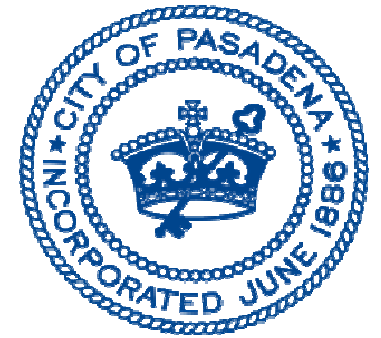
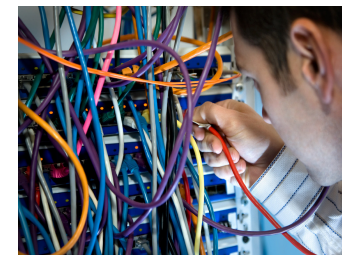


City of Pasadena, California Technology Infrastructure Assessment



October 2009



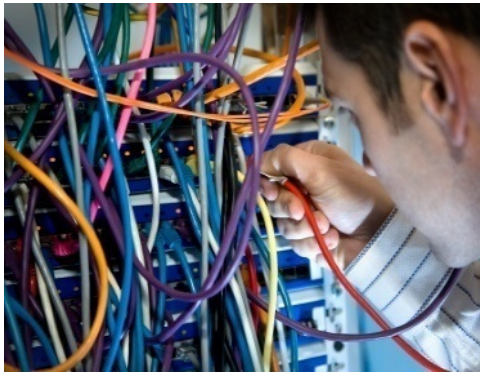
Pacific Technologies, Inc. Practical Planning. Positive Change.





Table of Contents

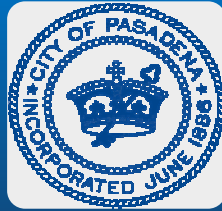
1. Executive Summary	1
Introduction.....	2
Summary of Findings and Recommendations.....	4
Alignment with Strategic Goals	7
2. Assessment	9
Business Context.....	10
Assessment Summary.....	11
Assessment Findings.....	13
Other Considerations.....	32
3. Recommendations	36
Recommendations.....	37
Recommendations Alignment with Strategic Goals.....	54
Conclusion.....	55
Appendices	
A. List of Participants.....	A – 1
B. IT Staffing Detail.....	B – 1



Chapter 1 Executive Summary

Introduction

Founded in 1886, the City of Pasadena (the City, Pasadena) works to improve the lives of its residents through its mission and strategic goals, outlined below:



City of Pasadena's Mission:

"Deliver exemplary municipal services responsive to our entire community and consistent with our history, culture and unique character."

Strategic Plan 3-Year Goals (2009-2012)

- ◆ Maintain fiscal responsibility and stability
- ◆ Improve, maintain, and enhance public facilities and infrastructure
- ◆ Increase conservation and sustainability
- ◆ Improve mobility and accessibility throughout the city
- ◆ Support and promote the local economy
- ◆ Ensure public safety

A city of nearly 150,000 residents, Pasadena annually hosts the nationally renowned "Tournament of Roses" and is also well known as a center of technology – being home to the Jet Propulsion Laboratory and the California Institute of Technology, among other prestigious organizations, businesses and agencies. The City's citizen-centric service focus has contributed to historically safe neighborhoods, healthy residents, high quality educational opportunities, and excellent employment opportunities.

Pasadena began investing in information technology (IT) many years ago to streamline processes and facilitate service delivery to citizens, businesses, visitors and employees. Now, compounded by deteriorating economic conditions in the United States – and California in particular – revenue shortfalls jeopardize the City's ability to sustain the delivery of high-quality municipal services.

The City desires an IT organization that supports its mission and strategic goals in a more cost-efficient and effective manner. Pasadena recognizes that its current, decentralized IT service delivery model (11 of 16 departments maintain their own IT support staff) and infrastructure environment (5 departments maintain their own server rooms) may be unnecessarily expensive – diminishing the City's ability to weather current economic conditions and deliver quality municipal services.

More than 75 City stakeholders – including city executives, managers, IT professionals, and end users – contributed to this planning effort through interviews, focus groups, workshops, and other data collection efforts.

With this in mind, the City of Pasadena engaged Pacific Technologies, Inc. (PTI) to facilitate the development of a technology infrastructure assessment. Beginning in July 2009, Pasadena and PTI worked in close partnership to examine the City's current technology environment, including a detailed evaluation of IT spending, IT staffing, and IT infrastructure.

A project steering committee comprised of senior city executives and information technology representatives provided leadership and critical guidance to this project. Additionally, more than 75 City stakeholders – including city executives, managers, IT professionals, and end users – contributed to this planning effort through interviews, focus groups, workshops and other data collection efforts. Our consultants gathered and analyzed documentation related to IT planning, policies, procedures, and citywide strategic initiatives. Additionally, we analyzed quantitative data related to citywide IT spending and support, and examined the City's current network architecture.

PTI evaluated IT service delivery at the City of Pasadena across the following five functional areas:

- **Customer Services** – labor related to directly helping end users utilize IT systems and services (e.g., help desk and PC support)
- **Infrastructure Services** – labor related to implementing and maintaining the organization's computers, systems software, and connectivity (e.g., server administration, data center operations)
- **Application Services** – 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

PTI also referenced its database of local government IT benchmarks to help the City understand how it compares to similar organizations and best practices.

This report presents the results of our work, including recommendations designed to help Pasadena improve its technology use and support its financial sustainability. Note that this assessment represents a point-in-time analysis and may not reflect changes after August 2009.

Summary of Findings and Recommendations

The following table summarizes the major findings, key recommendations, and resulting benefits detailed in the subsequent chapters of this document.

