



Practical Planning
Positive Change



May 7, 2010

Paul Thorn
MIT Director
City of Annapolis
160 Duke of Gloucester Street
Annapolis, Maryland 21401

Re: **FINAL Information Technology Strategic Plan**

Dear Paul:

PTI is pleased to present this final Information Technology Strategic Plan to the City of Annapolis. This report documents the analysis, findings, and recommendations from our work performed from September 2009 through May 2010.

I would like to take this opportunity to thank you, the project's steering committee, and all the other city stakeholders who contributed to this project. Your collective interest, participation, feedback, and effort helped drive the creation of this report.

Thanks and best wishes,

A handwritten signature in black ink, appearing to read "Dan Borgen", is placed over a light gray rectangular background.

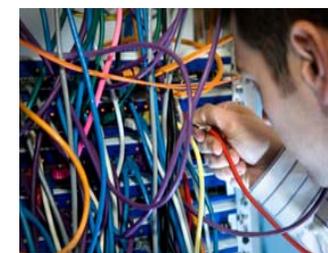
Dan Borgen
Co-CEO

Enclosure: FINAL Information Technology Strategic Plan

City of Annapolis Information Technology Strategic Plan



May 2010



Pacific Technologies, Inc. Practical Planning. Positive Change.



Table of Contents

Chapter 1 - Executive Summary	1
Introduction	2
Project Overview and Approach	3
Key Findings	3
Strategic Direction	7
Implementation Timeline.....	15
Implementation Project Costs.....	16
Expenditures by IT Goal	19
Alignment with City Strategic Priorities	20
Chapter 2 - Assessment	21
Strategic Priorities.....	22
Business Context.....	23
Assessment Summary.....	24
Assessment Findings.....	26
Chapter 3 - Strategic Direction	46
IT Vision and Goals	47
Goal 1: Informed IT Decisions	48
Goal 2: Accessibility and Accountability	55
Goal 3: Streamlined City Services	57
Goal 4: Reliable Technical Infrastructure.....	60
Goal 5: Responsive IT Support.....	63
Goal 6: IT Enabled Workforce	73
IT Project Alignment with City Strategic Priorities.....	75
Chapter 4 - Implementation Plan	76
Implementation Costs	77
Implementation Timeline.....	80
Appendices	
A - List of Participants.....	A – 1
B - IT Staffing Detail.....	B – 1
C - Business Function Model.....	C – 1
D - Ideal Application Architecture and Gap Analysis Summary.....	D – 1
E - Project Descriptions and Cost Detail.....	E – 1



Chapter 1 Executive Summary

Introduction

The City of Annapolis (the City, Annapolis) is known as America's sailing capital and serves as home to the United States Naval Academy and St. John's College, the third oldest institution of higher learning in the U.S. The City relies on information technology (IT) to support major components of the local economy, including government, tourism, and maritime industries. Technology facilitates outreach and communication with citizens, businesses, visitors, other governmental agencies, and city employees. No longer used simply to support back-office functions, technology is integral to the City's ability to directly serve its constituents.

Annapolis completed an IT Strategic Plan in 2002. While a valuable planning document, the intervening years brought significant change to the City. The population increased steadily each year, leading to greater demand for municipal services and increased strain on the City's financial resources. The Mayor's 2009 State of the City address noted that Annapolis' technical infrastructure is outdated and the IT department is understaffed. At the same time, citizens expect more government accountability and transparency. Expanding federal mandates and reporting requirements have become a major concern and new employees have high expectations for technology in the workplace, necessitating investment to compete for the best staff.

Technology has also evolved significantly since the original IT strategic plan. Use of the Internet as a means of delivering both service and information grew dramatically. Workforces became more mobile, the public takes a greater interest in municipal network security and information privacy, IT infrastructure is more standardized, and many peers are investing in enterprise solutions for document/content management, land information management, and business intelligence. To help its citizens and business partners prosper, Annapolis must find ways to cost-effectively enhance customer service, streamline business processes and support accountable, transparent government operations. All of these factors demand that the City successfully leverage information technology more than ever before.

As the City looks to the future, it needs an IT plan that articulates a vision for information technology at the City, defines a practical action plan for realizing the vision and supports the City's strategic priorities over the long term.

Annapolis must find cost-effective ways to enhance customer service, streamline business processes and support accountable government operations.



Strategic Priorities

- ◆ Public safety
- ◆ Community participation
- ◆ Public infrastructure
- ◆ Fiscal stewardship
- ◆ Quality of life

Project Overview and Approach

Within this context, the City once again engaged Pacific Technologies, Inc. (PTI) to develop a new IT strategic plan. Beginning in September 2009, Annapolis and PTI worked in close partnership to examine the City's current IT environment, reestablish a strategic direction for IT, and develop an implementation plan that effectively deploys IT solutions in support of the City's strategic priorities. A project steering committee comprised of senior city management provided leadership and critical guidance to this project. Additionally, nearly 70 city stakeholders¹ – including department heads, IT professionals, and end users – contributed to this planning effort through interviews, focus groups, and other data collection efforts.

These participants provided important insight that framed the study's findings and recommendations. PTI's consultants gathered and reviewed documentation related to IT planning, policies, procedures, and citywide strategic initiatives. Additionally, the consultants analyzed quantitative data related to citywide IT spending and support, and examined the City's current network architecture and application inventory. PTI also referenced its database of local government IT benchmarks to help the City understand how it compares to similar jurisdictions and industry best practices.

Note that this IT strategic plan represents a point-in-time analysis and may not reflect changes after October 2009. In particular, Annapolis' unprecedented structural budget deficit for fiscal years 2010 and 2011 led to a significant number of employee layoffs in March 2010 – subsequent to this project's quantitative assessment of IT labor, inventory and spending. As circumstances change, the City's IT priorities, and associated implementation projects, must change accordingly. *Consequently, this plan should be treated as a living document, reviewed annually, and revised as necessary.*

The remainder of this executive summary documents key assessment findings, identifies specific goals and strategic initiatives for IT, and presents an implementation plan – with attendant costs and timelines – for moving forward.

Key Findings

As previously indicated, Annapolis increasingly relies on information technology to support its budget priorities and facilitate communication with citizens, businesses, visitors, and city employees. No longer deployed simply to support back-office functions, the City's information technology infrastructure is integral to Annapolis' ability to directly serve its constituents. This section presents key strengths and opportunities for improvement surfaced through the assessment phase of the IT strategic planning process.

This plan should be treated as a living document, reviewed annually, and revised as necessary.

¹ Appendix A provides a complete list of participants.

The new mayor and city administration are committed to improving citywide information technology.

Areas of Strength

Planning engagements of this nature necessarily focus on weaknesses – but it is important to recognize the following IT strengths that the City can leverage and build upon:

- ◆ **The new mayor and city administration are committed to improving citywide information technology.** New city leadership has expressed a desire to leverage technology for meeting current and future service demands – with the overarching goal of making government services more efficient and customer-focused. Implementation of this IT strategic plan can help realize this strategic city imperative – particularly in a difficult budget climate.
- ◆ **The City participates in regional IT initiatives.** Annapolis partners with the City of Baltimore and a number of area counties in the Baltimore Urban Area Homeland Security Work Group (UAWG), which engages in sustained regional planning to coordinate emergency response and recovery. Key IT-related UAWG subcommittees include information technology, backup 911 and dispatch, closed circuit television, radio communications and network interoperability. In addition, the Annapolis Fire Department contracts with Anne Arundel County for computer-aided dispatch (CAD) and records management system (RMS). As a result of these partnerships and others,² citizens benefit from streamlined, coordinated government services. Annapolis and partner governments benefit from lower operating costs through economies of scale.
- ◆ **Annapolis purchases IT equipment centrally and utilizes defined standards for core IT equipment – a best practice.** The Management Information Technology division (MIT) handles procurement for IT assets (e.g., PCs, servers, enterprise software). This streamlines IT procurement efforts, increases purchasing power and leverages potential economies of scale. MIT also updates citywide workstation and server standards every six months, simplifying IT support.
- ◆ **The City has improved business automation since 2001.** In particular, Annapolis made significant progress in its geographic information systems (GIS) and web presence, both based on clear and detailed plans. The City utilizes an active, interdepartmental team to guide GIS goals and initiatives and successfully outsourced implementation of the website plan. Among other accomplishments, Annapolis has implemented applications supporting parks and recreation management (CLASS), permit management (TraKit) and emergency management (WebEOC, Dialogic)³. These improvements enhance city services, streamline specific business processes, increase productivity, reduce data errors, and improve government transparency and accessibility.

² Annapolis also participates in county, regional and state GIS data sharing agreements, state GIS governance (MSGIC - Maryland GIS Coordination), the Maryland Municipal Information Technology Association (MMITA), and is a member of the One Maryland broadband stimulus ARRA grant funding and wire line initiative.

³ The City has also implemented fire management, work order management, and quartermaster systems; upgraded the police records management system (RMS); and replaced computer-aided dispatch (CAD) and mobile data terminal (MDT) systems.

- ◆ **In addition, the City has made significant infrastructure improvements.** Annapolis has expanded its fiber network and implemented voice over Internet protocol (VoIP) telephones.⁴ The City's network backbone is reliable and appears to employ sufficient network security and spam control for external threats.⁵ Annapolis experiences little to no unplanned network outages and no significant security breaches have occurred at the City in recent years. This reduces and/or eliminates disruptions in business operations, increases end users' confidence and protects the City's information assets.

Opportunities for Improvement

Although the above strengths provide a foundation for the City's technology environment, PTI's assessment surfaced a variety of areas in which Annapolis' technology position can further improve. This section highlights the most significant challenges. Chapter 2 describes these opportunities for improvement in more detail.

- ◆ **IT spending and staffing remain significantly under-resourced.** Both citywide IT operations and maintenance (O&M) spending and citywide IT staffing levels *still fall below PTI's target range for local government*.⁶ Annapolis spends 2.22% of total O&M spending on IT O&M and employs 2.05% of total staff to provide IT support. This is not a new phenomenon – the City has lagged IT investment benchmarks for more than a decade. Despite notable increases since 2001, IT spending and staffing levels have not kept pace with the growth of city services and the automation expected of modern municipalities. In the absence of sufficient IT support, the efficiency and effectiveness of critical business functions suffer, including provision of eGovernment services, coordination of essential public safety services, maintenance of essential infrastructure, and proactive growth management.
- ◆ **Annapolis lacks a citywide IT governance forum and processes.** The City lacks structured processes and tools – as well as a chartered governance body – to support informed, citywide IT investment decision making. As a result, the City may not be realizing the greatest return on IT investments – in terms of both service improvements and operational efficiencies.
- ◆ **The City does not fund major IT investments with capital dollars.** Contrary to best practices, Annapolis relies heavily on operating and maintenance funding for major IT investments. Large IT

⁴ More specifically, Annapolis has completed 3 (out of 4) phases of a 2 Gbps east/west fiber ring backbone, deployed a wireless network and video surveillance system for critical downtown infrastructure locations, installed IP telephones and voice mail for 85% of telephone users, and implemented Ethernet topology and TCP/IP protocols citywide.

⁵ PTI's scope of work did not include a detailed security audit/assessment, but neither business users nor City IT staff reported significant security incidents/concerns.

⁶ PTI's target benchmarks are based upon IT spending, staffing, and inventory data collected from surveys and local government clients since 1993 as well as industry best practices. These target benchmarks are updated annually. The current local government target range for IT O&M spending is 2.5 – 4.5% and for IT O&M staffing is 3 – 5%, both relative to total organization O&M spending and O&M staffing.

Citywide IT spending and staffing remain significantly under-resourced.

expenditures currently follow the standard budget process and lack access to capital funding sources. This obscures the true cost of annual IT operations and maintenance, as isolated annual budget and/or fund increases pay for the one-time purchase of IT hardware and services. It also limits funding opportunities for IT capital projects and can encourage investments that are, in plain terms, “penny-wise and pound foolish.”

- ◆ **The City lacks structured IT help desk services.** Annapolis has not implemented a formal process for managing IT service requests, incidents, and communication with business users. MIT personnel respond to the City’s help line on an “as available” basis and do not provide 24/7 support. In addition, Annapolis lacks IT service performance measures and has not fully leveraged the capabilities of its IT help desk software, HelpBox. This leads to reactive, rather than proactive, IT customer support.
- ◆ **Major gaps exist in core business automation.** Several business functions still rely on shadow applications⁷ and manual, labor-intensive, paper-based processes to compensate for inadequate automation, including document management, maintenance management, citizen relationship management (CRM/311), project management, contract/grant management, and decision support/business intelligence. As a result, information remains siloed – increasing data duplication, decreasing data integrity, and delaying operations.
- ◆ **Core finance automation is beyond end-of-life.** The City’s financial management software (i.e., Therefore) is more than 16 years old, built on out-of-date technology, and no longer commercially supported. It is heavily customized, and its lack of security features prevents decentralization of numerous functions, including time entry, budget development, and requisitions. This system lacks management/performance reporting capabilities, greatly impedes city staff productivity and could potentially lead to a major, unplanned replacement expense.
- ◆ **City data centers (MIT and Police) do not fully align with modern design standards.** Both data centers lack electronic access control (e.g., RFID cards), tracking, advanced surveillance, and long-term backup power capabilities. Neither data center utilizes modern environmental controls – such as individual server temperature tracking and particle filtering. In addition, both facilities employ water-based fire suppression systems, which would damage critical IT equipment.
- ◆ **The City’s technical architecture is aging and not aligned with best practices.** More than 61% of Annapolis’ PCs are out-of-date (greater than three years old) and more than 59% of the City’s servers also are out-of-date (greater than four years old). This technical environment increases the risk of hardware failure and the loss of key operational data. Older equipment also requires

*Core finance
automation is beyond
end-of-life.*

additional maintenance and support and may inhibit the City's ability to support newer applications which require faster hardware.

Strategic Direction

City leaders, senior management, and other city stakeholders came together in a series of focus groups and workshops to develop a clear citywide IT strategic direction – driven by Annapolis' strategic priorities. This roadmap includes specific IT goals, strategies, and implementation projects (as indicated by the graphic below). Chapters 3 and 4 describe each of these components in more detail.



Executive and senior management at Annapolis and other city stakeholders came together in a series of focus groups and workshops to create the following vision for IT:

City of Annapolis IT Vision



Annapolis leverages IT to enhance quality, increase availability, improve reliability, and lower cost of city services

1

This plan outlines a set of IT goals and strategies to optimize the use of technology in delivering city services.

In support of this vision – and driven by Annapolis’ strategic priorities – the City’s project steering committee developed the following six IT goals:

City of Annapolis IT Goals

1	Informed IT Decisions	Technology investments align with city strategic priorities.
2	Accessibility and Accountability	Technology improves access to city information and services and promotes responsible municipal government.
3	Streamlined City Services	Information systems streamline city operations and improve service.
4	Reliable Technical Infrastructure	Technical infrastructure is secure, reliable, and cost effective.
5	Responsive IT Support	IT services are customer-oriented and responsive.
6	IT Enabled Workforce	City workforce is computer-literate and technology-enabled.

The following pages describe each of these goals, highlight associated IT initiatives, and outline attendant benefits. Chapter 3 offers further detail.

Goal 1: Informed IT Decisions

Technology investments align with city strategic priorities.



Effective IT governance ensures that the City has the right technology, in the right place, and the right cost – in support of Annapolis' business needs and imperatives.

Strategies

- ❖ **Establish a citywide IT governance structure**
- ❖ **Improve the City's IT funding approach and associated mechanisms**
- ❖ **Enhance IT strategic planning efforts**
- ❖ **Continue pursuing regional IT partnerships**

Implementation Projects

- 1.1 Develop and implement a formal citywide IT decision-making process
- 1.2 Create an IT-specific capital improvement fund
- 1.3 Conduct an IT outsourcing feasibility study

Benefits

- Ensures reliable and consistent IT decision making
- Expands funding for major IT investments
- Aligns IT investments with city strategic priorities and IT vision
- Improves allocation of limited resources
- Encourages cross-departmental information sharing

Goal 2: Accessibility and Accountability

Technology improves access to city information and services and promotes responsible municipal government.



IT serves as a critical foundation for Annapolis' ability to interact with citizens, manage key data and generate performance reports. This goal positions the City to better leverage technology in these areas.

Strategies

- ❖ Measure IT performance
- ❖ Improve interaction with citizens

Implementation Projects

- 2.1 Define IT performance measures
- 2.2 Evaluate potential CRM/311 solutions⁸
- 2.3 Implement the preferred CRM/311 solution⁸

Benefits

- Makes government more accessible and accountable
- Provides “anywhere, anytime” online access to city services and information
- Enhances citizens' sense of community and connection
- Increases service efficiency

Goal 3: Streamlined City Services

Information systems streamline city operations and improve service.



Perhaps more than any other IT investment area, business software directly and visibly supports the City's daily operations. This IT goal leverages the built-in best practices and capabilities of municipal software – emphasizing application integration and data sharing – to enhance operational efficiency and effectiveness.

Strategies

- ❖ **Improve business automation**
- ❖ **Emphasize use of commercial software**
- ❖ **Leverage the inherent web and GIS capabilities of new software**

Implementation Projects

- 3.1 Implement a new customer information/utility billing system
- 3.2 Implement a new human resources/payroll system
- 3.3 Implement a financial management system
- 3.4 Implement an electronic document management system
- 3.5 Implement a citywide maintenance management system
- 3.6 Pilot decision support/business intelligence software

Benefits

- Increases worker productivity
- Streamlines business processes
- Informs decision making
- Enhances asset maintenance and infrastructure
- Expands software and data integration
- Improves service quality

Goal 4: Reliable Technical Infrastructure

Technical infrastructure is secure, reliable, and cost-effective.



Annapolis' technical infrastructure provides a foundation for the software that automates and streamlines critical business functions. This strategic IT goal provides ongoing investment in IT equipment, maintains appropriate IT security, and plans for disaster recovery.

Strategies

- ❖ **Maintain a modern IT environment and architecture**
- ❖ **Position IT to support business continuity**
- ❖ **Ensure appropriate security for IT systems and data**

Implementation Projects

- 4.1 Utilize a professionally-designed data center to host core infrastructure
- 4.2 Revise disaster recovery plan
- 4.3 Define, fund, and implement a formal technology replacement cycle
- 4.4 Conduct annual IT security audits and assessments

Benefits

- Extends IT productivity enhancements to all city locations
- Simplifies IT support
- Allows continuing operations in the event of a disaster
- Protects the City's IT and information assets
- Supports future technological advancements

Goal 5: Responsive IT Support

IT services are customer-oriented and responsive.



This strategic IT goal equips Annapolis with the necessary IT skills and staff to cost-effectively support the City's technology investments.

Strategies

- ❖ Increase IT O&M staffing levels
- ❖ Organize MIT department along functional lines
- ❖ Enhance and modernize IT skill sets
- ❖ Formalize IT service desk processes and procedures
- ❖ Contract for specialized IT skills as needed
- ❖ Provide sufficient space for IT staff and equipment

Implementation Projects

- 5.1 Adopt new MIT organizational structure and increase staff⁹
- 5.2 Establish a professional IT service desk
- 5.3 Train IT staff
- 5.4 Upgrade MIT workspace
- 5.5 Contract professional IT project management services

Benefits

- Improves internal customer satisfaction and confidence
- Enhances IT staff ability to efficiently support and maintain City technology
- Maintains the cost-effectiveness of IT services
- Helps the City realize the full business value of IT investments

Goal 6: IT Enabled Workforce

City workforce is computer-literate and technology-enabled.



City personnel must demonstrate appropriate technology skills and have sufficient information access for Annapolis to experience the full value of its IT investments. This strategic IT goal expands both staff technology training opportunities and network connectivity.

Strategies

- ❖ **Ensure adequate technology training for city personnel**
- ❖ **Expand access to the city network**

Implementation Projects

- 6.1 Implement a technology training program for business users
- 6.2 Install indoor wireless access points at city facilities

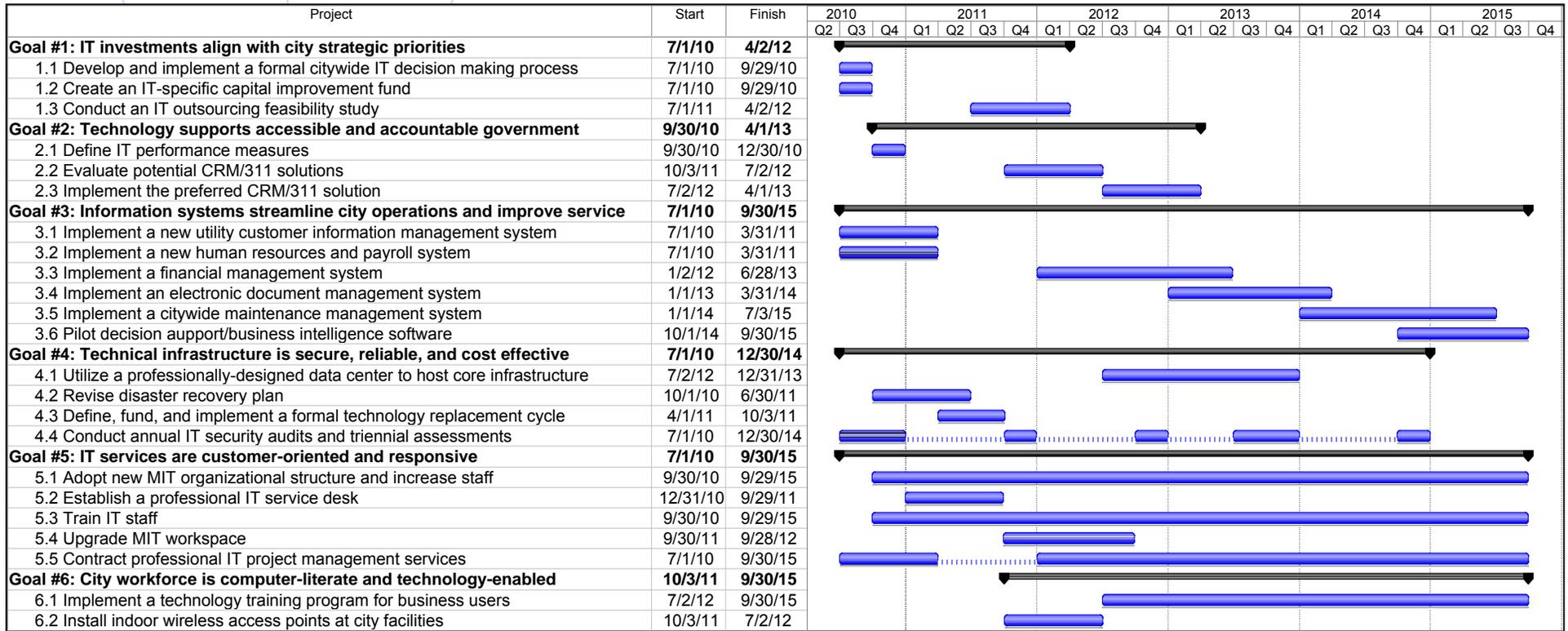
Benefits

- Enhances business operations and improves city worker productivity
- Increases business units' confidence in technology
- Creates a more attractive work environment
- Increases the return on technology investments

Implementation Timeline

The Gantt chart below presents a projected timeline for the plan's defined implementation projects, developed in partnership with the City's project steering committee. Annapolis will need to periodically review and adjust this implementation timeline – based on resource constraints, changing business needs, and strategic priorities.

Projected Implementation Timeline



Implementation Project Costs

This section examines total expenditures by IT goal and presents one-time, recurring, and annualized project costs. The cost estimates provide Annapolis with budget guidance for the plan's implementation projects. PTI developed these cost estimates based on industry knowledge, best practices, market research, and information provided by the City. Costs are in 2010 dollars and not adjusted for inflation.

One-time and Recurring Costs

The table on the following page illustrates one-time and recurring cost estimates for each recommended implementation project. The subsequent page presents average annualized costs over the next six years.¹⁰ In some instances, significant differences exist between the low-end and high-end estimates. In general, low-end estimates tend to reflect reduced scope, lower-cost technologies, and a greater reliance on internal labor. High-end estimates reflect a broader scope, higher-cost components and software, larger labor requirements, and generally include external consulting services for all or some of a project's implementation.

Costs do not include current city expenditures or already budgeted dollars, with the exception of \$350,000 the City has already budgeted for a new utility customer information system and \$350,000 for a new human resources/payroll system. These budgeted dollars are also footnoted under the subsequent tables. Project estimates *do include* costs associated with internal labor, based on fully-burdened hourly labor rates of \$39 for basic IT support and \$52 for business unit staff provided by the City. Recurring internal IT labor for supporting new and upgraded applications (projects 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, and 5.2) is incorporated as part of the recommended IT staffing increases within project 5.1. In addition, cost estimates for project 4.1 assume that the City will partner with a nearby public sector organization or contract with a third party for data center operations. Building a new city facility to replace both the MIT data center and the APD data center for this project would cost between \$1M and \$2M.

¹⁰ Appendix E provides descriptions and costing assumptions for each of the projects.

One-Time and Recurring Project Cost Estimates^{11,12}

Cost Summary		One-Time		Recurring		Total Six-Year Cost	
		Low	High	Low	High	Low	High
Goal 1: IT investments align with city strategic priorities							
1.1	Develop and implement a formal citywide IT decision making process	\$ 8,000	\$ 26,000	\$ 6,000	\$ 9,000	\$ 42,000	\$ 78,000
1.2	Create an IT-specific capital improvement fund	\$ 13,000	\$ 38,000	\$ -	\$ -	\$ 13,000	\$ 38,000
1.3	Conduct an IT sourcing feasibility study	\$ 69,000	\$ 117,000	\$ -	\$ -	\$ 69,000	\$ 117,000
Subtotal - Goal 1		\$ 90,000	\$ 181,000	\$ 6,000	\$ 9,000	\$ 124,000	\$ 233,000
Goal 2: Technology supports accessible and accountable government							
2.1	Define IT performance measures	\$ 18,000	\$ 34,000	\$ 2,000	\$ 4,000	\$ 28,000	\$ 54,000
2.2	Evaluate potential CRM/311 solutions	\$ 27,000	\$ 90,000	\$ -	\$ -	\$ 27,000	\$ 90,000
2.3	Implement the preferred CRM/311 solution	\$ 83,000	\$ 328,000	\$ 1,000	\$ 24,000	\$ 87,000	\$ 406,000
Subtotal - Goal 2		\$ 128,000	\$ 452,000	\$ 3,000	\$ 28,000	\$ 142,000	\$ 550,000
Goal 3: Information systems streamline city operations and improve service							
3.1	Implement a new utility customer information management system	\$ 361,000	\$ 809,000	\$ 15,000	\$ 47,000	\$ 433,000	\$ 1,033,000
3.2	Implement a new human resources and payroll system	\$ 459,000	\$ 1,316,000	\$ 28,000	\$ 90,000	\$ 592,000	\$ 1,743,000
3.3	Implement a financial management system	\$ 1,121,000	\$ 3,194,000	\$ 66,000	\$ 130,000	\$ 1,319,000	\$ 3,584,000
3.4	Implement an electronic document management system	\$ 603,000	\$ 1,203,000	\$ 58,000	\$ 58,000	\$ 733,000	\$ 1,333,000
3.5	Implement a citywide maintenance management system	\$ 682,000	\$ 957,000	\$ 10,000	\$ 35,000	\$ 692,000	\$ 992,000
3.6	Pilot decision support/business intelligence software	\$ 81,000	\$ 180,000	\$ 2,000	\$ 8,000	\$ 82,000	\$ 186,000
Subtotal - Goal 3		\$ 3,307,000	\$ 7,659,000	\$ 179,000	\$ 368,000	\$ 3,851,000	\$ 8,871,000
Goal 4: Technical infrastructure is secure, reliable, and cost effective							
4.1	Utilize a professionally-designed data center to host core infrastructure	\$ 17,000	\$ 35,000	\$ 12,000	\$ 24,000	\$ 47,000	\$ 94,000
4.2	Revise disaster recovery plan	\$ 17,000	\$ 60,000	\$ 2,000	\$ 3,000	\$ 25,000	\$ 73,000
4.3	Define, fund and implement a formal technology replacement cycle	\$ 7,000	\$ 12,000	\$ 173,000	\$ 269,000	\$ 830,000	\$ 1,290,000
4.4	Conduct annual IT security audits and triennial assessments	\$ 21,000	\$ 61,000	\$ 16,000	\$ 33,000	\$ 101,000	\$ 226,000
Subtotal - Goal 4		\$ 62,000	\$ 168,000	\$ 203,000	\$ 329,000	\$ 1,003,000	\$ 1,683,000
Goal 5: IT services are customer-oriented and responsive							
5.1	Adopt new MIT organizational structure and increase staff	\$ 12,000	\$ 63,000	\$ 415,000	\$ 737,000	\$ 1,286,000	\$ 2,285,000
5.2	Establish a professional IT service desk	\$ 77,000	\$ 176,000	\$ 15,000	\$ 30,000	\$ 149,000	\$ 319,000
5.3	Train IT staff	\$ -	\$ -	\$ 38,000	\$ 76,000	\$ 218,000	\$ 437,000
5.4	Upgrade MIT workspace	\$ 50,000	\$ 93,000	\$ -	\$ -	\$ 49,000	\$ 93,000
5.5	Contract professional IT project management services	\$ 100,000	\$ 195,000	\$ 100,000	\$ 150,000	\$ 550,000	\$ 870,000
Subtotal - Goal 5		\$ 239,000	\$ 527,000	\$ 568,000	\$ 993,000	\$ 2,252,000	\$ 4,004,000
Goal 6: City workforce is computer-literate and technology-enabled							
6.1	Implement a technology training program for business users	\$ -	\$ -	\$ 180,000	\$ 360,000	\$ 720,000	\$ 1,440,000
6.2	Install indoor wireless access points at city facilities	\$ 160,000	\$ 354,000	\$ 26,000	\$ 53,000	\$ 271,000	\$ 579,000
Subtotal - Goal 6		\$ 160,000	\$ 354,000	\$ 206,000	\$ 413,000	\$ 991,000	\$ 2,019,000
Total Cost		\$ 3,986,000	\$ 9,341,000	\$ 1,165,000	\$ 2,140,000	\$ 8,363,000	\$ 17,360,000

Note: Costs are rounded to nearest thousand dollars



¹¹ The City of Annapolis has already budgeted \$350,000 for project 3.1 and \$350,000 for project 3.2.

¹² Project 4.1 assumes the City will partner with a nearby public sector organization or contract with a third party for data center operations. PTI estimates that building an entirely new city facility for project 4.1 would cost between \$1M and \$2M.

