

Appendix R

Palm Beach County GIS Best Management Practices Comparable County GIS Program Summaries

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A. Introduction

The following County GIS Program summaries are provided to support Phase 2 of the GIS Best Management Practices Situation Assessment project for Palm Beach County, FL. This overall project will result in the recommendation of a comprehensive set of GIS Best Management Practices that Palm Beach County can use to set a path toward sustained excellence in the use of GIS. The County desires to: 1) validate the sustainability of its current management practices and make adjustments where indicated and; if warranted 2) undertake a more robust direction toward optimized and innovative approaches in its future GIS initiatives.

Phase 2 is the Comparative Analysis phase of the project which has located, documented, and analyzed GIS programs in several comparable government agencies. The study of these agencies will allow Palm Beach County to measure other successful GIS implementations against the established conditions of their County-wide GIS and to further the County's efforts to prescribe any indicated adjustments to GIS now and into the future.

B. Methodology

Phase 2 of the project targeted four County-wide GIS programs located throughout the U.S. to participate in the Best Management Practices Assessment. These County programs include: Johnson County, Kansas, Mecklenburg County, North Carolina, Orange County, Florida and Kern County, California. Each County participated in a three part assessment that included:

- Completing a Self-Assessment using a Baldrige style Best Management Practices Survey;
- A Customer Satisfaction Survey administered to relevant user organizations that rely on services from the County GIS program;
- A telephone interview conducted with the relevant GIS coordinator.

Characteristics of each County GIS program that make it somewhat unique and offer insights into Best Management Practices are documented in the summaries.

C. Comparable County Profiles

1. Johnson County, Kansas

Overall Theme: Entrepreneurship

a. Background

Johnson County is home to over 450,000 individuals. Created in 1855 and organized in 1857, Johnson County was one of the first 33 counties in Kansas. Located near the twin

cities of Kansas City, Kansas and Missouri, it contains 477 square miles, or 307,200 acres. Since the original establishment of the Shawnee Methodist Mission in 1839, Johnson County has developed into a complex mixture of urban and rural areas.

County government was established in Kansas to carry out state prescribed functions at the local level; that is, to act as an administrative agent for the state in such matters as tax assessment and collection, registration of motor vehicles, and record keeping. Also, as a local government, the County has assumed responsibility for provision of a wide variety of local services such as roads, public safety, health, environment, parks and recreation, planning and zoning, airports, library and civil defense.

The seven-member Board of County Commissioners is Johnson County's chief governing and policy-making body. County Commissioners are elected to four-year terms by the residents in districts that are roughly equal in population.

There are over 40 departments and more than 3,500 employees in Johnson County Government. Together they provide a variety of services, including a GIS program for the County.

The County-wide GIS program is called the Automated Information Mapping System (AIMS) and is a department within Johnson County government. AIMS was initiated by the Board of County Commissioners in the mid-1980s. The major reason for establishing AIMS was to enable the county to meet the rigorous mapping and documentation requirements of the complete property reappraisal mandated by the Kansas State Legislature. AIMS has since grown into a highly integrated support and service department within the county. GIS is used in many arenas including emergency management and response, property appraisal, public works, health services, and economic development.

AIMS is making the county's maps and data available online at:
<http://ims.jocogov.org/scripts/esrimap.dll?name=aims2&Cmd=map>.

The mission of AIMS is to provide open, efficient, and enterprise access to spatial data at a reasonable cost to aid stakeholders in making more efficient and effective decisions. To accomplish this mission, AIMS applies sound GIS principles with quality spatial data and effective distribution technologies to put AIMS services at the disposal of stakeholders. (Taken and modified from the AIMS Website - <http://aims.jocogov.org/>)

b. Leadership

A key to the success of the Johnson County GIS effort is that county leaders and government executives have recognized the roles that spatial information and analysis can play in the management of county mission activities and programs. Specifically, that GIS is used to support physical and organizational infrastructure within the county and leadership recognizes that GIS is a helpful tool in managing county infrastructure.

To this end, AIMS reports directly to the Assistant County Administrator that leads the Infrastructure Department. In the case of Johnson County, leadership recognized that to be successful the GIS effort had to exist organizationally outside of the inflexible business practices of the Information Technology Systems group. The AIMS

program is strongly focused on getting good quality spatial data into the customer's hands and integrating that data into their workflows.

Coordination of GIS across the enterprise is led informally by listening to the needs of customers, and allowing stakeholders involvement in the management process. Customer needs are the governance that ultimately guide the direction of AIMS (cities, departments, and the public). Johnson County does not currently have a GIS policy committee or coordination council.

c. Human Resources

Johnson County GIS program managers emphasize the importance of people in building a strong organization that encourages entrepreneurship. During the interview management stressed that "it is all about the people" who comprise the program staff. When asked, "What makes AIMS successful?" The reply was, "The talent of the staff."

The focus of management has been on creating a staff with diverse talents to be able to tackle many projects with various needs and deliverables. This philosophy translates into a program with the following characteristics:

- Purpose to create a diverse work environment that develops diverse individuals;
- Incorporate cross training that produces staff who are "jack of all trades" types, allowing for the ability to work on various types of projects with quality deliverables;
- Provide training across the board where needed or requested;
- Include adequate training funds in the budget.

The AIMS program has a total of 13 staff that includes management, analysts, and GIS specialists. There is currently no formal career path or title series for GIS staff to develop into and staff retention is seen as a challenge.

d. Information and Analysis

The Johnson County GIS program main focal point is to integrate GIS and spatial data into work flows and business processes of the County agencies. Given the maturity of the program, at this time, AIMS does not place great emphasis on data development, in fact investing only about \$225k per year in enterprise data. This distinction is important to understand the business model of the AIMS initiative. The entrepreneurial nature of this program focuses AIMS on customer issues. In a very real way, the existence of AIMS is dependent on the outcomes it facilitates for its customers. Moreover, GIS management and County leadership believe in the problem solving power of GIS and spatial information and stress integrating spatial information into daily work processes as the top priority.

Notwithstanding the focus on business outcomes, AIMS does provide baseline support for its clients, including managing and serving enterprise GIS data and application services that include:

Data

- A central data store;
- development databases are frequently updated;
- Street centerline updated on a weekly basis;
- Stormwater data that is updated approximately every 6 months.