Technology Infrastructure Assessment Summary

Summary Finding	Key Recommendation	Major Benefits
1. The City does not have a formal, cohesive approach to IT governance	Adopt a structured, citywide model for making and communicating major IT investment decisions – utilizing appropriate processes and tools	<ul style="list-style-type: none"> • Provides a clear, repeatable streamlined, and informed process for making strategic IT decisions • Ensures consistent evaluation of IT initiatives
2. IT is not organized effectively to support citywide IT leadership	Establish an IT department under the City Manager’s Office, led by a Chief Information Officer responsible for maintaining the City’s IT vision and direction	<ul style="list-style-type: none"> • Provides executive-level input regarding City IT resources, capabilities, and opportunities • Places a citywide emphasis on leveraging IT • Manages IT performance measurement, standards and policy development
3. Contrary to best practices, Pasadena uses operations and maintenance (O&M) dollars to fund major IT projects	Use capital funds for major IT investments, including implementation labor	<ul style="list-style-type: none"> • Expands funding opportunities for major IT investments • Clarifies the cost of annual IT operations and maintenance

1

Technology Infrastructure Assessment Summary (continued)

Summary Finding	Key Recommendation	Major Benefits
<p>4. IT service delivery runs counter to best practices:</p> <ul style="list-style-type: none"> • The City diverts a large amount of IT O&M labor to major IT projects – leading to low overall IT O&M staffing levels • Application support is significantly understaffed • The City's distributed approach to commodity¹ IT support is not aligned with best practices 	<p>Reorganize IT service delivery, as follows:</p> <ul style="list-style-type: none"> • Maintain overall IT staffing levels and reallocate major IT project labor to business application support • Centralize commodity IT functions and enterprise application support • Retain business specific application support staff in the business units • Co-locate IT support staff within the business units when appropriate 	<ul style="list-style-type: none"> • Minimizes the diversion of IT O&M support resources • Facilitates business unit productivity by improving use of the City's applications • Enables central IT to provide improved, cost-effective IT support to business users • Places IT support staff where they can be the most productive
<p>5. Pasadena's data center and server environment is widely distributed</p>	<p>Consolidate city servers into two data centers</p>	<ul style="list-style-type: none"> • Reduces data center operations and support costs • Improves server performance

1

¹ For this analysis, PTI defines commodity IT support as a set of common technology-related functions that consist of customer services (e.g., help desk and PC support) and infrastructure services (e.g., server administration, network administration, data center operations).

In support of our analysis, the following table provides an illustration of PTI’s recommendations for reallocating IT labor effort across the City. The first three columns in the table represent central IT (ITSD) labor, the second three columns represent business unit IT labor, and the last three columns represent total citywide IT labor. Columns labeled “current” reflect Pasadena’s existing IT labor allocation. Columns labeled “target” indicate PTI’s recommended IT labor allocation. The “net change” column calculates the difference between current and target IT staffing levels. The rows classify labor effort into the five IT functions defined earlier.

Current and Recommended IT Staffing Allocation

	Central IT Effort			Business Unit IT Effort			Citywide IT Effort		
	Current	Target	Net Change	Current	Target	Net Change	Current	Target	Net Change
Customer Services	3.70	12.00	8.30	8.60	0.00	(8.60)	12.30	12.00	(0.30)
Infrastructure Services	16.40	21.00	4.60	6.10	0.00	(6.10)	22.50	21.00	(1.50)
Application Services	4.90	18.00	13.10	8.90	14.50	5.60	13.80	32.50	18.70
IT Planning	2.80	2.00	(0.80)	2.10	1.00	(1.10)	4.90	3.00	(1.90)
IT Administration	8.50	4.00	(4.50)	3.60	2.00	(1.60)	12.10	6.00	(6.10)
IT O&M Labor on Major IT Projects	4.80	0.00	(4.80)	4.30	0.00	(4.30)	9.10	0.00	(9.10)
Total	41.10	57.00	15.90	33.60	17.50	16.10	74.70	74.50	(0.20)



**This row represents IT O&M labor currently allocated to major IT projects*

It is important to recognize that the new IT service delivery model represents a target end state. Shifts in IT labor effort should take place incrementally. In addition, the FTEs quantified in this analysis aggregate the partial labor effort of many individuals, as most staff work in more than one major IT discipline. For example, the 12.30 FTEs shown as the current citywide effort devoted to customer services represent the contribution of 47 individuals from across the City.

Correspondingly, simply moving individual personnel may not achieve the desired result – and will certainly not provide the correct mix of skill sets. In short, **achieving the recommendations outlined in this study will require significant human resources planning – as well as some difficult management decisions.**

Chapter 3 describes PTI’s recommended IT service delivery reorganization in further detail.

Alignment with Strategic Goals

To ensure optimal use of limited resources, IT investments must be aligned with the City's core priorities. The following table outlines key benefits of the recommendations presented in this study, highlighting the attendant support provided to Pasadena's defined strategic goals.

