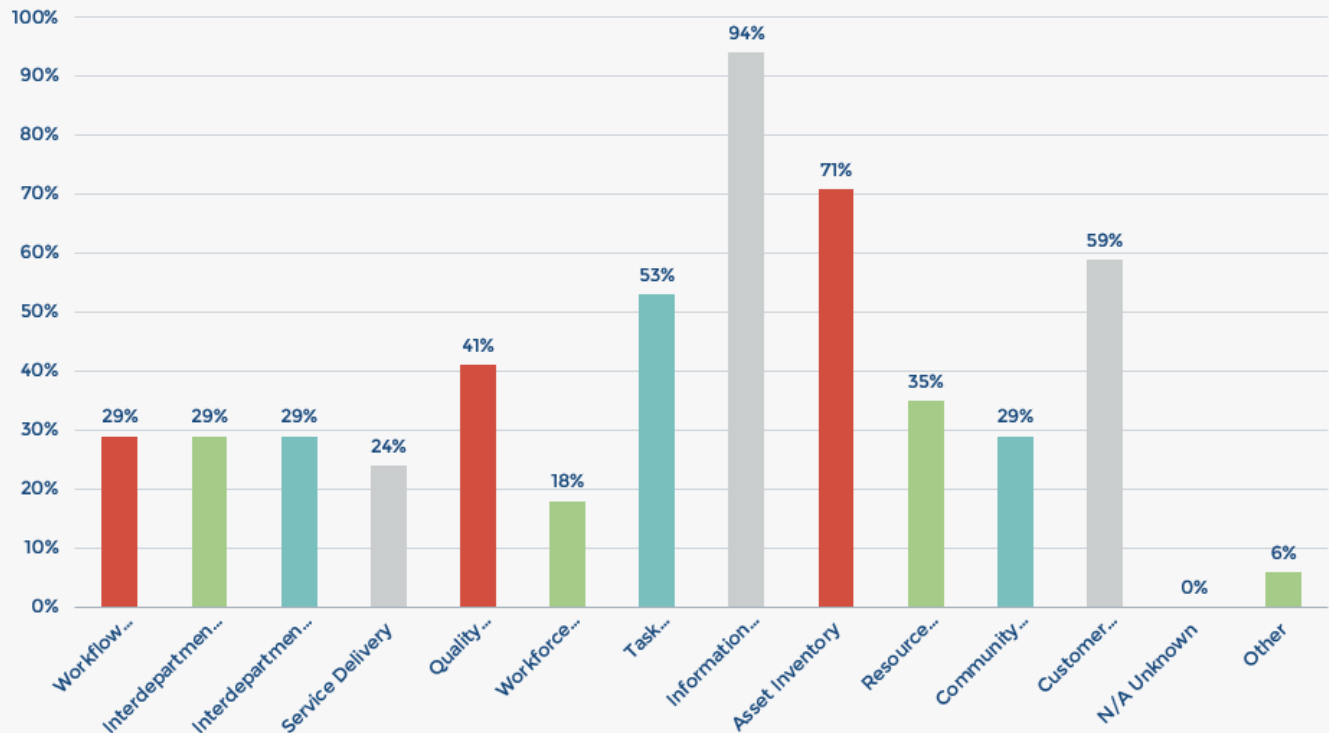
### Integration

How would you rate the integration of GIS with your mobile devices?

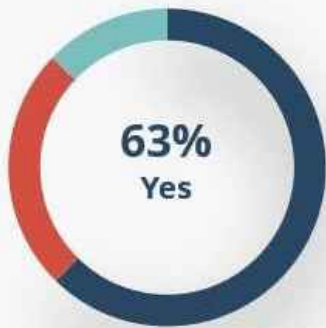


## GIS Benefits and Uses

In which areas has GIS helped you in your role or improved processes for you or your organization?



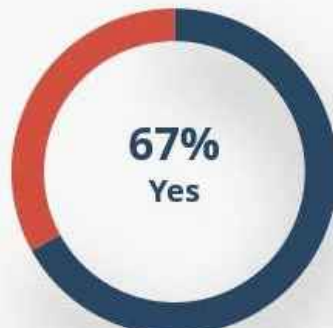
"Some of the best GIS implementations have found limited success due to lack of customer engagement, feedback, and education."



■ Yes ■ No ■ N/A Unknown

### Training & Education

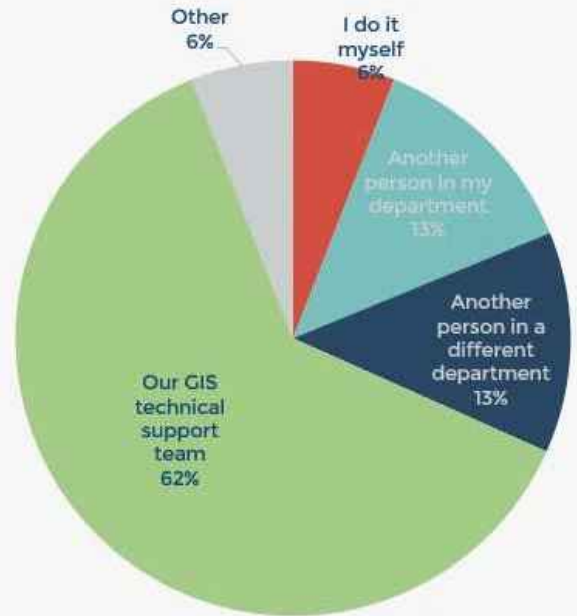
Does your organization provide any formal GIS training via workshops, classes, or tutorials?