Averaged Annualized Project Cost Estimates

Average Annualized Cost Summary						
Project	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Goal 1: IT investments align with city strategic priorities						
1.1 Develop and implement a formal citywide IT decision making process	\$ 23,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
1.2 Create an IT-specific capital improvement fund	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -
1.3 Conduct an IT sourcing feasibility study	\$ -	\$ 93,000	\$ -	\$ -	\$ -	\$ -
Annual Subtotal - Goal 1	\$ 48,000	\$ 100,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
Goal 2: Technology supports accessible and accountable government						
2.1 Define IT performance measures	\$ 26,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000
2.2 Evaluate potential CRM/311 solutions	\$ -	\$ 59,000	\$ -	\$ -	\$ -	\$ -
2.3 Implement the preferred CRM/311 solution	\$ -	\$ -	\$ 209,000	\$ 13,000	\$ 13,000	\$ 13,000
Annual Subtotal - Goal 2	\$ 26,000	\$ 62,000	\$ 212,000	\$ 16,000	\$ 16,000	\$ 16,000
Goal 3: Information systems streamline city operations and improve service						
3.1 Implement a new utility customer information management system	\$ 439,000	\$ 170,000	\$ 31,000	\$ 31,000	\$ 31,000	\$ 31,000
3.2 Implement a new human resources and payroll system	\$ 665,000	\$ 266,000	\$ 59,000	\$ 59,000	\$ 59,000	\$ 59,000
3.3 Implement a financial management system	\$ -	\$ 712,000	\$ 1,445,000	\$ 98,000	\$ 98,000	\$ 98,000
3.4 Implement an electronic document management system	\$ -	\$ -	\$ 361,000	\$ 556,000	\$ 58,000	\$ 58,000
3.5 Implement a citywide maintenance management system	\$ -	\$ -	\$ -	\$ 271,000	\$ 549,000	\$ 22,000
3.6 Pilot decision support/business intelligence software	\$ -	\$ -	\$ -	\$ -	\$ 98,000	\$ 36,000
Annual Subtotal - Goal 3	\$ 1,104,000	\$ 1,148,000	\$ 1,896,000	\$ 1,015,000	\$ 893,000	\$ 304,000
Goal 4: Technical infrastructure is secure, reliable, and cost effective						
4.1 Utilize a professionally-designed data center to host core infrastructure	\$ -	\$ -	\$ 17,000	\$ 17,000	\$ 18,000	\$ 18,000
4.2 Revise disaster recovery plan	\$ 38,000	\$ 1,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
4.3 Define, fund and implement a formal technology replacement cycle	\$ 5,000	\$ 171,000	\$ 221,000	\$ 221,000	\$ 221,000	\$ 221,000
4.4 Conduct annual IT security audits and triennial assessments	\$ 41,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Annual Subtotal - Goal 4	\$ 84,000	\$ 197,000	\$ 265,000	\$ 265,000	\$ 266,000	\$ 266,000
Goal 5: IT services are customer-oriented and responsive						
5.1 Adopt new MIT organizational structure and increase staff	\$ 58,000	\$ 115,000	\$ 230,000	\$ 346,000	\$ 461,000	\$ 576,000
5.2 Establish a professional IT service desk	\$ 85,000	\$ 59,000	\$ 23,000	\$ 23,000	\$ 23,000	\$ 23,000
5.3 Train IT staff	\$ 43,000	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000
5.4 Upgrade MIT workspace	\$ -	\$ 54,000	\$ 18,000	\$ -	\$ -	\$ -
5.5 Contract professional IT project management services	\$ 148,000	\$ 63,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Annual Subtotal - Goal 5	\$ 334,000	\$ 348,000	\$ 453,000	\$ 551,000	\$ 666,000	\$ 781,000
Goal 6: City workforce is computer-literate and technology-enabled						
6.1 Implement a technology training program for business users	\$ -	\$ -	\$ 270,000	\$ 270,000	\$ 270,000	\$ 270,000
6.2 Install indoor wireless access points at city facilities	\$ -	\$ 267,000	\$ 39,000	\$ 39,000	\$ 39,000	\$ 39,000
Annual Subtotal - Goal 6	\$ -	\$ 267,000	\$ 309,000	\$ 309,000	\$ 309,000	\$ 309,000
Projected Net New Funding Required	\$ 1,596,000	\$ 2,122,000	\$ 3,142,000	\$ 2,163,000	\$ 2,157,000	\$ 1,683,000

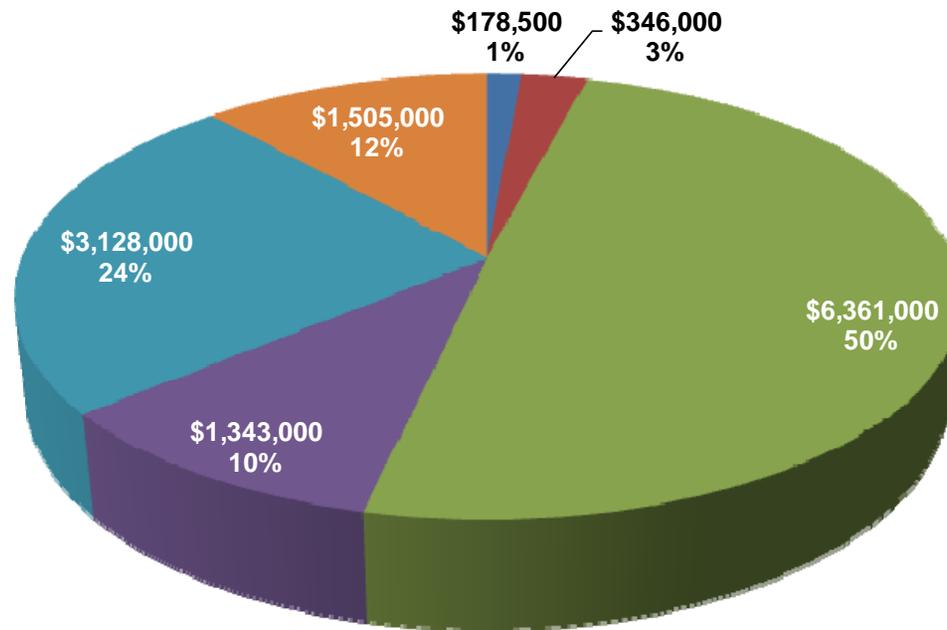
Note: Costs are rounded to nearest thousand dollars



Expenditures by IT Goal

It can be helpful to look at total project expenditures by IT goal to ensure that planned implementation efforts align with overall strategic direction. The following chart – portraying average six-year total cost estimates – makes clear that recommended projects align with the City’s IT goals. Note that goal 3 (*information systems streamline city operations and improve service*) receives a majority of the investment.

Six-Year Total Project Expenditures by IT Goal (average)



- Goal 1: IT investments align with city strategic priorities
- Goal 2: Technology supports accessible and accountable government
- Goal 3: Information systems streamline city operations and improve service
- Goal 4: Technical infrastructure is secure, reliable, and cost effective
- Goal 5: IT services are customer-oriented and responsive
- Goal 6: City workforce is computer-literate and technology-enabled

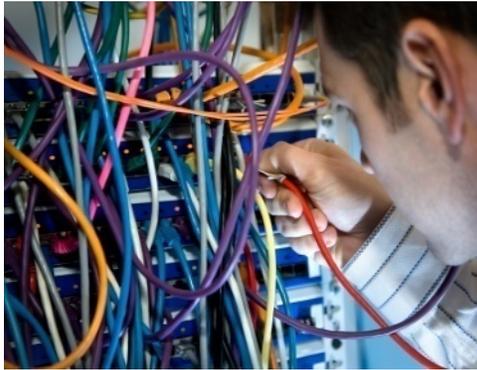
IT investments must be aligned with business needs.

Alignment with City Strategic Priorities

To ensure the best use of limited resources, IT investments must be aligned with business needs. The table below presents the major benefits of this study's recommendations, aligned with the City's strategic priorities.

IT Project Alignment with City Strategic Priorities

	Strategic Priorities				
	Public Safety	Community Participation	Public Infrastructure	Fiscal Stewardship	Quality of Life
Goal 1: IT investments align with city strategic priorities					
1.1 Develop and implement a formal citywide IT decision making process			✓	✓	
1.2 Create an IT-specific capital improvement fund			✓	✓	
1.3 Conduct an IT outsourcing feasibility study			✓	✓	
Goal 2: Technology supports accessible and accountable government					
2.1 Define IT performance measures		✓		✓	
2.2 Evaluate potential CRM/311 solutions		✓	✓	✓	✓
2.3 Implement the preferred CRM/311 solution		✓	✓		✓
Goal 3: Information systems streamline city operations and improve service					
3.1 Implement a new utility customer information management system		✓		✓	
3.2 Implement a new human resources and payroll system				✓	✓
3.3 Implement a financial management system			✓	✓	
3.4 Implement an electronic document management system	✓	✓	✓	✓	
3.5 Implement a citywide maintenance management system		✓	✓	✓	✓
3.6 Pilot decision support/business intelligence software	✓			✓	✓
Goal 4: Technical infrastructure is secure, reliable, and cost effective					
4.1 Utilize a professionally-designed data center to host core infrastructure	✓		✓	✓	✓
4.2 Revise disaster recovery plan	✓		✓		
4.3 Define, fund and implement a formal technology replacement cycle	✓		✓	✓	
4.4 Conduct annual IT security audits and triennial assessments	✓				
Goal 5: IT services are customer-oriented and responsive					
5.1 Adopt new MIT organizational structure and increase staff				✓	
5.2 Establish a professional IT service desk				✓	
5.3 Train IT staff				✓	
5.4 Upgrade MIT workspace				✓	
5.5 Contract professional IT project management services			✓	✓	
Goal 6: City workforce is computer-literate and technology-enabled					
6.1 Implement a technology training program for business users	✓		✓	✓	
6.2 Install indoor wireless access points at city facilities		✓	✓		



Chapter 2 Assessment

A viable IT strategic planning process must take into account the City's strategic priorities, as well as its current business, operating, and IT environment. This chapter highlights key citywide imperatives, describes trends driving the demand for information technology, and presents PTI's assessment of the major IT strengths and opportunities for improvement at the City of Annapolis. This serves as important context for the recommendations presented in Chapter 3.

Strategic Priorities

The City's mission and vision statements identify five long-term strategic priorities to guide capital investments and ongoing city activities.

- ◆ **Public safety** – a safe and secure environment for citizens to live and work
- ◆ **Community participation** – open access to and citizen involvement in local government
- ◆ **Public infrastructure** – adequate public facilities and services to support the residential and business communities
- ◆ **Fiscal stewardship** – essential services provided in a manner that recognizes the restrictions of dwindling resources balanced against citizen demands
- ◆ **Quality of life** – a healthful, attractive, and satisfying place in which to work, visit, and play



Strategic Priorities

- ◆ Public safety
- ◆ Community participation
- ◆ Public infrastructure
- ◆ Fiscal stewardship
- ◆ Quality of life

These priorities address the City's business drivers and environmental trends, described in the following section. Chapter 3 of this IT strategic plan provides recommendations and projects designed to directly support Annapolis' strategic objectives.

Business Context

With input from the project steering committee and nearly 70 stakeholders, PTI established the near-term context which drives the demand for information technology in the City of Annapolis. These needs and expectations require that the City employ technology to transform its operations within current and future budget constraints. PTI identified the following key business drivers:

- ◆ **Increasing demand/expectation for 24/7 service and information** – Constituents expect prompt service in response to their inquiries and needs, particularly with regard to eGovernment services (e.g., online transactions, public information, permitting, job applications, public safety/crime data, citizen complaints). Annapolis citizens desire more than just announcements from the city web site; they want more personalized interaction with elected officials and city staff. Technology has become a critical vehicle for communications (one way, two way, and interactive) with citizens, business partners, and other stakeholders – using a variety of media (telephone, web, email, social networks).
- ◆ **Expectation for transparency and accountability** – City council members, executives, and external authorities (e.g., federal regulators) demand better management information and reporting. In addition, community members expect prudent use of taxpayer dollars and easy access to public information.
- ◆ **Pressure to improve operational efficiency** – Annapolis faces increasing demands for municipal services without an associated growth in revenues. City residents want service and information at their convenience. They also want environmental sustainability, expansive services, responsible government, and prudent growth management. However, according to the 2009 Mayor’s State of the City Report, Annapolis’ budget “requires departments to continue the same quality service with less.” Further, the new city administration recently reported that the “city government faces a \$2.6 million structural deficit in the current fiscal year... and a \$6.4 million structural deficit for the fiscal year 2011.”
- ◆ **Growing emergency planning and homeland security requirements** – Annapolis’ proximity to Baltimore and Washington, D.C. increases citizen demand for safety and security. Growing use of the city harbor incurs additional risks and constituents want multiple, clear channels for mass notification in event of an emergency.
- ◆ **Significant reliance on grant funding** – During recent years, the City has augmented revenues with more than \$20 million of annual intergovernmental, grant and miscellaneous funding. The 2009 Mayor’s State of the City Report notes that “approximately 20 programs have been filed with the State for economic recovery dollars” and “25 staff members were trained through a program at the Anne Arundel Community College in grant writing.” However, the economic downturn will likely diminish these revenues and federal stimulus spending only offers a temporary solution. In addition,

According to the 2009 Mayor’s State of the City Report, Annapolis’ budget “requires departments to continue the same quality service with less.”

these funding sources typically cover capital investments, but fail to cover ongoing operating and maintenance costs, forcing the City either to increase annual spending accordingly or abandon the projects in future years.

- ◆ **Priorities of new city leadership** – In 2010, the City's new administration likely will implement new city strategic goals and priorities, particularly in light of increasing budget constraints. These changes may impact the city organizational structure, operations, scope of municipal services, and staffing levels. The new city administration has also displayed a greater emphasis on the role of technology in city operations.

Balancing growing citizen expectations against the imperative to contain costs places a high reliance on the workflow and communication capabilities offered by information technology. The City recognizes improvements in IT can – and must – help address these challenges. Accordingly, the City of Annapolis worked collaboratively with PTI to conduct a detailed assessment of its current IT environment. The remainder of this chapter describes the results of our assessment work.

Assessment Summary

PTI's consultants collected and analyzed data provided by the City pertaining to its IT labor, spending, infrastructure, and application portfolio. The consulting team used this information to assess the City's technology position against industry standards, best practices, and PTI's database of local government technology metrics. The consultants gathered additional information through one-on-one interviews and focus groups with the City's managers and staff – providing broad opportunities for participation.

PTI validated findings and recommendations through direct feedback and planning workshops with the City's project steering committee. PTI organized this analysis around four strategic IT focus areas, framed by the City's overall business context:

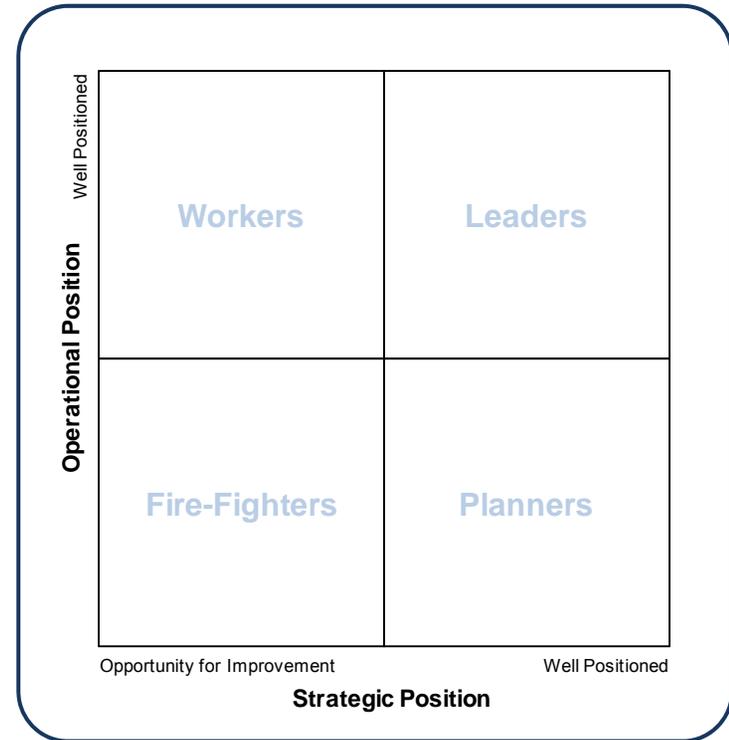
- ◆ **IT Decision Making** – processes, roles, and tools that support IT planning and investment decisions
- ◆ **IT Service Delivery** – organizational structure and staffing approaches that support applications and infrastructure
- ◆ **Applications** – software that supports the City's business functions



- ◆ **Technical Infrastructure** – hardware, systems software, databases, and network components that support the City’s applications

PTI utilizes a proprietary tool to summarize an organization’s baseline IT position. Applying quantitative rankings to nearly 100 key indicators; PTI plots the position of each IT focus area in one of four quadrants.

- 1. Leaders:** Focus areas in this quadrant indicate a combination of effective operations, appropriate strategic investment and positioning. This quadrant represents the ideal position for each focus area.
- 2. Planners:** Focus areas in this quadrant often have well laid out plans, but conduct current operations inefficiently. Generally speaking, these areas require attention to bridge the gap between current operations and their desired IT position.
- 3. Fire-Fighters:** A position in this quadrant indicates a focus area that largely functions in a reactive manner. Correspondingly, these areas need both strategic guidance and tactical attention.
- 4. Workers:** Focus areas in this quadrant conduct current operations very efficiently, but lack a strategic outlook for the next three to five years. An effective planning effort can move these areas into the “Leaders” quadrant, often with relatively small investments.

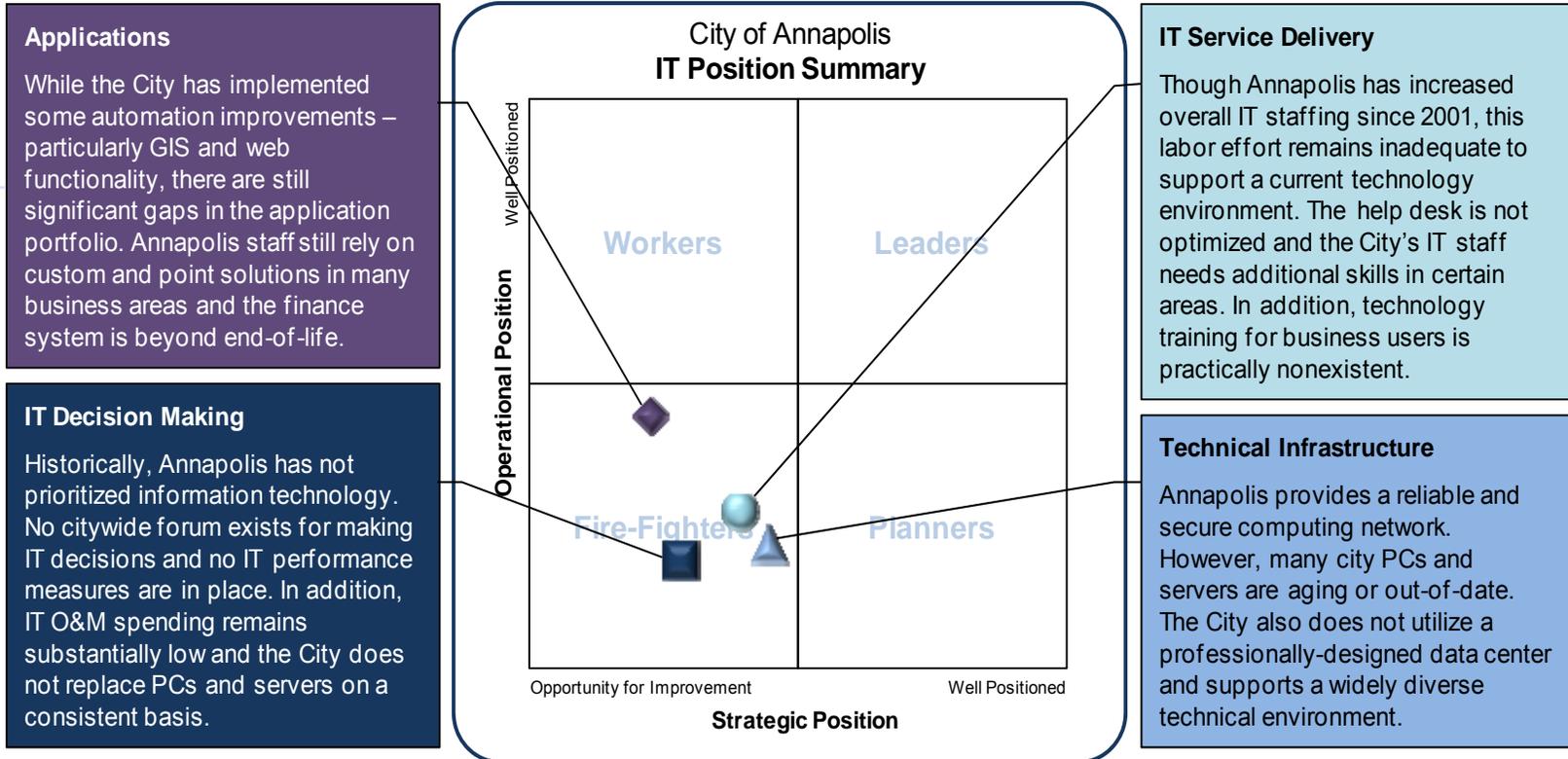


The X and Y axes indicate “opportunity for improvement” at the bottom and “well positioned” at the top. The X axis (horizontal) charts the City’s strategic position for three IT focus areas; the Y axis (vertical) charts the City’s operational position across the same four areas.

Since most organizations tend to improve operational efficiency as they conduct better planning processes, positions for each focus area typically progress along a linear trend line that starts at the bottom-left and moves to the top-right.

The figure on the following page illustrates the City of Annapolis’ current IT position, evaluated within this framework. This assessment is based on information gathered from interviews and focus groups with city staff, data collected on the City’s technology environment, and PTI’s IT benchmarks for local government.

PTI’s assessment tool plots the position of an organization’s IT focus areas based on over 100 strategic and operational indicators.



The remainder of this chapter presents detailed assessment results for each of these IT focus areas, categorizing findings as either strengths or opportunities for improvement. Chapter 3 presents specific recommendations aimed at moving the City of Annapolis’ IT position into the top-right quadrant.

Assessment Findings

This section details PTI’s findings surrounding the City of Annapolis’ current IT position. It includes a quantitative baseline for IT spending and staffing, as well as areas of strength and opportunities for improvement in each of the four strategic IT focus areas.

Quantitative Baseline

This quantitative profile provides a starting point from which the City can measure its progress. It also informs the findings presented later in this chapter.

\$1.57M

Spending on IT operations and maintenance (O&M) in FY 2009

\$40

IT O&M spending per citizen in 2009¹⁴

\$2,646

IT O&M spending per city full-time equivalents (FTEs) in 2009¹⁵

The City of Annapolis spends \$1.57 million – approximately 2.22% of its total operations and maintenance (O&M) expenditure – on technology O&M¹³, inclusive of fully-burdened staff salaries, hardware and software maintenance, and other recurring technology-related expenditures.

City of Annapolis IT O&M Spending



	Expenditures	% of Total
Total City Operating Budget	\$70,511,221	
IT Operating Budget	\$1,566,404	2.22%
IT Goods & Services	\$533,700	0.76%
Management Information Technology	405,300	
Other Departments	128,400	
IT Personnel	\$1,032,704	1.46%
Management Information Technology	801,880	
Other Departments	230,824	

¹³ O&M figures were reported by City staff. They include spending on personnel and goods and services, while excluding debt service, depreciation, and transfers to capital projects.

¹⁴ Based on a population of 38,992 and an FTE count of 592 provided by City of Annapolis staff.

¹⁵ As of March 2010, MIT lost 1.50 FTE through FY 2011 due to budget cuts and associated layoffs.

This quantitative profile provides a starting point from which the City can measure its progress.

8.69

Management Information
Technology FTEs providing IT
O&M labor

2.00

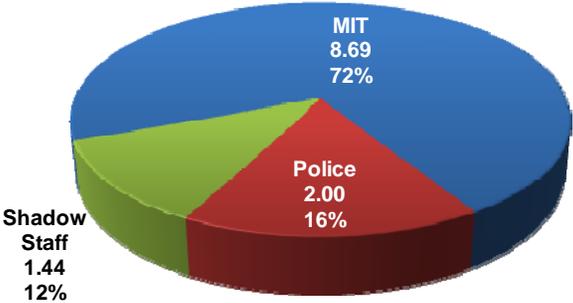
IT-titled FTEs in the Police
Department providing IT O&M
labor

1.44

Non-IT-titled FTEs (shadow staff)
providing IT O&M labor

Management Information Technology (MIT),¹⁶ with 8.69¹⁷ FTEs, provides *application services, infrastructure services, and customer services* to the City of Annapolis staff. The chart below presents the distribution of IT labor effort (in FTEs).

Annapolis IT Labor Effort



The following table presents a more detailed breakdown of the City's IT O&M labor.

IT Labor Category	FTE
MIT staff	9.00
MIT intern	0.25
Total MIT labor¹⁸	9.25
GIS data maintenance	-0.50
IT capital projects	-0.06
Total MIT O&M labor	8.69
Police IT O&M labor	2.00
Shadow staff¹⁹ IT O&M labor	1.44
Total IT O&M labor	12.13

¹⁶ Throughout this report, the term "IT" refers to technology and labor effort on a citywide basis. MIT refers to the Management Information Technology division within the Finance Department.

¹⁷ As of March 2010, MIT lost 1.50 FTE through FY2011 due to budget cuts and associated layoffs. Figures throughout this chapter are based on FTE levels prior to the March layoffs.

¹⁸ This consists of MIT's nine full-time staff and a quarter-time intern. The total IT O&M labor of 8.69 FTEs excludes labor allocated to GIS data maintenance and IT capital projects. PTI conducted this labor analysis prior to the March 2010 layoffs.

¹⁹ Departmental staff with primarily non-IT duties who devote 10% or more of their time to IT support. At Annapolis, nine shadow staff provide the 1.44 FTE labor shown, representing \$113,828 in personnel costs. PTI also conducted this analysis prior to the March 2010 layoffs.

380

Desktop computers in use at the City

150

Laptop computers in use at the City

45

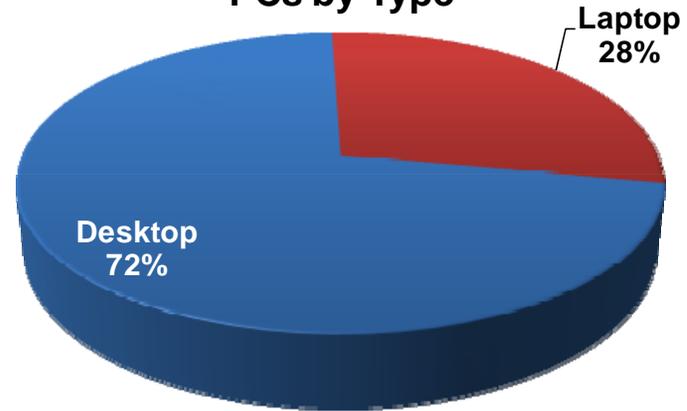
Servers in use at the City

135

Specialized devices (e.g., blackberry, mobile data terminal) in use at the City

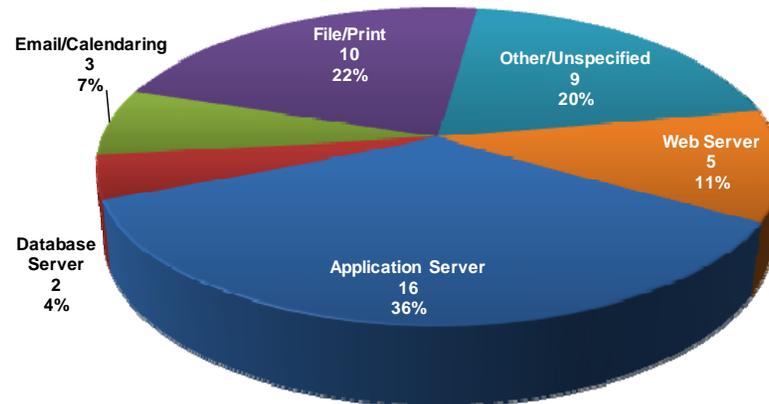
The City of Annapolis also has an extensive technology infrastructure. The figure below presents the types of computers currently in use at the City.

PCs by Type



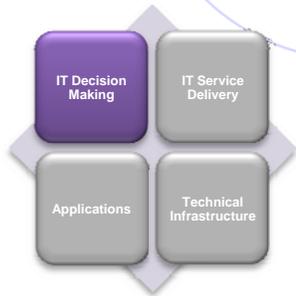
The following chart depicts the primary functions of servers currently in use at the City.

Server Primary Function



The following sections present findings from PTI's assessment of Annapolis' current IT environment. Both strengths and opportunities for improvement are organized around the four strategic IT focus areas:

- ◆ IT decision making
- ◆ IT service delivery
- ◆ Applications
- ◆ Technical infrastructure



IT Decision Making

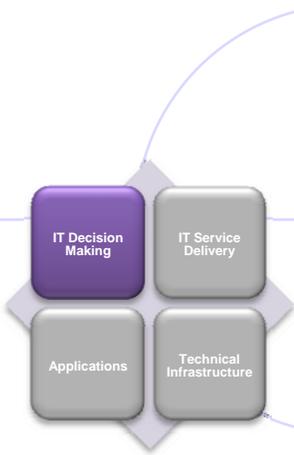
IT decision making encompasses an organization's ability to make informed technology investment decisions aligned with its business needs. From a strategic perspective, IT decision making (including governance processes and tools) represents a critical area, as it determines how the City plans for, allocates, and manages its IT resources. Without appropriate leadership and direction, ad hoc decisions and sub-optimal investments often occur.

Strengths

The following table describes areas of strength and associated impacts of the City's IT decision making.

Finding	Impacts
<p>The City participates in several regional IT initiatives.</p> <p>Annapolis partners with the City of Baltimore and a number of area counties in the Baltimore Urban Area Homeland Security Work Group (UAWG), which engages in sustained regional planning to coordinate emergency response and recovery. Key IT-related UAWG subcommittees include information technology, backup 911 and dispatch, closed circuit television, radio communications and wireline interoperability.</p> <p>The Annapolis Fire Department contracts with Anne Arundel County for Computer-aided Dispatch (CAD) and Records Management systems.</p> <p>In addition, Annapolis participates in county, regional and state GIS data sharing agreements, state GIS governance (MSGIC - Maryland GIS Coordination), the Maryland Municipal Information Technology Association (MMITA), and is a member of the One Maryland broadband stimulus ARRA grant funding and wire line initiative.</p>	<ul style="list-style-type: none"> • Realizes economies of scale – reducing infrastructure and services costs for partners • Encourages a regional approach to selected government services • Serves the shared needs of all participating organizations

Aligned with best practices, Annapolis participates in several regional IT initiatives.