Services

- Internal agency data and application services;
- Online mapping, including Johnson County land records;
- Web services, including addresses (brought in from other departments), school locator, utility information, digital plat services, and county economic research

e. Strategic Planning

Johnson County has adopted the development and use of strategic and business (see attached in Appendix A). The business plan is developed annually and is primarily a marketing plan that outlines revenue goals, considers how to increase users, and expand its customer base. Johnson County is looking at peer counties as additional customer organizations.

f. Operations

AIMS is fully funded by the Johnson County general fund. The Program annual budget is approximately \$1.2 million dollars. AIMS has been practicing sustainable government by annually "giving back" to the general fund an average of 30% of their budget. This is done through generating revenue from data licenses, map sales and providing services and solutions. AIMS leadership is hoping to increase the revenue they generate through the ongoing development and deployment of additional services.

g. Customer Satisfaction Results

The following is a summary of the Customer Satisfaction Survey results; more detailed results are provided in Appendix I.

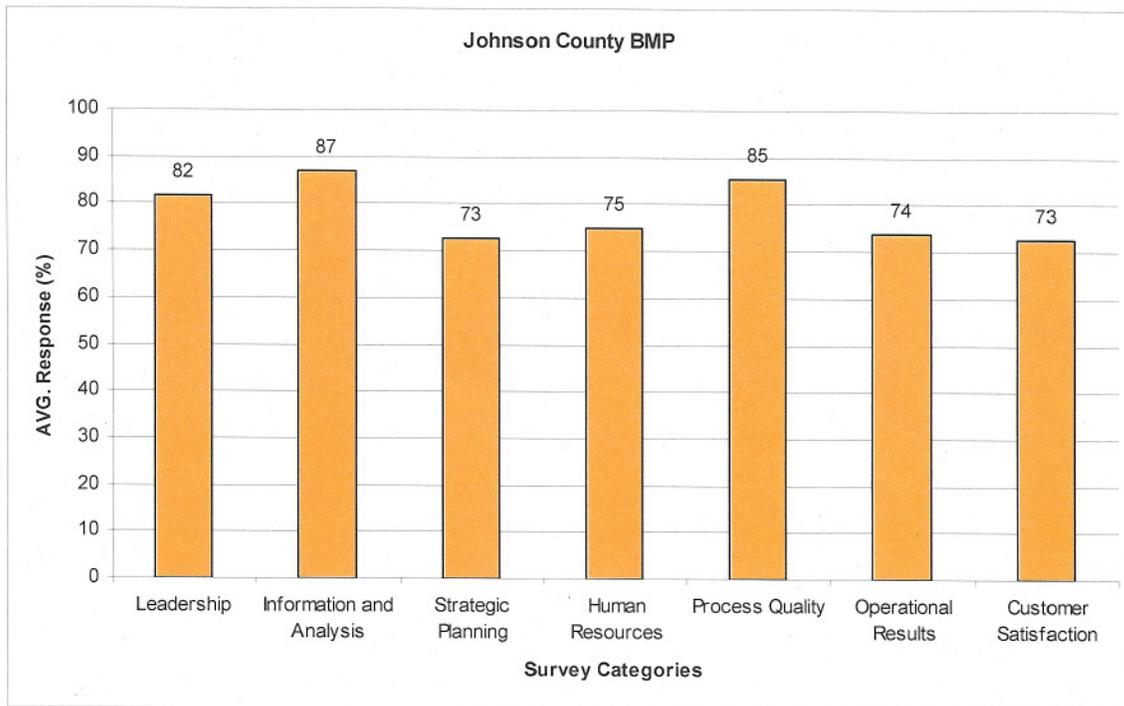
- Frequency of Use: 70% on a daily basis; 95% more often than monthly.
- Essential to Work: 65% essential; 35% critical
- Overall Satisfaction: 72% very satisfied; 27% satisfied
- Currency: 61% very satisfied; 33% satisfied; 5% no opinion
- Geographic Coverage: 50% very satisfied; 39% satisfied; 5% no opinion; 5% dissatisfied
- Accuracy to Field Conditions: 44% very satisfied; 38% satisfied;
- Access to Cost Effective Training: 39% very satisfied; 50% satisfied; 11% no opinion
- Ease of Use: 61% very satisfied; 39% satisfied

- Timeliness of Products and Services: 83% very satisfied; 28% satisfied
- Sufficiency of Resources Available: 50% very satisfied; 44% satisfied; 5% no opinion
- Satisfaction with Resources: 78% very satisfied; 22% satisfied
- Empowerment to Perform Work: 72% very satisfied; 28% satisfied
- Reciprocity of Data: 39% very satisfied; 44% satisfied; 17% no opinion
- Collaboration: 56% very satisfied; 39% satisfied; 5% dissatisfied

These results indicate a very high level of satisfaction by the clients of AIMS.

h. Self Assessment

The Bar Chart below summarizes the County GIS Program responses to the Self Assessment Survey. The % response for each Best Management Practices category represents a composite score of relevant questions pertaining to each area.



i. Key Findings

Key factors influencing Johnson County GIS include:

1. Johnson County has an entrepreneurial model where product and service delivery are not a “free goods”. The County uses market based mechanisms, to focus resources on priority business activities of its clientele.
2. For success in this entrepreneurial model, AIMS must create a level of trust such that it must be and be perceived as being able to provide better and faster service

than other organizations. To date, AIMS has been delivering quality service, on time.

3. AIMS has adopted an aggressive technology approach, but not on that is on the leading edge. AIMS extends the lifecycle of its technology investments as long as practical such that it is delivering useful services with older, but proven technologies, e.g., AIMS is still using an older internet application.
4. Innovations are employed to improve product and service delivery, not just innovation for innovation's sake.
5. The annual business planning exercise establishes performance metrics as a way to both establish and measure success as well as to focus resources to the tasks of the program.
6. As part of the entrepreneurial model, AIMS has marketed the program extensively. Outreach and education was a big first step; and then continuing to expose and market new services. These efforts have resulted in not only creating awareness but also instilling trust and confidence.
7. Organizing AIMS outside of the IT organization in Johnson County has contributed to customer confidence and customer support. In the current model AIMS needed to be its own department to have the flexibility to be able to provide the products and services needed for its clients to be successful.
8. The access to and the engagement of County leadership is a key driver to the success of the AIMS program.