■ Yes ■ No

### User Groups

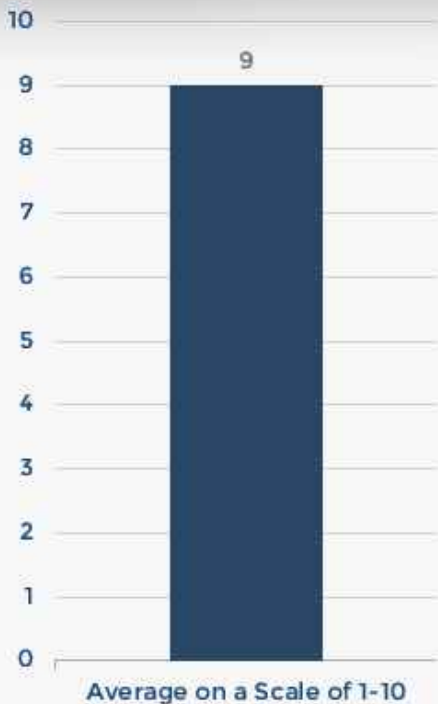
Does your organization have a user's group or similar body that meets on occasion to talk about and/or work with GIS, or have you been invited to one?



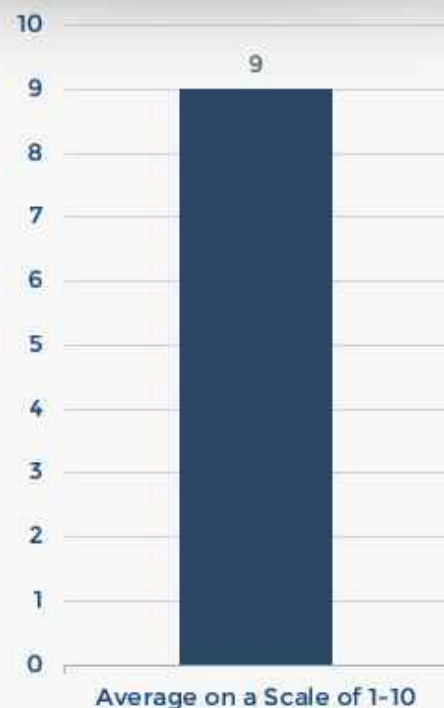
### GIS Support

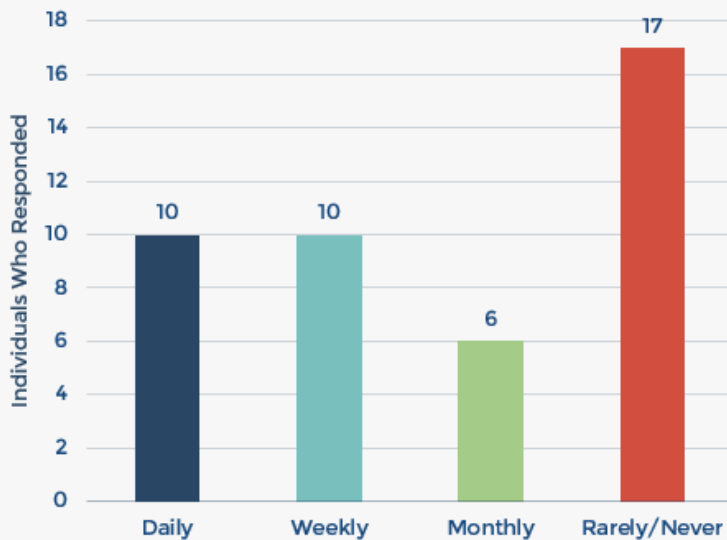
Who do you turn to for GIS technical support, advice, training, education, or other knowledge-based support?