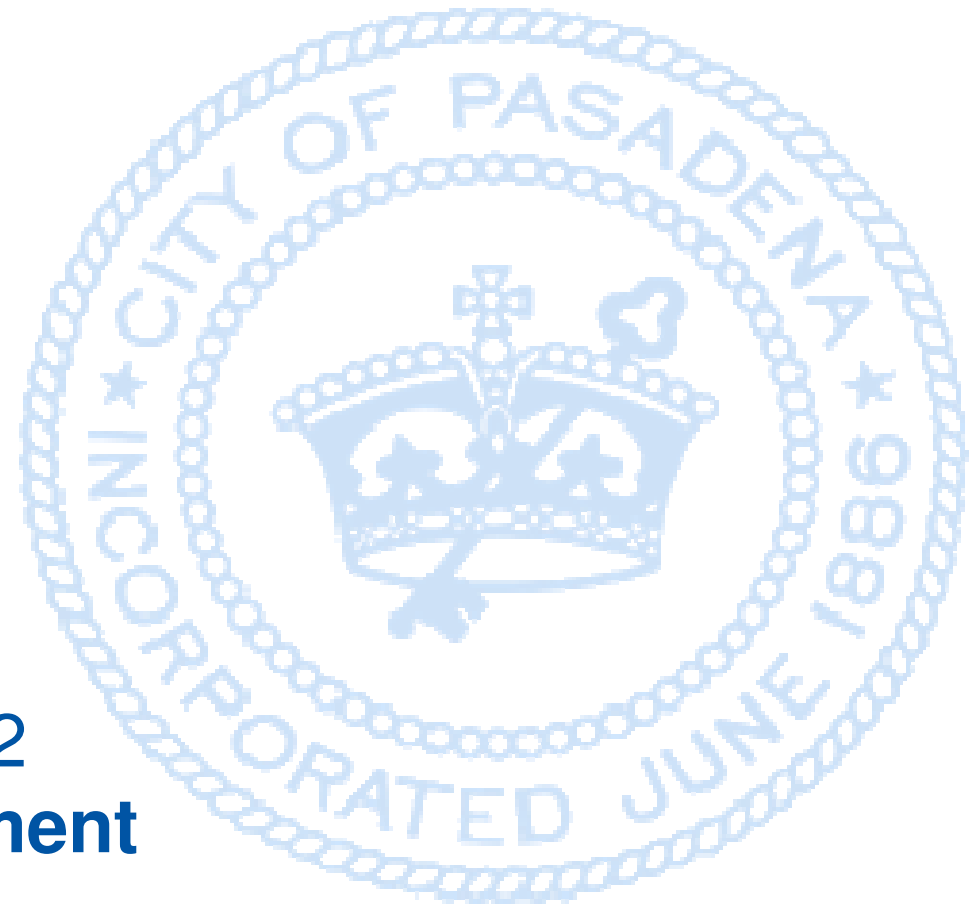
Pasadena's Strategic Goals:	PTI's Recommendations:
Fiscal Responsibility	<ul style="list-style-type: none"> • Improve citywide IT decision making – ensuring maximum return on IT investment • Leverage capital resources to expand IT investment • Increase IT service delivery efficiency • Reduce infrastructure expenditures • Encourage use of shared IT resources • Align IT funding methods with IT services and city strategic goals • Establish technology replacement funding to sustain an up-to-date technology environment
Public Infrastructure	<ul style="list-style-type: none"> • Maintain network and server infrastructure • Appropriately secure information assets • Increase support for mission-critical infrastructure software
Sustainability	<ul style="list-style-type: none"> • Streamline operations and increase efficiencies to support sustainable business practices • Minimize IT-related carbon "footprint" • Optimize use of available IT resources • Continue utilizing mobile technologies to reduce trips and minimize redundant data entry by city staff
Accessibility	<ul style="list-style-type: none"> • Increase IT decision making transparency and accountability • Provide consistent, reliable and responsive IT service and support
Local Economy	<ul style="list-style-type: none"> • Improve support for applications that will support local business and economic growth
Public Safety	<ul style="list-style-type: none"> • Ensure that city staff have up-to-date technology • Secure key IT assets and information • Prepare the City to continue operations in the event of a disaster • Improve public safety automation

The table below outlines the alignment of each PTI recommendation with Pasadena's strategic goals in more detail.

Recommendations Alignment with Strategic Goals

		Strategic Goals					
		Fiscal Responsibility	Public Infrastructure	Sustainability	Accessibility	Local Economy	Public Safety
IT Decision Making Recommendations							
DM.1	Implement citywide IT decision making	✓	✓	✓	✓	✓	✓
DM.2	Create and implement an IT organization transition plan	✓					
DM.3	Create a director-level CIO position	✓					
DM.4	Use capital funds for major IT investments	✓	✓				
DM.4	Improve the IT O&M finding model	✓					
DM.5	Define and report upon IT performance measures	✓					
DM.6	Establish a formal PC replacement fund	✓					✓
DM.7	Establish a server and infrastructure replacement fund	✓					✓
DM.8	Develop an enterprise application strategic plan	✓	✓	✓	✓	✓	✓
DM.9	Conduct a PeopleSoft replacement study	✓					
DM.11	After IT reorganization, evaluate outsourcing opportunities	✓		✓			
DM.12	Continue pursuing regional IT partnerships	✓	✓	✓			✓
IT Service Delivery Recommendations							
SD.1	Centralize commodity IT services	✓		✓	✓		
SD.2	Reallocate application support labor		✓	✓	✓	✓	✓
SD.3	Co-locate IT support staff within the business units		✓	✓	✓	✓	✓
SD.4	Establish a project management office	✓					
SD.5	Establish a Chief Security Officer position	✓					✓
SD.6	Establish a Customer Account Representative position	✓			✓		
SD.6	Establish a formal IT service management methodology	✓		✓			
SD.7	Increase IT staff specialization	✓	✓	✓	✓		✓
Technology Infrastructure Recommendations							
TI.1	Develop and communicate citywide technology standards	✓		✓			
TI.2	Consolidate servers into two data centers	✓		✓			
TI.3	Optimize server and network infrastructure	✓		✓	✓		
TI.4	Conduct an IT security assessment	✓	✓				✓
TI.5	Develop a disaster recovery plan	✓	✓	✓	✓		✓
TI.6	Expand wireless access on city campuses	✓	✓	✓	✓		

The remainder of this report expands upon the findings and recommendations outlined in this executive summary.



Chapter 2 Assessment

A viable technology assessment must take into account the City's current business and political environments as well as its current IT environment. This chapter explores the environmental trends driving the demand for information technology and presents PTI's current-state assessment of the major IT strengths and challenges at the City of Pasadena. It serves as important context for the recommendations presented in Chapter 3.

Business Context

With input from the project steering committee and over 75 city stakeholders, PTI assessed the environmental trends driving the demand for information technology in Pasadena. We organized the City's major business drivers into three broad categories: *fiscal constraints*, *increasing service demands*, and a *diverse and sophisticated community*. These demands and expectations require that the City employ technology to more effectively and efficiently deliver essential municipal services.