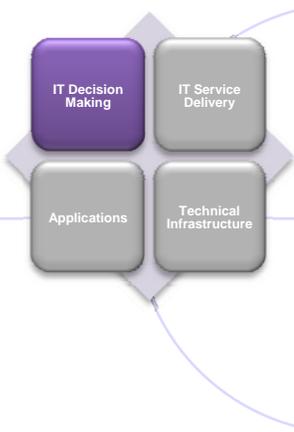
The City utilizes defined standards for core IT equipment.

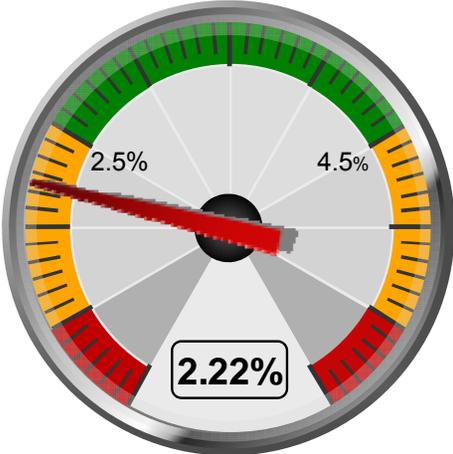
Finding	Impacts
<p>Annapolis leverages central purchasing for IT. MIT handles procurement for all IT equipment (e.g., PCs, servers, enterprise software).</p>	<ul style="list-style-type: none"> • Lowers purchase costs of IT goods • Streamlines IT procurement efforts
<p>GIS and website plans are in place. The City implemented most of its GIS plan, developed in 2004, contributing to significant GIS advancements, and has an active, interdepartmental team guiding GIS goals and initiatives. The City developed a clear and detailed website plan and successfully outsourced implementation to Deep Blue, a web development vendor. This resulted in significant website improvements.</p>	<ul style="list-style-type: none"> • Supports the City’s use of land- and parcel-based information and services • Enables future GIS and Web integration with new software investments – streamlining operations • Increases public access to public information and City geospatial data • Enhances citizen participation
<p>The City utilizes defined standards for core IT equipment. MIT updates city workstation and server standards every six months.</p>	<ul style="list-style-type: none"> • Simplifies IT service and support • Leverages purchasing power and economies of scale
<p>Annapolis uses a simple, straightforward IT O&M funding approach. The City funds IT as a single entity through the standard budget process.</p>	<ul style="list-style-type: none"> • Encourages collegiality and cooperation among departments for IT resources • Avoids the complications of chargeback models

Opportunities for Improvement

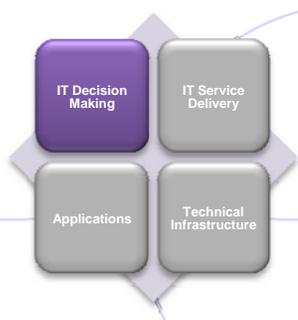
The following table identifies the City’s IT decision-making challenges and associated impacts.

Finding	Impacts
<p>IT governance deviates from best practices. Annapolis lacks a single, citywide forum for making IT investment decisions. Current IT decision-making processes and criteria are not well communicated. In addition, key stakeholders (e.g., end users, department managers) do not consistently participate in IT decisions and the city does not utilize tools (e.g., balanced scorecard) to evaluate potential IT investments.</p>	<ul style="list-style-type: none"> • Limits the City’s ability to align IT investments with strategic goals and priorities • Leads to siloed and potentially uninformed IT decisions • Hinders executive buy-in for technology initiatives



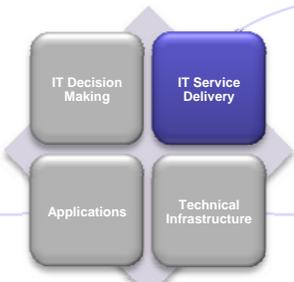
Finding	Impacts
<p>Citywide IT operations and maintenance (O&M) spending falls at the low-end of PTI's target range for local government.²⁰</p> <p>Though Annapolis has more than tripled IT spending from \$474K to \$1.57M since 2001, it still only represents 2.22% of total O&M spending. This amount still falls below PTI's target range (2.5 – 4.5%) and is not commensurate with a desire to fully integrate technology into city operations and improve efficiency and effectiveness.</p> 	<ul style="list-style-type: none"> • At a strategic level, funding for IT O&M activities will not support future advancements and the use of technology as a strategic tool • Prevents the City from realizing the full value of its IT investments • Provides a suboptimal level of technology equipment and support • History of underinvestment has created a backlog of unmet IT needs
<p>The City lacks executive-level IT leadership.</p> <p>Technology has not been sufficiently advocated at the highest level of city management. The City does not have a clearly-defined IT vision or direction.</p>	<ul style="list-style-type: none"> • Leads to underinvestment in technology and associated support • Risks IT investments not aligning with the desired direction for IT • Increases the likelihood IT processes will remain unguided in the future • Obscures IT investment criteria

²⁰ PTI's target benchmarks are based upon IT spending, staffing, and inventory data collected from surveys and local government clients since 1993 as well as industry best practices. These target benchmarks are updated annually.



Contrary to best practices, the City does not utilize a formal technology replacement fund.

Finding	Impacts
<p>Annapolis does not measure IT performance. The City does not use any quantitative metrics to evaluate IT performance.</p>	<ul style="list-style-type: none"> • Hinders effective IT governance • Prevents the City from identifying and addressing IT related service issues • Decreases confidence in IT service delivery
<p>Major IT investments are not funded with capital dollars. Large IT expenditures currently follow the standard budget process and are funded with O&M dollars. No capital funding is available for IT.</p>	<ul style="list-style-type: none"> • Limits funding opportunities for large IT investments • Creates wide fluctuations in O&M spending for expensive software systems and associated hardware – impacts budgeting process for all departments
<p>The City does not utilize a technology replacement cycle/fund. Annapolis does not replace PCs, servers, etc. on a defined periodic cycle. In the past few years, about \$100,000 has been allocated annually for PC and server replacement, an insufficient amount for such a program.</p>	<ul style="list-style-type: none"> • Prevents the City from leveraging the potential cost savings offered by a planned replacement cycle • Complicates the process for replacing and/or upgrading IT assets • Results in an outdated and heterogeneous technical infrastructure • May reward departments that can make the best business case rather than addressing citywide needs and priorities
<p>Failed SAP implementation has discouraged major investments in IT applications and system integration. The City’s attempt to install an enterprise resource planning (ERP) system was not successful and drained a significant amount of City resources.</p>	<ul style="list-style-type: none"> • Creates barriers to interdepartmental collaboration • Fosters excessive risk aversion, resulting in slow and halting IT progress • Hinders the City’s ability to eliminate severe automation gaps



Collaboration between central IS and other departments is improving.

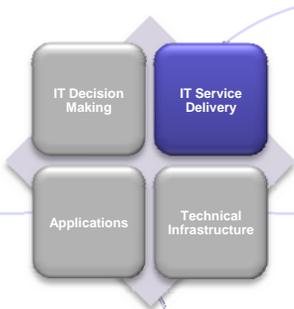
IT Service Delivery

IT service delivery refers to the organization, staffing levels, and allocation of technology support personnel. An assessment of this focus area provides insight into the alignment of IT services with overall business objectives and IT service demands.

Strengths

The following table describes the City’s IT service delivery areas of strength and associated impacts.

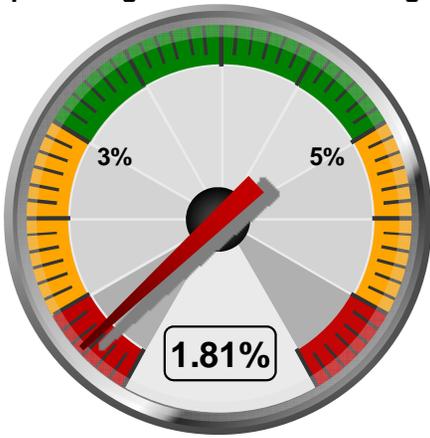
Finding	Impacts
<p>Since 2001, Annapolis increased citywide IT staffing levels. The City has more than doubled IT-titled O&M staffing from 5.27 FTEs to 10.69 FTEs. This raised IT O&M staffing as a percentage of overall city FTEs from 1.07% to 1.81%.</p>	<ul style="list-style-type: none"> Increases business user confidence in IT Improves IT service responsiveness Enhances the value of IT operations
<p>Citywide PC support ratio falls within PTI’s target range. Annapolis’ ratio of PCs to PC support FTEs is 283-to-1, within PTI’s target range of 250-to-1 and 350-to-1.</p> <p style="text-align: center;">Ratio of PCs to PC Support FTEs</p> 	<ul style="list-style-type: none"> Provides efficient service by allocating an appropriate amount of MIT labor to PC support Diminishes the creation of workaround processes Increases the utilization of technology across the City
<p>Business units have a high regard for MIT personnel. City staff reported in focus groups and interviews with PTI that MIT staff:</p> <ul style="list-style-type: none"> Provide responsive infrastructure and desktop support Demonstrate appropriate IT skills to support the existing portfolio Share knowledge well and demonstrate positive relationships Deliver adequate IT service and support Continue to enhance city GIS 	<ul style="list-style-type: none"> Increases willingness of users to contact MIT for support needs Builds strong individual IT service relationships

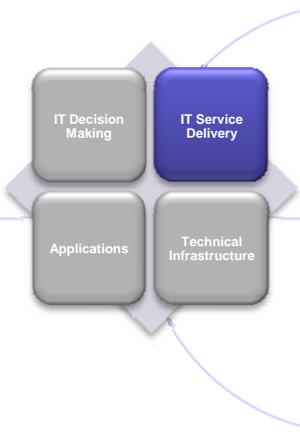


Opportunities for Improvement

The following identifies the City's challenges regarding delivery of IT services.

The City's IT-titled O&M staffing level falls significantly below PTI's target range for local government.

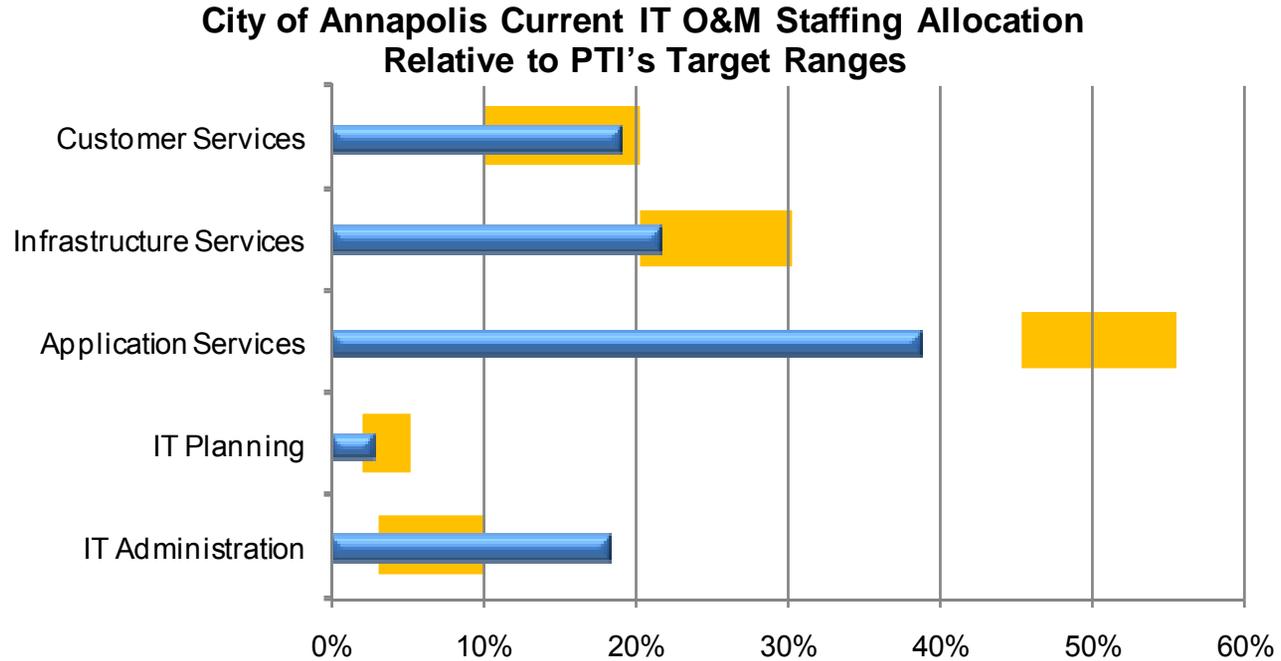
Finding	Impacts
<p>The City's IT-titled O&M staffing level falls significantly below PTI's target range for local government.</p> <p>The City of Annapolis' IT-titled O&M staffing as a percentage of total O&M staffing is 1.81% – below the low end of PTI's target range – and not commensurate with the City's desire to leverage IT for improved efficiency and effectiveness.</p> <p style="text-align: center;">IT-titled O&M staffing as a percentage of total O&M staffing</p> 	<ul style="list-style-type: none"> • Impairs the City's ability to realize the full value of its IT investments • Provides only a basic level of IT support • Hinders the City's ability to strategically plan for and effectively administer IT systems and services • Diminishes Annapolis' ability to leverage IT tools and processes to improve business practices • Compromises the City's ability to install, configure, and maintain business applications
<p>Annapolis' IT help desk is not aligned with best practices.</p> <p>The City has not implemented an effective approach or process for managing IT service requests, incidents, and communication with business users. MIT personnel respond to the City's help line on an "as available" basis and do not provide 24/7 support. In addition, Annapolis lacks IT service performance measures and has not fully leveraged the capabilities of its IT help desk software, HelpBox.</p>	<ul style="list-style-type: none"> • Leads to inconsistent IT support approaches (e.g., triage vs. resolution) • Misallocates IT skills and staff • Ineffectively supports ongoing operations and maintenance of technology investments • Decreases operational efficiency

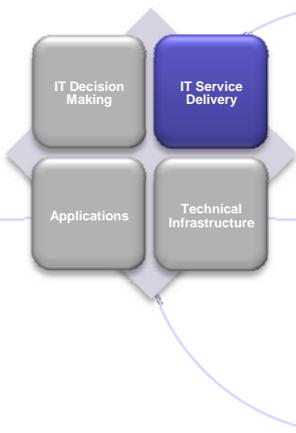


Finding	Impacts
<p>Annapolis' IT labor allocation can be further optimized (see figure below).</p> <p>The City's application services labor allocation falls below PTI's target range, likely due to significant automation gaps and the low-tech nature of existing applications. The City's IT administration labor allocation exceeds PTI's target range, primarily because MIT's small organization size makes achieving economies of scale difficult.</p>	<ul style="list-style-type: none"> • Undermines the City's ability to utilize new application capabilities as an engine of productivity • Ineffectively supports ongoing operations and maintenance of technology investments • Leaves some business units resistant to centralized IT service delivery • Leads business users to utilize point solutions and/or shadow applications in place of misunderstood or unknown application capabilities

The distribution of IT support labor does not align with best practices.

The figure below presents the distribution of the City of Annapolis' IT-titled labor effort across the five IT functions. The blue bars denote the citywide IT labor effort relative to PTI's target allocation ranges, denoted by yellow rectangles. These ranges represent a typical target for municipal IT labor allocation.





The table below presents Annapolis' current IT O&M FTE data and totals for each functional area.

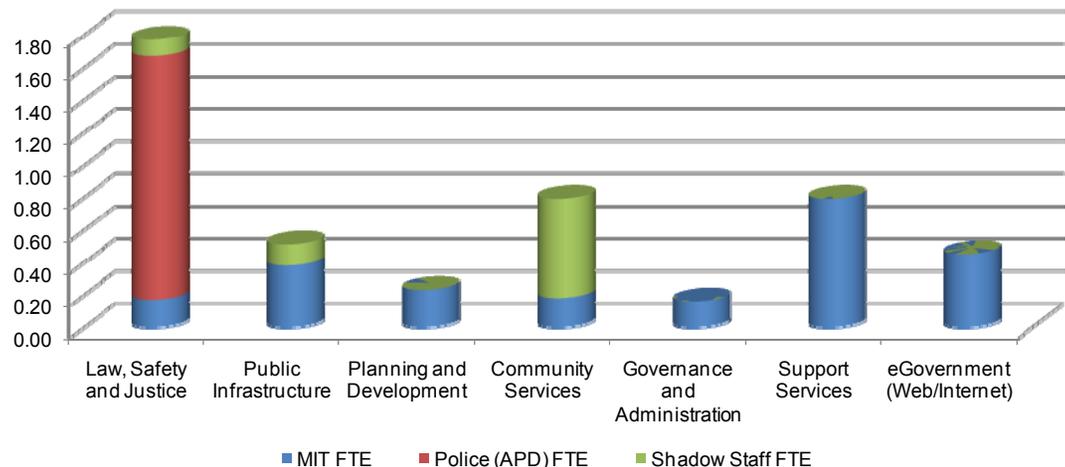
The City of Annapolis Current IT O&M Staffing Allocation²¹

IT Functions	IT O&M Labor Effort (in FTEs)		
	MIT Effort	Police (APD) IT Effort	Total IT Effort
Customer Services	1.55	0.39	1.94
Infrastructure Services	2.39	0.11	2.50
Application Services	2.36	1.50	3.86
IT Planning	0.34	0.00	0.34
IT Administration	2.05	0.00	2.05
Total:	8.69	2.00	10.69

2

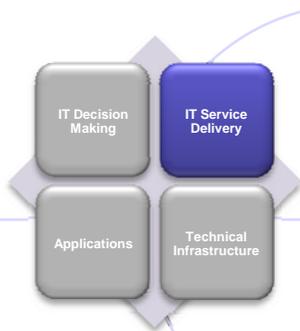
The following chart augments this analysis. It presents the City's application services labor effort by functional areas served (e.g., public safety). It also adds shadow staff²² labor effort into our analysis, further demonstrating unmet software support requirement in various functional areas – most notably in community services (e.g., parks and recreation software support).

Application Support by Functional Area (including shadow staff)



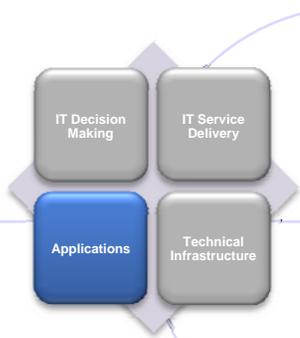
²¹ As of March 2010, the City lost 1.50 FTE from MIT through FY 2011 due to budget cuts and associated layoffs.

²² The term "shadow staff" refers to non IT-titled personnel who spend more than 10% of their time performing IT support functions.



Annapolis' IT staff has limited skills in some key areas.

Findings	Impacts
<p>Annapolis' IT staff has limited skills in some key areas. Through interviews and focus groups with PTI, both business users and IT staff reported a need for more of the following skills:</p> <ul style="list-style-type: none"> • Tier 2 PC support (deskside problem resolution) • Business analysis (identifying automation to support business needs) • Project management • Database administration 	<ul style="list-style-type: none"> • Undermines Annapolis' ability to leverage technology for improved efficiency and service quality • Hinders the City's ability to effectively analyze business needs, implement appropriate solutions and manage large scale projects • Reduces IT support capabilities • Inhibits business functions as departments remain uninformed and/or uninvolved
<p>The City does not emphasize IT training. Annapolis has no defined IT training program, curriculum, or budget. Many departments still rely on manual and/or paper-based processes and lack the business analysis and/or IT skills necessary to convert to efficient electronic data systems. In addition, some business users are reluctant to develop technology skills. Position descriptions have not had IT skills updated for several years, and there is no provision for continued IT training.</p>	<ul style="list-style-type: none"> • City does not realize full productivity increase possible from technology • Reduces IT support capabilities • Limits IT advancement opportunities – making Annapolis a less desirable place to work • Lowers confidence in central IT support
<p>MIT work and storage space will not support future growth and expanded use of technology. Annapolis' current IT office, closet and equipment space is limited. It is crowded at current IT staffing levels and will not adequately support additional IT personnel or equipment.</p>	<ul style="list-style-type: none"> • Constrains the efficiency and effectiveness of IT service delivery • Risks loss or misplacement of IT assets
<p>Software support skills focus on older technologies. Given the age and/or low-tech nature of some city applications (e.g., Therefore, Groupwise), Annapolis maintains some IT skills that will not apply to more modern software and technologies.</p>	<ul style="list-style-type: none"> • Hinders the City's ability to implement new software solutions and leverage technology for improved efficiency and service quality • Diminishes future IT support capabilities



Applications

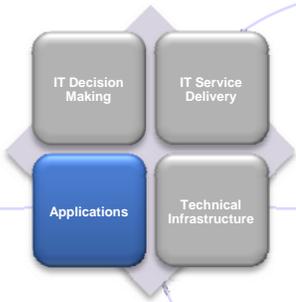
Applications refer to the software used to support core business functions. PTI reviewed the City of Annapolis' software inventory and gathered additional information through interviews and focus groups. This section documents those findings.

Strengths

The following table describes the City of Annapolis' application strengths and associated impacts.

Finding	Impacts
<p>The City has achieved a number of automation improvements since 2001.</p> <p>Examples include:</p> <ul style="list-style-type: none"> • Improved web and GIS functionality • Parks and recreation management (CLASS) • Permit management (TraKit) • Emergency management and planning (WebEOC, Dialogic) • Fire management and quartermaster systems • Upgraded police records management system (RMS), computer-aided dispatch (CAD) system and mobile data terminal (MDT) system • Work order management (iWorQ) 	<ul style="list-style-type: none"> • Enhances city services • Streamlines specific business processes and supports business operations • Increases productivity • Limits manual processes • Reduces data errors • Improves government transparency and accessibility
<p>Annapolis recently requested proposals from vendors for new utility billing and HR/payroll systems.</p> <p>The city plans to implement new software packages for these both of these functions during 2010.</p>	<ul style="list-style-type: none"> • Modernizes part of the City's application portfolio and improves overall business automation • Increases Annapolis' ability to track and manage utility customer accounts, usage, and associated billing operations • Enhances the City's ability to manage human resources/payroll data and business processes • Adds additional capability, improving overall operational efficiency • Provides opportunities to implement automated workflow

Many significant application investments are planned or currently in progress.

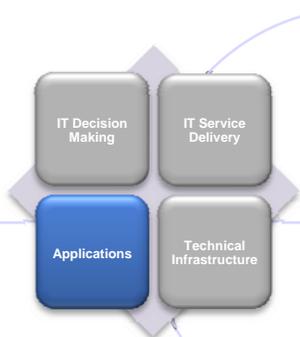


Opportunities for Improvement

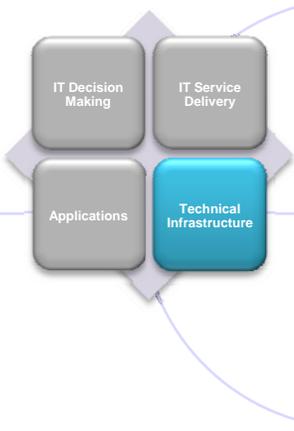
The following table describes the City’s application portfolio challenges.

Many severe gaps exist in the City’s application portfolio.

Finding	Impacts
<p>Many core applications provide only limited functionality.</p> <p>In particular, the City’s maintenance management, human resources management, utility customer information management and financial management systems lack many modern features.</p>	<ul style="list-style-type: none"> Increases the time and resources required to conduct routine operations Requires business unit staff to create shadow applications and paper-based processes to make up for deficiencies in (or a lack of) current automation Fosters siloed information storage and retrieval Limits management reporting abilities
<p>Many severe gaps exist in the City’s application portfolio.</p> <p>The most critical areas include:</p> <ul style="list-style-type: none"> Document management Maintenance management Citizen relationship management (CRM/311) Project management Contract/grant management Decision support/business intelligence Remote IT support tools 	<ul style="list-style-type: none"> Requires manual business processes Increases data errors and process redundancy Places a high reliance on institutional knowledge Fosters creation and use of shadow systems and point solutions
<p>Annapolis’ financial management system is beyond end-of-life.</p> <p>Therefore is more than 16 years old, built on out-of-date technologies, and is not commercially supported. It is heavily customized and its lack of security features prevents decentralization of numerous functions, including time entry, budget development, and purchase requisitions.</p>	<ul style="list-style-type: none"> Risks failure of a critical municipal system Limits data and information sharing Hampers decision support capabilities Encourages the use of shadow systems and point solutions Impedes productivity
<p>Core systems lack integration (e.g., finance system, iWorQ) and the City relies excessively on point systems and redundant data entry.</p> <p>Most of the City’s major applications are not integrated and, as such, do not share critical data.</p>	<ul style="list-style-type: none"> Requires users to manually transfer data from one system to another Duplicates data in core systems and shadow applications Misses opportunities to optimize business operations



Finding	Impacts
<p>Personal productivity software is not up-to-date. Annapolis still uses Microsoft Office XP (2002).</p>	<ul style="list-style-type: none"> Leaves city employees with outdated software for word processing, spreadsheets, presentations, and scheduling – hindering collaboration and limiting productivity Complicates document transfer with external organizations, vendors, citizens, and governmental partners.
<p>The City's internet presence and capabilities still need improvement. Although several advancements have been made since the last IT plan, Annapolis' web site is not citizen-centric – it is still organized by department rather than customer need – and lacks strong citywide branding. Business units reported difficulty in adding new content and keeping departmental sites up-to-date.</p>	<ul style="list-style-type: none"> Limits online citizen self-service Hinders public information access Misses opportunities to reduce customer traffic at city facilities



Technical Infrastructure

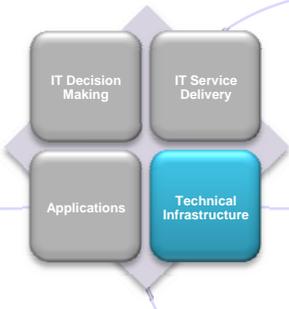
Technical infrastructure refers to the hardware, networks, databases, and operating systems that support city applications. An organization’s technical infrastructure provides the critical foundation for connectivity and processing power.

Strengths

The following table describes technical infrastructure areas of strength and associated impacts.

Finding	Impacts
<p>The City’s network is reliable. Annapolis experiences little to no unplanned network outages.</p>	<ul style="list-style-type: none"> • Reduces and/or eliminates disruptions in business operations by minimizing downtime • Increases end user confidence • Provides a robust medium for communications
<p>Annapolis’ phase 3 fiber network infrastructure build is complete. The City has expanded high-speed network connectivity to most city facilities and locations.</p>	<ul style="list-style-type: none"> • Expands network access and connectivity • Continues to facilitate data communications, application availability, and modern technology across the City
<p>Nearly all city PCs are standardized on a single personal computer operating system. The City reported that nearly all of its 530 PCs run on the Windows XP operating system.</p>	<ul style="list-style-type: none"> • Simplifies PC image creation, management and deployment • Provides a common and familiar support environment • Eases patch deployment • Reduces maintenance costs
<p>VoIP capable phones are installed in all fiber connected locations. The City has installed new phone technology in most locations. This amounts to an estimated 85% of City phones (425 of 500).</p>	<ul style="list-style-type: none"> • Develops a foundation for pursuing unified communications, which bolsters staff productivity and streamlines operations
<p>The City appears to employ sufficient network security and spam control for external threats. While an IT security audit/assessment was beyond the scope of this study, business users reported satisfaction with the effectiveness of current spam control. In addition, no significant security breaches have occurred at the City of Annapolis in recent years.</p>	<ul style="list-style-type: none"> • Minimizes operational disruptions • Increases business user confidence in technology • Ensures strong defense against viruses and spam originating outside of the City’s core network

Nearly all Annapolis PCs are standardized on a single personal computer operating system.

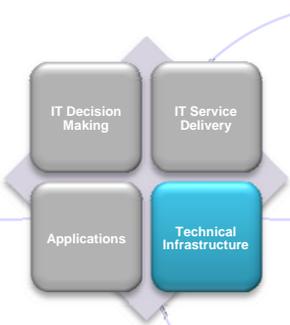


Opportunities for Improvement

The following table describes challenges related to the City’s technical infrastructure.

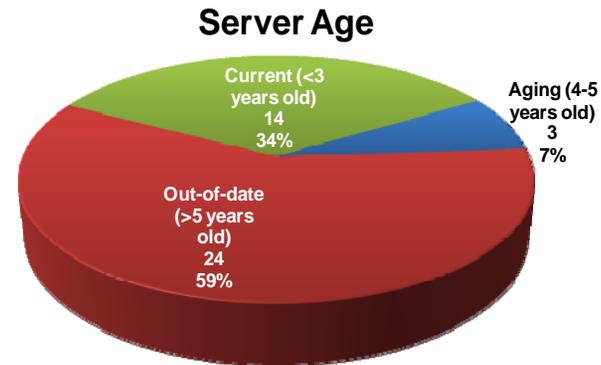
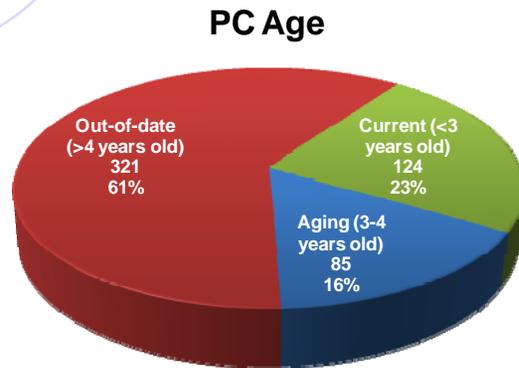
City data centers (MIT and Police) do not fully align with modern design standards.

Finding	Impacts
<p>City data centers (MIT and Police) do not fully align with modern design standards.</p> <p>Both lack electronic access control (e.g., RFID cards), tracking, and advanced surveillance, and long-term backup power capabilities. In addition, neither data center utilizes modern environmental controls – such as individual server temperature tracking and particle filtering. Both facilities have water-based fire suppression systems, which would damage core IT equipment.</p>	<ul style="list-style-type: none"> • Endangers the City’s physical IT assets and operations due to unauthorized access, fluctuating electrical power, and environmental risks • Risks service disruption to critical operations, control, communication, financial, and other information systems • Increases infrastructure maintenance costs, labor effort, and energy consumption
<p>Annapolis lacks an off-site backup/disaster recovery location.</p> <p>The City’s current disaster recovery plan assumes recovery within city limits and calls for removing backup tapes from the existing data center. Restarting operations requires access to the data center along with undamaged servers and infrastructure.</p>	<ul style="list-style-type: none"> • Diminishes the City’s ability to provide essential services during and/or after a disaster or emergency • Increases operational risks • Slows the City’s recovery from unplanned outages – impacting business processes
<p>Annapolis lacks wireless connectivity for staff use.</p> <p>The City has not installed indoor wireless access points (WAPs) to support Internet and intranet connectivity for city staff and contractors.</p>	<ul style="list-style-type: none"> • Constrains operational efficiency • Limits city staff information access while in meetings and/or away from primary workspace



Finding	Impacts
<p>A significant portion of city servers and workstations are out-of-date (see charts below).</p> <p>No more than 33% (using a three-year replacement cycle) of the City's PCs should qualify as out-of-date.</p> <p>No more than 20% (using a five-year replacement cycle) of the City's servers should qualify as out-of-date.</p>	<ul style="list-style-type: none"> Increases the risk of hardware failure Risks loss of key operational data and disruptions in city business May inhibit the City's ability to adequately serve users as applications and operating systems require faster hardware Requires increasing maintenance and support

A significant portion of the City's servers and workstations are aging or out-of-date.