2. Kern County, California

Overall Theme: Striving for Visibility

a. Background

Kern County is located in the central valley of southern California extending beyond the southern slope of the eastern Sierra Nevada's into the Mojave Desert. Kern County is 8,141 square miles, or roughly the size of Massachusetts, and is home to approximately 780,000 residents. Established in 1866 with the mining town of Havilah as the original county seat, Bakersfield has been the Kern County seat since 1874. When Kern County was first established mining was the dominate industry in the region as the land was not suited for agriculture. However that changed once the lakes and swamps were drained and converted to agriculture land. Agriculture remains an important industry to this day along with more modern pursuits such as oil, natural gas, hydro-electric, wind turbine power and geothermal power. The oil fields of Kern County account for 1/10th of the U.S oil production. Kern County is experiencing a period of unprecedented growth. This creates of host of expected issues most notably transportation infrastructure and public services such as health, police and fire. The attraction of Kern County are the open spaces mixed with urban amenities, contradictory to the typical southern California images of dense, sprawling urban areas.

Bakersfield is the county seat as well as the largest city in Kern County. There are over 50 departments in Kern County governed by a five member board of supervisors, each

elected for a four-year term from five separate geographical districts within the county. With an annual operating budget of over 1.3 billion dollars Kern County is able to offer its citizens a wide variety of services. Of specific interest is the Division of Engineering and Survey Services, which is home to the Kern County GIS program.

GIS has existed in the region for the past 7 years and the GIS has been centralized in the County for the past 4 years. Kern County GIS does not exist as a separate department but rather it is a department within a department. The formal manager for the GIS department is the manager for the Division of Engineering and Survey Services; however there is a designated GIS coordinator position for the Kern County GIS program.

Although there have been many successes, the County GIS program is limited by staffing and a lack of political support. Functionally, the program is the work of the coordinator who acts as an "army of one" in regard to production, coordination, and advocacy.

Notwithstanding, Kern County GIS aims to grow and prove the value of GIS across the county. This focus on "making things happen" has restricted Kern County from participating in more sustainable practices such as creating a strategic plan, growing staff and creating a more efficient use of available resources. Coupled with the fact that the GIS coordinator's position does not officially oversee the department, influencing decision making is a challenge.

b. Leadership

GIS has been in the region for the past 6-7 years and centralized in Kern County in the past four years, since hiring its first GIS coordinator.

The Kern County GIS is an example of program that is organizationally located within a programmatic department, in this case the Engineering and Survey Department. This type of organizational model is fairly common in county government, particularly with start up GIS programs. While this organizational model affords some degree of administrative convenience, it brings with it several challenges that are typified in Kern County. These challenges include:

- A county-wide GIS effort that is largely informal in nature;
- No formal governance model for Kern County GIS; at the same time a volunteer GIS coordination team meets on a monthly basis;
- The organizational model results in the perception that County-Wide GIS is "a department lost within a department";
- The GIS effort is located too far away from the center of power to influence decisions.

There is currently a lack of high level political support for Kern County GIS. And while the County has a GIS Coordinator position, there are not clear lines of authority between the central GIS program, the GIS leads in other county departments, and other GIS Specialists located throughout the County.

c. Human Resources

Kern County has a one staff member located in the central GIS program that is dedicated to the development of standards and coordination across county government. There is some hope that this staff may be expanded. Various departments have GIS staff to manage their internal programs. This central staff works cooperatively to leverage additional capability distributed in other programs.

The County-wide GIS is currently in the process of creating a GIS title series for a career progression path. In addition to the GIS Coordinator position, there are two technical titles:

- GIS Technician (level 1-3)
- GIS Analyst is primary GIS technology person responsible for database management, software management, etc.

A GIS training class for county users is also available.

d. Information and Analysis

The Kern County GIS provides Enterprise Data custodian roles in support of County government and delivers spatial data sets and services from the County GIS Web site at <http://www.co.kern.ca.us/gis/>. Kern County GIS serves as the custodian for base map data sets that are developed or purchased by the County. The GIS program also serves as the custodian for layers that have no other logical stewards, such as: municipal boundaries, annexation boundaries, and jurisdictional boundaries. The County GIS hosts the technical framework for Internet Mapping Services through its Geocortex IMF viewer.

Kern County GIS encourages the sharing and use of data and use of internet mapping to the maximum extent possible. Digital, spatial data is made freely available to the public through the County GIS Clearinghouse. A pro-development; pro-business atmosphere in the county has helped create an environment and a constituency that is supportive of GIS. The philosophy of County-Wide GIS is to provide free data access allows as many users as possible to access GIS and help spread the idea that GIS is a valuable tool throughout the county.

In its role as custodian of enterprise data custodian, Kern County GIS provides needed services to constituent agencies. Ultimately though, any analytical use of GIS is largely the role of individual agencies.

e. Strategic Planning

Kern County has been remarkably successful, despite the lack a strategic plan for its GIS program. The importance of a strategic plan to support sustainability and growth is understood but lack of resources has prevented real progress. Currently the 'backbone' of the GIS program in Kern County rests on the shoulders of a single individual, the GIS Coordinator. There is keen recognition that this model is not sustainable for the following reasons:

- As a 'one person' agency Kern County GIS is not institutionalized. Dependency upon an individual is risky;
- No documentation exists for transferability of management practices;

- The is a lack of contingency planning places essential program services in jeopardy should the coordinator not be available;
- The lack of strategic plan that encapsulates the collective needs and vision of County stakeholders, especially decision makers, inherently limits their engagement and commitment to broader enterprise needs. That said there is considerable effort and commitment at a technical staff level for the efforts of the program.

Because there is no plan, Kern County GIS is also lacking performance metrics with which to measure the successes of practices. The majority of the GIS effort has been spent on “making things happen” as opposed to developing the planning and policies needed to help shape the long term direction of the organization. This is due to many reasons such as staff restrictions and the GIS coordinator’s desire to make GIS more visible, trying to make it a part of department workflows and the lack of a strategic plan.

f. Operations

Funding for Kern County GIS is provided from the general fund. However since the GIS is located within the Department of Engineering, funds are funneled through the Engineering Department. Thus, indirect and limited access to funds makes it difficult to grow and add personal and other critical needs.

g. Customer Satisfaction

The following is a summary of the Customer Satisfaction Survey results; more detailed results are provided in Appendix B.