Fiscal Constraints

While the cost of service delivery increases, Pasadena has experienced consistently declining revenues. Building permits are down, vacancy rates are up and the City may face a deficit of \$95Mas early as 2014. These financial challenges are exacerbated by the State of California's financial crisis and generally bleak economic conditions. In addition, projections indicate that this is not a short-term problem. City costs will continue to grow at a rate that exceeds the revenue growth rate – creating a structural budget deficit in the general fund. This revenue shortfall may require up to a 10% reduction in City expenditures. As a result, Pasadena must cut spending and/or pursue additional revenue sources to sustain the level of municipal operations and services city stakeholders expect. Effective technology solutions can facilitate, and even augment, this process.

Increasing Service Demands

Pasadena faces increasing demands for online services, information, and interaction. Residents want to conduct transactions, access municipal records, receive services, and participate in government via the Internet. They also want environmental sustainability, expansive services (e.g., public health), responsible government, and prudent growth management. Balancing these expectations against the imperative to minimize costs places a high reliance on the workflow and communication capabilities offered by information technology. Pasadena must also contend with increasing stakeholder demands for greater operational transparency and accountability – areas that IT can also help facilitate.

Citizen demands and expectations require that Pasadena employ technology to more effectively and efficiently deliver essential municipal services.

A Diverse and Sophisticated Population

The City of Pasadena is well known as a center of technology and serves as a home for a number of organizations, businesses, and educational institutions, such as the national Jet Propulsion Laboratory and the California Institute of Technology. Due in part to its large population of knowledge workers, many of Pasadena's customers for city services routinely use technology – and expect it as part of “doing business” with government. Pasadena's constituents also tend to be growth conscious, with an expectation that their government to use taxpayer dollars wisely and to operate in a sustainable fashion. Still, more than 12 percent of the City's population is age 65 or over and another 16 percent of the population falls below the poverty line. Many of these residents continue to prefer “high touch” to “high tech” delivery of government services. In addition, Pasadena residents come from many diverse cultures and backgrounds. Nearly 45% of the City's population speaks a language other than English at home. Pasadena's challenge will be to employ technology – in both noticeable and transparent ways – to meet the needs of these diverse constituents.

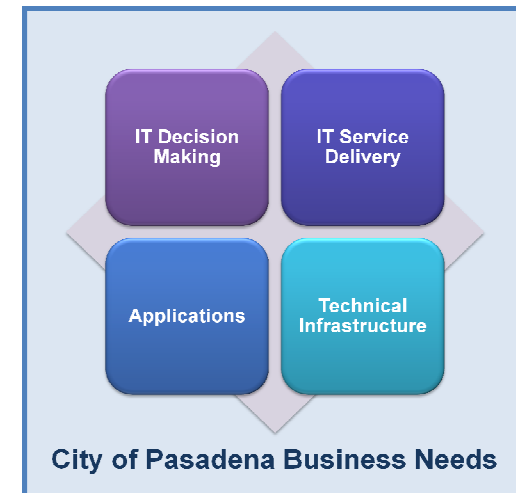
Assessment Summary

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

PTI validated findings and recommendations through direct feedback and planning workshops with the project's IT steering committee.

PTI organized this analysis around three of the four strategic IT focus areas, framed by Pasadena's overall business context:

- **IT Decision Making** – processes, roles, and tools to support IT planning and investment decisions
- **IT Service Delivery** – organizational structure and staffing approaches to support applications and infrastructure
- **Technical Infrastructure** – hardware, systems software, databases, and network components to support the City's applications
- **Applications** – although not within the scope of this assessment, PTI surfaced some findings described in the *Other Considerations* section of this chapter



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

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 the following 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 an ad hoc 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 to "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 three areas.

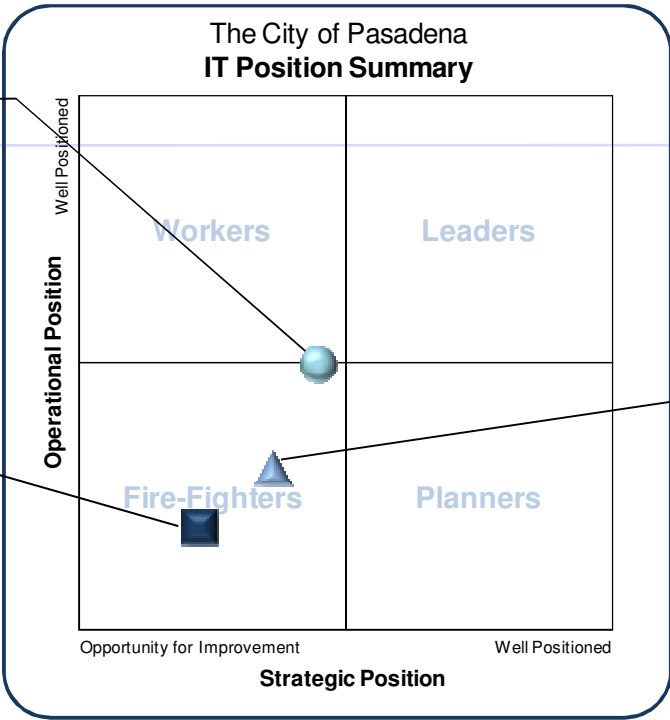
Since most organizations tend to improve operational efficiency as they conduct better planning processes, their IT position typically progresses along a linear trend line that starts at the bottom-left and moves to the top-right.

The figure on the following page illustrates the City of Pasadena's 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 IT spending, staffing, and infrastructure, and PTI's IT benchmarks for local government.

City of Pasadena Strategic IT Position Summary

Technical Infrastructure
 Although the City's PCs are largely standardized on a single operating system, a significant percentage are also out-of-date. In addition, Pasadena's server environment is widely distributed and the City lacks a formal disaster recovery plan.