### Organization's Commitment to Up-To-Date GIS solutions



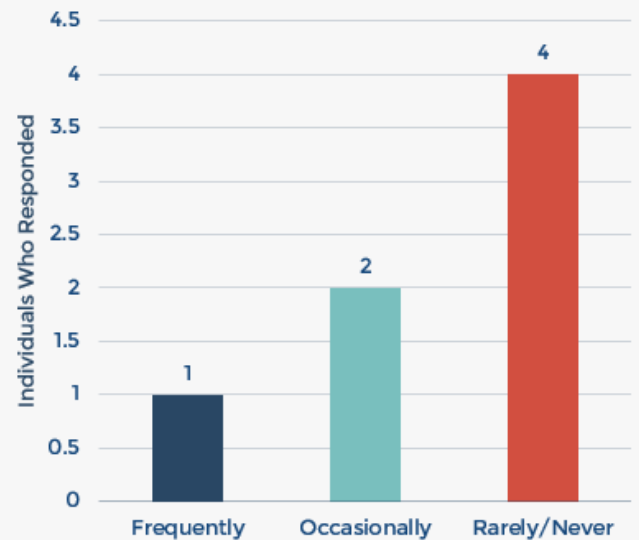
### Organization's GIS Enthusiasm





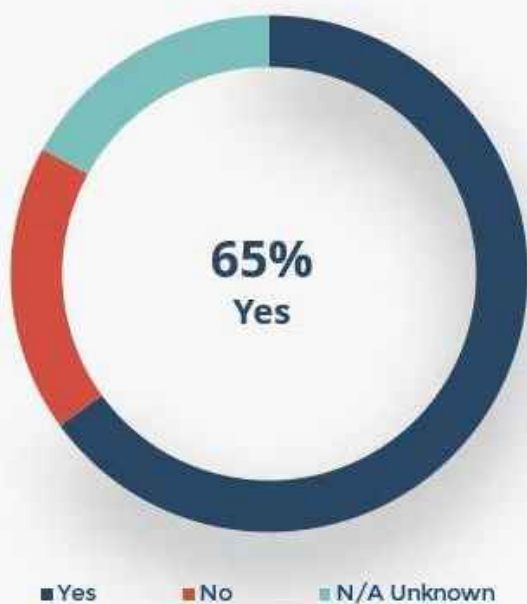
### GIS Utilization

On average, how often are you using GIS for your position?



### GIS Data & Metadata Modification

How often do you create new or modify existing GIS data or metadata?



### Software Performance

Of the software solutions currently available to you, are there any in which the functionalities or capabilities are inadequate for your needs?

### Which ArcGIS extensions are currently in use in your department?

Spatial Analyst, Network Analyst, Community Analyst, Image Analyst, and 3D Analyst

### What non-Esri GIS software solutions are currently in use by your department?

Google Maps/Earth  
Pix-4D - Student Version



"A critical key to GIS success is understanding goals and defining success. To that end, having KPIs reflective of industry best practices is an important step."

# BENCHMARKING AND KEY PERFORMANCE INDICATORS (KPIs)

One of the reasons that many GIS initiatives fail to reach full potential is the absence of metrics and goals. The relationship between metrics and goals is a cyclical one – without metrics, there is no basis for setting goals and gauging progress; without goals, there are no outcomes to measure based on metrics. The success of GIS in Bay County will rely on effective metrics and achievable goals, reviewed annually to evaluate progress and refine objectives. Committing to both will help the county:

- Define success
- Prioritize objectives
- Devise a path forward
- Stay on the desired course

## GIS BENCHMARKING

It is important for Bay County to establish a baseline from which to gauge the success and progress of the enterprise-wide GIS effort. Without metrics, organizational GIS programs often drift over time without focus and clarity. These organizations know that GIS has benefits and they should be using GIS but are not tracking its success. Therefore, it is very important that the county establish metrics and begin to benchmark performance and progress against these metrics. GIS Benchmarking is a structured methodology that identifies the gaps in an organization and uses them to compare actual existing performance with a potential or desired future performance.



This chapter focuses on establishing key metrics and performance indicators (KPIs). This information should be tracked annually to identify progress and areas that need further attention. KPIs allow a GIS program to:

- Define what success looks like;
- Focus everyone on goals;
- Measure – what gets measured gets done;
- Encourage accountability;
- Provide an opportunity for small and large victories;
- Provide a baseline for detailed annual goals;
- Measure success and progress.

## METHODOLOGY

The Benchmarking Analysis (BA) is a subjective evaluation of the existing GIS conditions of the county. It is a checklist of tasks that conventional wisdom and industry knowledge identify as prudent and essential to the success of any enterprise GIS. The six categories of the BA are collectively referred to as the “Six Pillars of GIS Sustainability” and each component can then be used as a KPI gauging mechanism for a successful strategic, enterprise, scalable, resilient, and enduring GIS. Each of the six pillars has a sequence of questions that are graded on a 1 to 10 scale — 1 being bad (needs work) and 10 being excellent (fully implemented). Each component is weighted equally in this exercise. However, some organizations may elect to weight the results based on importance.

An initial assessment is conducted through an interview process whereby a grade is given for each individual item. These results are then refined during the course of the planning process based on departmental interviews, questionnaires, and supporting documentation. This results in an accurate and objective comprehensive picture of the organization's strengths, weaknesses, gaps, opportunities, and KPIs. These KPIs should be used as a systematic way of monitoring progress over time.