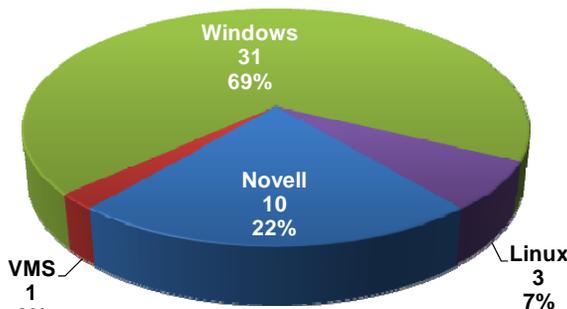


The City does not conduct regular third-party security audits or assessments.

Finding	Impacts
<p>The City does not conduct regular third-party security audits or assessments.</p> <p>Annapolis' physical and logical security programs and tools have not been evaluated in recent years nor does it have a formal security policy in place. A thorough review would include permissions, use policies, firewalls, networks, data center access, monitoring tools, among other elements.</p>	<ul style="list-style-type: none"> Increases the likelihood that unauthorized access attempts go undetected Prevents the City from proactively addressing potential security threats/breaches

MIT supports a diverse server operating system environment.

2

Finding	Impacts															
<p>MIT supports a diverse server operating system environment.</p> <p>The City maintains 45 servers running on four different server operating system families.²³ This heterogeneous environment directly results from siloed automation decisions and point solutions. Upgrades planned within the next few years, including replacement of the financial system, will mitigate this problem.</p> <p style="text-align: center;">Server Operating System</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Server Operating System Data</caption> <thead> <tr> <th>Operating System</th> <th>Count</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Windows</td> <td>31</td> <td>69%</td> </tr> <tr> <td>Novell</td> <td>10</td> <td>22%</td> </tr> <tr> <td>Linux</td> <td>3</td> <td>7%</td> </tr> <tr> <td>VMS</td> <td>1</td> <td>2%</td> </tr> </tbody> </table>	Operating System	Count	Percentage	Windows	31	69%	Novell	10	22%	Linux	3	7%	VMS	1	2%	<ul style="list-style-type: none"> • Increases the labor effort and cost associated with server support • Risks loss of key operational data and disruptions in city business • Complicates server support cross training and backup
Operating System	Count	Percentage														
Windows	31	69%														
Novell	10	22%														
Linux	3	7%														
VMS	1	2%														
<p>Annapolis does not employ formal approaches to information sharing, database management, or storage.</p> <p>City IT staff reported supporting a variety of different database platforms, including Oracle, SQL Server, Access, and a number of proprietary databases. No clear criteria exist for making database management system (DBMS) product determinations. End users reported distributed records management and data stores, redundant data across departments, and insufficient storage capabilities. This also results from siloed automation decisions and point solutions.</p>	<ul style="list-style-type: none"> • Reduces data integrity • Inhibits data integration • Complicates the City's data storage environment • Expands the City's data storage requirements • Limits Annapolis' ability to provide reliable, real-time information to support decision making 															

* * * * *

After validating these findings in a workshop with the City's project steering committee, PTI facilitated the development of a citywide IT vision and goals that build upon the City's existing strengths and address the opportunities for improvement identified in this chapter. Chapter 3 presents this new strategic IT direction for Annapolis.

²³ The "Windows" family includes 2000, 2003, 2008 and XP Pro.



Chapter 3 Strategic Direction

This chapter charts a strategic direction for information technology at the City. It outlines a core set of IT goals and attendant strategies to guide the deployment of technology – aligned with the City of Annapolis’ strategic priorities.

IT Vision and Goals

The City recognizes that, properly used, IT represents a foundational element of city service delivery, driving the quality, efficiency, and effectiveness of city operations. As such, PTI worked with the project’s steering committee to develop the following vision for citywide IT:



City of Annapolis IT Vision

Annapolis leverages IT to enhance quality, increase availability, improve reliability, and lower cost of city services

In support of this vision – and driven by Annapolis’ strategic priorities – PTI and the City’s project steering committee developed the following six IT goals:

City of Annapolis IT Goals

1	Informed IT Decisions	Technology investments align with city strategic priorities.
2	Accessibility and Accountability	Technology improves access to city information and services and promotes responsible municipal government.
3	Streamlined City Services	Information systems streamline city operations and improve service.
4	Reliable Technical Infrastructure	Technical infrastructure is secure, reliable, and cost effective.
5	Responsive IT Support	IT services are customer-oriented and responsive.
6	IT Enabled Workforce	City workforce is computer-literate and technology-enabled.

These goals support Annapolis’ strategic priorities. In turn, one or more IT strategies support each IT goal. The remainder of this chapter details the five IT goals and associated IT strategies.

This plan outlines a set of IT goals and strategic to optimize the use of technology in delivering City services.

Goal 1: Informed IT Decisions

Technology investments align with city strategic priorities.

IT decision-making structures and processes are fundamental to effective IT services because they direct how Annapolis plans for, allocates, and manages its IT resources. Effective IT governance will ensure that the City has the right technology, in the right place, and at the right cost – in support of Annapolis' strategic priorities. The following initiatives support this goal:

- ◆ Establish a citywide IT governance structure
- ◆ Improve the City's IT funding approach and associated mechanisms
- ◆ Enhance IT strategic planning efforts
- ◆ Continue pursuing regional IT partnerships

Establish a citywide IT governance structure

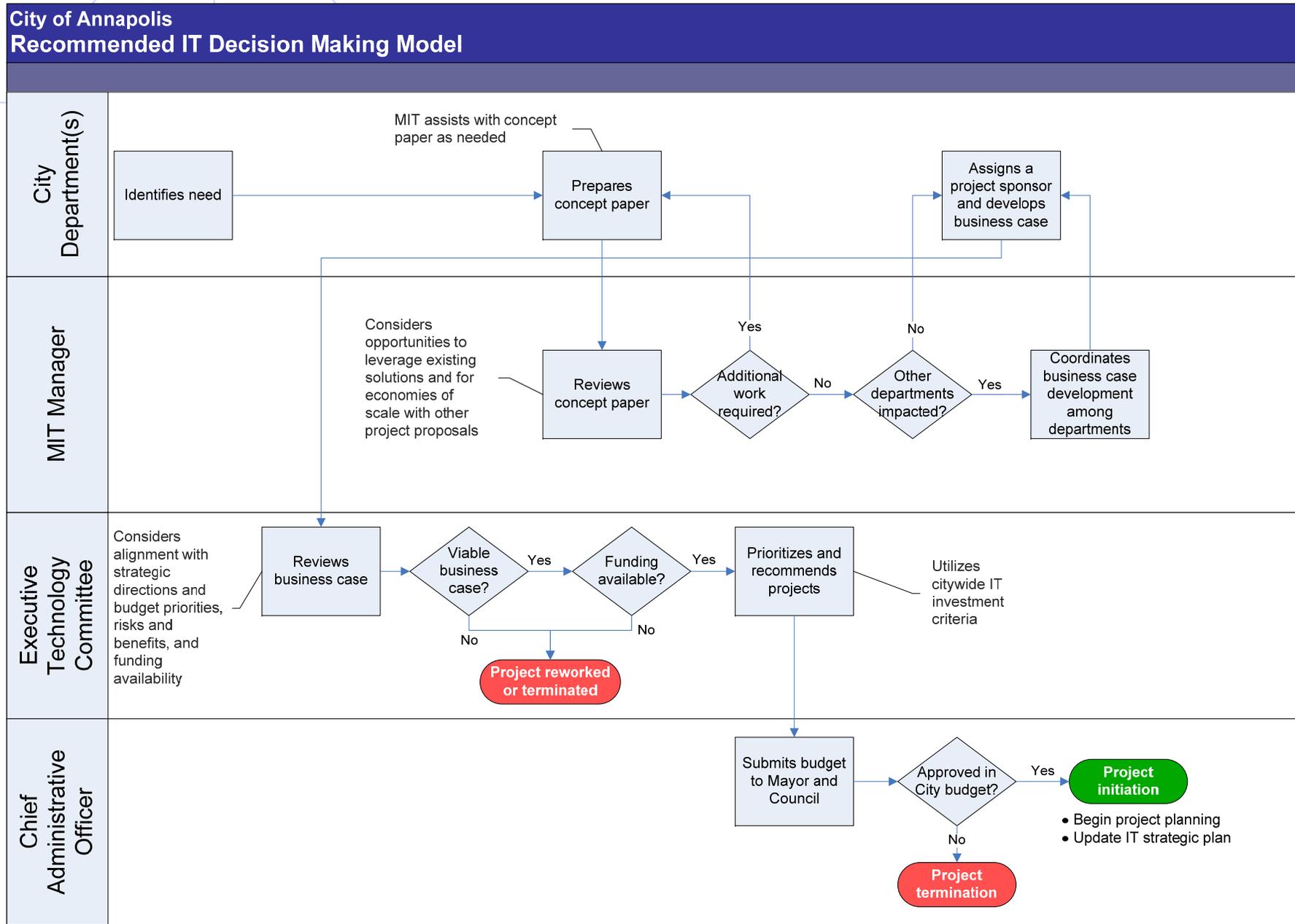
To help the City make the best use of its IT resources, Annapolis should adopt a structured, citywide process (detailed on the following pages) for making and communicating major IT investment decisions. This includes clearly defining stakeholder roles and responsibilities, decision making policies and procedures, and prioritization criteria. The City must also establish tools (e.g., concept paper, business case, balanced scorecards²⁴) to support the analysis and prioritization of potential IT investments and ensure decisions are fully supported by an appropriate business impact assessment and financial analysis.

Associated Benefits

- ◆ Facilitates the adoption of an organization-wide view of technology
- ◆ Aligns IT investments with Annapolis' core business priorities
- ◆ Improves the allocation of limited IT resources
- ◆ Enhances communication with key stakeholders
- ◆ Creates agreed-upon IT policies and procedures
- ◆ Supports shared IT investments

²⁴A performance management tool that balances both financial and non-financial measures, as well as short-term and long-term performance, in support of an organization's strategic priorities.

The exhibit below depicts a process for effectively prioritizing major IT investments.



3

The bullet points below outline recommended roles and responsibilities associated with the citywide IT decision making model shown on the previous page.

IT Decision Making – Roles and Responsibilities

Chief Administrative Officer

- ◆ Submits prioritized project list to Council
- ◆ Terminates unfunded IT projects
- ◆ Approves updates to the IT strategic plan in partnership with the MIT Manager

MIT Manager

- ◆ Develops citywide IT policies, standards and exceptions
- ◆ Maintains the IT Strategic Plan
- ◆ Reviews business unit IT project proposals
- ◆ Assesses resource impacts
- ◆ Coordinates joint business unit business case development

Executive Technology Committee

- ◆ Takes an enterprise view on improving business processes via technology
- ◆ Identifies funding sources
- ◆ Assesses multi-department impacts
- ◆ Serves as a clearinghouse for major information technology-related projects
- ◆ Prioritizes major information technology projects
- ◆ Monitors post-project performance

City Department(s)

- ◆ Identifies customer needs/wants
- ◆ Develops initial project proposal
- ◆ Develops business case
- ◆ Sponsors projects

3

PTI recommends that Annapolis implement two key tools – concept paper and business case – as part of the IT decision making process. A concept paper is a less formal document (e.g., one to three pages) which allows decision makers to explore ideas without placing too much of a burden on staff. A business case is a more formal document that requires thorough financial and business analysis. The graphic on the following page presents the key elements of each of these tools.

Concept Paper

- ◆ Less formal (e.g., one to three pages)
- ◆ Allows decision makers to explore ideas without placing too much of a burden on staff
- ◆ Includes:
 - Brief statement of problem
 - Brief description of proposed solution or investment
 - High-level cost estimate
 - Identification of impacted stakeholders and business processes
 - Labor requirements
 - Benefits
 - Alignment with strategic priorities

Business Case

- ◆ More formal
- ◆ Requires thorough financial analysis
- ◆ Includes:
 - Brief investment description
 - Business assessment:
 - ✓ Description of existing situation and problem
 - ✓ Description of proposed changes
 - ✓ Other alternatives considered
 - ✓ Description of proposed technology
 - ✓ Impacts on other business units
 - ✓ Measurements and major deliverables
 - ✓ Project organization
 - Financial impacts:
 - ✓ One-time costs
 - ✓ Ongoing costs
 - ✓ Cost/benefit analysis, including return on investment
 - ✓ Intangible benefits
 - ✓ Risk assessment
 - ✓ Funding sources
 - Staffing impacts:
 - ✓ Implementation labor requirements
 - ✓ O&M labor requirements

3

Improve the City's IT funding approach and associated mechanisms

Fully implementing the recommendations and projects described in this IT strategic plan – in particular, major investments in new municipal systems – will require large one-time expenditures. In tight budget times, money for these projects will have to come from information technology-specific capital improvement funds, rather than IT O&M funds or other general fund sources.

In addition, to realize the potential gains in efficiency and service quality offered by technology, Annapolis must invest resources accordingly. Higher IT O&M spending is a natural consequence of increased IT investment. Thus, the city needs to budget adequate funding for IT operations and maintenance. Simply reaching the low end of PTI's target range for local government (2.5 – 4.5% of total city O&M spending) will require an increase in city IT O&M spending from \$1.57M to approximately \$1.75M over the life of this plan (presuming total city O&M spending diminishes or remains constant). In addition, to adequately support all recommendations within this plan, annual IT O&M spending will need to reach at least \$2.64M.²⁵ As technology becomes further integrated into the delivery of municipal services, Annapolis' IT O&M spending as a percentage of total IT O&M spending should approach the high end of PTI's target range for local government. If appropriately utilized, this additional technology investment will be more than offset by citywide gains in operational efficiency and service quality.

Associated Benefits

- ◆ Clarifies the cost of annual IT operations and maintenance
- ◆ Mitigates large fluctuations in IT O&M spending
- ◆ Expands funding opportunities for major IT projects

Enhance IT strategic planning efforts

To successfully achieve its IT goals, Annapolis needs to periodically review, revise and update its IT strategic plan. This includes the development of annual IT work plans to implement the IT strategic plan. These work plans establish the detailed tasks, timelines and resource estimates necessary to support this plan's broader IT projects and initiatives. Focusing on one year at a time breaks up the projects into smaller, more manageable steps. As the implementation schedule in chapter 4 indicates, achieving an optimal IT environment is a multiyear undertaking. As part of this strategy, Annapolis should regularly update its GIS and website plans, which outline specific, achievable goals for the City in these areas.

²⁵ Chapter 4 presents one-time and recurring project cost estimates.

This strategy also requires detailed business analysis to support IT decisions. The City should conduct feasibility studies, as appropriate, to evaluate major IT issues, which will provide the detailed cost-benefit and business impact analysis necessary to make well-informed IT strategy and investment decisions. In particular, the City needs to periodically evaluate IT outsourcing opportunities. Increasingly, organizations outsource IT services – particularly for “commodity” IT services such as help desk and infrastructure services. Hosted solutions can offer viable alternatives to enterprise-owned applications and infrastructure. While Annapolis may cost-effectively provide these services and technologies, the City should regularly evaluate the benefits of utilizing third-party providers. This plan recommends a feasibility study to assess the costs, benefits, and risks related to potential IT outsourcing alternatives.

Associated Benefits

- ◆ Ensures Annapolis achieves its desired IT goal state
- ◆ Helps the City make informed, measured progress toward its IT goals
- ◆ Builds upon recent GIS and website planning success
- ◆ Maintains the cost effectiveness of IT services

Continue pursuing regional IT partnerships

Regional services and data sharing partnerships offer the potential to enhance citizen services and realize economies of scale. This strategy encourages Annapolis to continue participating in ventures with neighboring government organizations and seeking partnerships whenever they improve services, support City strategic priorities and/or save resources via economies of scale. Significant collaboration opportunities exist in GIS, emergency management, public safety, and data center/network infrastructure development.

Associated Benefits

- ◆ Enables Annapolis to leverage economies of scale
- ◆ Reduces costs
- ◆ Expands citizen services
- ◆ Provides better management information

Goal 1: Informed IT Decisions	Implementation Projects
	<ul style="list-style-type: none">1.1 Develop and implement a formal citywide IT decision making process1.2 Create an IT-specific capital improvement fund1.3 Conduct an IT outsourcing feasibility study

Goal 2: Accessibility and Accountability

Technology improves access to city information and services and promotes responsible municipal government.

IT has become a critical component of every public organization's ability to brand itself, do business with customers, provide public information, and facilitate internal communication. In addition, part of the City's success relies on its ability to accurately assess trends and make strategic decisions for the future. The following strategies support this goal:

- ◆ Measure IT performance
- ◆ Improve interaction with citizens

Measure IT performance

This strategy consists of implementing a more formal approach to IT performance management. It includes collaboration between MIT and business units to define specific IT performance targets and develop a process for measuring and regularly reporting on IT service. Sample performance metrics include: Tier 1 problem resolution rate (e.g., 75% of problems resolved via phone), number of problems per workstation, average time to resolution (e.g., 20 minutes), service unit cost for IT services, network uptime, number of unplanned outages, average length of unplanned outages, workstation impact minutes, number of security breaches, etc.

Associated Benefits

- ◆ **Enables city leadership to more quickly and accurately identify and address IT service concerns and clearly assesses IT project outcomes**
- ◆ **Increases business user confidence in IT staff and tools**
- ◆ **Builds consensus around IT service levels and improves accountability**
- ◆ **Identifies and build on areas of strength and addresses opportunities for improvement**

Improve interaction with citizens

The use of social media, citizen relationship management systems (CRM/311), and public communication systems for outreach represent relatively new and unproven approaches to constituent interaction in the public sector. However, citizens increasingly expect their local governments to utilize these technologies. Technology has become a critical vehicle for communications (one way, two way, and interactive) with citizens, business partners, and other stakeholders, using a variety of media (telephone, web, email, social networks). Over the next five years, Annapolis needs to implement web 2.0 platforms and applications, as well as GIS technology, that will improve communication with stakeholders. It is important, due to the nascent nature of this technology, for Annapolis to thoroughly evaluate options available in the marketplace during the selection process. This strategy also includes continuing enhancements to Annapolis' Internet presence in accordance with the City's website plan.

Associated Benefits
<ul style="list-style-type: none"> ◆ Provides “one stop” convenience for residents and visitors ◆ Increases coordination and efficiency across departments ◆ Expands customer and stakeholder access to information and supports online transactions (in parallel with continuing website improvements) ◆ Allows citizens to engage with city government from the comfort of their own homes, public facilities, wi-fi hot spots, kiosks, and more ◆ May save money using a social media presence compared to traditional marketing and public interaction methods

Goal 2: Accessibility and Accountability	Implementation Projects
	<ul style="list-style-type: none"> 2.1 Define IT performance measures 2.2 Evaluate potential CRM/311 solutions 2.3 Implement the preferred CRM/311 solution

Goal 3: Streamlined City Services

Information systems streamline city operations and improve service.

Perhaps more than any other IT investment area, business software directly and visibly supports the City's ability to perform daily operations. Implementing new technology is a critical step in improving operations, but automation must also be supported by an enterprise commitment to business process change. This strategic goal leverages the built-in best practices and capabilities of commercial software – and emphasizes application integration and data sharing – to enhance operational efficiency and effectiveness. The following initiatives work together in support of this goal:

- ◆ Improve business automation
- ◆ Emphasize use of commercial software
- ◆ Leverage the inherent web capabilities of new software

Improve business automation

Over the course of the plan, Annapolis must address a number of severe application gaps. The highest priority areas for new software consist of financial management, document/records management, maintenance and facilities management, human resources/payroll management, and utility customer information management. When acquiring new systems, Annapolis needs to select commercially proven software packages that offer measurable value and support the City's business needs. In addition, Annapolis should select new software with a preference toward integrated systems, which will reduce costs and simplify implementation and support. As part of an IT strategy workshop, PTI facilitated an application prioritization process with the City's project steering committee. The results of that prioritization informed this IT plan's strategies and recommended projects.

Associated Benefits

- ◆ Introduces new automated functionality
- ◆ Automates business workflow
- ◆ Enhances service quality and improves productivity
- ◆ Reduces the City's reliance on paper and paper-based processes
- ◆ Increases stakeholder access to information
- ◆ Maximizes the value of Annapolis' technology investment as well as the productivity of many non-IT resources

Emphasize use of commercial software

Most municipal software vendors incorporate business process “best practices” into their software products, allowing work tasks to progress electronically, and build their systems on common platforms, improving integration capability. Accordingly, Annapolis should avoid custom application development. The advantages offered by commercial software packages are too great to be ignored and custom software development is rarely cost effective. As the City implements new business applications with expanded functionality, it needs to retire existing supplemental systems, files, and tools (e.g., Excel spreadsheets, custom-developed Access databases) and implement workflow automation whenever possible. Perhaps most importantly, MIT must partner with business units to reengineer work processes. There are no longer “technology” projects – only business projects with a technology component.

Associated Benefits

- ◆ **Leverages automated workflow and “best practices” built into the software**
- ◆ **Improves data integration capabilities**
- ◆ **Enhances service quality and productivity**
- ◆ **Focuses IT support skills on a limited set of platforms and core competencies**
- ◆ **Keeps pace with advancements in technology**
- ◆ **Limits reliance on institutional knowledge and siloed solutions**
- ◆ **Increases stakeholder access to information**

Leverage the inherent web and GIS capabilities of new software

Citizens and businesses increasingly utilize the Internet to conduct business and acquire information. Accordingly, their expectations for information and service availability via the Web will continue to rise. City stakeholders have also become more accustomed to leveraging geospatial data through GIS to access public information, assess economic development potential, track health and wellness data, and facilitate many other activities. Most applications designed to automate local government services (e.g., applying for a building permit, paying a parking fine, investigating a utility bill) provide significant web and GIS functionality and integration. As such, city staff supporting these new applications will need to possess appropriate web and GIS skills. Successfully implementing and utilizing these features should be a high priority as the City invests in new business systems.

Associated Benefits

- ◆ Meets the increasing expectations of Annapolis’ citizens
- ◆ Develops the City’s ability to offer the support of a “virtual City Hall” that provides information and services without requiring physical interaction with Annapolis’ business units

Goal 3: Streamlined City Services	Implementation Projects
	<ul style="list-style-type: none"> 3.1 Implement a new customer information management system 3.2 Implement a new human resources/payroll system 3.3 Implement a financial management system 3.4 Implement an electronic document management system 3.5 Implement a citywide maintenance management system 3.6 Pilot decision support/business intelligence software

Goal 4: Reliable Technical Infrastructure

Technical infrastructure is secure, reliable, and cost-effective.

The City's technology infrastructure provides a foundation for the software that streamlines operations and automates critical business functions. It includes the hardware, system software, databases, operating systems, and network components that support Annapolis' application portfolio. The following strategies support a technology infrastructure aligned with this goal:

- ◆ Maintain a modern IT environment and architecture
- ◆ Position IT to support business continuity
- ◆ Ensure appropriate security for IT systems and data

Maintain a modern IT environment and architecture

As previously stated, information technology requires ongoing investment to maintain its reliability and operational effectiveness. This initiative consists primarily of the following three elements:

- ◆ Utilize a professionally-designed data center – The City should evaluate options for hosting its servers and critical network components in an improved environment. Options may include sharing a data center with a neighboring government partner, outsourcing data center operations, and building a new data center. To optimize the new data center's effectiveness, Annapolis should also complete the final phase of the fiber ring. This strategy will improve access control, security, environmental controls and remote management capabilities.

Associated Benefits

- ◆ Ensures the long-term reliability and security of critical IT assets
- ◆ Reduces the risk of service disruption
- ◆ Increases network and application responsiveness
- ◆ Enhances storage management

- ◆ Implement a formal technology replacement cycle with sufficient and continued funding – Define specific life cycles for PCs (e.g., 2-3 years), servers (e.g., 4-5 years) and key network and infrastructure components (e.g., 5-7 years). Establish funds to replace hardware as it approaches end-of-life.

Associated Benefits

- ◆ Establishes a sustainable computer and network environment across the City
- ◆ Avoids unplanned and unbudgeted expenditures
- ◆ Ensures the long-term reliability of IT assets

- ◆ Standardize on no more than two server operating systems – As the City implements new automation, limit the number of server platforms (e.g., Windows 2008, Linux) in use. In the future, server and network architectures that rely on fewer modern platforms will provide greater value than older heterogeneous mixes.

Associated Benefits

- ◆ Simplifies IT support
- ◆ Leverages bulk purchasing opportunities
- ◆ Eases the potential transition to an externally managed data center

Position IT to support business continuity

A continuity of operations plan (COOP) establishes which business functions are most crucial to City stakeholders, and guides business operations during and after a major interrupting event (e.g., earthquake, extended power outage). Disaster recovery plans specify the activities IT must conduct to bring business operations back online – in the order determined by the COOP. They include guidelines for networks, hardware, data and applications. MIT needs to revise and expand Annapolis' current disaster recovery plan to restore service more quickly and to utilize a backup location outside city limits. This plan should leverage a professionally-designed data center, as described in the previous strategy.

Associated Benefits

- ◆ Minimizes disruption in business activities
- ◆ Allows the City to smoothly continue operations and provide municipal services in case of a disaster

Ensure appropriate security for IT systems and data

Federal and state mandates for information security and privacy, as well as citizen expectations, continually increase the need for adequate information security. This strategy puts in place enhanced physical (e.g., locked doors/cabinets) and logical (e.g., network structure, passwords) IT security policies, practices, and tools. Data assets (e.g., customer/citizen information, City documents) should be categorized by security risk level and protected appropriately. A professionally-designed data center, as described earlier, should provide sufficient physical security. Annapolis should engage third-party specialists to conduct annual security audits and triennial security assessments to ensure that the City's technical environment is equipped to deal with potential threats and the ever-changing IT risk environment.

Associated Benefits
<ul style="list-style-type: none"> ◆ Helps the City discover and address internal (e.g., inadequate or abused policies, permissions or physical security) and external (e.g., viruses, hackers, denial of service attacks) security threats ◆ Protects the City's information assets ◆ Positions the City as a trusted keeper of citizen information

Goal 4: Reliable Technical Infrastructure	Implementation Projects
	<ul style="list-style-type: none"> 5.1 Utilize a professionally-designed data center to host core infrastructure 5.2 Revise disaster recovery plan 5.3 Define, fund, and implement a formal technology replacement cycle 5.4 Conduct annual IT security audits and assessments

Goal 5: Responsive IT Support

IT services are customer-oriented and responsive.

The City must provide IT services that effectively and proactively respond to business unit needs, and stay current with technology. The following strategies address these objectives:

- ◆ Increase IT staffing levels
- ◆ Organize MIT division along functional lines
- ◆ Enhance and modernize IT skill sets
- ◆ Formalize IT service desk processes and procedures
- ◆ Contract for specialized IT skills as needed
- ◆ Provide sufficient space for IT staff and equipment

Increase IT staffing levels

As help desk and infrastructure services become more commoditized and increasingly automated, organizations realize greater IT service efficiencies. Application support, on the other hand, is more technically specialized and requires a fluent understanding of business needs. In high performing organizations, application services staff often account for 50% or more of total IT staffing. As indicated in Goal 3, this area is also where the organization maximizes the value of its technology. **Though this plan recommends augmenting current IT staffing levels, the City may choose to outsource some portion of IT support predicated on the results of the IT outsourcing feasibility study (project 1.3).** The description herein assumes that Annapolis continues to provide IT service and support internally. Note that this **increase in IT staffing levels occurs incrementally over the course of the plan's time horizon.**

This initiative adds five to six (5-6) additional FTEs of application support staff, as needed over the next six years, to support new business automation and better align the City's application services with best practice staffing levels. These personnel will provide much needed business analysis capabilities and application support for the City's new business systems. They will also bring application-specific web and GIS skills, as necessary, to extend the capabilities afforded by new vended software.

Contingent on Annapolis' future data center approach, this strategy also requires 1-2 additional FTEs for server administration, data center operations, and security administration labor effort. These personnel will primarily support hardware associated with new application investments.

Finally, this strategy also requires Annapolis to add one FTE focused on IT training and customer account management, which will support both the development of the business user IT training program and IT service desk improvements.

These additional FTEs would increase IT operations and maintenance staffing from 1.81% of total O&M staff to 3.25% (PTI’s target range is 3 – 5%). The following table provides a more detailed illustration of the recommended reallocation. The first three columns represent central IT labor, the second three columns represent police (APD) IT labor, and the last three columns represent total citywide IT labor. Columns labeled “current” indicate Annapolis’ existing IT labor allocation as of November 2009. Columns labeled “target” indicate PTI’s recommended IT labor allocation, and the “Net Change (rounded)” column calculates the difference between the current and target IT staffing levels. The rows classify the labor effort into the five IT disciplines defined by PTI for analysis purposes.

Proposed IT Staffing Levels and Allocation²⁶

	MIT Effort			Police (APD) IT Effort			Citywide IT Effort		
	Current	Target	Net Change	Current	Target	Net Change	Current	Target	Net Change
Customer Services	1.55	3.00	1.45	0.39	0.00	(0.39)	1.94	3.00	1.06
Infrastructure Services	2.39	4.25	1.86	0.11	0.00	(0.11)	2.50	4.25	1.75
Application Services	2.36	5.00	2.64	1.50	4.00	2.50	3.86	9.00	5.14
IT Planning	0.34	0.75	0.41	0.00	0.25	0.25	0.34	1.00	0.66
IT Administration	2.05	2.00	(0.05)	0.00	0.00	0.00	2.05	2.00	(0.05)
Total	8.69	15.00	6.31	2.00	4.25	2.25	10.69	19.25	8.56

It is important to note that the target IT staffing levels shown above represent a strategic end state.

As previously indicated, shifts in IT labor effort should take place incrementally over the plan’s timeline. Also as noted earlier, most of the increases in application support labor should coincide with the implementation of new business software.