IT Decision Making
 While many City leaders express a commitment to leveraging technology, the absence of strong IT leadership and the lack of a cohesive citywide process for making IT investment decisions result in ad hoc, uncoordinated IT investments.



IT Service Delivery
 Without a clear citywide vision for IT, IT service delivery tends to be reactive rather than proactive. Contrary to best practices, Pasadena's distributed approach to core IT services is inefficient and, with limited performance measurement and accountability in place, many business users lack confidence in central IT support.

Assessment Findings

This section details PTI's findings surrounding the City of Pasadena's current IT position. It includes a quantitative baseline for IT spending and staffing, as well as areas of strength and major 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.

\$12.4M

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

\$84

IT O&M spending per citizen in 2009²

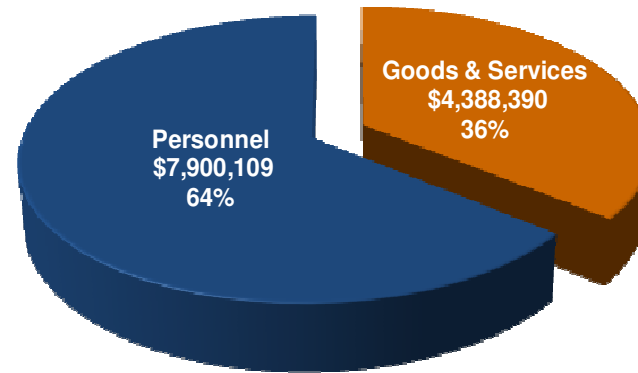
\$6,040

IT O&M spending per city FTE in 2009

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

Pasadena spends \$12.4 million – approximately 3.38% of its total operation and maintenance (O&M) expenditure – on technology O&M, inclusive of fully-burdened staff salaries, hardware and software maintenance, and other recurring technology-related expenditures.

City of Pasadena IT O&M Spending (2009)



	Expenditures	% of Total Operating Budget
Total City Operating Budget	\$363,047,073	
IT Operating Budget	\$12,288,499	3.38%
IT Goods & Services	\$4,388,390	1.20%
IT Services Division	2,640,486	
All Other Departments	1,021,634	
IT Personnel	\$7,900,109	2.18%
IT Services Division	4,137,828	
All Other Departments	3,762,281	

² Based on a population of 148,126 as provided by City of Pasadena staff

41.12

FTEs in the Information Technology Services Division (ITSD)

33.53

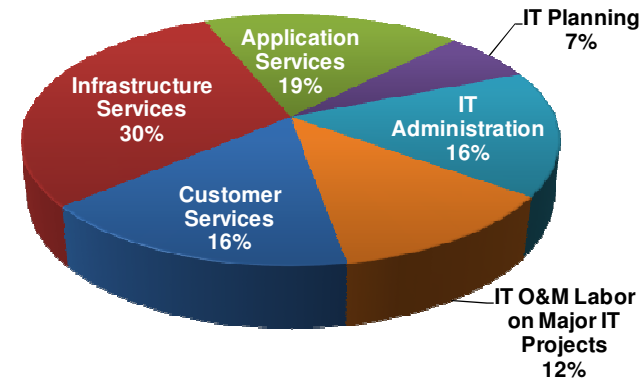
IT-titled FTEs in other city departments, including Libraries & Information Services, Water & Power, Planning & Development, and Finance

9.10

FTEs (of the numbers shown above) support major IT projects

The Information Technology Services Division (ITSD), comprised of 41.12 full-time equivalents (FTEs),³ provides *application support, network infrastructure support, and customer support* to over 2,000 city staff. Additionally, eleven (11) other departments have IT staff supporting these same disciplines.

City of Pasadena IT O&M Staffing Allocation
(all departments)



*Values in the table below are rounded to the nearest tenth.

	ITSD	Business Units	Total
Customer Services	3.70	8.60	12.30
Infrastructure Services	16.40	6.10	22.50
Application Services	4.90	8.90	13.80
IT Planning	2.80	2.10	4.90
IT Administration	8.50	3.60	12.10
IT O&M Labor on Major IT Projects	4.80	4.30	9.10
Total	41.10	33.60	74.70

The following sections describe findings derived from the above data as well as from interviews and focus groups with city staff, additional quantitative information, IT-related documentation and data center walkthroughs. PTI utilizes this assessment to determine the difference between Pasadena’s current performance and the potential for the future. Where the gap is large, opportunities for improvement exist. We organize our findings around the three strategic IT focus areas within our scope:

- IT decision making
- IT service delivery
- Technical infrastructure

At the conclusion of this chapter, we also outline other considerations surfaced by PTI that focus on Pasadena’s application portfolio – although an in-depth review of the City’s business software was beyond this project’s scope.

IT Decision Making

IT decision making encompasses the processes, roles, and tools that support IT planning and investment. Effective use of technology depends on an organization’s ability to make knowledgeable technology investment decisions that align with its business needs. From a strategic perspective, IT decision making 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>City executives and senior management are committed to improving citywide information technology</p> <p><i>Coping with Pasadena’s difficult budget climate while ensuring stakeholders continue to receive high quality services requires carefully planned and executed investments. City management views technology as a conduit for operating more efficiently and effectively.</i></p>	<ul style="list-style-type: none"> • Aligns IT investments with citizen and budget priorities • Assures city staff that IT is a priority

While many City leaders express a commitment to leveraging technology, the absence of strong IT leadership and the lack of a cohesive citywide process for making IT investment decisions result in ad hoc, uncoordinated IT investments.

Pasadena's IT operations and maintenance (O&M) expenditures fall within PTI's target range for local government.