## THE SIX PILLARS

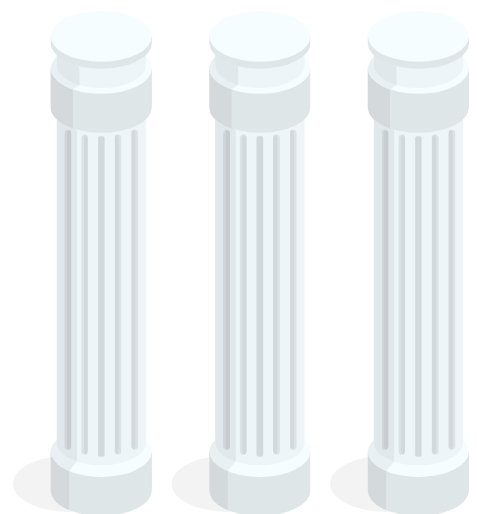
The following sections discuss the county's existing conditions as it relates to “Six Pillars of GIS Sustainability”. These pillars are the major areas that must be planned and working well to have an effective GIS program. The pillars are:

1. **Governance**
2. **Data and Databases**
3. **Procedures, Workflow and Integration**
4. **GIS Software**
5. **IT Infrastructure**
6. **Training, Education and Knowledge Transfer**

These next pages give an overview of key elements of the KPIs. A full document on Benchmarking and KPIs was provided separately.



“One of the reasons that many GIS initiatives fail to reach full potential is the absence of metrics and goals.”



"Good Governance is the most important component of a successful GIS program. Without it, the program will flounder."



## GOVERNANCE KPI

Arguably, good governance is the most important factor of a successful GIS program. Without good governance, a GIS program will flounder at best and totally fail at worst. Overall, governance at Bay County is very good. Staff is very cognizant of the needs of the users and they put customer satisfaction as a top priority. The GIS team is innovative, personable, and outward focused which is the reason that the overall program has been very successful. The overall Governance KPI rating at this writing is 59 percent. Most of the KPI receiving low scores revolve around either documentation or socialization of the GIS. These deficiencies have been overcome by the excellence of staff but without them, the program is vulnerable to staff turnover. This strategic plan and subsequent updates to this plan are important. Establishing a GIS Steering Committee and further invigorating a user's group will ensure buy-in and participation by departments and key staff. This plan assists in establishing vision, goals, and objectives and starting the process of measuring the quality of service. Many of the deficiencies today can be easily overcome and rectified. Within a year, it should be expected that this set of metrics will be fast approaching 90 percent.



"Management is doing things right; leadership is doing the right things."

– Peter Drucker





# DATA KPI

Data is the most expensive component of a GIS program. Organizations spend millions of dollars creating and maintaining data (GIS and non-GIS). One of the most powerful aspects of GIS is that it should become the primary tool for viewing data within an organization. As stated previously, over 90 percent of all data maintained by a county government has a geographic component (address, property id). Viewing the data spatially empowers staff to analyze and manage data in new ways. Additionally, GIS should be used to “geo-enable” the wealth of data that resides in the various IT systems maintained by the county. The county and the GIS team have done a thorough job with the creation and maintenance of GIS data. The overall score of 86 percent is indicative of solid data management. The county has invested the resources in the creation of key base layers (addressing, parcels, streets, and aerial photography) which serve as the basis for all other GIS work. Similar to governance, the main deficit is documentation and ensuring that the organization has full exposure and understanding of how the data can be used to help them in their jobs. Improving the master data list, instituting a systematic data review, and documenting data creation policies will rapidly move the county above 90 percent.



## Data & Databases



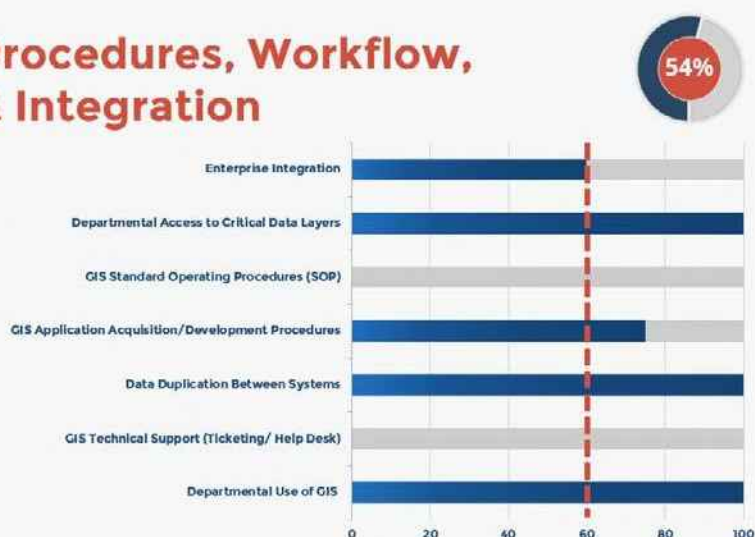
“Garbage in,  
garbage out.”

“Knowing where things are, and why, is  
essential to rational decision making”

~ Jack Dangermond

"A picture is worth a thousand words. Humans can understand data in map form and discover relationships that are impossible with data only."