In addition, this target IT O&M staffing level should sufficiently support all the application investments and other recommendations described in this IT strategic plan. However, this IT staffing projection assumes that the overall size of city government, in terms of personnel (FTEs) and expenditures, remains relatively stable. It does not account for significant increases or decreases in organizational

²⁶ The table shows an increase of 8.56 FTEs rather than 8.00 FTEs suggested in the narrative. The table assumes that the City can reallocate existing GIS data maintenance labor to GIS support (0.50 FTEs) – with business unit subject matter experts providing the GIS data maintenance – and existing IT capital project labor to IT O&M labor (0.06 FTEs) – with temporary IT staff compensated through CIP funding providing backfill labor during IT capital projects.

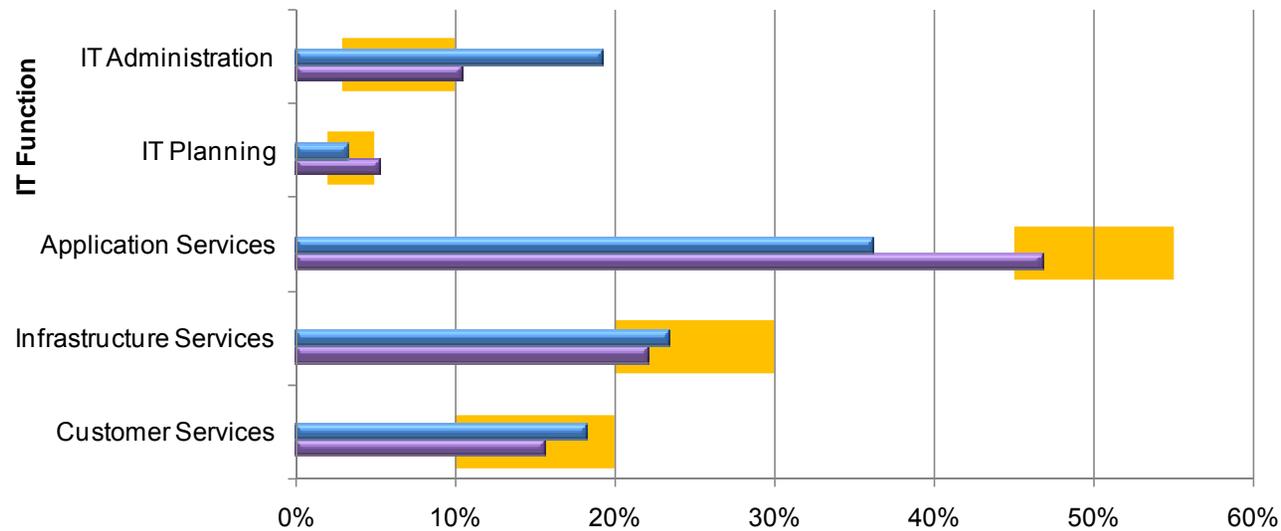
size, which would impact IT staffing levels accordingly, particularly in customer services and infrastructure services.

As the figure below indicates, this increase in IT O&M staffing more closely aligns the City's IT labor with PTI's target ranges. The chart depicts current and proposed distribution of Annapolis' IT labor effort across the five IT functions. The yellow rectangles indicate PTI's target range for each IT function.

City of Annapolis Current and Proposed IT Staffing Allocation Relative to PTI's Target Ranges

Legend

- Current
- Proposed
- PTI Target Range

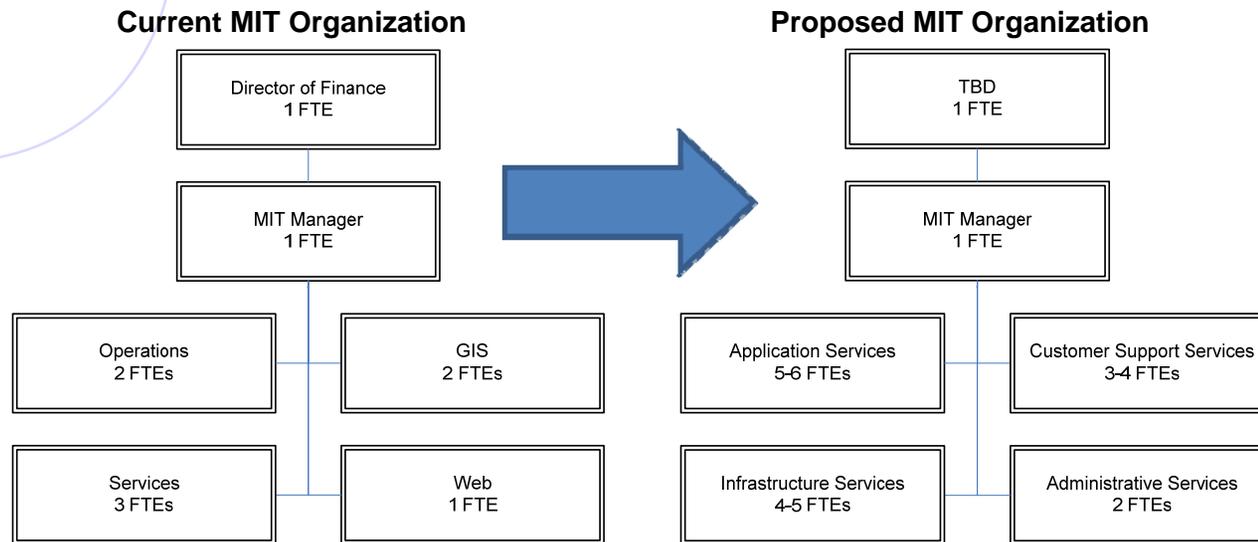


Associated Benefits

- ◆ Brings Annapolis' level of IT O&M staffing in line with its IT vision
- ◆ Helps realize service economies of scale
- ◆ Improves responsiveness to business units
- ◆ Enhances the City's ability to support and make the best use of existing business software
- ◆ Prepares the City for an expanding application portfolio
- ◆ Improves business unit operational efficiency

Organize MIT division along functional lines

This strategy involves formalizing the roles and responsibilities within MIT. It reorganizes MIT staff from the existing units (Operations, Services, GIS, and Web) around four primary IT disciplines (application services, infrastructure services, customer support services, and administrative services) and staffing those areas according to best practices. The organizational models that follow depict current and proposed MIT organizational structures.



The MIT reorganization can be summarized as follows:

- ◆ Current Operations staff move into the new Infrastructure Services division, augmented by incremental IT O&M personnel increases
- ◆ Part of the current Services staff move into the new Administrative Services division and the remainder move into the new Customer Support Services division, augmented by incremental IT O&M personnel increases
- ◆ Current GIS and Web staff move into the new Application Services division, augmented by incremental IT O&M personnel increases

In addition, this new structure also relocates the MIT division. During workshops with the project steering committee, PTI suggested positioning MIT within Central Services. PTI made this recommendation based on a long term, strategic view for IT at the City of Annapolis, independent of current city employees occupying any of these roles. However, at the time of this plan's writing, recent changes in Annapolis' administration put the City's overall operations and organization in a state of flux. As such, we elected to leave this to-be-determined ("TBD") in this plan's proposed organizational chart.

The following provides a brief assessment of the pros and cons attendant to alternative MIT reporting structures:

Central Services – As a ubiquitous part of city infrastructure, technology and information systems would be a natural fit within a division handling enterprise functions and managing capital projects. Like other functions currently under Central Services (e.g., purchasing, real estate management, leasing, space planning, capital programs) – IT represents a citywide service need. However, we understand that Central Services, as it currently exists, may be eliminated by the new administration as part of a broader city reorganization.

Mayor's Office (creates a CIO position) – Though some advisors have advocated a cabinet-level CIO reporting to the Mayor, notably the recent EquaTerra report and the new Mayor's idea team, PTI does not believe the size of Annapolis' current IT organization warrants a separate department at this time. From our experience, mayors typically don't want the IT function as a direct report and aren't elected to office by voters to oversee the support of that function. In this type of structure, operational support services (e.g., IT) often create an added, unnecessary burden on policy-making activities. In the future, a CIO role may be appropriate, provided that the City completes most or all of the technology investments described in this plan and expands its use of technology and support staff accordingly. The need for this position would also be contingent on Annapolis' strategy with regard to outsourcing, cloud computing, and the future application environment.

Chief Administrative Officer – The new administration's transition idea team recommended the consolidation of a number of departments under the aegis of the Chief Administrative Officer. At the time of this plan's writing, the City had made no formal decisions. However, as described under our assessment of a potential move to Central Services, PTI views grouping MIT with other administrative functions and citywide support services (e.g., human resources, finance, purchasing, capital programs) as an appropriate solution for a city of Annapolis' size. This structure buffers the Mayor and City Council from the day-to-day operations, and possible minutia, of managing enterprise-wide administrative functions and – in particular – IT support.

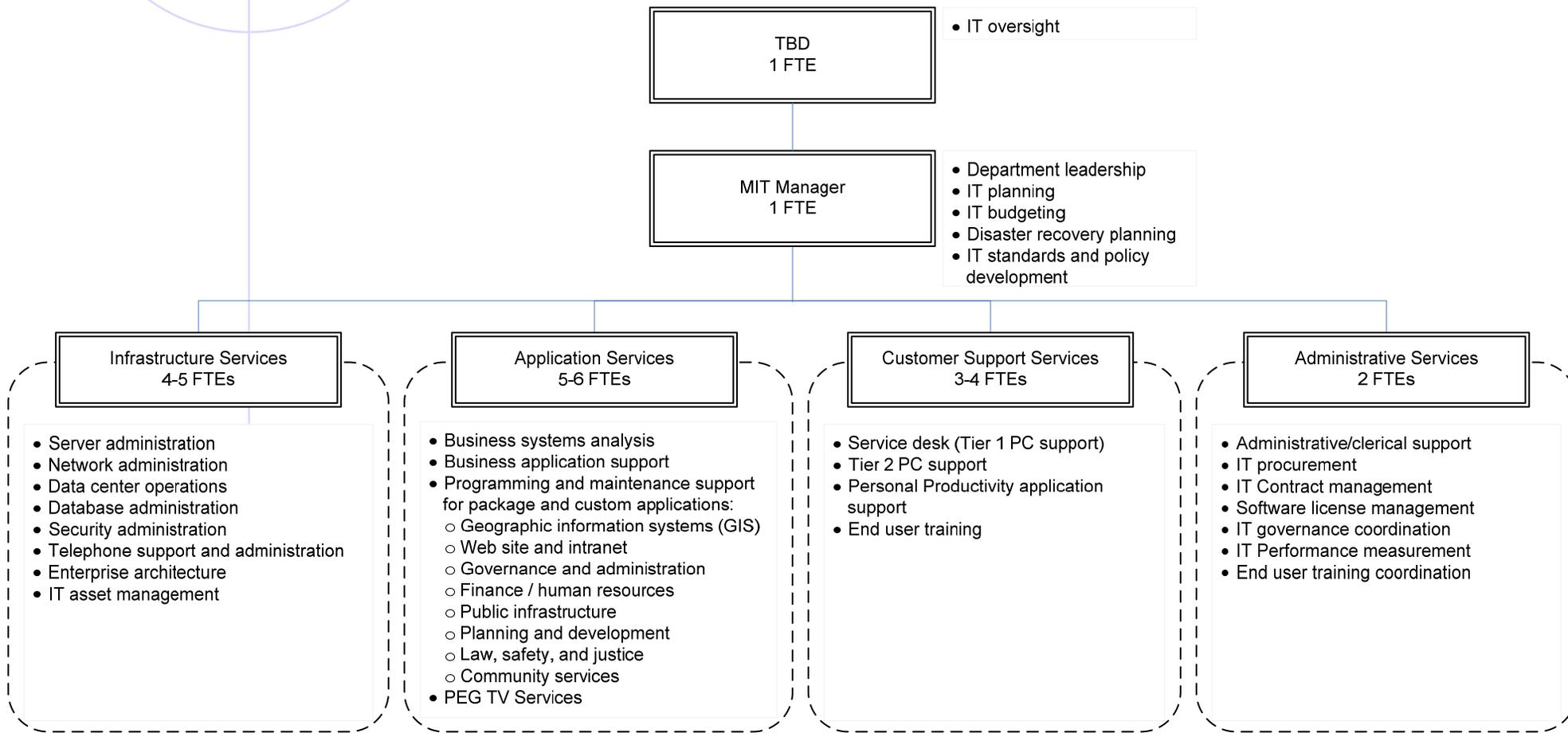
Finance (status quo) – This approach would leave MIT's existing reporting structure alone. However, in PTI's experience, this approach no longer represents a best practice. IT has moved from a back-office financial support function and is now viewed as a driver for transforming business operations

across the enterprise. External reviews of the City’s organization (e.g., PTI, EquaTerra, new Mayor’s transition idea teams) consistently recommend that IT should occupy a different place in the reporting hierarchy. Annapolis has made only limited progress in technology over the past decade. An organizational move may help Annapolis overcome this trend.

Ultimately, the following criteria should bear the most influence on this decision: elevation of IT as a citywide priority, the need for organizational change, and MIT’s role as an internal service provider.

The following page presents a recommended MIT organizational chart, including division roles and responsibilities.

Proposed MIT Organization (detailed)



Associated Benefits

- ◆ Enhances internal IT customer service
- ◆ Increases IT operational efficiency and staff productivity
- ◆ Improves management and control of clearly delineated IT service disciplines (e.g., infrastructure services, customer services)
- ◆ Positions the City for ongoing optimization of its IT resources
- ◆ Offers better career paths and advancement opportunities for IT personnel

Enhance and modernize IT skill sets

The City lacks sufficient IT skills in some areas as described in chapter 2. This strategy increases Annapolis' investment in IT training as well as expanding technical skill requirements for new hires. It develops and implements individualized, coordinated training programs for IT personnel in the following areas: tier 2 PC support, business analysis, and database administration.

Associated Benefits

- ◆ Ensures availability of current IT skills
- ◆ Provides opportunities for IT staff to refresh and/or update their skills
- ◆ Makes Annapolis a more competitive employer
- ◆ Improves IT operational efficiency
- ◆ Increases the value received from technology
- ◆ Expands the City's ability to support a modern application portfolio
- ◆ Enhances end user satisfaction

Formalize IT service desk processes and procedures

In association with the increase in IT O&M staff and the reorganization of IT services, Annapolis needs to formalize its approach to IT customer support. Key elements of a structured IT service desk include:

- ◆ Clear definition of customer support roles and responsibilities
- ◆ Standard problem resolution processes
- ◆ Full-time coverage of the service desk phone line
- ◆ Consistent use of remote IT support tools
- ◆ IT service performance measures
- ◆ Integrated IT inventory management
- ◆ Approach to providing 24/7 support

Associated Benefits

- ◆ **Streamlines IT services**
- ◆ **Enables IT staff to respond more quickly to IT needs**
- ◆ **Raises overall service quality**
- ◆ **Improves problem resolution**
- ◆ **Increases user confidence in IT support**
- ◆ **Aligns IT support with city business needs**
- ◆ **Provides better management information surrounding IT service delivery**

Contract for specialized IT skills as needed

Given Annapolis' relatively small size, it is impractical for the City to retain highly specialized and/or unique IT skills on staff. The City should hire the necessary expertise as needed on a temporary basis. In particular, this includes contracting with professional project managers for major IT projects.

Associated Benefits

- ◆ Enables the City to acquire scarce IT skills as needed
- ◆ Increases the probability of successful project implementation
- ◆ Standardizes IT project management practices
- ◆ Supports IT implementation efforts
- ◆ Positions the City to manage IT projects throughout this IT strategic plan

Provide sufficient space for IT staff and equipment

The new MIT division location does not include space for IT equipment storage and will neither support increases in MIT staff nor an expanded role for technology to support city operations. Annapolis must locate work, storage, and archiving space that will be adequate for both current and future IT support needs and prepare to expand (or reduce) this space as needs change.

Associated Benefits

- ◆ Improves IT operational efficiency and IT service quality
- ◆ Makes Annapolis a more attractive place to work for IT staff
- ◆ Aids IT asset tracking and management

Goal 5: Responsive IT Service Delivery	Implementation Projects
 A photograph showing four call center agents in a row, wearing headsets and looking towards the right. They are in a professional office setting.	<ul style="list-style-type: none">5.1 Adopt new MIT organizational structure and increase staff5.2 Establish a professional IT service desk5.3 Train IT staff5.4 Upgrade MIT workspace5.5 Contract professional IT project management services

Goal 6: IT Enabled Workforce

City workforce is computer-literate and technology-enabled.

The benefits of automation will never be fully realized unless city personnel are comfortable with technology, trained in its use, and provided sufficient access. This goal invests in ongoing staff development and connectivity to ensure employees can effectively utilize business applications as well as leverage other technologies that improve operations. The following strategies support this goal:

- ◆ Ensure adequate technology training for city personnel
- ◆ Expand access to the city network

Ensure adequate technology training for city personnel

In addition to enhancing IT staff skills and abilities, Annapolis should also provide regular training opportunities for business users. The MIT division should collaborate with human resources to develop, implement, and maintain this technology training program, which will provide city staff with the opportunity to regularly refresh and/or update their skills.

Expand access to the city network

This strategy ensures that all major city locations have fiber network connectivity and implements indoor wireless access points (WAPs) in selected city buildings. These connections will provide network access for city staff and contractors in support of Annapolis operations and may be expanded in the future based on city business needs. They will also prevent City staff from being tethered to their workstations/cubes, improving overall productivity. Beyond the life of this plan, the City may also need to expand connectivity by using mobile devices (e.g., smart phones) and specialized field equipment associated with specific business functions. Annapolis should consider leveraging public-private partnerships in this area, as appropriate.

- Associated Benefits**
- ◆ **Increases city staff connectivity, mobility and collaboration**
 - ◆ **Extends connectivity to locations without physical network access**
 - ◆ **Increases business user productivity**
 - ◆ **Enhances management information access during key meetings**

Goal 6: IT Enabled Workforce	Implementation Projects
	<p>6.1 Implement a technology training program for business users</p> <p>6.2 Install indoor wireless access points at city facilities</p>

IT investments must be aligned with business needs.

IT Project Alignment with City Strategic Priorities

To ensure the best use of limited resources, IT investments must be aligned with business needs. The table below presents the major benefits of this study's recommendations, aligned with the City's strategic priorities.

IT Project Alignment with City Strategic Priorities

	Strategic Priorities				
	Public Safety	Community Participation	Public Infrastructure	Fiscal Stewardship	Quality of Life
Goal 1: IT investments align with city strategic priorities					
1.1 Develop and implement a formal citywide IT decision making process			✓	✓	
1.2 Create an IT-specific capital improvement fund			✓	✓	
1.3 Conduct an IT outsourcing feasibility study			✓	✓	
Goal 2: Technology supports accessible and accountable government					
2.1 Define IT performance measures		✓		✓	
2.2 Evaluate potential CRM/311 solutions		✓	✓	✓	✓
2.3 Implement the preferred CRM/311 solution		✓	✓		✓
Goal 3: Information systems streamline city operations and improve service					
3.1 Implement a new utility customer information management system		✓		✓	
3.2 Implement a new human resources and payroll system				✓	✓
3.3 Implement a financial management system			✓	✓	
3.4 Implement an electronic document management system	✓	✓	✓	✓	
3.5 Implement a citywide maintenance management system		✓	✓	✓	✓
3.6 Pilot decision support/business intelligence software	✓			✓	✓
Goal 4: Technical infrastructure is secure, reliable, and cost effective					
4.1 Utilize a professionally-designed data center to host core infrastructure	✓		✓	✓	✓
4.2 Revise disaster recovery plan	✓		✓		
4.3 Define, fund and implement a formal technology replacement cycle	✓		✓	✓	
4.4 Conduct annual IT security audits and triennial assessments	✓				
Goal 5: IT services are customer-oriented and responsive					
5.1 Adopt new MIT organizational structure and increase staff				✓	
5.2 Establish a professional IT service desk				✓	
5.3 Train IT staff				✓	
5.4 Upgrade MIT workspace				✓	
5.5 Contract professional IT project management services			✓	✓	
Goal 6: City workforce is computer-literate and technology-enabled					
6.1 Implement a technology training program for business users	✓		✓	✓	
6.2 Install indoor wireless access points at city facilities		✓	✓		

Chapter 4 presents an implementation plan for the key projects listed in this chapter. Appendix E provides detailed project descriptions, costs, and cost assumptions.



Chapter 4 Implementation Plan

This chapter outlines a six-year work plan aimed at improving municipal operations and streamlining work processes. It summarizes the recommended project costs, and presents an attendant implementation timeline.

Implementation Costs

This implementation plan identifies a set of specific implementation projects, with an attendant schedule and cost estimates, aimed at achieving the City's IT goals.

The cost estimates in this section provide the City of Annapolis with budget guidelines for the implementation projects outlined in chapter 3. In particular, these project cost estimates will aid Annapolis' IT decision making and budgeting within the context of the city's 2010 and 2011 structural budget deficits. PTI developed both low- and high-end cost estimates for new projects based on industry knowledge, best practices, market research, and PTI's recent experience with similar technology projects and procurements. The tables in this chapter present one-time, recurring and annualized costs for each project. The scope of this IT strategic plan did not include the definition of hard dollar benefits, or a return on investment analysis. Appendix E provides detailed project descriptions, costs, and cost assumptions.

One-time and Annual Recurring Costs

One-time and recurring project costs present best available estimates based upon current assumptions and available pricing information, stated in 2010 dollars. Individual project cost estimates reflect total project budgets. The table on the following page illustrates one-time and recurring cost estimates for each recommended implementation project. The subsequent page presents average annualized costs over the next six years. In some instances, significant differences exist between the low-end and high-end estimates. In general, low-end estimates tend to reflect reduced scope, lower-cost technologies, and a greater reliance on internal labor. High-end estimates reflect a broader scope, higher-cost components and software, larger labor requirements, and generally include external consulting services for all or some of a project's implementation.

Costs do not include current city expenditures or already budgeted dollars, with the exception of \$350,000 the City has already budgeted for a new utility customer information system and \$350,000 for a new human resources/payroll system. These budgeted dollars are also footnoted under the subsequent tables. Project estimates *do include* costs associated with internal labor, based on fully-burdened hourly labor rates of \$39 for basic IT support and \$52 for business unit staff provided by the City. Recurring internal IT labor for supporting new and upgraded applications (projects 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, and 5.2) is incorporated as part of the recommended IT staffing increases within project 5.1. In addition, cost estimates for project 4.1 assume that the City will partner with a nearby public sector organization or contract with a third party for data center operations. Building a new city

facility to replace both the MIT data center and the APD data center for this project would cost between \$1M and \$2M.

One-time and Annual Recurring Cost Estimates^{27,28}

Cost Summary		One-Time		Recurring		Total Six-Year Cost	
		Low	High	Low	High	Low	High
Goal 1: IT investments align with city strategic priorities							
1.1	Develop and implement a formal citywide IT decision making process	\$ 8,000	\$ 26,000	\$ 6,000	\$ 9,000	\$ 42,000	\$ 78,000
1.2	Create an IT-specific capital improvement fund	\$ 13,000	\$ 38,000	\$ -	\$ -	\$ 13,000	\$ 38,000
1.3	Conduct an IT sourcing feasibility study	\$ 69,000	\$ 117,000	\$ -	\$ -	\$ 69,000	\$ 117,000
Subtotal - Goal 1		\$ 90,000	\$ 181,000	\$ 6,000	\$ 9,000	\$ 124,000	\$ 233,000
Goal 2: Technology supports accessible and accountable government							
2.1	Define IT performance measures	\$ 18,000	\$ 34,000	\$ 2,000	\$ 4,000	\$ 28,000	\$ 54,000
2.2	Evaluate potential CRM/311 solutions	\$ 27,000	\$ 90,000	\$ -	\$ -	\$ 27,000	\$ 90,000
2.3	Implement the preferred CRM/311 solution	\$ 83,000	\$ 328,000	\$ 1,000	\$ 24,000	\$ 87,000	\$ 406,000
Subtotal - Goal 2		\$ 128,000	\$ 452,000	\$ 3,000	\$ 28,000	\$ 142,000	\$ 550,000
Goal 3: Information systems streamline city operations and improve service							
3.1	Implement a new utility customer information management system	\$ 361,000	\$ 809,000	\$ 15,000	\$ 47,000	\$ 433,000	\$ 1,033,000
3.2	Implement a new human resources and payroll system	\$ 459,000	\$ 1,316,000	\$ 28,000	\$ 90,000	\$ 592,000	\$ 1,743,000
3.3	Implement a financial management system	\$ 1,121,000	\$ 3,194,000	\$ 66,000	\$ 130,000	\$ 1,319,000	\$ 3,584,000
3.4	Implement an electronic document management system	\$ 603,000	\$ 1,203,000	\$ 58,000	\$ 58,000	\$ 733,000	\$ 1,333,000
3.5	Implement a citywide maintenance management system	\$ 682,000	\$ 957,000	\$ 10,000	\$ 35,000	\$ 692,000	\$ 992,000
3.6	Pilot decision support/business intelligence software	\$ 81,000	\$ 180,000	\$ 2,000	\$ 8,000	\$ 82,000	\$ 186,000
Subtotal - Goal 3		\$ 3,307,000	\$ 7,659,000	\$ 179,000	\$ 368,000	\$ 3,851,000	\$ 8,871,000
Goal 4: Technical infrastructure is secure, reliable, and cost effective							
4.1	Utilize a professionally-designed data center to host core infrastructure	\$ 17,000	\$ 35,000	\$ 12,000	\$ 24,000	\$ 47,000	\$ 94,000
4.2	Revise disaster recovery plan	\$ 17,000	\$ 60,000	\$ 2,000	\$ 3,000	\$ 25,000	\$ 73,000
4.3	Define, fund and implement a formal technology replacement cycle	\$ 7,000	\$ 12,000	\$ 173,000	\$ 269,000	\$ 830,000	\$ 1,290,000
4.4	Conduct annual IT security audits and triennial assessments	\$ 21,000	\$ 61,000	\$ 16,000	\$ 33,000	\$ 101,000	\$ 226,000
Subtotal - Goal 4		\$ 62,000	\$ 168,000	\$ 203,000	\$ 329,000	\$ 1,003,000	\$ 1,683,000
Goal 5: IT services are customer-oriented and responsive							
5.1	Adopt new MIT organizational structure and increase staff	\$ 12,000	\$ 63,000	\$ 415,000	\$ 737,000	\$ 1,286,000	\$ 2,285,000
5.2	Establish a professional IT service desk	\$ 77,000	\$ 176,000	\$ 15,000	\$ 30,000	\$ 149,000	\$ 319,000
5.3	Train IT staff	\$ -	\$ -	\$ 38,000	\$ 76,000	\$ 218,000	\$ 437,000
5.4	Upgrade MIT workspace	\$ 50,000	\$ 93,000	\$ -	\$ -	\$ 49,000	\$ 93,000
5.5	Contract professional IT project management services	\$ 100,000	\$ 195,000	\$ 100,000	\$ 150,000	\$ 550,000	\$ 870,000
Subtotal - Goal 5		\$ 239,000	\$ 527,000	\$ 568,000	\$ 993,000	\$ 2,252,000	\$ 4,004,000
Goal 6: City workforce is computer-literate and technology-enabled							
6.1	Implement a technology training program for business users	\$ -	\$ -	\$ 180,000	\$ 360,000	\$ 720,000	\$ 1,440,000
6.2	Install indoor wireless access points at city facilities	\$ 160,000	\$ 354,000	\$ 26,000	\$ 53,000	\$ 271,000	\$ 579,000
Subtotal - Goal 6		\$ 160,000	\$ 354,000	\$ 206,000	\$ 413,000	\$ 991,000	\$ 2,019,000
Total Cost		\$ 3,986,000	\$ 9,341,000	\$ 1,165,000	\$ 2,140,000	\$ 8,363,000	\$ 17,360,000

Note: Costs are rounded to nearest thousand dollars

²⁷ The City of Annapolis has already budgeted \$350,000 for project 3.1 and \$350,000 for project 3.2.

²⁸ Project 4.1 assumes the City will partner with a nearby public sector organization or contract with a third party for data center operations. PTI estimates that building an entirely new city facility for project 4.1 would cost between \$1M and \$2M.

Annualized Costs

The table below presents the estimated average annualized costs for each project, combining one-time and recurring costs based on the high-end estimates. Neither inflation, nor labor rate increases are factored into the estimates.