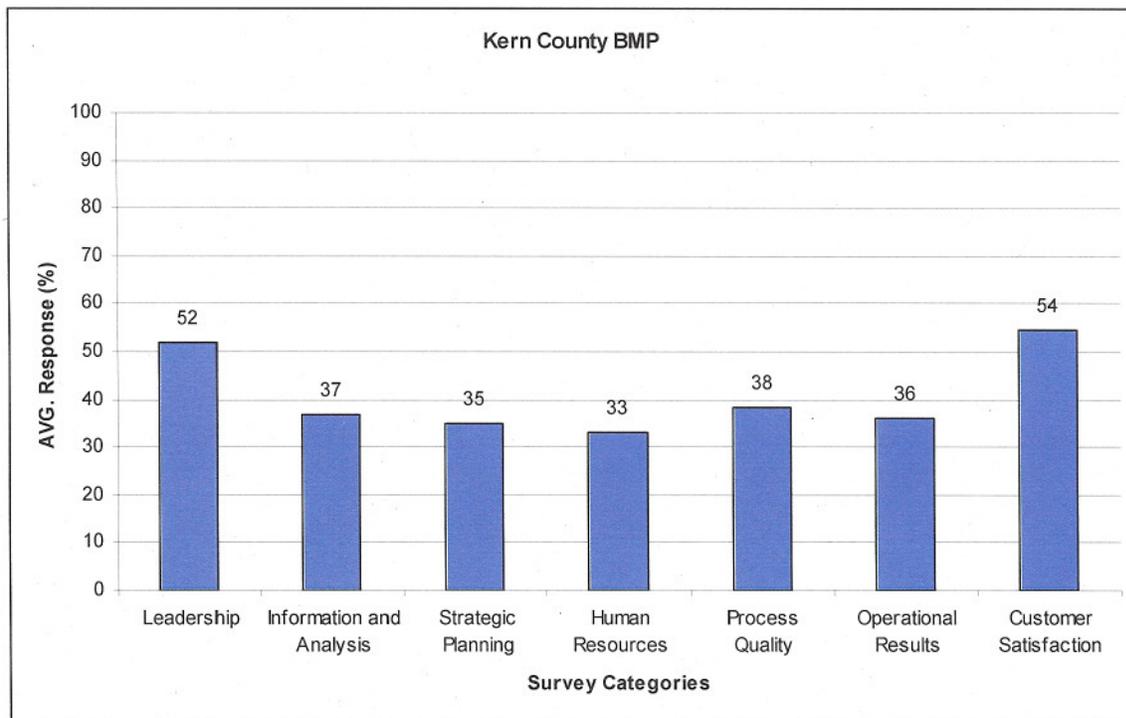
- Frequency of Use: 50% on a daily basis; 25% more often than monthly; 19% monthly; 6% less than monthly
- Essential to Work: 38% essential; 38% critical; 13% preferred; 13% somewhat useful
- Overall Satisfaction: 20% very satisfied; 67% satisfied; 13% no opinion
- Currency: 20% very satisfied; 73% satisfied; 7% no opinion
- Geographic Coverage: 27% very satisfied; 40% satisfied; 43% no opinion
- Accuracy to Field Conditions: 31% very satisfied; 47% satisfied; 22% no opinion
- Access to Cost Effective Training: 47% very satisfied; 27% satisfied; 20% no opinion; 7% dissatisfied
- Ease of Use: 27% very satisfied, 47% satisfied, 20% no opinion; 7% dissatisfied
- Timeliness of Products and Services: 27% very satisfied; 20% satisfied; 47% no opinion; 7% dissatisfied
- Sufficiency of Resources Available: 7% very satisfied; 40% satisfied; 33% no opinion; 20% dissatisfied
- Satisfaction with Resources: 20% very satisfied; 33% satisfied; 40% no opinion; 7% dissatisfied

- Empowerment to Perform Work: 20% very satisfied; 67% satisfied; 13% no opinion
- Reciprocity of Data: 33% very satisfied; 53% satisfied, 13% no opinion
- Collaboration: 34% very satisfied; 33% satisfied; 33% no opinion

Customer satisfaction is remarkably positive given the lack of resources to support a county wide effort. There appears to be significant good will built around strong, but informal organizational model. Good will also seems to be driven from the excellent effort made staff across the County.

h. Self Assessment

The Bar Chart below summarizes the County GIS Program responses to the Self Assessment Survey. The % response for each Best Management Practices category represents a composite score of relevant questions pertaining to each area.



i. Key Findings

Key factors influencing Kern County GIS include:

1. Kern County GIS reflects a highly successful “start-up” county-wide GIS program. Working with very limited staffing and resources the County has established:
 - a. Enterprise data stores with mechanisms for access and use;
 - b. The creation of an informal and voluntary governance mechanisms;

- c. The creation of a client base for enterprise GIS data within the County, with other governmental partners, and the private sector.
2. Customer satisfaction reflects the limited availability of services and data currently supplied by Kern County GIS. Responses to the Customer Satisfaction Survey reflect that customers are satisfied that GIS services currently exist, but there is a desire for better quality.
 - a. From a self evaluation perspective, what is working well:
 - i. Of the staff that exists, they are competent and provide quality services;
 - ii. Agency staff is both competent and leverages
 - iii. The GIS Coordinator feels that he has been given the opportunity prove the usefulness of GIS;
 - b. From a self evaluation perspective what needs improvement
 - i. Not enough staff.
 - ii. Non-sustainable management practices
3. The County culture of open access and sharing data is appreciated by clients from within and outside County government. This has engendered good will that has aided in keeping up the momentum of this program. It is seen as a commitment to public service.
4. The entire County-wide GIS coordination effort is informal and relies on the coordinator keeping everything together, creating a 'person centric' organization. There are complications to this:
 - a. This model requires the coordinator to have a compatible personality to effectively encourage everyone to work together to support common goals;
 - b. It is not sustainable in the long run
5. Kern County GIS is in transition: From an organization that employs start-up best practices to one that inevitably must embrace longer term, sustainable best practices.
6. To make this transition, decision makers and elected officials must be persuaded and brought into the process.

3. Orange County, Florida

Overall Theme: Transition

a. Background

Home to over 1 million inhabitants with Orlando as its county seat, Orange County covers 907 square miles in central Florida. Originally named Mosquito County when created in 1824, Orange County was renamed in 1845 to reflect the main product of the region, oranges. Oranges really outline the recent history of Orange County when at one point nearly 1/4th of the county was covered by orange groves. Today Orange County still produces oranges, though on a much more limited scale. Attractions such as Disney World and Universal Studios are now synonymous with the Orlando/Orange County area.

Central Florida's mild climate coupled with some of the nation's best known theme parks and the Orlando Convention Center make Orange County a popular destination for both tourists and businesses alike with over 40 million visitors a year.