## Procedures, Workflow, & Integration



## PROCEDURES, WORKFLOW, AND INTEGRATION KPI

A prevalent misconception about GIS is that it is just a compilation of computerized hard-copy maps. In reality, it is a digital map that is integrated with data that enables users to analyze, query, understand, and compare datasets. One of the mistakes that many GIS programs make is keeping GIS separate from other IT systems. GIS should be the viewing portal to those IT systems and work symbiotically with each of them. The county has integrated with a number of IT systems and will need to integrate with a majority of the remainder. The sustainability of GIS, no matter how successful currently, requires good documentation. The creation of standard operating procedures should be an area of focus for the GIS team. Additionally, giving the user base visibility into a technical support queue so that they have full purview into the disposition of their technical support cases. The GIS team should review their integration and documentation efforts annually. Additionally, an auto-geocoding tool should be acquired that geo-enables IT system data automatically through a management console.

"GIS gives new life to IT systems, allowing users to visualize the wealth of data and insight that they contain."

## GIS Software



## SOFTWARE KPI

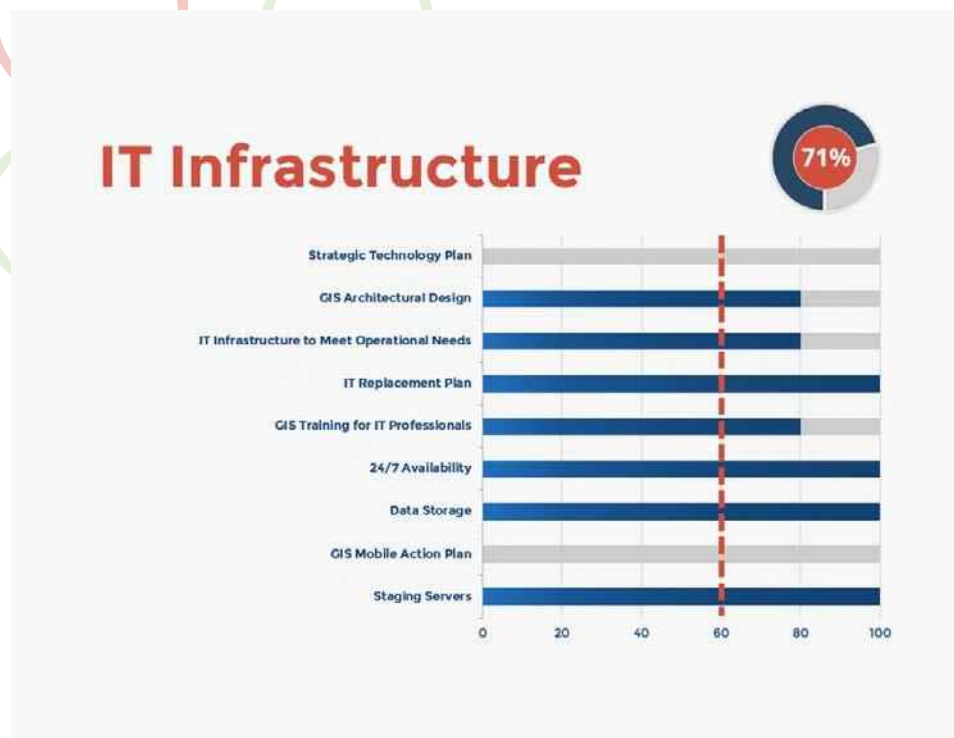
Software is the manifestation of investment in GIS. This is a great time to be using GIS. A decade ago, users were provisioned software applications that required extensive knowledge of GIS. The applications were not user-friendly nor aesthetically pleasing. However, the focus over the last few years has been the user experience. End-user tools are now being designed with ease-of-use in mind. Most users are not GIS professionals and therefore need tools that are intuitive and meet a specific need or set of needs. Likewise, tools for the public have become much more intuitive and graphically pleasing. Esri has created and released hundreds of software options that work on various platforms. Bay County GIS staff have done a fantastic job of implementing end-user tools. They are leveraging the appropriate tools for the appropriate users. The county should focus on the two areas of growth over the next few years – mobile and public-facing GIS. With better connectivity in the field, GIS mobility has become a reality. Also, there are innumerable ways to provide the public with information in a geographic context.

**"A picture (map) is worth a thousand words."**

**"GIS software should become the de-facto portal into all of Bay County's data."**



"GIS software has become untethered. No longer do we have to sit at our desk using a PC. GIS can be used anywhere."