Finding	Impacts
<p>Pasadena's IT operations and maintenance (O&M) expenditures fall within PTI's target range for local government⁴</p> <p>The City spends approximately 3.38% of its total O&M expenditure on IT O&M.</p> <div data-bbox="499 367 1159 732" data-label="Figure"> <p>IT O&M Spending as a Percentage of Citywide O&M spending</p> <p>0% 2.5% 4.5%</p> <p>City of Pasadena 3.38%</p> </div>	<ul style="list-style-type: none"> • At a strategic level, Pasadena adequately funds IT O&M activities
<p>Pasadena is a regional IT partner for digital radio systems</p>	<ul style="list-style-type: none"> • Encourages a regional approach to critical business and technology issues affecting citizens, neighboring jurisdictions and other key stakeholders • Leverages economies of scale to reduce costs
<p>City departments demonstrate interest in pursuing shared application investments</p> <p>Through interviews and focus groups conducted by PTI during the assessment phase, most managers and end users expressed a desire to increase collaboration and pursue shared technology investments.</p>	<ul style="list-style-type: none"> • Enhances the City's return on application investments • Increases software user base and expands knowledge sharing opportunities

⁴ PTI's O&M spending target range, and associated calculations, exclude specific non-IT related costs and soft-dollar transfers such as depreciation expense, debt service, internal service charges, and capital IT project labor.

Opportunities for Improvement

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

Finding	Impacts
<p>Pasadena lacks a citywide approach to IT decision making</p> <p>Contrary to best practices, the City does not employ an enterprise IT governance model. There is no effective interdepartmental body or structured process for identifying and prioritizing IT investments. Technology needs and solutions are not well communicated between ITSD and business units. Additionally, current IT decision making processes rely on limited business and financial analysis.</p>	<ul style="list-style-type: none"> • Results in inconsistent or ad hoc technology decisions and investments – which may not align with City strategic goals • Offers no clear criteria for prioritizing technology projects • Results in missed opportunities to achieve economies of scale or to leverage similar project efforts • Provides no uniform mechanisms to define, track, and assess project outcomes • Delays or stalls technology investments as staff resources are reallocated to shifting priorities
<p>The City has no formal IT vision</p> <p>Pasadena has not formally adopted a vision or goal state for citywide IT and, as such, has no clear overall direction for deployment of information technology.</p>	<ul style="list-style-type: none"> • Risks IT investments not aligning with the desired direction for IT • Increases the likelihood IT processes will remain unguided for the future
<p>Contrary to best practices:</p> <ul style="list-style-type: none"> • Operations and maintenance (O&M) dollars fund most large IT projects⁵ – Pasadena does not utilize capital funding for major IT investments • The City diverts a significant amount of IT O&M labor to large IT projects – more than nine FTEs of salaried IT labor support Pasadena's IT projects 	<ul style="list-style-type: none"> • Leads to fluctuating, less predictable, annual technology spending • Obscures the true cost of annual IT operations • Limits funding opportunities for major IT projects and can encourage suboptimal (i.e., "pennywise and pound foolish") IT investments • Diverts support away from IT O&M functions • Encourages departmental budget increases to support one-time purchases of IT hardware and services
<p>Pasadena lacks IT performance and accountability measures</p> <p>The City currently does not define, track, nor communicate enterprise-wide IT performance metrics.</p>	<ul style="list-style-type: none"> • Inhibits effective IT governance • Hinders the City's ability to identify and address service issues • Contributes to a lack of confidence in centralized IT service delivery

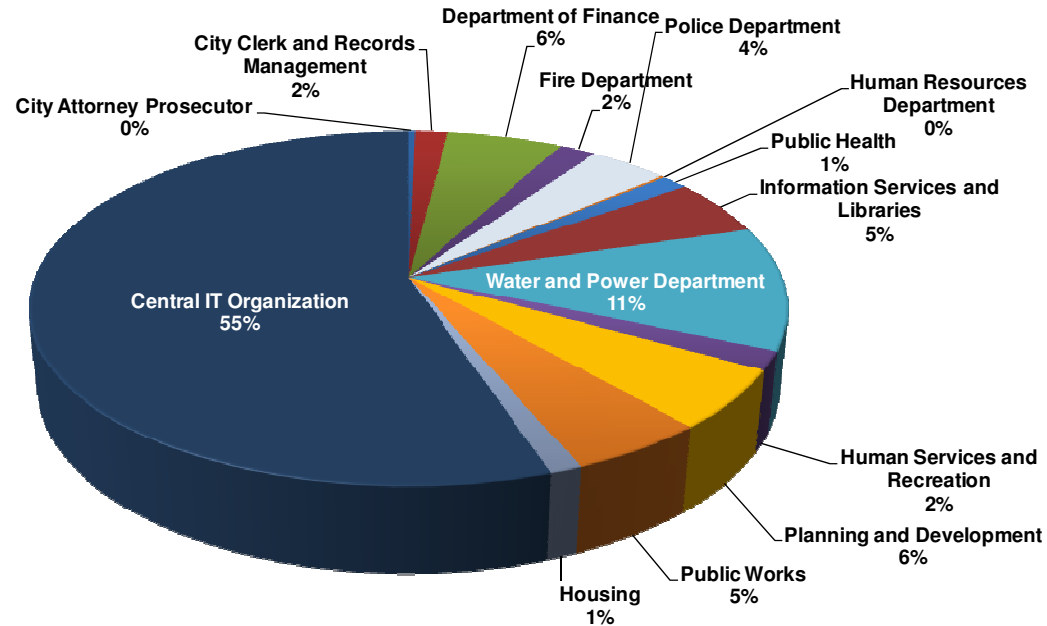
Pasadena lacks a citywide approach to IT decision making.

2

Finding	Impacts
<p>IT O&M spending authority is widely distributed ITSD spending accounts for only 55% (\$6,778,314) of total City IT O&M expenditures (\$12,288,499). See figure below.</p>	<ul style="list-style-type: none"> • Allows the purchasing of redundant goods and services • Increases the difficulty of managing the City's IT expenditures and environment • Obscures the citywide cost of technology • Leads to a heterogeneous IT environment and architecture • Enables "siloed" IT decision making

IT O&M spending authority is widely distributed.