Orange County is unique in that it is a charter county, meaning that it has its own constitution and is self-governing. This model is seen as more flexible, allowing the county to better react to the needs and desires of its citizens. The county government itself is led by a county mayor, elected at large, and six county commissioners elected from single member districts. Both mayor and county commissioners are elected every four years, alternating election years. Orange County has an annual budget of over 2 billion dollars and nearly 7,200 employees spread out through 11 departments. One of the major issues for central Florida and Orange County in particular is the issue of rapid growth and urban sprawl. It seems appropriate that the Orange County GIS program is located in the Department of Growth Management.

There are two main drivers for the GIS in Orange County, the rapid growth that is occurring as well as emergency services.

Land is being developed at a rate of 7,800 acres per year and the population is exploding. If current trends are to continue the population of Orange County could reach 2.5 million by the year 2050, from today's population of just slightly over 1 million. At current levels there are approximately 500,000 building inspections per year, which is 30% more than any other county in the nation.

The other driver for Orange County GIS is emergency services. This is a common theme throughout the country as accurate data is vital in any emergency situation. However, Orange County has a unique situation of having over 40 million visitors per year with little local knowledge of the area. Not only is the County in 'Hurricane Alley', it is a possible target for man-made threats as well. With continued growth, it will be vital for Orange County to maintain a modern GIS system capable of supporting the needs of emergency services throughout Orange County and the region for the benefit of both its citizens and its millions of guests.

It is the Department of Growth Management's goal to provide guidance for the growth and change of Orange County in order to maintain a high quality of life for all. The department is dedicated to providing professional, quality customer service, through the use of technology and the Internet to improve the exchange of information with the individuals and communities they serve.

b. Leadership

Orange County has several interesting characteristics that make it a geographic area ripe for GIS. These characteristics include being located in a part of the country with unprecedented population growth accompanied by tremendous pressure for urban and suburban development, hosting a robust tourist industry, and being exposed to a variety of natural and man-made risks.

In the U.S. any one of these factors would likely result in the adoption and use of GIS, but in the case of Orange County, these multiple factors have contributed to early adoption and recognition of the value of GIS by County leadership. Traditionally, GIS development has been highly decentralized. There is keen understanding by

leadership that GIS is important; and that it must be protected and constantly upgraded and improved for use by emergency services. A great deal of political support has come from the fact that Orange County recently experienced a hurricane, and it is often under threat, on some level, by the prospect of severe weather.

It is with that context that County leadership has recently made a push towards enhancing GIS at the enterprise level, formalizing coordination, and building capacity through out the County.

The Orange County GIS is located organizationally in the Department of Growth Management. Growth Management is a large agency primarily due to the unprecedented growth that the county is experiencing. To help coordinate the use of GIS, the County-wide program has adopted a governance structure that consists of:

- GIS Steering Committee composed of department directors and deputy directors that sets policy;
- GIS Technical Committee composed of representatives from GIS sections distributed across the enterprise; and
- GIS Coordinator who reports directly to the GIS steering committee and serves as Chair of the technical committee.

c. Human Resources

The development and use of GIS in Orange County government is currently highly decentralized, with GIS users spread across the county in many different departments. The central Orange County GIS staff size is quite small.

Efforts are underway, with the help of a contractor, to organize IT and GIS more consistently across the enterprise. This effort is addressing the creation of a central technology team to deal with infrastructure technology, and a re-organization strategy for GIS.

Orange County GIS has established a professional GIS position ladder with 4 different technical levels, ranging from GIS Technician to GIS Senior Analyst. Recruitment strategies for hiring new staff are evolving to include skill sets in IT combined with GIS.

The County-wide GIS budget contains funds for internal and external training programs for its central staff. There are also training programs and plans for GIS staff distributed across the Enterprise in various County departments.

d. Information and Analysis

The Growth Management Department Fiscal & Administrative Services Division's GIS Section maintains a Web site at:

(<http://www.orangecountyfl.net/cms/DEPT/growth/maps.htm>).

This site organizes a variety of GIS data resources including: a series of standard maps showing the features most commonly requested by government staff and the public. These standard base maps include such information as: County Commission Districts, existing and future land use, parks and schools, urban service areas, etc. The site also

offers an FTP site hosted by Orange County GIS that allows download of a variety of GIS data sets.

Orange County GIS also maintains an Interactive Mapping Service (Orange County InfoMap) that currently allows multiple data layers to be displayed and mapped. A second generation data repository is in progress. This new repository will be a GIS Portal that is being developed to provide decision support and executive management support services.

In addition to providing access to enterprise data and services, the Orange County GIS staff currently performs a mix of QA/QC, data maintenance, specialized support for management, support for emergency operations, planning and application development, and training support and consultation. The central GIS does not provide service bureau function (preparing custom maps, etc.), but rather people in the individual business areas produce those products and analyses.

Given the organizational structure, the bulk of the transactional and analytical uses of GIS are undertaken in the business areas. It is the goal of county wide GIS staff to facilitate more strategic use of the technology and the data (see strategic planning below)

e. Strategic Planning

Orange County GIS does have a strategic plan that is reviewed annually and updated on a 3 year cycle. Those who participate in the development of the strategic plan are the GIS coordinator, members of the Technical GIS Committee and the Steering Committee.

The enterprise GIS does not presently engage in business planning however that is changing and GIS planning is making its way into the business planning processes of the County.

As the transition to a more formal coordination model is being completed, county wide GIS is focusing on six key strategies, including:

- There is an effort being made to integrate GIS and spatial information into County business processes, especially for use by non GIS staff. This will take the form of background processes and analytics as well as using map presentation a part of reporting.
- To create a true enterprise spatial and related non-spatial data repository;
- To automate data transfers between the agencies and between agencies and the enterprise;
- To focus on web based communications and architectures
- Move the County toward spatially enabled decision support; and
- Create countywide geographic standards so that there is consistency across the Enterprise.

f. Operations

The Orange County Department of Growth Management is funded by the county general fund, which then indirectly provides operating funds for the GIS program. Programmatically, Orange County GIS is in a state of transition both in terms of data delivery and services and internal organization. In terms of data delivery, the GIS is planning to migrate to a Portal environment; and organizationally the GIS is working to become more integrated into business processes throughout the county, for example using GIS/GPS technology with the Department of Corrections to monitor parolees.

g. Customer Satisfaction

The following is a summary of the Customer Satisfaction Survey results; more detailed results are provided in Appendix C.