## INFRASTRUCTURE KPI

Arguably the least glamorous component of an enterprise GIS is the infrastructure necessary to keep it running. Nonetheless, a good infrastructure is critical to GIS success. A slow and/or unreliable GIS experience is one of the quickest ways to frustrate users. Once users make up their minds that technology is not user-friendly and/or unusable it takes a huge effort to convince them otherwise. Therefore, maintaining an effective hardware and networking platform is mission critical. Bay County's GIS program is housed in IT, giving staff access to IT professionals. The GIS infrastructure is well provisioned, resulting in good end-user connectivity. Opportunities for growth are similar to previous pillars in regards to documenting and planning. This document serves as the GIS Master Plan that should be a basis for an overall Technology Plan for the county. Additionally, a GIS Mobile Action Plan should be put in place documenting the county game-plan, standards, and recommendations for mobile technology. GIS mobility will become much more prevalent and needs to be guided by best practices and standards.

"A slow user experience results in losing a user. Regaining that person as a user takes a ten-fold effort."

## Training & Education



## TRAINING, EDUCATION, AND KNOWLEDGE TRANSFER KPI

Training, Education, and Knowledge Transfer is universally the most underserved pillar of GIS sustainability. However, it is one of the most important. Many excellent GIS implementations languish because the power of GIS is not understood. Some organizations mistakenly believe that software training is enough. However, education and understanding of what GIS can do for the end-user are equally (if not more) important. Bay County's GIS is very successful. However, one of the biggest growth areas necessary to sustain that success is documented in this set of Key Performance Indicators. The GIS team should create a comprehensive training and education plan that is updated each year. Internal training and education workshops should be offered throughout the year and should be focused on how GIS can help the end-users. Engaging end-users in this process through the GIS User's Group is important. Educating each department about how GIS can benefit their process is a must.



"An organization that understands what GIS can do for them is on the verge of becoming a world-class organization."

"Many excellent GIS implementations languish because the power of GIS is not understood."



# VISION, GOALS, AND OBJECTIVES

## VISION STATEMENT

## ENTERPRISE-WIDE GOALS AND OBJECTIVES





Having a Vision, Goals, and Objectives is critical to the success of any GIS program. The Vision Statement clarifies the overall purpose of the Bay County GIS initiative and gives clarity to GIS staff and users. The following is a recommended vision statement for the Bay County GIS Initiative:

*“The Bay County geospatial program is envisioned to govern, coordinate, and implement an integrated county-wide geographic information system (GIS) to support the effective, practical, and innovative use of GIS.”*

The goals and objectives of the county are derived from the Voice of the Customer survey, on-site interviews, discussions with GIS staff, and follow up research and documentation review. The goals and objectives have been categorized to align with the Six Pillars of GIS Sustainability (See KPI section). Bay County should strive to achieve the

following goals along with their subsequent objectives. An annual work plan should be established to accomplish these goals and objectives. These goals and objectives should be reviewed annually and updated as appropriate.

### **OBJECTIVE 1: Complete the GIS Master Plan and present to stakeholders**

In the county's 2018-2019 Master Plan there was a recommendation to create a GIS Master Plan, with this plan being the result of said recommendation. This master plan clearly defines how GIS will shape the future of work within the county.

### **OBJECTIVE 2: Annually update the GIS Master Plan**

The GIS Master Plan has so many variables both feeding into GIS as well as being consumed. It is very likely that some of those variables and/or requirements will change over time. In order for Bay County to continuously improve their use of GIS over time it is recommended that this GIS Master Plan be revisited and updated each subsequent year.

### **OBJECTIVE 3: Adopt the proposed GIS Vision, Goals, and Objectives**

By having a clearly defined GIS Vision, along with concise Goals

and Objectives Bay County will be best positioned for all future operations.

### **OBJECTIVE 4: Implement Internal Project Tracking**

Give visibility of the work plan to all users to include priorities and status.

### **OBJECTIVE 5: Implement a GIS Steering Committee**

Bay County should form an executive-level steering committee to guide the organization's overall GIS. The group should be comprised of directors from the key departments, such as Utilities, Community Development, Emergency Services, Public Works, and General Services, and should be ultimately responsible for the direction of the county-wide GIS. This ensures executive-level buy-in and support.

### **OBJECTIVE 6: Establish a formal internal GIS User Group**

An internal GIS user group, meeting on a regular basis will increase cross departmental GIS knowledge throughout the

## **GOAL #1: GOVERNANCE – HOW GIS IS MANAGED**

### **OBJECTIVE 1: Complete a comprehensive digital data assessment and review**

A full data assessment should be completed initially, and revisited annually, utilizing tools such as the Esri Data Reviewer, to validate and analyze the GIS data quality thus identifying any areas that must be addressed. Those areas should be added into the annual work plan.

### **OBJECTIVE 2: Create a comprehensive GIS Master Data List (MDL)**

The county needs to create a comprehensive enterprise-wide Master Data List (MDL) that defines all of the digital data layers used and required by the departments. The GIS team should work on providing a complete MDL that is readily accessible in an easy-to-consume format so that users can identify available layers that they would want to include in their various GIS applications. There should be a focus on a consumer friendly version.