4

Average Annualized Cost Estimates

Average Annualized Cost Summary						
Project	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Goal 1: IT investments align with city strategic priorities						
1.1 Develop and implement a formal citywide IT decision making process	\$ 23,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
1.2 Create an IT-specific capital improvement fund	\$ 25,000	\$ -	\$ -	\$ -	\$ -	\$ -
1.3 Conduct an IT sourcing feasibility study	\$ -	\$ 93,000	\$ -	\$ -	\$ -	\$ -
Annual Subtotal - Goal 1	\$ 48,000	\$ 100,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
Goal 2: Technology supports accessible and accountable government						
2.1 Define IT performance measures	\$ 26,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000
2.2 Evaluate potential CRM/311 solutions	\$ -	\$ 59,000	\$ -	\$ -	\$ -	\$ -
2.3 Implement the preferred CRM/311 solution	\$ -	\$ -	\$ 209,000	\$ 13,000	\$ 13,000	\$ 13,000
Annual Subtotal - Goal 2	\$ 26,000	\$ 62,000	\$ 212,000	\$ 16,000	\$ 16,000	\$ 16,000
Goal 3: Information systems streamline city operations and improve service						
3.1 Implement a new utility customer information management system	\$ 439,000	\$ 170,000	\$ 31,000	\$ 31,000	\$ 31,000	\$ 31,000
3.2 Implement a new human resources and payroll system	\$ 665,000	\$ 266,000	\$ 59,000	\$ 59,000	\$ 59,000	\$ 59,000
3.3 Implement a financial management system	\$ -	\$ 712,000	\$ 1,445,000	\$ 98,000	\$ 98,000	\$ 98,000
3.4 Implement an electronic document management system	\$ -	\$ -	\$ 361,000	\$ 556,000	\$ 58,000	\$ 58,000
3.5 Implement a citywide maintenance management system	\$ -	\$ -	\$ -	\$ 271,000	\$ 549,000	\$ 22,000
3.6 Pilot decision support/business intelligence software	\$ -	\$ -	\$ -	\$ -	\$ 98,000	\$ 36,000
Annual Subtotal - Goal 3	\$ 1,104,000	\$ 1,148,000	\$ 1,896,000	\$ 1,015,000	\$ 893,000	\$ 304,000
Goal 4: Technical infrastructure is secure, reliable, and cost effective						
4.1 Utilize a professionally-designed data center to host core infrastructure	\$ -	\$ -	\$ 17,000	\$ 17,000	\$ 18,000	\$ 18,000
4.2 Revise disaster recovery plan	\$ 38,000	\$ 1,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
4.3 Define, fund and implement a formal technology replacement cycle	\$ 5,000	\$ 171,000	\$ 221,000	\$ 221,000	\$ 221,000	\$ 221,000
4.4 Conduct annual IT security audits and triennial assessments	\$ 41,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Annual Subtotal - Goal 4	\$ 84,000	\$ 197,000	\$ 265,000	\$ 265,000	\$ 266,000	\$ 266,000
Goal 5: IT services are customer-oriented and responsive						
5.1 Adopt new MIT organizational structure and increase staff	\$ 58,000	\$ 115,000	\$ 230,000	\$ 346,000	\$ 461,000	\$ 576,000
5.2 Establish a professional IT service desk	\$ 85,000	\$ 59,000	\$ 23,000	\$ 23,000	\$ 23,000	\$ 23,000
5.3 Train IT staff	\$ 43,000	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000	\$ 57,000
5.4 Upgrade MIT workspace	\$ -	\$ 54,000	\$ 18,000	\$ -	\$ -	\$ -
5.5 Contract professional IT project management services	\$ 148,000	\$ 63,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Annual Subtotal - Goal 5	\$ 334,000	\$ 348,000	\$ 453,000	\$ 551,000	\$ 666,000	\$ 781,000
Goal 6: City workforce is computer-literate and technology-enabled						
6.1 Implement a technology training program for business users	\$ -	\$ -	\$ 270,000	\$ 270,000	\$ 270,000	\$ 270,000
6.2 Install indoor wireless access points at city facilities	\$ -	\$ 267,000	\$ 39,000	\$ 39,000	\$ 39,000	\$ 39,000
Annual Subtotal - Goal 6	\$ -	\$ 267,000	\$ 309,000	\$ 309,000	\$ 309,000	\$ 309,000
Projected Net New Funding Required	\$ 1,596,000	\$ 2,122,000	\$ 3,142,000	\$ 2,163,000	\$ 2,157,000	\$ 1,683,000

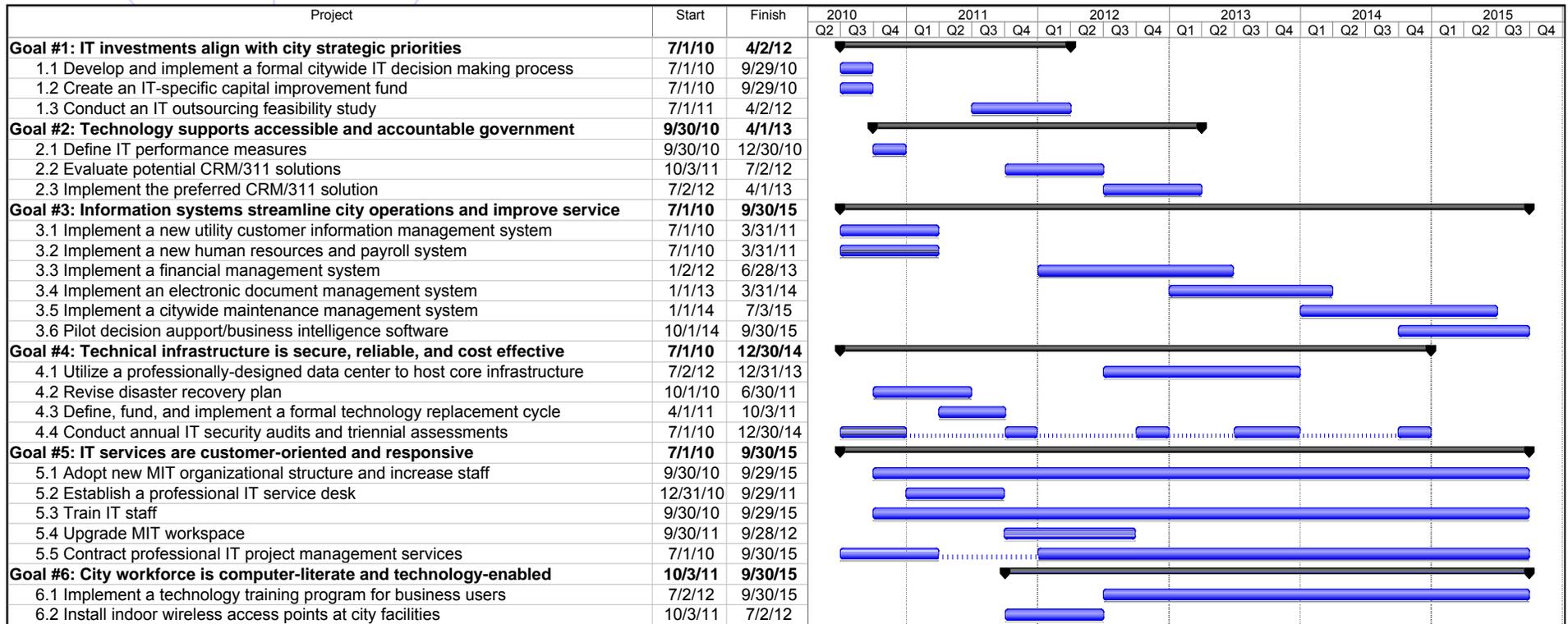
Note: Costs are rounded to nearest thousand dollars

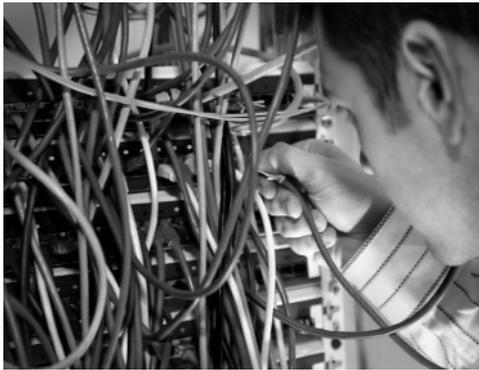
Implementation Timeline

The Gantt chart below presents a projected timeline for this plan's defined implementation projects, developed in partnership with the City's project steering committee. Annapolis will need to periodically review and adjust this implementation timeline – based on resource constraints, changing business needs, and strategic priorities.

4

Projected Implementation Timeline





Appendix A List of Participants

Nearly 70 city stakeholders – including city executives, department managers, IT professionals, and end users – contributed to this planning effort through interviews, focus groups, and other data collection efforts. The following table lists these participants.

Name	Position/Title	Department/Agency
Alland, Leela	Facilities Manager	Central Services
Banks, Ian	City Personal Transportation Specialist	Transportation
Bowes, John	Lieutenant, Fire Marshal's Office	Fire
Brown, Maria	Assistant Director	DNES
Bucalo, Theresa	Deputy City Clerk	Clerks Office
Bunker, Mike	Superintendent of Utilities	Public Works
Burkhardt, Thora	Civil Engineer 2	Public Works
Costello, Andy	Foreman	Parks and Recreation
Couchenour, Sr., Robert D.	Superintendent	Public Works
Creek, James	Utilities Super	Public Works
Downes, John	Utilities Super	Public Works
Duah, Kwaku Agyemang	Acting Transportation Director	Transportation
Elliott, Tim	Finance Director	Finance
Gaines, Cyndi	Election Administrator	City Clerk
Hanna, Joe	Utilities Super	Public Works
Hart, Beth	Special Projects Director	Police
Howard, Cynthia	Captain	Police
Hyman, Paula	Marketing Specialist	Transportation

A

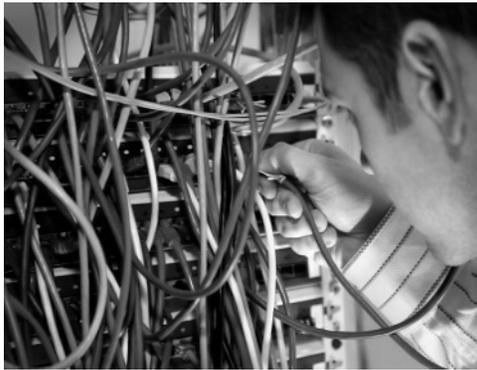
Name	Position/Title	Department/Agency
Johnson, Renee	Police Records Specialist	Police
Kimbo, Tira	Attorney	Law
Kline, Linda	Senior Accountant	Finance
Kling, Steve	City Attorney	Law
Lackey, Paul	Computer Draftsperson	Public Works
Lee, Marcelle	Administrator	Central Services
Mackell, Elvis	Public Works Maintenance Worker II	Public Works
Martin, Kelly	Captain, Public Information Officer	Fire
Martin, Lisa	IT Assistant Analyst	MIT
Matland, Danielle	Director	Transportation
McAllister, Patricia	IT Support	MIT
McMahon, Kevin	Senior Accountant	Finance
Miguez, Dave	Building Police	Police
Milburn, Kimla	Director	Human Resources
Miron, Mike	Director	Office of Economic Affairs
Morgan, Jeff	Battalion Chief	Fire
Neutzling, Eric	Captain	Police
Openshaw, Lily	Engineer	Public Works
Paquin, Brian	IT Specialist	MIT
Patrick, Marcia	Assistant to the Director	Public Works
Plumer, LeeAnn	Director	Parks and Recreation

A

Name	Position/Title	Department/Agency
Posey, Al	Senior Engineer	Emergency Management
Pratt, Clinton	Electrical Inspector	DNES
Pristoop, Michael	Chief	Police
Quigley, John	Plumbing Inspector	DNES
Remaley, Douglas	Deputy Chief; Emergency Services	Fire
Ridgway, Judy	Administrative Office Associate	Public Works
Schuetz, Rob	Director	Central Services
Scott, Kevin	Senior Planner	DNES
Sebastian, Matt	Engineer	Public Works
Sherlock, Ed	Director	Emergency Management
Smith, Barb	Analyst	MIT
Smith, Doug	Chief Administrative Officer	Mayor's Office
Smith, Jerome	Fire Chief	Fire
Snyder, Brian	Procurement Officer	Purchasing
Spencer, Tony	Director	Office of Youth and Community Affairs
Steele, Karen	Legal Assistant	Law
Staudinger, Nancy	Warrant Control/Records Supervisor	Police
Sturgill, Josh	Technician	GIS
Swontek, Tom	Chief Code Official	DNES
Tait, Cindy	Public Works Analyst	Public Works
Thorn, Paul	MIT Manager	MIT

Name	Position/Title	Department/Agency
Tripodi, Shirley	Assistant Finance Director	Finance
Veres, Peter	Network Engineer	MIT
Walters, Flip	Asst Harbormaster-Operations	Harbormaster
Wampler, Shawn	Coordinator	GIS
Weaver, Ray	Public Information Officer	Police
Williams, Scott	Captain	Police
Young, Inna	Webmaster	MIT

A



Appendix B IT Staffing Detail

In developing the information technology service delivery findings in chapter 2, PTI evaluated Annapolis' information technology staffing levels across five IT functional areas:

- ◆ **Customer Support** – labor related to directly helping end users utilize IT systems and services (e.g., help desk, tier 2 support)
- ◆ **Infrastructure Support** – labor related to implementing and maintaining the organization's computers, systems software, and connectivity (e.g., servers, networks)
- ◆ **Application Support** – labor related to developing, installing, configuring, and otherwise maintaining the software needed to meet the operational, management, and reporting requirements of the organization
- ◆ **IT Planning** – labor related to technology planning and governance
- ◆ **IT Administration** – labor related to the oversight and administration of technology

The tables in this appendix reflect ongoing operations and maintenance (O&M) labor expressed as full time equivalent (FTE) effort. They do not include IT labor paid for by capital allocations.

City staff initially provided this data, and reviewed and validated it after PTI assembled and analyzed it.

IT Staffing Detail

The table below presents the allocation of IT O&M staffing between MIT and other departments.

IT-titled Staff Labor Distribution			
	IT FTE	% of City IT FTE	% of total City FTE
MIT	8.69	81.3%	1.47%
Other Departments	2.00	18.7%	0.34%
Total City IT FTE	10.69	100.0%	1.81%

The following table summarizes IT labor effort allocation across each of the five defined IT disciplines.

IT Functions	IT-Titled Labor Effort by IT Function					
	MIT		Other Departments		Citywide Totals	
	FTE	% Allocation	FTE	% Allocation	FTE	% Allocation
Customer Services	1.55	12.8%	0.39	3.2%	2.29	18.9%
Infrastructure Services	2.39	19.7%	0.11	0.9%	2.60	21.4%
Application Services	2.36	19.5%	1.50	12.4%	4.70	38.7%
IT Planning	0.34	2.8%	0.00	0.0%	0.34	2.8%
IT Administration	2.05	16.9%	0.00	0.0%	2.20	18.1%
Total:	8.69	71.7%	2.00	16.5%	12.13	100.0%

The table below details the distribution of the City's *application services* staffing across seven application areas. These numbers represent the IT labor effort devoted to supporting specific software within each business function.

Application Area	Application Area Labor Effort					
	MIT		Other Departments		Citywide Totals	
	FTE	% Allocation	FTE	% Allocation	FTE	% Allocation
Law, Safety and Justice	0.17	7.2%	1.50	100.0%	1.67	43.3%
Public Infrastructure	0.38	16.1%	0.00	0.0%	0.38	9.8%
Planning and Development	0.23	9.7%	0.00	0.0%	0.23	6.0%
Community Services	0.18	7.6%	0.00	0.0%	0.18	4.7%
Governance and Administration	0.16	6.8%	0.00	0.0%	0.16	4.1%
Support Services	0.79	33.5%	0.00	0.0%	0.79	20.5%
eGovernment (Web/Internet)	0.45	19.1%	0.00	0.0%	0.45	11.7%
Total:	2.36	100.0%	1.50	100.0%	3.86	100.0%

The tables on the following pages present summary labor data collected by PTI and validated by the City of Annapolis. Due to the nature and size of the data set, the full matrix and associated data cannot be effectively presented in this report.

Definitions for each of the IT disciplines and associated activities follow the summary tables.

	IT-Titled Staff Only				Inclusive of Shadow Staff			
	Central Org IT Staff	Business Unit IT Staff	FTE TOTAL	FTE TOTAL w/Overtime	Shadow Staff	FTE TOTAL	FTE TOTAL w/Overtime	
FTE Totals	1.55	0.39	1.94	1.94	0.35	2.29	2.29	
Customer Services								
Help Desk (Tier 1)	0.53	0.10	0.63	0.63	0.05	0.68		
Tier 2 support:	0.51	0.23	0.74	0.74	0.25	0.99		
Personal Computer Support	0.34	0.02	0.36	0.36	0.00	0.36		
Portable Device/Specialized Device Support	0.07	0.20	0.27	0.27	0.05	0.32		
Personal Productivity Tool Support	0.10	0.07	0.17	0.17	0.20	0.37		
Business Application Support	0.31	0.02	0.33	0.33	0.00	0.33		
Training	0.20	0.04	0.24	0.24	0.05	0.29		
Infrastructure Services	2.39	0.17	2.50	2.50	0.10	2.60	2.60	
Personal Computer Administration	0.49	0.01	0.50	0.50	0.00	0.50		
Database Administration	0.15	0.02	0.17	0.17	0.04	0.21		
Security Administration	0.10	0.02	0.12	0.12	0.00	0.12		
Data Center/Server Room Operations	0.07	0.00	0.07	0.07	0.00	0.07		
Project Management	0.43	0.01	0.44	0.44	0.00	0.44		
Server Administration:	0.59	0.00	0.59	0.59	0.00	0.59	0.59	
Email/Calendar Administration	0.15	0.00	0.15	0.15	0.00	0.15		
File/Print Administration	0.20	0.00	0.20	0.20	0.00	0.20		
Application Server Administration	0.16	0.00	0.16	0.16	0.00	0.16		
Database Server Administration	0.13	0.00	0.13	0.13	0.00	0.13		
Storage Administration	0.08	0.00	0.08	0.08	0.00	0.08		
Other Server Administration	0.17	0.00	0.17	0.17	0.00	0.17		
Communication Services:	0.26	0.05	0.31	0.31	0.06	0.37	0.37	
Network Administration (WAN/LAN/Wireless)	0.20	0.00	0.20	0.20	0.00	0.20		
Radio Support	0.00	0.05	0.05	0.05	0.05	0.10		
Telephone Systems Support	0.06	0.00	0.06	0.06	0.01	0.07		
Business Application Services	2.36	1.50	3.86	3.86	0.84	4.70	4.70	
Law, Safety and Justice	0.17	1.50	1.67	1.67	0.10	1.77	1.77	
Packaged application support	0.02	1.30	1.32	1.32	0.00	1.42		
Custom application support	0.01	0.20	0.21	0.21	0.00	0.21		
GIS support	0.14	0.00	0.14	0.14	0.00	0.14		
Public Infrastructure	0.38	0.00	0.38	0.38	0.13	0.51	0.51	
Packaged application support	0.02	0.00	0.02	0.02	0.07	0.09		
Custom application support	0.01	0.00	0.01	0.01	0.05	0.06		
GIS support	0.35	0.00	0.35	0.35	0.01	0.36		
Planning and Development	0.23	0.00	0.23	0.23	0.00	0.23	0.23	
Packaged application support	0.02	0.00	0.02	0.02	0.00	0.02		
Custom application support	0.01	0.00	0.01	0.01	0.00	0.01		
GIS support	0.20	0.00	0.20	0.20	0.00	0.20		
Community Services	0.18	0.00	0.18	0.18	0.61	0.79	0.79	
Packaged application support	0.03	0.00	0.03	0.03	0.60	0.63		
Custom application support	0.00	0.00	0.00	0.00	0.00	0.00		
GIS support	0.15	0.00	0.15	0.15	0.01	0.16		
Governance and Administration	0.16	0.00	0.16	0.16	0.00	0.16	0.16	
Packaged application support	0.05	0.00	0.05	0.05	0.00	0.05		
Custom application support	0.01	0.00	0.01	0.01	0.00	0.01		
GIS support	0.10	0.00	0.10	0.10	0.00	0.10		
Support Services	0.79	0.00	0.79	0.79	0.00	0.79	0.79	
Packaged application support	0.23	0.00	0.23	0.23	0.00	0.23		
Custom application support	0.50	0.00	0.50	0.50	0.00	0.50		
GIS support	0.06	0.00	0.06	0.06	0.00	0.06		
eGovernment (Web/Internet)	0.45	0.00	0.45	0.45	0.00	0.45	0.45	
Packaged application support	0.03	0.00	0.03	0.03	0.00	0.03		
Custom application support	0.27	0.00	0.27	0.27	0.00	0.27		
GIS support	0.15	0.00	0.15	0.15	0.00	0.15		
IT Planning	0.34	0.00	0.34	0.34	0.00	0.34	0.34	
Strategic planning & governance	0.16	0.00	0.16	0.16	0.00	0.16		
Research and development	0.16	0.00	0.16	0.16	0.00	0.16		
Disaster recovery/planning	0.02	0.00	0.02	0.02	0.00	0.02		
IT Administration	2.05	0.00	2.05	2.05	0.15	2.20	2.20	
Asset management	0.14	0.00	0.14	0.14	0.00	0.14		
IT procurement	0.71	0.00	0.71	0.71	0.10	0.81		
Standards and policies development	0.11	0.00	0.11	0.11	0.00	0.11		
Customer Account Management	0.17	0.00	0.17	0.17	0.00	0.17		
Administrative support	0.52	0.00	0.52	0.52	0.00	0.52		
Departmental management	0.40	0.00	0.40	0.40	0.05	0.45		
Geographic Information Systems	0.50	0.00	0.50	0.50	0.00	0.50	0.50	
GIS Data Maintenance	0.50	0.00	0.50	0.50	0.00	0.50		
Capital IT Projects	0.06	0.00	0.06	0.06	0.00	0.06	0.00	
Capital IT Project Labor	0.06	0.00	0.06	0.06	0.00	0.06		
Totals (excluding capital projects):	8.69	2.00	10.69	10.69	1.44	12.13	12.13	



	IT-Titled Staff Only				Inclusive of Shadow Staff			
	Central Org IT Staff	Business Unit IT Staff	Cost TOTAL	Cost TOTAL w/Overtime	Shadow Staff	Cost TOTAL	Cost TOTAL w/Overtime	
Cost Totals								
Customer Services								
Help Desk (Tier 1)	\$ 35,362	\$ 7,923	\$ 43,285		\$ 4,487	\$ 47,772		
Tier 2 support:	\$ 31,803	\$ 18,223	\$ 50,026		\$ 14,718	\$ 64,744		
Personal Computer Support	\$ 18,666	\$ 1,585	\$ 20,251		\$ -	\$ 20,251		
Portable Device/Specialized Device Support	\$ 5,788	\$ 15,846	\$ 21,635		\$ 3,385	\$ 25,019		
Personal Productivity Tool Support	\$ 7,348	\$ 792	\$ 8,140		\$ 11,334	\$ 19,474		
Business Application Support	\$ 27,502	\$ 1,585	\$ 29,087		\$ -	\$ 29,087		
Training	\$ 15,010	\$ 3,169	\$ 18,180		\$ 4,487	\$ 22,667		
Infrastructure Services	\$ 174,440	\$ 8,716	\$ 183,156	\$ 183,156	\$ 3,990	\$ 186,745	\$ 186,745	
Personal Computer Administration	\$ 25,323	\$ 792	\$ 26,116		\$ -	\$ 26,116		
Database Administration	\$ 13,332	\$ 1,585	\$ 14,917		\$ 3,590	\$ 18,506		
Security Administration	\$ 7,679	\$ 1,585	\$ 9,263		\$ -	\$ 9,263		
Data Center/Server Room Operations	\$ 6,343	\$ -	\$ 6,343		\$ -	\$ 6,343		
Project Management	\$ 34,670	\$ 792	\$ 35,462		\$ -	\$ 35,462		
Server Administration:	\$ 68,398	\$ -	\$ 68,398		\$ -	\$ 68,398		
Email/Calendar Administration	\$ 12,227	\$ -	\$ 12,227		\$ -	\$ 12,227		
File/Print Administration	\$ 16,714	\$ -	\$ 16,714		\$ -	\$ 16,714		
Application Server Administration	\$ 14,972	\$ -	\$ 14,972		\$ -	\$ 14,972		
Database Server Administration	\$ 8,855	\$ -	\$ 8,855		\$ -	\$ 8,855		
Storage Administration	\$ 5,946	\$ -	\$ 5,946		\$ -	\$ 5,946		
Other Server Administration	\$ 9,684	\$ -	\$ 9,684		\$ -	\$ 9,684		
Communication Services:	\$ 18,696	\$ 3,962	\$ 22,658		\$ -	\$ 22,658		
Network Administration (WAN/LAN/Wireless)	\$ 14,545	\$ -	\$ 14,545		\$ -	\$ 14,545		
Radio Support	\$ -	\$ 3,962	\$ 3,962		\$ -	\$ 3,962		
Telephone Systems Support	\$ 4,151	\$ -	\$ 4,151		\$ -	\$ 4,151		
Business Application Services	\$ 140,980	\$ 137,941	\$ 278,921	\$ 278,921	\$ 72,298	\$ 351,219	\$ 351,219	
Law, Safety and Justice	\$ 10,114	\$ 137,941	\$ 148,055		\$ 3,385	\$ 151,439		
Packaged application support	\$ 1,301	\$ 120,185	\$ 121,487		\$ 3,385	\$ 124,871		
Custom application support	\$ 897	\$ 17,756	\$ 18,653		\$ -	\$ 18,653		
GIS support	\$ 7,915	\$ -	\$ 7,915		\$ -	\$ 7,915		
Public Infrastructure	\$ 19,313	\$ -	\$ 19,313		\$ 11,666	\$ 30,979		
Packaged application support	\$ 1,301	\$ -	\$ 1,301		\$ 6,282	\$ 7,583		
Custom application support	\$ 897	\$ -	\$ 897		\$ 4,487	\$ 5,384		
GIS support	\$ 10,543	\$ -	\$ 10,543		\$ 897	\$ 18,012		
Planning and Development	\$ 12,742	\$ -	\$ 12,742		\$ -	\$ 12,742		
Packaged application support	\$ 1,301	\$ -	\$ 1,301		\$ -	\$ 1,301		
Custom application support	\$ 897	\$ -	\$ 897		\$ -	\$ 897		
GIS support	\$ 10,543	\$ -	\$ 10,543		\$ -	\$ 10,543		
Community Services	\$ 9,661	\$ -	\$ 9,661		\$ 57,248	\$ 66,909		
Packaged application support	\$ 2,199	\$ -	\$ 2,199		\$ 56,302	\$ 58,501		
Custom application support	\$ -	\$ -	\$ -		\$ -	\$ -		
GIS support	\$ 7,462	\$ -	\$ 7,462		\$ 945	\$ 8,407		
Government and Administration	\$ 9,700	\$ -	\$ 9,700		\$ -	\$ 9,700		
Packaged application support	\$ 3,254	\$ -	\$ 3,254		\$ -	\$ 3,254		
Custom application support	\$ 1,175	\$ -	\$ 1,175		\$ -	\$ 1,175		
GIS support	\$ 5,272	\$ -	\$ 5,272		\$ -	\$ 5,272		
Support Services	\$ 60,593	\$ -	\$ 60,593		\$ -	\$ 60,593		
Packaged application support	\$ 16,939	\$ -	\$ 16,939		\$ -	\$ 16,939		
Custom application support	\$ 39,835	\$ -	\$ 39,835		\$ -	\$ 39,835		
GIS support	\$ 3,818	\$ -	\$ 3,818		\$ -	\$ 3,818		
eGovernment (WellInvent)	\$ 18,858	\$ -	\$ 18,858		\$ -	\$ 18,858		
Packaged application support	\$ 1,664	\$ -	\$ 1,664		\$ -	\$ 1,664		
Custom application support	\$ 9,732	\$ -	\$ 9,732		\$ -	\$ 9,732		
GIS support	\$ 7,462	\$ -	\$ 7,462		\$ -	\$ 7,462		
IT Planning	\$ 33,832	\$ -	\$ 33,832	\$ 33,832	\$ -	\$ 33,832	\$ 33,832	
Strategic planning & governance	\$ 17,467	\$ -	\$ 17,467		\$ -	\$ 17,467		
Research and development	\$ 14,293	\$ -	\$ 14,293		\$ -	\$ 14,293		
Disaster recovery/planning	\$ 2,072	\$ -	\$ 2,072		\$ -	\$ 2,072		
IT Administration	\$ 164,824	\$ -	\$ 164,824	\$ 164,824	\$ 14,248	\$ 179,072	\$ 179,072	
Asset management	\$ 10,365	\$ -	\$ 10,365		\$ -	\$ 10,365		
IT procurement	\$ 49,321	\$ -	\$ 49,321		\$ 9,499	\$ 58,819		
Standards and policies development	\$ 11,433	\$ -	\$ 11,433		\$ -	\$ 11,433		
Customer Account Management	\$ 17,871	\$ -	\$ 17,871		\$ -	\$ 17,871		
Administrative support	\$ 29,900	\$ -	\$ 29,900		\$ -	\$ 29,900		
Departmental management	\$ 45,934	\$ -	\$ 45,934		\$ 4,749	\$ 50,683		
Geographic Information Systems	\$ 24,576	\$ -	\$ 24,576	\$ 24,576	\$ -	\$ -		
GIS Data Maintenance	\$ 24,576	\$ -	\$ 24,576		\$ -	\$ -		
Capital IT Projects	\$ 3,904	\$ -	\$ 3,904	\$ 3,904	\$ -	\$ 3,904	\$ 3,904	
Capital IT Project Labor	\$ 3,904	\$ -	\$ 3,904		\$ -	\$ 3,904		
Totals (excluding capital projects)	\$ 623,753	\$ 177,557	\$ 801,310	\$ 801,310	\$ 113,827	\$ 915,138	\$ 915,138	



IT Functional Area and Activities Definitions

Customer Services

Customer Services includes those activities related to directly supporting users of IT systems and services (e.g., help desk).

Help Desk (Tier 1)

The activities related to providing a first point of contact for users to report problems and seek answers to questions related to their personal computers, network access, email, personal productivity software, and business application software. Includes initial problem resolution, triage, and problem escalation.

Tier 2 Support

The activities related to providing in-person assistance with the software and hardware that support user work functions, including PCs, handhelds and other mobile devices, peripherals, and specialized computing environments such as public kiosks.

Personal Computer Support (Tier 2)

The activities related to onsite support of the organization's network applications (e.g., calendar, email, etc.), desktop computers, laptop computers, terminals, and attendant operating systems and peripherals.

Portable Device/Specialized Device Support (Tier 2)

The processes related to onsite support of personal digital assistants (PDAs), including troubleshooting syncing to desktop PCs, network connectivity, and their business-specific applications. The processes related to onsite support of the special purpose devices (beyond portable devices), such as kiosks, mobile data terminals (MDTs), etc., along with attendant peripherals.

Personal Productivity Tool Support (Tier 2)

The processes related to providing onsite end-user support concerning the use of desktop applications such as word processing, spreadsheets, presentation tools, and other organizational office productivity tools.

B

Business Application Support (Tier 2)

The processes related to providing end-user support (answering questions, etc.) regarding the use of business-specific software (e.g., financial management, permit management, etc.) beyond that which is provided by the first point of contact.

Customer Account Management

Staff work in conjunction with departments or divisions guaranteeing that service level agreements are adhered to and customer needs are being met. Includes tracking and reporting service levels, business need assessments and service gap determination, and the collection and reporting of service measures (e.g., tier 1 and tier 2 response and resolution rates, customer satisfaction surveys). May also include directly managing vendor service contracts or assisting with vendor relationship management.

Training

The processes related to providing technology-related instruction to staff aimed at enhancing their skills, knowledge, and performance. Includes training requirement analysis, course design and development, and training delivery.

Infrastructure Services

Infrastructure Services include those activities related to implementing and maintaining the organization's computers, systems software, and connectivity (servers, networks, etc.).

Personal Computer Administration

The activities related to the setup, configuration, original installation, and scheduled maintenance of end users' desktop and laptop computers, end-user terminals, and related peripherals. Includes installation and configuration of PC operating systems and software, such as personal productivity tools and anti-virus applications. Includes the creation and maintenance of disk images, application of patches and updates, and all scheduled maintenance.

Database Administration

The processes related to planning, implementing, and administering the data structures required to support the organization's applications portfolio, and to maintaining the data contained within the organization's defined data structures. Includes performance management and recovery.

Security Administration

The processes related to developing, maintaining, and administering the security plan for the organization's host processors, servers, personal computers, communication devices and networks. Does not include installation of desktop security tools nor server account management – does include managing centrally managed server based security solutions.

Data Center/Server Room Operations

The processes related to the planning, administration, and operation of the facility that houses all centralized computing equipment, including backup/restore operations and storage management. It also includes operation and maintenance of the attendant systems, including fire suppression, backup electrical power, air conditioning, etc.

Project Management

Those processes related to the oversight and coordination of major systems-related technology initiatives.