Distribution of IT-related O&M Expenditures by Department (includes shadow IT staff)



Finding	Impacts
<p>The City lacks an integrated IT asset inventory Pasadena does not track or maintain a consolidated citywide inventory of its information technology hardware, software, and data assets.</p>	<ul style="list-style-type: none"> • Complicates hardware refreshes • Impedes disaster recovery planning • Diminishes ability to account for IT assets
<p>Pasadena does not utilize a technology replacement fund The City does not allocate funding annually nor have a formal schedule for replacing key IT assets (e.g. PCs, servers) when they reach end-of-life.</p>	<ul style="list-style-type: none"> • Risks large, unplanned, technology expenditures to replace key IT assets • Prevents Pasadena from leveraging the potential cost savings offered by a planned replacement cycle • Complicates the process for replacing and/or upgrading IT assets
<p>Limited management information is available regarding the true cost of IT investment Pasadena does not collect information regarding IT spending, IT assets and IT support on a citywide basis.</p>	<ul style="list-style-type: none"> • Increases the difficulty of making prudent IT investment decisions • Hinders IT performance measurement and accountability • Encourages siloed IT decision making
<p>Pasadena's IT O&M funding model deviates from best practices The ITSD chargeback model does not consistently tie fees to the goods and services received nor does it align well with City strategic goals. Most notably:</p> <ul style="list-style-type: none"> • Headcount-based charges (i.e., 8624 – Enterprise Network, 8641 – ITSD-MS Licensing) result in disproportionate costs for some departments • Some chargeback methods (i.e., 8632 – ITSD-AD&S-GIS, 8612 – PC & Net Service Center) discourage use of ITSD services <p>In addition, chargeback calculations are not well communicated by ITSD and not well understood by business users.</p>	<ul style="list-style-type: none"> • Creates barriers to collaboration among business units and ITSD • Inhibits ability to evaluate sourcing alternatives (e.g., cloud computing) by making cost comparison with alternative service providers difficult • Contributes to a lack of confidence in centralized IT service delivery

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.

PTI utilized its proprietary IT labor analysis tools to gather information surrounding IT labor effort at the City of Pasadena. The matrix asked each IT-titled employee to allocate the time he or she spends performing a variety of functions in five key IT disciplines: customer support, infrastructure support, application support, IT planning, and IT administration.⁶ This data, when combined with PTI's technical inventory, enables a comparison of city IT labor effort to industry best practices, PTI target ranges, and IT staffing in other government organizations.

Strengths

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

Finding	Impacts
<p>Business users find ITSD staff hard-working and helpful</p> <p>In interviews and focus groups conducted by PTI, staff reported that:</p> <ul style="list-style-type: none"> ITSD personnel are skilled and dedicated Tier 1 help desk services for basic IT support (e.g., email, PC operating systems) are responsive and effective Telecommunications support is customer-oriented and well regarded 	<ul style="list-style-type: none"> Builds strong individual IT service relationships Increases willingness of staff to contact ITSD for support
<p>Business units are largely satisfied with their departmental IT support</p> <p>Eleven departments maintain their own full-time or part-time IT staff, some providing the complete range of IT support services. City staff reported that business unit IT personnel:</p> <ul style="list-style-type: none"> Provide good IT service Understand business needs Possess specialized application knowledge Offer support during extended business hours (e.g., Library Information Services) 	<ul style="list-style-type: none"> Reinforces departments' desire to maintain their own IT staff Effectively leverages business-specific application knowledge and skills Encourages IT staff to develop in-depth understanding of business operations

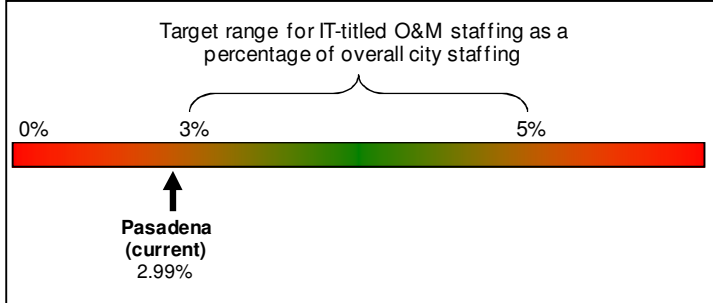
Business users find ITSD personnel hard-working and helpful.

⁶ Definitions for each of these five IT functions are available in Appendix B.

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

Opportunities for Improvement

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

Finding	Impacts
<p>The City's IT-titled O&M staffing level falls below PTI's target range for local government⁷</p> <p>Pasadena's IT O&M labor as a percentage of citywide O&M labor is 2.99% – below the lower end of PTI's target range – and not commensurate with the City's desire to utilize IT as a strategic tool. This dearth of IT-titled O&M labor is largely attributable to 9.10 FTEs of effort allocated toward major IT projects.</p> <p>Target range for IT-titled O&M staffing as a percentage of overall city staffing</p>  <p>The chart displays a horizontal bar with a color gradient from red on the left to green on the right. The x-axis is labeled with 0%, 3%, and 5%. A bracket above the bar spans from the 3% mark to the 5% mark, labeled 'Target range for IT-titled O&M staffing as a percentage of overall city staffing'. An arrow points to the 2.99% mark on the x-axis, labeled 'Pasadena (current) 2.99%'. The 2.99% mark is to the left of the 3% mark, indicating it is below the target range.</p>	<ul style="list-style-type: none"> • Provides only a basic level of IT support • Diminishes Pasadena's ability to leverage IT tools and processes to improve business practices • Compromises the City's ability to develop, install, configure, and maintain business applications – a more significant issue in light of the City's extensive application portfolio and use of high-end applications (e.g., PeopleSoft) • Hinders Pasadena's ability to strategically plan for and effectively administer IT systems and services
<p>With the exception of customer services⁸, Pasadena's IT staffing labor allocation does not fall within PTI's target ranges</p> <p>The City expends an undue amount of labor effort on overhead tasks and functions (i.e., IT planning, IT administration). Application services are significantly understaffed (see chart on the following page). A significant portion of IT O&M labor has been diverted to major IT projects (see table on the following page).</p>	<ul style="list-style-type: none"> • Promotes the creation of various workarounds as staff struggle to implement and utilize technology effectively • Impairs effective use of the City's installed applications, reducing the value of those investments • Erodes Pasadena's ability to provide ongoing, long-term support for applications that are fundamental to operations