### **OBJECTIVE 3: Develop and document data creation procedures to ensure continuity and consistency**

## **GOAL #2: DATA AND DATABASES**

### **OBJECTIVE 1: Geo-Enabling all corporate databases to allow for complete enterprise integration**

Integration with or geo-enabling all corporate databases is critical for the county to leverage the wealth of information they have available. For some systems, this may be no more than setting up an automatic geocoder to geo-enable records as they are entered into the system. Additionally, as older systems are replaced a key focus should be ensuring that the replacement systems lend themselves to being well integrated with GIS.

### **OBJECTIVE 2: Develop and document a robust set of Standard Operating Procedures (SOPs)**

The GIS team should create GIS Standard Operating Procedures (SOP) for workflow, integration, and interoperability. This will position the county in a way that will provide sustainability of the GIS into the future.

## **GOAL #3: PROCEDURES, WORKFLOW AND TRAINING**

county, as well as optimizing collaboration on technical issues that might arise.

#### **OBJECTIVE 7: Create Standard Operating Procedures (SOPs) to develop an environment of standardization and sustainability of GIS at the county**

Several opportunities for Standard Operating Procedures (SOPs) were identified with a suggested minimum of SOPs related to Data Maintenance and QA/QC Procedures, Base Layer Updates, and Metadata, amongst many other opportunities.

#### **OBJECTIVE 8: Develop a formal measure of quality service**

A formal project and customer service feedback mechanism should be put into place. The county should measure the quality of GIS service and technical support throughout the organization, and where possible the residents of the Bay County. The quality of service can be examined through questionnaires and interviews or metrics related to project goals and objectives.

#### **OBJECTIVE 9: Maintain an Annual Work Plan**

Based on this Master Plan and subsequent updates, develop an annual high-level work plan that is shared with the Steering Committee and the GIS User's Group.

#### **OBJECTIVE 10: Update the KPIs**

Annually update the Key Performance Indicators included in this report to track progress and report back to the steering committee.

#### **OBJECTIVE 11: Maintain a Project Portfolio**

Annually update the success stories to include new projects and return-on-investment examples.

#### **Objective 12: Bi-Annual Departmental Meetings**

Meet with each department bi-annually to discuss GIS usage in their department and additional possibilities.

## MANAGED AND MAINTAINED

Data maintenance procedures should be implemented to ensure continuity and consistency in data quality. SOPs clarifying how various datasets must be created and enforced to include in-office and field data creation and maintenance.

#### **OBJECTIVE 4: Review Metadata Quarterly**

Review the GIS metadata quarterly to ensure that it is being updated and that key data editors are contributing.

#### **OBJECTIVE 5: Data Layer Improvements**

Annually review the data needs of the organization and create a list of priority data updates and new data layers with a

prioritization and game plan for completion. Create the needed data as per the needs assessment.

#### **OBJECTIVE 6: Aerial Photography**

Continue to acquire aerial photography every three years. This may include the acquisition of other types of remotely sensed data such as oblique imagery for "desktop appraisals".

#### **Objective 7: Geometric Network**

Implement geometric networks and business rules for Utility Services as appropriate.

#### **OBJECTIVE 3: Put into use a ticketing system to track GIS Technical Support requests**

The GIS Division should consider putting into use a ticketing system to track GIS Technical Support requests.

#### **Objective 4: Addressing SOP**

Need to refine the addressing workflow and create an SOP. This will require the engagement of other departments for approval.

#### **Objective 5: Extend GIS Functions as per the Needs Assessment**

- Creation of story map highlighting CIP projects
- Heat Maps of crash and traffic locations
- Creation of a story map in support of economic development
- Implementation of Esri EOC tools

## ND INTEGRATION



#### **OBJECTIVE 1: Increase use of mobile software to allow better access to data in the field, as well as improving field collection activities**

Bay County is currently utilizing mobile software, though there are many other use cases that could benefit from additional mobile solutions. The county should continue to investigate new opportunities for mobile solutions into the future.

#### **OBJECTIVE 2: Annual software review**

Annually review the existing application suite and new tools afforded by Esri to ascertain new ways of doing business and new tools that should be implemented. Review each of the departmental applications to determine if they still meet the needs of the external users and how they can be improved. Sunset applications that have outlived their purpose.

#### **OBJECTIVE 3: Refine and Extend Departmental Applications**

Continue with the implementation of department specific applications using Esri's Web AppBuilder. Meet annually with each department to determine how best to augment the tools with widgets (custom functionality), queries, canned reports, and other functions.

#### **OBJECTIVE 4: Expand on usage of Story Maps**

With the utilization of Esri's Story Maps, targeted information can be compiled in an easy to access and understand manner open to the public, or for internal use only. This will allow Bay County to spread the word over successes or keep the public informed.

#### **OBJECTIVE 5: Establish a robust set of dashboards for all critical departments**

Utilizing Esri's ArcGIS Solutions Bay County could benefit from having web-based dashboards with department specific key performance indicators displayed in real time for efficient decision making by the responsible parties.

## **GOAL #4: GIS SOFTWARE**

#### **OBJECTIVE 1: Update the GIS Architectural Design document to reflect all improvements and changes to the GIS environment**

The document should include details about the environment with a vision for the next five years.