Server Administration

The activities related to implementing and maintaining servers, including both Intel-based and mid-range devices (such as AS/400). These activities also include administration, account management, and operation of file, print and application servers and other logical network devices; performance management; tuning; applying operating system patches and upgrades; and administering configuration data.

Email/Calendaring Administration

Administration of email and calendaring servers, including account set-up, backup administration, account restoration, etc.

File/Print Administration

Administration of file and print servers including account administration, print queue monitoring, back-up and optimization, etc.

Application Server Administration

Administration of servers used to house or deliver application software to end-users. Includes account administration, optimization of network connectivity, data backup, database restoration, etc. Covers ERP and departmental application hosting, as well as GIS, websites for eGovernment and/or Intranet, etc.

Database Server Administration

Labor concerned with maintaining the hardware and network capabilities associated with the organization's database servers. Examples include assessing and increasing storage capacity, improving data throughput, overseeing server access security, etc.

Storage Administration

Labor associated with the administration of SANS/NAS data storage, centralized archival storage systems and/or off site data storage. Activities would include performing scheduled backups, assessing

storage capacity and growth demands, setting end-user storage quotas, monitoring data storage security and integrity, assisting with emergency planning and data recovery efforts, etc.

Other Server Administration

Administration of any other servers not accounted for in the prior categories. Examples may be dedicated proprietary SCADA servers, servers used for administration of MDTs or other secure communications services, video and webcasting servers, etc. NOTE: Web server administration is NOT in this category -- labor related to these should go under "Application Server Administration", above.

Communication Services

Administration of the devices, services and vendors responsible for voice and data communication within and external to the organization. May include infrastructure device installation and maintenance (phones, routers, etc.), and managing service agreements and relationships with vendors and/or contractors.

Network Administration (LAN/WAN/Wireless)

The activities related to implementing and maintaining the operational integrity of the organization's local and wide-area networks, both wired and wireless, and video technology. Technologies include building wiring, fiber optic data circuits, and point-to-point technologies such as laser and microwave. These activities include responding to user requests for assistance, performance monitoring, coordinating with external network service providers, and taking appropriate corrective actions as needed.

Radio Support

The activities related to maintaining a radio communication infrastructure inclusive of end-user radio support for both public safety and other government needs. May include direct infrastructure technical support or oversight of independent contractors, and managing vendor relationships. Staff in this role may be involved in developing radio maintenance procedures and operational policies, communications protocols, and/or emergency response planning efforts.

Telephone Systems Support

Implementation, administration and management of analog and/or Voice over IP telephone services, including number assignment, phone moves, voice mail system management, connectivity, switch or gateway maintenance, etc.

Application Services

Application Services includes those activities related to developing, installing, configuring, and otherwise maintaining the software needed to meet the operational, management, and reporting requirements of the organization.

Financial Management

Management and maintenance of the applications related to risk management, treasury management, water accounting, and contract management.

Planning

Management and maintenance of the applications related to the administration of the organization's planning and development automation, such as supply/demand modeling, and business resumption planning, etc.

Infrastructure Development and Maintenance

Management and maintenance of the applications related to supporting the organization's utilities, fleet, and other major physical assets, including: project management, work management, drawing management, real property management, and computer aided drafting and design.

Water Delivery

Management and maintenance of the applications related to meter reading, water supply scheduling, and power coordination.

Core Support Services

Management and maintenance of the applications that are used to support internal administrative needs including help desk, legal support, board support, human resources/payroll, timekeeping, and management reporting.

Quality Assurance and Compliance

Management and maintenance of the applications related to water quality monitoring and environmental health and safety.

Web/Internet

Management and maintenance of applications related to the Internet and intranet including the design, maintenance, and development of web pages.

IT Planning

IT planning includes those activities related to planning for the technology function at the organization.

Strategic Planning and Governance

The processes related to identifying and evaluating the future directions for IT application, networks, and hardware for the organization. Includes strategic planning, evaluating and prioritizing IT investments, technology research, participating in committees and task forces, and feasibility studies.

Research and Development

The processes related to evaluation and testing of current and future IT products and services, and to the deployment of pilot projects to test the viability of these technologies for the organization. Includes dissemination of relevant information to appropriate parties.

Disaster Recovery/Planning

The processes related to developing, maintaining, updating, and testing the organization's IT disaster recovery/business resumption plan, and to activating and managing the plan in the event of a disaster.

IT Administration

IT Administration includes those activities related to the oversight and administration of the technology function at the organization.

Asset Management

The processes related to managing the IT properties of the organization, include tracking serial number, warranty, and inventory.

IT Procurement

The processes related to acquisition of goods and services in support of all IT functions; including the development of Requests for Proposals (RFP's), evaluation and selection of vendors, management of purchasing activities, receipt and inventory of goods, and tracking of warranty information and performance guarantees.

Standards and Policies Development

Those processes related to the creation and updating of IT standards and policies related to hardware, software, procurement, security, and staffing.

Administrative Support

The processes related to the provision of clerical, administrative, and related services required for the ongoing operation of the IT division.

Departmental Management

The processes related to management and oversight of the organization's technology functions: including staff evaluation, quality assurance, and budgeting.

Geographic Information Systems (GIS)

GIS includes the integrated hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

GIS Data Maintenance

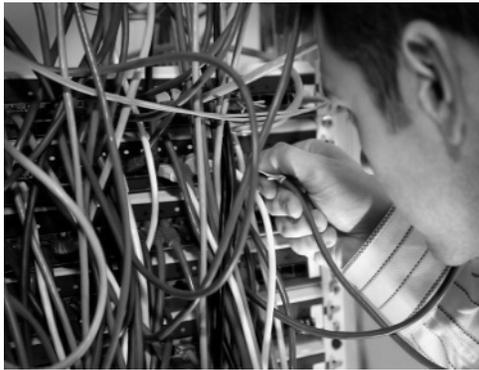
The processes related to entering and maintaining GIS data (e.g., updating assets or infrastructure with as-builts), making maps based on existing GIS structures, and performing analysis on existing GIS structures. **This labor effort is not included in the analysis as it is not considered a specialized IT discipline or function.**

Capital IT Projects

Capital IT projects consists of the expenditures for a physical improvement to an existing capital asset such as additions and major alterations that are intended to improve performance or increase useful life.

Capital IT Project Labor

The labor associated with physical improvements to existing capital assets (i.e., additions and major alterations) that are intended to improve performance or increase useful life. **This labor effort is not included in the analysis as it is not operations and maintenance.**



Appendix C Business Function Model

What is a Business Function Model?

A business function model identifies, in a structured format, the activities an organization performs to meet its business objectives. Each of the activities shown in a business function model becomes a potential candidate for automation. The model, therefore, serves as a template for driving an organization's overall approach to automating its business functions.

It is important to distinguish between a function model and an organization model. An organization model depicts an enterprise's structure, typically, in a hierarchical fashion. A business function model depicts what an organization does, independent of organizational structure.

Business functions tend to be much more stable than organizational units. Organizations typically change over time to accommodate changes in how an enterprise does its work. The business functions themselves remain relatively unchanged, unless the business significantly alters its mix of services and/or products.

Diagramming Conventions

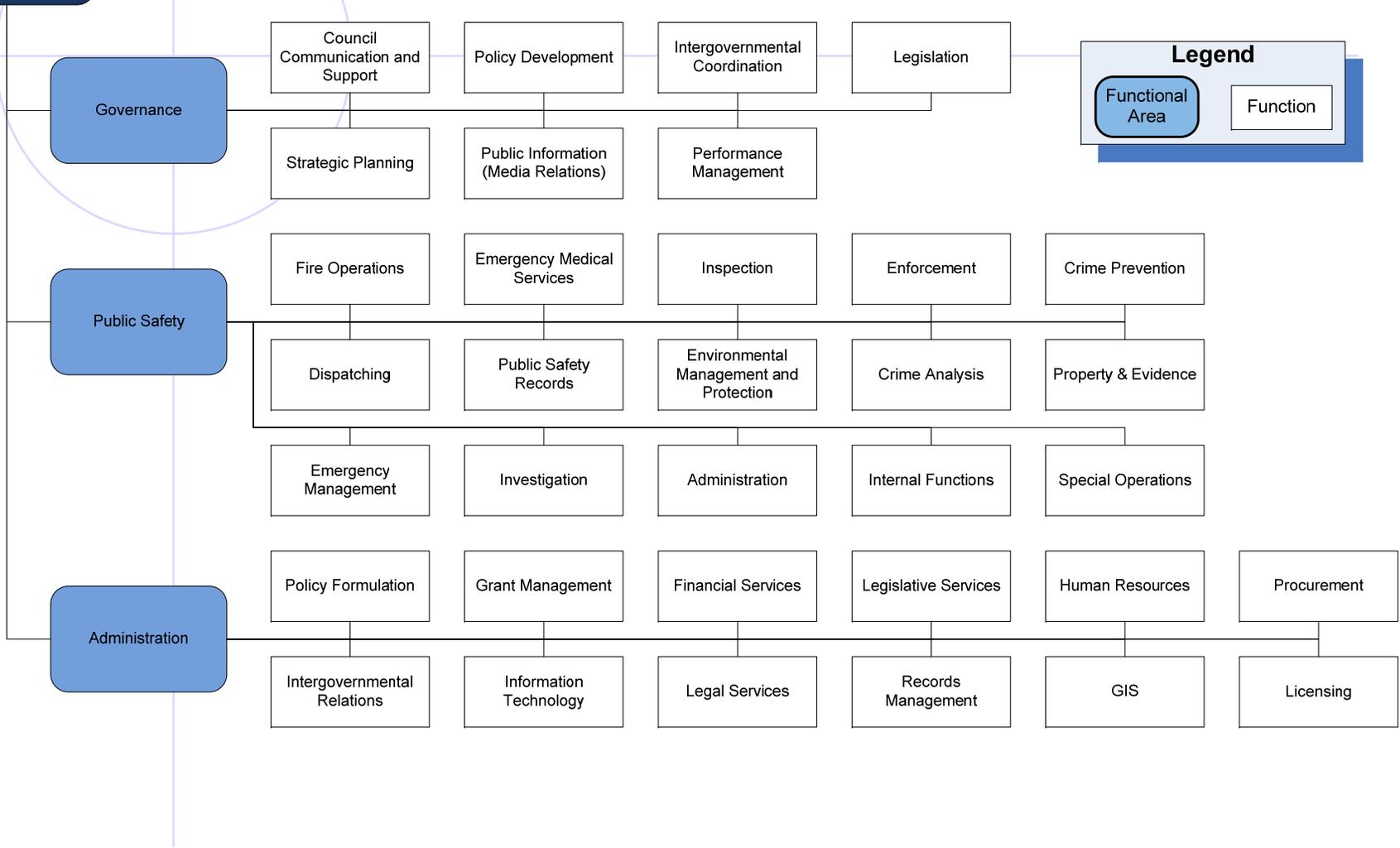
Business function models contain two primary components:

- ◆ **Functional Areas** – the major categorization of all tasks required to conduct business (e.g., “Public Safety” is a functional area)
- ◆ **Functions** – a group of ongoing activities which, together, completely support one functional area (e.g., “Emergency Management” is a subordinate function within the “Public Safety” functional area)

The diagram on the following pages depicts a function model of Annapolis' business. The “roundtangles” represent functional areas. The rectangles connected to the right of the “roundtangles” represent subordinate business functions.

Please note that the order in which the functional areas, functions, and sub-functions are listed does not imply any precedence of dependence.

City of Annapolis

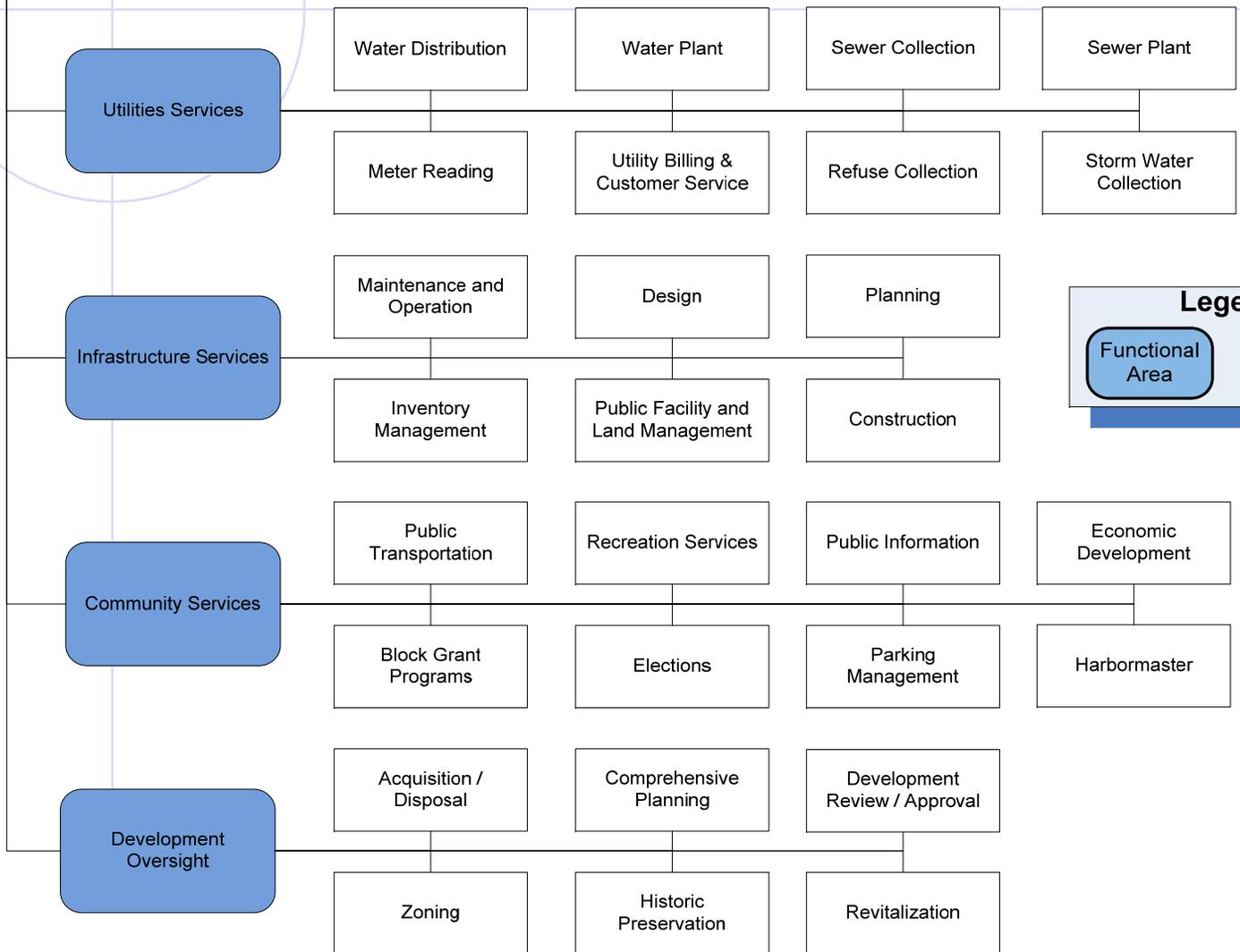


Legend

- Functional Area (represented by a blue rounded rectangle)
- Function (represented by a white rectangle)



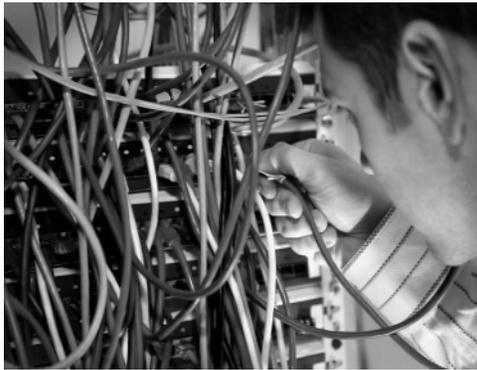
City of Annapolis (continued)



Legend

Functional Area (blue rounded rectangle)

Function (white rectangle)



Appendix D Ideal Application Architecture and Gap Analysis Summary

Overview

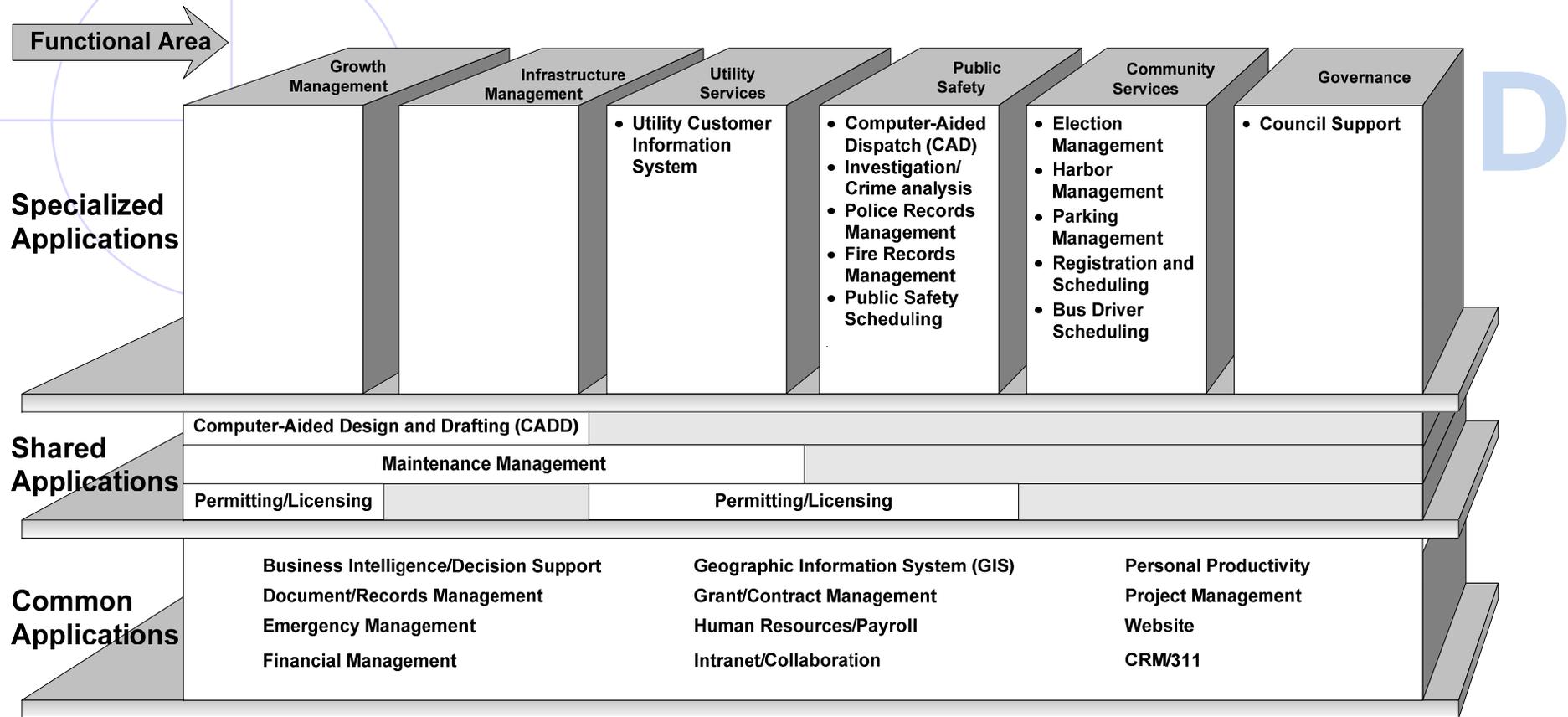
This appendix presents an ideal application architecture for the City of Annapolis, driven by the City's business function model. The diagram builds on the functional areas outlined in that model, and highlights a strategic software approach to help automate them along the following lines:

- ◆ **Specialized Applications** – supporting one functional area
- ◆ **Shared Applications** – supporting more than one, but not all, functional areas
- ◆ **Common Applications** – supporting all functional areas across the enterprise

The ideal application architecture on the following page illustrates those specialized applications that – in an ideal environment – would support each of the City's business functional areas (listed across the top of the diagram), as well as shared and citywide applications that would support multiple functional areas.

We utilize this schematic to graphically depict PTI's "gap" analysis – a comparison of the City's current applications to the ideal architecture. Where the gap is large, opportunities for investment exist.

City of Annapolis Ideal Application Architecture



Methodology

PTI worked with the City to conduct a gap analysis of existing business applications. PTI first documented application strengths and weaknesses during interviews and focus groups with city staff. PTI then conducted desk-side application reviews, during which experienced users of each application were asked to evaluate the software on a scale of 1 (severe gap) to 5 (no gap) for six separate criteria:

- ◆ **Functionality** – the ability of the application to support necessary business processes
- ◆ **Ease of use** – the degree of user friendliness of the application’s interface, screen layout, navigation, etc.
- ◆ **Integration** – the degree to which the application shares data with other applications, to minimize duplicate data entry
- ◆ **Implementation** – the degree to which the purchased application has been deployed
- ◆ **Reporting** – the appropriateness of canned reports and the degree/ease of report customization
- ◆ **Supporting systems** – the reliability, responsiveness, and/or “newness” of the support operating system, databases, etc.

Finally, PTI revised and validated these gap assignments during a workshop with the City’s project steering committee.

Application Gap Analysis Summary

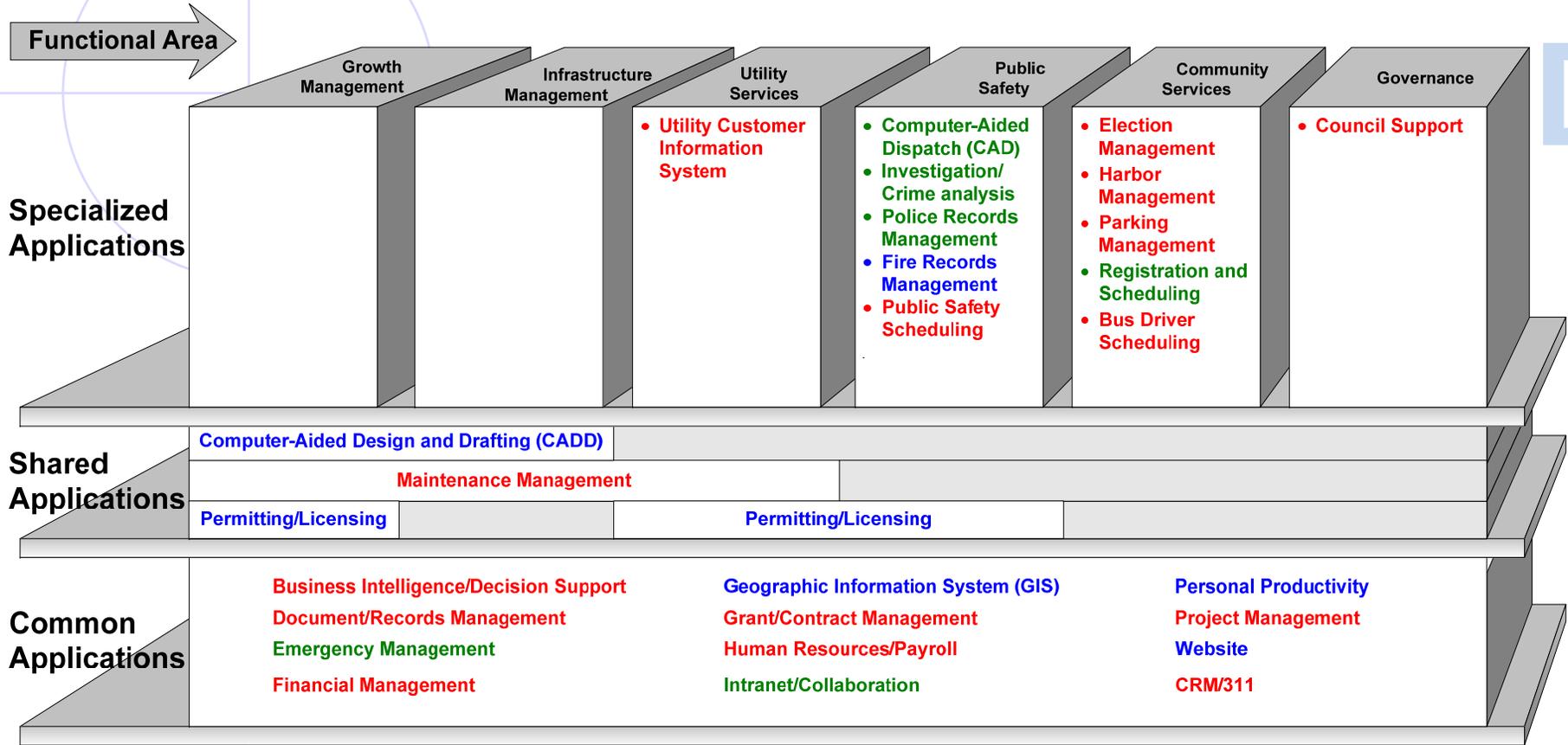
The assigned gaps (minimal, moderate, and severe) represent the gap between the functionality of existing applications and the target or ideal application environment, based on the analysis described above.

- ◆ **Minimal gap** – the City’s application is technically current, easy to use, integrated with other key city applications and offers sufficient functionality
- ◆ **Moderate gap** – the City’s application is aging, moderately difficult to use, integrated with some key applications, and meets most needs but requires more investment to offer desired functionality
- ◆ **Severe gap** – the City’s application is at or beyond end-of-life, meets very few needs, is difficult to use, or integrated with few or no other key city applications – these applications require significant investment or replacement to meet required functionality

In some cases, no current application corresponds to the ideal state. In these cases, the severe gap results from the absence of ideal functionality. Where the gap is severe, opportunities exist for significant return on investment.

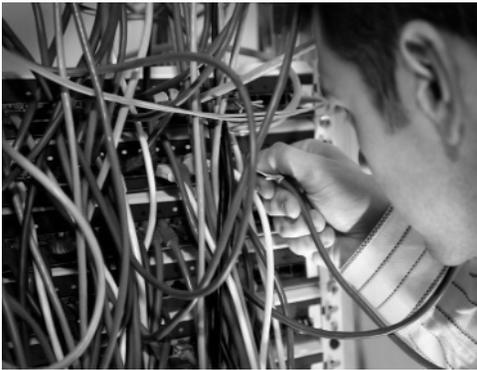
As illustrated in the gap analysis diagram below, fifteen (44%) applications in the City’s portfolio were assigned severe gaps, six (22%) received moderate gaps and only six (22%) had minimal gaps.

City of Annapolis Application Gap Analysis



Overall Gap Assessment	Minimal
	Moderate
	Severe
	Not Reviewed





Appendix E Project Descriptions and Cost Detail

This appendix details the implementation projects, grouped by the City's IT goals:

- ◆ IT investments align with city strategic priorities
- ◆ Technology supports accessible and accountable government
- ◆ Information systems streamline city operations and improve service
- ◆ Technical infrastructure is secure, reliable, and cost effective
- ◆ IT services are customer-oriented and responsive
- ◆ City workforce is computer-literate and technology-enabled

Global Cost and Labor Assumptions

PTI developed cost estimates for the recommended IT projects identified in Chapters 3 and 4. Costing assumptions for these projects include:

- ◆ All costs are incremental to current city budgets (i.e., the figures do not include amounts already budgeted) with the exception of \$350,000 already budgeted for a new utility customer information system and \$350,000 already budgeted for a new human resources/payroll system (projects 3.1 & 3.2)
- ◆ All internal labor effort estimates are in full-time equivalents (FTEs)
- ◆ An FTE work year comprises 1,820 hours
- ◆ Costs are applied to internal labor at the fully-burdened (30%) average hourly labor rates of \$39.00 for IT Services staff and \$52.00 for business unit staff
- ◆ One-time internal labor estimates are calculated based on the total required labor effort over the duration of the project – backfill is not included
- ◆ Costs are applied to external labor at the following rates:
 - Procurement – \$150.00
 - Implementation – \$175.00
 - Project Management – \$175.00
 - Quality Assurance – \$175.00
 - Training – \$150.00
 - Miscellaneous – \$150.00
- ◆ Recurring software costs are estimated at 20% of one-time license costs
- ◆ Recurring hardware costs (e.g., maintenance, support, replacement) are estimated at 20% of one-time purchase costs, except where otherwise noted

- ◆ Recurring internal IT labor for supporting new and upgraded applications (projects 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, and 5.2) is incorporated as part of the recommended IT staffing increases within project 5.1

The following pages detail the costs and assumptions associated with the implementation projects presented in chapters 3 and 4. Each page presents the estimated costs and labor effort utilizing the framework below.

E

Cost Category	One-time				Recurring			
	Time (Hours)		Costs		Time (Hours)		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	8,805	14,088	\$ 411,176	\$ 666,679	2,201	4,403	\$ 119,290	\$ 238,580
Business Unit SME	7,044	10,566	\$ 311,345	\$ 467,017	440	881		
Central IT	1,761	3,522	\$ 99,831	\$ 199,662	1,761	3,522		
Professional Services Labor	9,313	14,386	\$ 1,396,950	\$ 2,157,900	80	120		
Procurement	400	600	\$ 60,000	\$ 90,000				
Implementation and Training	6,625	10,250	\$ 993,750					
Project Management	2,080	3,120	\$ 312,000					
Quality Assurance	208	416	\$ 31,200					
Hardware			\$ -				\$ -	\$ 7,500
Software			\$ 420,000				\$ 84,000	\$ 150,000
Total Time and Costs	18,118	28,474	\$ 28,126	\$ 3,049,519	4,281	4,923	\$ 5,290	\$ 414,080

PTI estimated city implementation labor effort in FTEs.

Cost projections were calculated using an average hourly rate for internal labor.

When included, independent, third-party, quality assurance is estimated at the high-end at **10%** of implementation costs for hardware and software implementation projects.

Recurring hardware costs are estimated at **20%** of one-time purchase costs, except where otherwise noted.

One-time external labor costs are calculated based on total required labor hours over the duration of the project.

Software and hardware cost estimates, where applicable, are informed by market research.

Recurring software costs are estimated at **20%** of one-time purchase costs, except where otherwise noted.