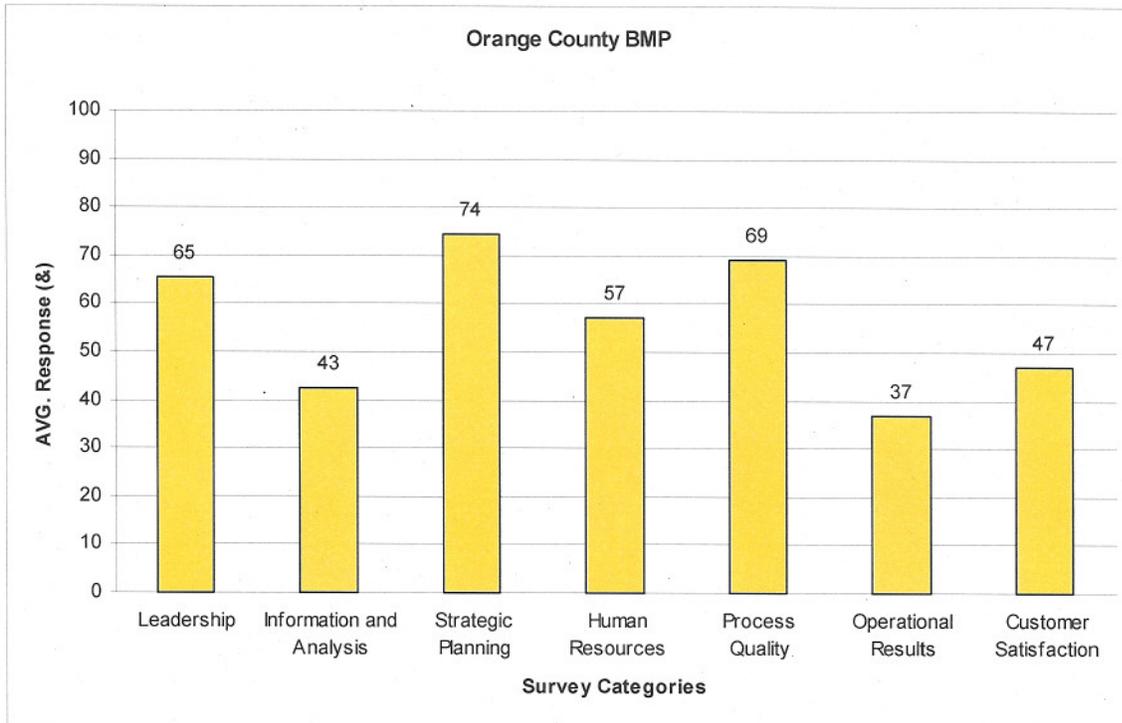
- Frequency of Use: 65% on a daily basis; 15% more often than monthly; 15% less than monthly; 5% never
- Essential to Work: 25% essential; 55% critical; 10% preferred; 10% unnecessary
- Overall Satisfaction: 10% very satisfied; 60% satisfied; 20% no opinion
- Currency: 10% very satisfied; 55% satisfied; 20% no opinion; 5% dissatisfied
- Geographic Coverage: 11% very satisfied; 47% satisfied; 32% no opinion; 5% dissatisfied
- Accuracy to Field Conditions: 6% very satisfied; 35% satisfied; 47% no opinion; 12% dissatisfied
- Access to Cost Effective Training: 6% very satisfied; 6% satisfied; 47% no opinion; 24% dissatisfied; 18% very dissatisfied
- Ease of Use: 22% very satisfied; 39% satisfied; 22% no opinion; 17% dissatisfied
- Timeliness of Products and Services: 18% very satisfied; 65% satisfied; 12% no opinion; 5% dissatisfied
- Sufficiency of Resources Available: 17% very satisfied; 33% satisfied; 28% no opinion; 22% dissatisfied
- Satisfaction with Resources: 11% very satisfied; 50% satisfied; 22% no opinion; 11% dissatisfied; 5% dissatisfied
- Empowerment to Perform Work: 11% very satisfied; 56% satisfied; 22% no opinion; 11% dissatisfied
- Reciprocity of Data: 18% very satisfied; 24% satisfied; 47% no opinion; 12% dissatisfied
- Collaboration: 18% very satisfied; 41% satisfied; 29% no opinion; 12% dissatisfied

Results of the Customer Satisfaction Survey reflect the current state of transition that Orange County GIS is currently under going. Because formal county wide

coordination is just in the beginning stages, the survey indicates a level of dissatisfaction with access to enterprise resources.

h. Self Assessment

The Bar Chart below summarizes the County GIS Program responses to the Self Assessment Survey. The % response for each Best Management Practices category represents a composite score of relevant questions pertaining to each area.



i. Key Findings

Key factors influencing Orange County GIS include:

1. A system and a program that is very much in transition. This transition is marked, especially, by an effort to improve the organizational structure;
2. A key driver for this change has been the perceived value of GIS to emergency services preparedness and response to a wide range of natural and man-made threats. Secondly, development in the County is driving the need for a more enterprise approach to GIS and for performance management in general.
3. The strategies employed in this transition are focused on enhancing outcomes, not processes. These key strategies include:
 - a. Enterprise data stores with automated mechanisms for population of those stores, access and use;
 - b. The development of county wide standards;
 - c. The migration of GIS to a decision support tool
 - d. Adoption of a services oriented architecture for data access and use.

4. As an early adopter, albeit in a highly decentralized fashion, the County has made considerable investments in GIS and has adopted best practices for that environment. The effort now is on enterprise best practices.

4. Mecklenburg County, North Carolina

Overall Theme: Sustainability through Centralization

a. Background

Located in southwestern North Carolina on the border with South Carolina, Mecklenburg County is 526 square miles in size and home to approximately 800,000 residents. Mecklenburg County has a rich history dating back to the era of colonization by the British and was formally established as a county on February 1st 1763 and named after Queen Charlotte of Mecklenburg, the wife of King George III. Charlotte is the county seat as well as the largest city in the county. Historically, Mecklenburg County was an agriculture and industrial region of North Carolina but has modernized into one of the main banking centers of the United States.

Mecklenburg County operates with a nine-member board of elected county commissioners. Members of the board then elect a chairman and vice-chairman for the Board of County Commissioners. Elections are held every two years in a hybrid district/at-large vote. Six commissioners are elected from single member districts and three members are elected at-large by a county-wide vote.

Mecklenburg County is the center of a regional metropolitan area comprising 14 counties in North and South Carolina. Cities included in this area include Charlotte, Gastonia, and Concord. Mecklenburg County government has an annual budget of approximately 1.3 billion dollars and prioritizes its resources on public health and education. The County also provides a host of services and there are over 50 departments within the county that services the counties infrastructure, economic and public services needs. Included in these services is Mecklenburg County Geospatial Information Services, the County's GIS program.