#### **OBJECTIVE 2: Establish a separate GIS Mobile Action Plan, allowing for testing, development, and production environments**

As GIS mobile tools are more widely embraced, the county will need to ensure a mobile action plan is in place to guide mobile use. Standards for mobile hardware, platforms, applications, and field data collection need to be established.

## **GOAL #5: IT INFRASTRUCTURE**

#### **OBJECTIVE 1: Develop an on-going GIS training plan for all county staff**

The GIS team needs to create an annual training plan that incorporates formal and informal training and education opportunities for the entire organization.

#### **OBJECTIVE 2: Conduct internal multi-tiered GIS software training as a part of the annual GIS work plan**

Training is critical at all skill levels, and just as there are multiple tiers of software users, there should be appropriately structured tiers of training plans for incorporation in the annual GIS work plan

#### **OBJECTIVE 3: Conduct internal mobile GIS software training**

Such training will provide refresher courses throughout the year to maintain a consistent level of capabilities, as well as new training for those users who do not currently have the knowledge required when utilizing mobile solutions

#### **OBJECTIVE 4: Ensure each department within the county has a specific training plan for staff to develop and maintain appropriate GIS skills**

The county should ensure that all departmental GIS users have the appropriate training to carry out the GIS functions

## **GOAL #6: TRAINING, EDUCATION AND K**

### OBJECTIVE 6: Implementation of ArcGIS Hub

Following with the latest Esri technology around open data, Bay County should establish a full ArcGIS Hub solution, providing the state-of-the-art access to GIS data and tools all in an easily searchable central location.

### OBJECTIVE 7: Implement a web-based travel time application for the public

Drawing real-time traffic information from WAZE, and other sources, provide a web-based travel time application accessible on all variety of browsers and mobile devices.

### OBJECTIVE 8: Acquire a Third Party Data Mining Tool

This tool would assist with mining data from existing IT systems like TrakIt, Chameleon and others.

### Objective 9: Expand the Application Suite to Include:

- Further refinement and implementation of the EOC Suite

- Implementation of a StoryMap for Economic Development
- Implementation of a StoryMap highlighting the county's CIP Program
- Implementation of a StoryMap of the Comprehensive Plan

### OBJECTIVE 3: Annual infrastructure review

Critically review architecture annually to identify best practices and implement needed upgrades. Based on the results of the annual Voice of the Customer Survey, identify weaknesses in the systems and identify a plan for improvement.

necessary to enable them to do their jobs. This will be a part of the annual training plan.

### OBJECTIVE 5: Conduct internal ROI workshops

Highlight various successes in utilizing GIS technologies within the county, thus spreading the understanding of the breadth of benefits associated with the usage of GIS

### OBJECTIVE 6: Online seminars and workshops

Utilize online seminars and workshops to further promote the use of GIS and provide avenues to share use cases across departments



### OBJECTIVE 7: Informal and ongoing training opportunities

Conduct monthly informal GIS training and education sessions similar to a brown bag lunch workshop, Annual Esri User's Conference, GIS Day, or even more structured software based training for building skills in the use of ArcGIS Pro, amongst other things.

### OBJECTIVE 8: Create a succession plan

Create and sustain a succession plan to ensure as staff depart the county, that a game plan is in place for the retirement of the current GIS Manager.

## KNOWLEDGE TRANSFER







## CONCLUSION

Bay County's GIS is a success by any standard. As evidenced by the key performance indicators, the county has achieved implementation of the technology. However, the technology continues to evolve and advance. Many opportunities exist to expand the use of GIS within all departments and with the public. It is clear that staff throughout the county need to and desire to continue to utilize GIS technology to conduct daily tasks. GIS use in local government is going to become more prevalent. GIS will become the de facto portal for managing and analyzing data at Bay County (spatial and non-spatial). The spread of GIS tools has been significant over the past few years. Also, residents are equipped with an ever-increasing array of GIS-based tools. They have location aware phones and an assortment of mobile devices. Over the next decade, this will become more prevalent. Users will expect local governments to automatically provide location-based service (LBS) information on road closures or work in their area, the location of the nearest county facility with desired amenities, the location of special events, utility services, and the location of projects throughout the county. This can only be accomplished through the use of GIS. The county has invested in GIS and will continue to do so. The importance of GIS at the county will continue to increase. Therefore, it is critical to the success of the organization as a whole that the recommendations made in this Master Plan are adopted, ensuring that the county's GIS investment will be viable and able to meet the ever-increasing demand.

The Bay County GIS Program is one of the most successful county GIS implementations in the country. As compared to its peers, the county has achieved an advanced and prevailing implementation.

This Master Plan will serve as a road map for the future and should be updated incrementally to reflect accomplishments and changing priorities.

**"The application of GIS is limited only by the imagination of those who use it."**

**- Jack Dangermond**



**BAYCOUNTY,**  
**FLORIDA**