1.1 Develop and implement a formal citywide IT decision making process

This project establishes a citywide IT governance model for information technology at the City (detailed in chapter 3). It charters an executive technology committee and defines membership, scope of authority, roles, responsibilities, and relationships between MIT and other city departments. This project also creates the governance processes and associated tools to support IT project oversight.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.09	0.14	\$ 7,592	\$ 11,388	0.06	0.10	\$ 5,928	\$ 8,892
Business Unit SME	0.06	0.09	\$ 5,408	\$ 8,112	0.05	0.08	\$ 4,992	\$ 7,488
Central IT	0.03	0.05	\$ 2,184	\$ 3,276	0.01	0.02	\$ 936	\$ 1,404
Professional Services Labor (Total)			\$ -	\$ -			\$ -	\$ -
Procurement			\$ -	\$ -			\$ -	\$ -
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -			\$ -	\$ -
Quality Assurance			\$ -	\$ -			\$ -	\$ -
Contract Services		100	\$ -	\$ 15,000			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 7,592	\$ 26,388			\$ 5,928	\$ 8,892

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Four two-hour meetings with eight department representatives and two MIT staff to:
 - Establish an executive technology committee charter
 - Define membership, scope of authority, roles, responsibilities, and relationships for IT decision making at the city
 - Review and finalize the executive technology committee charter
 - Review and finalize attendant processes and tools
- ◆ Eighty hours of central IT and business unit staff (40 hours each) support for the development and finalization of materials
- ◆ On the high end, the City utilizes professional implementation/change management services
- ◆ On a recurring basis, the same group of business unit and MIT representatives meet six times per year

1.2 Create an IT-specific capital improvement fund

This project develops an IT CIP funding model/approach and moves this approach through the City's governance process for approval.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.15	0.21	\$ 13,208	\$ 19,032			\$ -	\$ -
Business Unit SME	0.11	0.16	\$ 10,400	\$ 15,600			\$ -	\$ -
Central IT	0.04	0.05	\$ 2,808	\$ 3,432			\$ -	\$ -
Professional Services Labor (Total)			\$ -	\$ -			\$ -	\$ -
Procurement			\$ -	\$ -			\$ -	\$ -
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -			\$ -	\$ -
Quality Assurance			\$ -	\$ -			\$ -	\$ -
Contract Services		125	\$ -	\$ 18,750			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 13,208	\$ 37,782			\$ -	\$ -

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Eight two-hour meetings with 10 key city stakeholders to:
 - Create the CIP fund
 - Develop funding model
 - Acquire appropriate approvals
 - Implement new fund
- ◆ Forty hours of business unit staff support for the development and finalization of materials
- ◆ High-end estimates also include costs and labor associated with procuring and utilizing professional consulting services as well as 50% more internal labor hours

1.3 Conduct an IT Sourcing Feasibility Study

This project conducts a feasibility study to quantify and evaluate the costs and benefits of potential IT outsourcing options which may offer viable alternatives to enterprise-owned applications, local infrastructure hosting and internal IT support. This study will define IT sourcing alternatives and assumptions (e.g., complete outsourcing, tier 1/help desk services only, network services only, completely internal IT services and support), develop a long-term cost analysis for each of the options (including total cost of ownership and return on investment), and evaluate IT sourcing alternatives (including both quantitative and qualitative options, such as technical skill availability, long-term strategic fit, cost, staff buy-in, organizational change). Ultimately, this study will result in an informed, recommended IT sourcing direction for the City of Annapolis.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.11	0.14	\$ 8,736	\$ 12,168			\$ -	\$ -
Business Unit SME	0.07	0.09	\$ 6,240	\$ 8,736			\$ -	\$ -
Central IT	0.04	0.05	\$ 2,496	\$ 3,432			\$ -	\$ -
Professional Services Labor (Total)			\$ -	\$ -			\$ -	\$ -
Procurement			\$ -	\$ -			\$ -	\$ -
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -			\$ -	\$ -
Quality Assurance			\$ -	\$ -			\$ -	\$ -
Contract Services	400	700	\$ 60,000	\$ 105,000			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 68,736	\$ 117,168			\$ -	\$ -

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ The City utilizes professional services to conduct the feasibility study
- ◆ MIT and business unit staff support the study
- ◆ Three workshops with the consulting team
- ◆ Review the draft study and providing feedback
- ◆ Attending the final presentation
- ◆ MIT staff administers the project
- ◆ High-end estimate increases the size of the project steering team, the scope of study (e.g., more alternatives, additional financial analysis), and the cost of the professional consulting services

2.1 Define IT performance measures

This project defines specific IT performance level targets, and establishes mechanisms to regularly monitor and report on targets.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.10	0.19	\$ 8,892	\$ 15,834	0.02	0.05	\$ 2,028	\$ 4,056
Business Unit SME	0.05	0.11	\$ 4,992	\$ 9,984	0.01	0.03	\$ 1,248	\$ 2,496
Central IT	0.05	0.08	\$ 3,900	\$ 5,850	0.01	0.02	\$ 780	\$ 1,560
Professional Services Labor (Total)			\$ -	\$ -			\$ -	\$ -
Procurement			\$ -	\$ -			\$ -	\$ -
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -			\$ -	\$ -
Quality Assurance			\$ -	\$ -			\$ -	\$ -
Contract Services	60	120	\$ 9,000	\$ 18,000			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 17,892	\$ 33,834			\$ 2,028	\$ 4,056

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Six to twelve two-hour meetings with department representatives to:
 - Establish objectives for reporting
 - Review and finalize performance targets
 - Review and finalize reporting mechanisms
- ◆ Additional central IT staff support for developing and finalizing materials
- ◆ City utilizes professional services to identify/review performance targets – amount of external services varies between low- and high-cost scenarios
- ◆ Recurring internal FTE perform ongoing measurement, analysis and reporting, as well as participation in quarterly meetings with MIT and department staff to review/update measures

2.2 Evaluate potential CRM/311 solutions

This project conducts a feasibility study to evaluate various alternatives for potential citizen relationship management and/or 311 call center systems. This includes strategic alignment, cost estimation and implementation planning (scheduling, key milestones, and resource assignments). The alternatives evaluated will range from low-cost leveraging of existing systems to full-featured call center solutions.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.29	0.16	\$ 27,456	\$ 14,976			\$ -	\$ -
Business Unit SME	0.29	0.16	\$ 27,456	\$ 14,976			\$ -	\$ -
Central IT			\$ -	\$ -			\$ -	\$ -
Professional Services Labor (Total)		500	\$ -	\$ 75,000			\$ -	\$ -
Procurement		500	\$ -	\$ 75,000			\$ -	\$ -
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -			\$ -	\$ -
Quality Assurance			\$ -	\$ -			\$ -	\$ -
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 27,456	\$ 89,976			\$ -	\$ -

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ On the low end, business unit FTE and central IT FTE develop the plan
- ◆ On the high end, the City utilizes professional consulting services in place of internal labor

2.3 Implement the preferred CRM/311 solution

Based on the recommendation from project 2.2, this project implements a customer relationship management system. At the low end, this simply extends the system(s) already in use by Public Works and/or other departments to a citywide basis. It also includes some business process improvement to align customer service practices across the organization. At the high end, it implements a full-featured CRM package, setting up a call center to provide “one-stop” convenience for resident and visitor enquiries.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.43	0.36	\$ 32,864	\$ 31,460			\$ -	\$ -
Business Unit SME	0.10	0.25	\$ 9,464	\$ 23,660			\$ -	\$ -
Central IT	0.33	0.11	\$ 23,400	\$ 7,800			\$ -	\$ -
Professional Services Labor (Total)	264	1,080	\$ 45,600	\$ 177,000			\$ -	\$ -
Procurement		400	\$ -	\$ 60,000				
Implementation and Training	264	680	\$ 45,600	\$ 117,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 5,000	\$ 40,000			\$ 1,000	\$ 8,000
Software			\$ -	\$ 80,000			\$ -	\$ 16,000
Total Costs			\$ 83,464	\$ 328,460			\$ 1,000	\$ 24,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Low end is primarily MIT-driven, with some involvement by business units
- ◆ High end based on as-bid costs for a slightly larger municipality
- ◆ Implementation largely done by vendor, coordinating with MIT
- ◆ Additional input by business units
- ◆ Excludes costs for call center facilities and associated staff
- ◆ Ongoing IT support will range between 0.5 and 0.75 FTEs

3.1 Implement a new utility customer information system

This project implements a new customer information/utility billing system.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	2.25	3.50	\$ 183,365	\$ 283,920			\$ -	\$ -
Business Unit SME	1.00	1.50	\$ 94,640	\$ 141,960			\$ -	\$ -
Central IT	1.25	2.00	\$ 88,725	\$ 141,960			\$ -	\$ -
Professional Services Labor (Total)	600	1,700	\$ 103,000	\$ 290,500			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	480	1,280	\$ 82,000	\$ 217,000			\$ -	\$ -
Project Management	80	280	\$ 14,000	\$ 49,000				
Quality Assurance	40	140	\$ 7,000	\$ 24,500				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 25,000	\$ 35,000			\$ 5,000	\$ 7,000
Software			\$ 50,000	\$ 200,000			\$ 10,000	\$ 40,000
Total Costs			\$ 361,365	\$ 809,420			\$ 15,000	\$ 47,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ High- and low-end estimates are based on bids already received by the City
- ◆ Ongoing IT support for this application will range between 0.75 and 1.0 FTEs

3.2 Implement a new human resources and payroll system

This project replaces the payroll function of the existing financial management system and extends it to include timekeeping. It also implements new functionality to support position tracking, job applications, benefits enrollment, training management, and other human resources (HR) functions.

The RFP for this project has already been issued, and the City was evaluating responses as of February 2010. Funds are budgeted in the current fiscal year for the purchase of this system and accurate costs will soon be known. **Estimates assume separate vendors for this system and financial management (project 3.3). The City may realize cost savings even beyond the low-end estimates by selecting a vendor that offers integrated finance/HR system functionality.**

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	2.00	2.00	\$ 165,620	\$ 165,620			\$ -	\$ -
Business Unit SME	1.00	1.00	\$ 94,640	\$ 94,640			\$ -	\$ -
Central IT	1.00	1.00	\$ 70,980	\$ 70,980			\$ -	\$ -
Professional Services Labor (Total)	875	4,000	\$ 153,125	\$ 700,000			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	875	4,000	\$ 153,125	\$ 700,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 15,000	\$ 25,000			\$ 3,000	\$ 5,000
Software			\$ 125,000	\$ 425,000			\$ 25,000	\$ 85,000
Total Costs			\$ 458,745	\$ 1,315,620			\$ 28,000	\$ 90,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ High-end estimates represent a Tier 1 solution²⁹ and low-end estimates represent a Tier 2 solution³⁰
- ◆ Both estimates require similar involvement of MIT and business unit labor for implementation
- ◆ Business unit staff participate in determining and testing software configuration
- ◆ MIT staff assists the vendor in deploying modules and integrating the application with other software packages and data repositories at the City
- ◆ Ongoing IT support for this application will range between 0.75 and 1.25 FTEs
- ◆ The City utilizes professional implementation assistance to train end users, ensuring application proficiency

²⁹ A comprehensive, flexible software package targeted toward large accounts.

³⁰ Products not as functionally rich as Tier 1 solutions, which have limited tailoring capabilities and are targeted toward smaller and mid-sized accounts.

3.3 Implement a financial management system

This project replaces the existing financial management system with a more modern and easily integrated solution. It also implements new functionality to support budgeting, grant management, e-payments, and management reporting.

Estimates assume separate vendors for this system and HR/Payroll (project 3.2). The City may realize cost savings even beyond the low-end estimates by selecting a vendor that offers integrated finance/HR/payroll system functionality.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	4.00	4.00	\$ 331,240	\$ 331,240			\$ -	\$ -
Business Unit SME	2.00	2.00	\$ 189,280	\$ 189,280			\$ -	\$ -
Central IT	2.00	2.00	\$ 141,960	\$ 141,960			\$ -	\$ -
Professional Services Labor (Total)	2,625	12,750	\$ 459,375	\$ 2,212,500			\$ -	\$ -
Procurement		750	\$ -	\$ 112,500				
Implementation and Training	2,625	12,000	\$ 459,375	\$ 2,100,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 30,000	\$ 50,000			\$ 6,000	\$ 10,000
Software			\$ 300,000	\$ 600,000			\$ 60,000	\$ 120,000
Total Costs			\$ 1,120,615	\$ 3,193,740			\$ 66,000	\$ 130,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ High-end estimates represent a Tier 1 solution
- ◆ Low-end estimates represent a Tier 2 solution
- ◆ Both estimates require similar involvement of MIT and business unit labor for implementation
- ◆ Business unit staff participate in determining and testing software configuration
- ◆ MIT staff assists the vendor in deploying modules and integrating the application with other software packages and data repositories at the City
- ◆ Ongoing IT support for this application will range between 1 and 1.75 FTEs
- ◆ The City utilizes professional implementation assistance to train end users, ensuring application proficiency

3.4 Implement an electronic document management system

This project installs an enterprise document scanner with software supporting document archiving, indexing, and retrieval. The software also supports e-discovery, public information requests, and Internet viewing functions.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	1.75	1.75	\$ 147,875	\$ 147,875			\$ -	\$ -
Business Unit SME	1.00	1.00	\$ 94,640	\$ 94,640			\$ -	\$ -
Central IT	0.75	0.75	\$ 53,235	\$ 53,235			\$ -	\$ -
Professional Services Labor (Total)	1,000	1,000	\$ 165,000	\$ 165,000			\$ -	\$ -
Procurement	400	400	\$ 60,000	\$ 60,000				
Implementation and Training	600	600	\$ 105,000	\$ 105,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services		4,000	\$ -	\$ 600,000			\$ -	\$ -
Hardware			\$ 90,000	\$ 90,000			\$ 18,000	\$ 18,000
Software			\$ 200,000	\$ 200,000			\$ 40,000	\$ 40,000
Total Costs			\$ 602,875	\$ 1,202,875			\$ 58,000	\$ 58,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Business unit staff participate in:
 - Workflow design
 - Process engineering
 - Training
 - System testing
- ◆ MIT staff:
 - Support system implementation
 - Train users
 - Test the system
- ◆ Recurring business unit labor effort provides input to MIT for ongoing system tailoring
- ◆ Recurring IT FTE effort performs ongoing system maintenance and administration
- ◆ Ongoing IT support for this application will range between 0.5 and 1.0 FTEs
- ◆ Hardware, software, and implementation are similar for high- and low-end estimates
- ◆ Low-end approach has City staff scan the backlog of paper documents
- ◆ High-end approach utilizes vendor staff to scan backlog of paper documents

3.5 Implement a citywide maintenance management system

This project implements a single maintenance management solution at the City. It replaces point solutions currently in use by Public Works, Central Services and other departments.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	4.50	5.00	\$ 384,475	\$ 425,880			\$ -	\$ -
Business Unit SME	2.75	3.00	\$ 260,260	\$ 283,920			\$ -	\$ -
Central IT	1.75	2.00	\$ 124,215	\$ 141,960			\$ -	\$ -
Professional Services Labor (Total)	1,520	2,190	\$ 247,500	\$ 358,750			\$ -	\$ -
Procurement	500	700	\$ 75,000	\$ 105,000				
Implementation and Training	840	1,280	\$ 141,000	\$ 217,000			\$ -	\$ -
Project Management	120	140	\$ 21,000	\$ 24,500				
Quality Assurance	60	70	\$ 10,500	\$ 12,250				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 10,000	\$ 35,000			\$ 2,000	\$ 7,000
Software			\$ 40,500	\$ 137,500			\$ 8,100	\$ 27,500
Total Costs			\$ 682,475	\$ 957,130			\$ 10,100	\$ 34,500

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Business unit staff:
 - Inform functional requirements
 - Participate in developing an RFP, as well as evaluating vendor responses
 - Determine business process impacts and changes
 - Inform workflow design
 - Test the system
- ◆ MIT staff:
 - Inform technical requirements
 - Participate in developing an RFP, as well as evaluating vendor responses
 - Assist the vendor with installing and integrating the software package
 - Perform data conversion
 - Test the system
- ◆ Both estimates include professional procurement assistance, project management, and quality assurance
- ◆ The low-end estimate requires a single web server
- ◆ The high-end estimate requires one server each for production, test, and database functions
- ◆ Ongoing IT support for this application will range between 0.5 and 1.0 FTEs

3.6 Pilot decision support/business intelligence software

This project implements a decision support/business intelligence tool in a single business area (e.g., Finance). Limiting the initial deployment of this automation ensures the City does not overextend its available IT resources, provides a test case for product capabilities, and minimizes the City's investment and associated risks.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.50	1.00	\$ 41,405	\$ 82,810			\$ -	\$ -
Business Unit SME	0.25	0.50	\$ 23,660	\$ 47,320			\$ -	\$ -
Central IT	0.25	0.50	\$ 17,745	\$ 35,490			\$ -	\$ -
Professional Services Labor (Total)	175	350	\$ 28,125	\$ 57,500			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	175	350	\$ 28,125	\$ 57,500			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 10,000	\$ 20,000			\$ 2,000	\$ 4,000
Software			\$ 975	\$ 20,000			\$ 195	\$ 4,000
Total Costs			\$ 80,505	\$ 180,310			\$ 2,195	\$ 8,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Business unit SME FTEs:
 - Identify critical decision support areas
 - Review and adjust business processes
 - Test the system
- ◆ MIT FTEs:
 - Implement, integrate and configure the software
 - Perform data conversion
 - Test the system
- ◆ The City purchases a new server and database for hosting the application
- ◆ Recurring business unit SME FTEs inform ongoing system tailoring
- ◆ Recurring central IT FTEs conduct ongoing system maintenance and administration
- ◆ Ongoing IT support for this application will range between 0 and 0.25 FTEs

4.1 Utilize a professionally-designed data center to host core infrastructure

This project moves the City's mission-critical servers and related equipment to a more secure and reliable facility. The City will most likely choose the services of a vendor specializing in infrastructure hosting, unless a data center shared with other local jurisdictions is shown to be more cost-effective. Implementation will be staged in phases to coincide with major application replacements, avoiding the expense and risk of moving old and non-standard equipment to the new data center. This project will also include completion of the City's fiber network ring (phase 4), which will be externally funded (either through a government partner or federal grants). Thus, the associated one-time costs are not included here and the recurring costs fall beyond this plan's time horizon.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.04	0.09	\$ 3,120	\$ 6,240			\$ -	\$ -
Business Unit SME			\$ -	\$ -			\$ -	\$ -
Central IT	0.04	0.09	\$ 3,120	\$ 6,240			\$ -	\$ -
Professional Services Labor (Total)	10	25	\$ 1,750	\$ 4,375			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	10	25	\$ 1,750	\$ 4,375			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 12,000	\$ 24,000			\$ 12,000	\$ 24,000
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 16,870	\$ 34,615			\$ 12,000	\$ 24,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Implementation costs are minimal, since most server installation costs are associated with specific application projects
- ◆ Recurring costs reflect a range of quoted prices for rental of two standard racks
- ◆ Server consolidation/virtualization may decrease rack space required, with commensurate cost savings

4.2 Revise disaster recovery plan

This project updates and expands the existing disaster recovery plan to provide same-day recovery of mission-critical computing services in the event of an emergency. The plan is tested on an annual basis by MIT staff. Details of the plan will be contingent on the capabilities of the data center utilized in project 4.1.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.12	0.22	\$ 9,672	\$ 17,680	0.02	0.04	\$ 1,560	\$ 3,120
Business Unit SME	0.05	0.09	\$ 4,992	\$ 8,320			\$ -	\$ -
Central IT	0.07	0.13	\$ 4,680	\$ 9,360	0.02	0.04	\$ 1,560	\$ 3,120
Professional Services Labor (Total)	40	240	\$ 7,000	\$ 42,000			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	40	240	\$ 7,000	\$ 42,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 16,672	\$ 59,680			\$ 1,560	\$ 3,120

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Business unit staff involved in initial plan update
- ◆ At the low end, the City utilizes an advisory level of consulting service for the initial plan update – then continues to update and test its disaster recovery plan using internal IT labor
- ◆ At the high end the City utilizes professional consulting to fully develop the revised plan and support initial testing – subsequent updates and tests will be conducted using internal IT labor

4.3 Define, fund, and implement a formal technology replacement cycle

This project determines the replacement life cycle for PCs, servers, and critical network equipment and appropriates the annual amount needed for replacement. The City has historically allocated approximately \$100,000 for PC and server replacement each year. The figures shown here represent average annual expenditures – actual costs will vary from year to year depending on the exact amount of equipment reaching the end of its life cycle.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.08	0.16	\$ 7,280	\$ 12,480	0.20	0.35	\$ 13,884	\$ 24,960
Business Unit SME	0.04	0.07	\$ 4,160	\$ 6,240			\$ -	\$ -
Central IT	0.04	0.09	\$ 3,120	\$ 6,240	0.20	0.35	\$ 13,884	\$ 24,960
Professional Services Labor (Total)			\$ -	\$ -			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ 159,500	\$ 243,750
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 7,280	\$ 12,480			\$ 173,384	\$ 268,710

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ The City replaces 45 servers on a five-year cycle at a cost between \$3,000 and \$5,000
- ◆ The City replaces 530 PCs on a four-year cycle at a cost between \$1,000 and \$1,500 – includes costs associated with Microsoft Office and anti-virus software
- ◆ On both the low- and high-end, internal labor will be used to acquire and install PCs and servers
- ◆ Does not include eventual replacement of fiber network equipment, as this will occur beyond the six-year time horizon of this plan

4.4 Conduct annual IT security audits and triennial assessments

This project implements enterprise IT security software and utilizes an outside consultant to perform an initial audit. MIT is responsible for ongoing security reviews and revisions as needed, with an annual review by an outside consultant. On a triennial basis, the project accounts for an outside consultant to conduct a more thorough and detailed assessment.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.02	0.04	\$ 1,560	\$ 3,120	0.07	0.13	\$ 4,680	\$ 9,360
Business Unit SME			\$ -	\$ -			\$ -	\$ -
Central IT	0.02	0.04	\$ 1,560	\$ 3,120	0.07	0.13	\$ 4,680	\$ 9,360
Professional Services Labor (Total)	80	160	\$ 14,000	\$ 28,000			\$ -	\$ -
Procurement			\$ -	\$ -				
Implementation and Training	80	160	\$ 14,000	\$ 28,000			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -	70	120	\$ 10,500	\$ 18,000
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ 5,000	\$ 30,000			\$ 1,000	\$ 6,000
Total Costs			\$ 20,560	\$ 61,120			\$ 16,180	\$ 33,360

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Cost range reflects variation in audit software capability and level of professional services required
- ◆ Costs averaged per year – actual costs will vary depending on amount of consulting assistance needed

5.1 Adopt new MIT organizational structure and increase staff

This project adds up to a total of eight IT FTEs over the course of this IT strategic plan: 5 additional FTEs of application support staff, 1-2 additional FTEs of infrastructure support staff and 1 additional FTE focused on IT training and customer account management. It also reorganizes MIT staff around four primary IT disciplines (application services, infrastructure services, customer support services, and administrative services) and changes the MIT Manager's reporting relationship as described in chapter 3. This project is contingent upon the outcome of the IT sourcing feasibility study.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.13	0.20	\$ 12,168	\$ 19,136	0.10	0.16	\$ 414,992	\$ 737,488
Business Unit SME	0.05	0.08	\$ 4,992	\$ 7,488	0.05	0.08	\$ 4,992	\$ 7,488
Central IT	0.08	0.12	\$ 7,176	\$ 11,648	0.05	0.08	\$ 410,000	\$ 730,000
Professional Services Labor (Total)		292	\$ -	\$ 43,800			\$ -	\$ -
Procurement		292	\$ -	\$ 43,800				
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 12,168	\$ 62,936			\$ 414,992	\$ 737,488

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ MIT plans and manages personnel moves, new reporting structures, and modification of job descriptions, as needed
- ◆ Business unit staff supports the hiring process
- ◆ Low-end estimate increases MIT staff by six FTEs throughout the life of this IT strategic plan
- ◆ High-end estimate increases MIT staff by nine FTEs over the life of this IT strategic plan
- ◆ High-end also includes costs for professional recruitment assistance
- ◆ The recurring costs in the table above are for the final year of the plan once all new hires are in place

5.2 Establish a professional IT service desk

This project defines and implements a process-based set of best practices to manage an IT service desk, including support (e.g., configuration management, incident management, problem resolution) and service delivery (e.g., service continuity, capacity management, service level management). It develops a phased transition plan; implements the plan; and monitors outcomes and integrates enhancements as needed.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.35	0.71	\$ 29,432	\$ 60,268	0.05	0.09	\$ 5,200	\$ 8,320
Business Unit SME	0.19	0.40	\$ 18,200	\$ 38,116	0.05	0.09	\$ 5,200	\$ 8,320
Central IT	0.16	0.31	\$ 11,232	\$ 22,152			\$ -	\$ -
Professional Services Labor (Total)	130	360	\$ 20,500	\$ 58,000	30	67	\$ 4,500	\$ 10,050
Procurement			\$ -	\$ -				
Implementation and Training	130	360	\$ 20,500	\$ 58,000	30	67	\$ 4,500	\$ 10,050
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ 10,000	\$ 30,000			\$ 2,000	\$ 6,000
Software			\$ 17,500	\$ 28,000			\$ 3,500	\$ 5,600
Total Costs			\$ 77,432	\$ 176,268			\$ 15,200	\$ 29,970

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Business unit hours consist of participation in interviews and focus groups as well as steering committee time necessary to help define specific service level needs
- ◆ The high-end estimate also includes costs for professional consulting assistance
- ◆ The low-end includes three days of training for three IT staff at \$1,500 per day
- ◆ The high-end estimates three days of training for three IT staff at \$2,000 per day
- ◆ Additional consulting time for translating a service methodology (e.g., ITSM, ITIL) into actual work practices and tools
- ◆ Refresh training provided on a three-year cycle and some internal labor allocated for annual improvements to IT service desk processes

5.3 Train IT staff

This project provides biannual training for 100% of the City's IT staff (assumes increase to approximately 19 FTEs) in topics to support this IT strategic plan. Courses may include specific application training, tier 2 PC support processes, business analysis, database administration, or other topics to improve related technical skills.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)			\$ -	\$ -	0.24	0.48	\$ 17,784	\$ 35,568
Business Unit SME			\$ -	\$ -	0.03	0.07	\$ 3,120	\$ 6,240
Central IT			\$ -	\$ -	0.21	0.41	\$ 14,664	\$ 29,328
Professional Services Labor (Total)			\$ -	\$ -	134	267	\$ 20,100	\$ 40,050
Procurement			\$ -	\$ -				
Implementation and Training			\$ -	\$ -	134	267	\$ 20,100	\$ 40,050
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ -	\$ -			\$ 37,884	\$ 75,618

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ MIT staff support scheduling and coordination of training
- ◆ Business unit (HR) and IT staff develop and annually update individual training plans
- ◆ Low-end training cost: \$2,000 for three days of training
- ◆ High-end training cost: \$4,000 for six days of training

5.4 Upgrade MIT workspace

This project identifies and acquires (if necessary) additional workspace to support increased MIT staff and an expanded role for technology at the City.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.70	1.10	\$ 49,725	\$ 78,000			\$ -	\$ -
Business Unit SME			\$ -	\$ -			\$ -	\$ -
Central IT	0.70	1.10	\$ 49,725	\$ 78,000			\$ -	\$ -
Professional Services Labor (Total)		100	\$ -	\$ 15,000			\$ -	\$ -
Procurement		100	\$ -	\$ 15,000				
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 49,725	\$ 93,000			\$ -	\$ -

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ MIT staff provides move planning and oversight
- ◆ Low-end estimates utilize MIT labor to complete the move
- ◆ High-end estimates include professional property location assistance as well as professional moving assistance

5.5 Contract professional IT project management services

This project hires a skilled, qualified individual to manage and oversee major IT projects throughout the life of the IT strategic plan. Depending on specific project management skills needed, the City may change contractors to suit the major implementation underway at the time.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)			\$ -	\$ -			\$ -	\$ -
Business Unit SME			\$ -	\$ -			\$ -	\$ -
Central IT			\$ -	\$ -			\$ -	\$ -
Professional Services Labor (Total)		300	\$ -	\$ 45,000			\$ -	\$ -
Procurement		300	\$ -	\$ 45,000				
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services	667	1,000	\$ 100,050	\$ 150,000	667	1,000	\$ 100,050	\$ 150,000
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 100,050	\$ 195,000			\$ 100,050	\$ 150,000

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ High-end and low-end estimates provide a salary range for 1 FTE
- ◆ High-end estimates also include costs for recruitment assistance

6.1 Implement a technology training program for business users

This project establishes an IT training and assessment program for 70% of the City's business unit staff/end users (assumes 600 employees) – including outside training courses, train-the-trainer programs, and internal training initiatives. This project will initially focus on enterprise-wide systems and progress to training in specific departmental or functional applications. The project also offers "refresh training" to employees every three years.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)			\$ -	\$ -	0.79	1.58	\$ 74,880	\$ 149,760
Business Unit SME			\$ -	\$ -	0.79	1.58	\$ 74,880	\$ 149,760
Central IT			\$ -	\$ -			\$ -	\$ -
Professional Services Labor (Total)			\$ -	\$ -	700	1,400	\$ 105,000	\$ 210,000
Procurement			\$ -	\$ -				
Implementation and Training			\$ -	\$ -	700	1,400	\$ 105,000	\$ 210,000
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services			\$ -	\$ -			\$ -	\$ -
Hardware			\$ -	\$ -			\$ -	\$ -
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ -	\$ -			\$ 179,880	\$ 359,760

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Both low- and high-end estimates assume external training
- ◆ Low-end training cost: \$250 for one day of training
- ◆ High-end training cost: \$500 for two days of training
- ◆ Business unit staff (HR) manage and update the training program

6.2 Install indoor wireless access points at city facilities

This project implements indoor wireless access points in major facilities for city staff and contractors in support of city operations.

Cost Category	One-time				Recurring			
	Time*		Costs		Time*		Costs	
	Low	High	Low	High	Low	High	Low	High
Internal Labor (Total)	0.33	0.50	\$ 23,712	\$ 35,568	0.07	0.10	\$ 4,742	\$ 7,114
Business Unit SME			\$ -	\$ -			\$ -	\$ -
Central IT	0.33	0.50	\$ 23,712	\$ 35,568	0.07	0.10	\$ 4,742	\$ 7,114
Professional Services Labor (Total)		300	\$ -	\$ 45,000			\$ -	\$ -
Procurement		300	\$ -	\$ 45,000				
Implementation and Training			\$ -	\$ -			\$ -	\$ -
Project Management			\$ -	\$ -				
Quality Assurance			\$ -	\$ -				
Contract Services	200	300	\$ 30,000	\$ 45,000			\$ -	\$ -
Hardware			\$ 106,400	\$ 228,000			\$ 21,280	\$ 45,600
Software			\$ -	\$ -			\$ -	\$ -
Total Costs			\$ 160,112	\$ 353,568			\$ 26,022	\$ 52,714

*PTI estimates internal labor in FTE and external labor in hours

Cost assumptions:

- ◆ Low-end estimate consists of eight wireless access points in each of 19 buildings at \$700 each
- ◆ High-end estimate consists of twelve wireless access points in each of 19 buildings at \$1,000 each
- ◆ MIT installs and tests each wireless device