The County GIS program is founded on the principles of providing high quality geospatial data, technology solutions and empowering the customers of Mecklenburg County to makes data-driven decisions. Mecklenburg GIS has been a key service of Mecklenburg County and became its own department in July of 2005. As a result of strong leadership and management, Mecklenburg GIS has shown its value to the county and is well integrated across all departments. By creating partnerships with local colleges to recruit talent; and developing relationships with nationally recognized data suppliers, Mecklenburg County GIS is well in line with their vision of becoming a recognized leader in local government geospatial technology delivery and a preferred provider of geospatial data.

b. Leadership

Mecklenburg County is one of the fastest growing counties in the United States and has a full-fledged GIS system with GIS staff in a number of departments who are involved in analysis, database design, and application development. The County-wide

program is called the Mecklenburg County Geospatial Information Services. The GIS exists as its own department and has enjoyed this status since July of 2005. Mecklenburg County GIS is somewhat unique in that spatial information and services are well integrated into the workflows of most county departments.

The Mecklenburg County Geospatial Information Services enjoys strong support from county management office and reports directly to the e-government services management office as well as the county manager's office. Part of the success the GIS program was upon its inception into an individual department, the land records group, base mapping, and mapping and solutions groups were all combined into one program. This has fostered a more centralized model for county wide activities. As a result, the Geospatial Information Services program now enjoys strong support across the County and with its external partners. It considers itself a model for other counties within the state.

Mecklenburg County's GIS is the result of a partnership between the various county and city departments. The Mecklenburg County Land Records Management department provides the management and technical oversight for GIS. Each department maintains its own unique data layers. This has fostered a high degree of cooperation between county and city departments that probably would not have occurred without GIS. There is also a positive relationship with the private sector; including a street centerline data partnership, custom mapping for developers, press releases, and cooperative GIS Day type activities. By combining resources, Mecklenburg County provides an enterprise-wide decision-making tool for internal departments and the public.

As will become more apparent below, the approach in Mecklenburg County GIS has been towards strong intergovernmental relations. This includes collaboration with a number of cities and towns. This organization maintains strong relationships with the State of North Carolina and USGS.

c. Human Resources

The Mecklenburg County GIS has a strong, well balanced staff that is a model for sustainability. The staff is comprised of various GIS disciplines along the following title series; GIS Technician, GIS Programmer Analyst, GIS Technical Analyst, GIS System Architect, GIS Database Administrator. Breakdown of staff includes:

- Application Staff, 10
- Enterprise Addressing, 17
- Project Services/Mapping, 4
- Floater that does various work throughout, 1

As the result of a broader County pay study, there is a specific grouping for GIS professionals in the County position ladder.

The County has taken an aggressive approach on training with program budget includes funds for technical training. They build annual training plans around individual and programmatic needs. In addition each staff member is supported for attendance at least one national conference each year.

The county maintains a relationship with a local college and provides opportunities for students to work on project. This has been funded in part by a federal grant.

d. Information and Analysis

There are two areas of particular note where Mecklenburg County is leading the way in implementing Best Practices with respect to information and analysis. These include promoting an enterprise services oriented architecture that is resulting in reusable services, and the extensive use of delivering services via the Internet.

Mecklenburg County's geographic information system (GIS) Internet applications at <http://www.maps.co.mecklenburg.nc.us> solve two major community issues: accessibility to information and compliance with North Carolina Public Records Law. The GIS Internet applications have improved the efficiency and effectiveness of Mecklenburg County's information services as well as provided services previously unavailable without Internet technology. The county's efforts have resulted in Mecklenburg County being viewed as a well-governed community by its citizens.

This system offers the following three benefits:

- Improved service to the public.
- Better intergovernmental cooperation and coordination - Mecklenburg County's GIS is the result of a partnership between the various county and city departments. The Mecklenburg County Land Records Management Department provides the management and technical oversight for GIS. Each department maintains its own unique data layers. This has fostered a high degree of cooperation between county and city departments that probably would not have occurred without GIS. By combining our resources, Mecklenburg County provides an enterprise-wide decision-making tool (GIS) for our internal departments and the public. The GIS on the Internet has caused these major departments to share their computer data in a common format that can be used by other county agencies. It has eliminated redundancy and duplication of effort. Each agency is now responsible for the information that is unique to its department. The result is an integrated solution that serves the needs of Mecklenburg County and its citizens.
- Unparalleled delivery of tax information on the Internet - The GIS Real Estate System delivers an unparalleled amount of tax information over the Internet. By far, the most sought after information in GIS on the Internet is real estate information. This application provides tax maps, owner information, and tax values. It also provides the tools required to perform comparative-sales-analysis searches.

Other Internet based mapping services include:

- Student Assignment Express - used by Charlotte-Mecklenburg schools to publicize its student assignment decisions and to provide students, parents, teachers, and school administrators accurate information about where the school assignment boundaries are and answers the very popular question, "What school district am I in?"
- Voter Information Express - developed for the Board of Elections to publicize precincts and precinct locations.

- Community Crime Mapping System - provides the public maps showing the intensity and location of criminal activities and detailed reports of the nature of these crimes.
- The Flood Zone Application - allows users to view, query, and analyze FEMA
- Floodplain Land Use Map and Surface Water Improvement Management stream buffers.
- Citizen Help Map - an application for locating public buildings or political districts.
- The Park Facility Locator and Map & Go - a general use application for the public at large. The Park Facility Locator quickly helps locate nearby parks and/or facilities. The Map & Go application plots and maps driving directions between any two addresses in Mecklenburg County, as well as in the United States.

Mecklenburg County has experienced overwhelming acceptance by the public and an insatiable demand for this information. The Web site continues to record a growing demand, rising steadily each month since its implementation. The site averages more than three million hits a month. This Web site receives more queries than any other Web site supported by Mecklenburg County. Reference: URISA Journal, Vol. 17, No2, 2005

Second, Mecklenburg County also maintains a central data repository and data warehouse that is subscription based and supports data download capability. Data resources include historic scanned aerial photography and digital georeferenced aerial imagery.

The County policies with respect to access to data is based on the notion of reasonable fees based on North Carolina's open records laws.

e. Strategic Planning

Mecklenburg County GIS has a charter to develop a strategic plan; a second generation plan is currently under development with specific business goals to be accomplished in the next three years. There is also desire to create a business plan for budgeting purposes; and a goal to encourage the 6 towns in Mecklenburg County to become involved in using GIS.

Mecklenburg County GIS has a set of performance metrics that is essentially a report card measuring customer satisfaction, map delivery time, etc. The adoption of performance measures is consistent with a culture of performance management that exists throughout Mecklenburg County, with the overall goal for Mecklenburg County to be efficient and effective.

f. Operations

Mecklenburg County Geospatial Information Services is funded from three sources:

- \$2.7 million from the County General Fund;
- \$711k from county fee-based programs, such as permits;

- \$55k from data sales.
- Mecklenburg's GIS budget is helped by an influx of \$711,000 a year that is fee based income from other county program fees (permits, etc). Another \$55,000 is generated from data sales.

The emphasis of serving GIS over the Internet has caused several major departments to share their computer data in a common format that can be used by other county agencies. This Best Practice has eliminated redundancy and duplication of effort. Each agency is now responsible for the information that is unique to its department. The result is an integrated solution that serves the needs of Mecklenburg County government and its citizens.

GeoSpatial Information System Services does not provide service bureau like functions. Rather it focuses on enterprise responsibilities and initiatives.

g. Customer Satisfaction

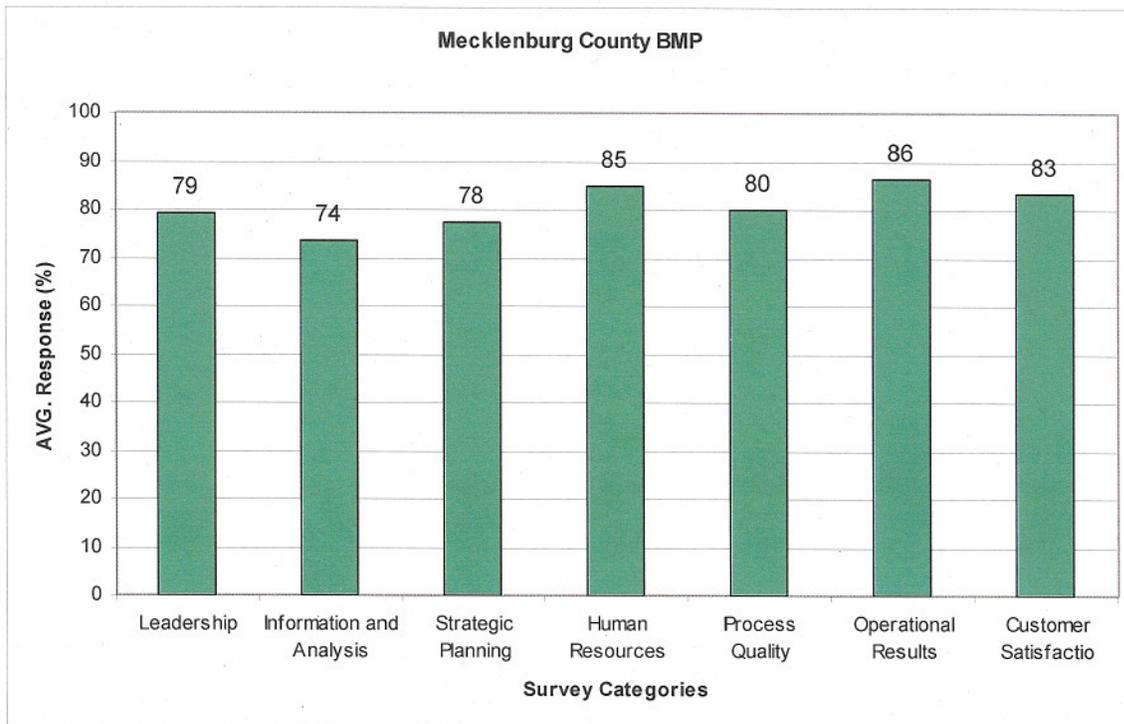
The following is a summary of the Customer Satisfaction Survey results; more detailed results are provided in Appendix D.

- Frequency of Use: 34% on a daily basis; 45% more often than monthly; 7% monthly; 14% less than monthly
- Essential to Work: 45% essential; 40% critical; 14% preferred; 3% unnecessary
- Overall Satisfaction: 68% very satisfied; 28% satisfied; 4% no opinion
- Currency: 43% very satisfied; 46% satisfied; 10% no opinion
- Geographic Coverage: 32% very satisfied; 54% satisfied; 7% no opinion; 7% dissatisfied
- Accuracy to Field Conditions: 43% very satisfied; 46% satisfied; 11% no opinion
- Access to Cost Effective Training: 21% very satisfied; 21% satisfied; 50% no opinion; 7% dissatisfied
- Ease of Use: 38% very satisfied; 46% satisfied; 18% no opinion
- Timeliness of Products and Service: 50% very satisfied; 39% satisfied; 10% no opinion
- Sufficiency of Resources Available: 43% very satisfied; 46% satisfied; 7% no opinion; 4% dissatisfied
- Satisfaction with Resource: 43% very satisfied; 39% satisfied; 14% no opinion; 4% dissatisfied
- Empowerment to Perform Work: 36% very satisfied; 61% satisfied; 4% no opinion
- Reciprocity of Data: 29% very satisfied; 61% satisfied; 10% no opinion
- Collaboration: 29% very satisfied; 64% satisfied; 4% no opinion; 4% dissatisfied

The overall response from the Mecklenburg County Customer Satisfaction Survey was very strong and positive. The general perception is that everyone in the county is more or less connected to GIS. There is a strong correlation between customer satisfaction and the responses reflected in the Self Assessment Survey in the next section.

h. Self Assessment

The Bar Chart below summarizes the County GIS Program responses to the Self Assessment Survey. The % response for each Best Management Practices category represents a composite score of relevant questions pertaining to each area.



i. Key Findings

Key factors influencing Mecklenburg County GIS include:

1. Mecklenburg County is the most centralized of all of the comparable counties, including Palm Beach County
2. The principal driver for the more centralized model is efficiency. The efficiency theme emanates from County leadership.
3. The County's GIS is mature and embodies a variety of best practices across its system. These include:
 - a. The County employs performance management techniques that predetermine success metrics and focuses resources to meet those measures.
 - b. The County has a culture of innovation, technical and otherwise, where it is willing to accept the risks of new methods and technologies.

- c. A strong intergovernmental approach to the use of GIS
- 4. Sustainability is a key strategic theme for the County. Its organizational and operational models reflect the County's desire for a sustainable program.