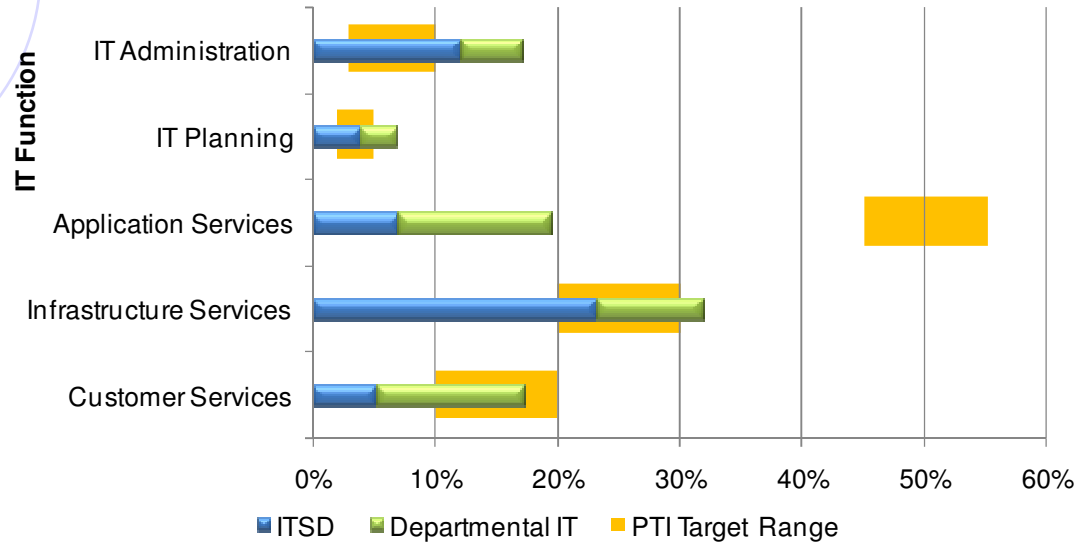
⁷ PTI's target benchmarks are based upon IT spending, staffing, and inventory data collected from industry best practices, surveys, and local government clients since 1993. These target benchmarks are updated annually.

⁸ Customer services includes those activities related to directly supporting users of IT systems and services (e.g., help desk services/Tier 1 support, Tier 2 support, user training, personal productivity tool support).

The figure below depicts the overall distribution of Pasadena's IT-titled labor effort across the five IT functions. The blue segments denote the proportion of the work performed by ITSD staff, while the green segments represent IT-titled staff in other departments. The yellow rectangles indicate PTI's target range for each IT function. The table underneath it presents current FTE data for each area.

Pasadena's IT staffing labor allocation does not fall within PTI's target ranges.

City of Pasadena's Current IT Staffing Allocation Relative to PTI's Target Ranges



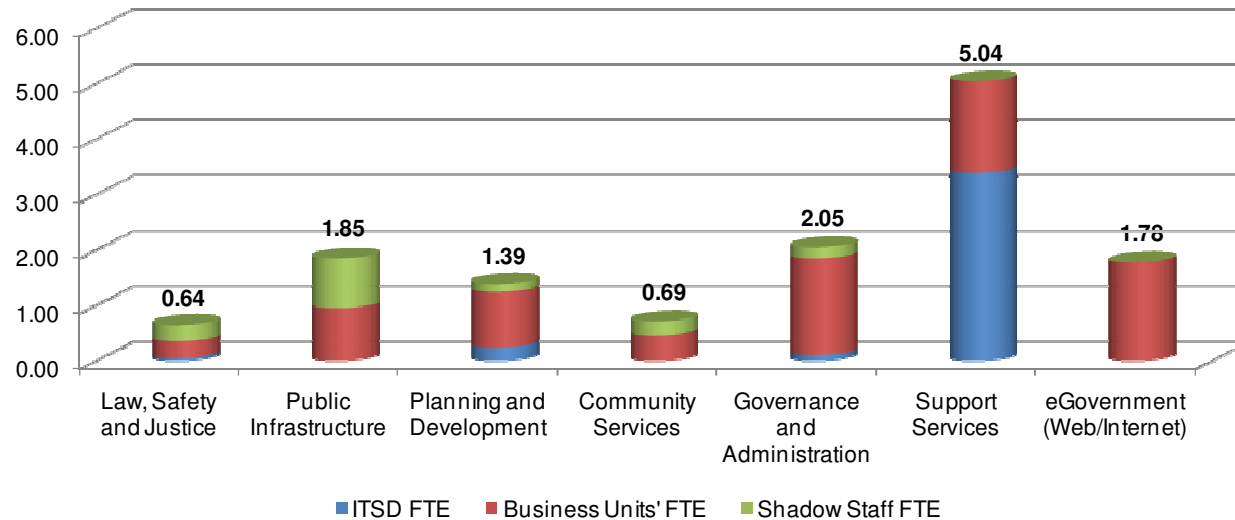
City of Pasadena's Current IT Staffing Allocation

	Central IT Effort	Business Unit IT Effort	Citywide IT Effort
	Current	Current	Current
Customer Services	3.70	8.60	12.30
Infrastructure Services	16.40	6.10	22.50
Application Services	4.90	8.90	13.80
IT Planning	2.80	2.10	4.90
IT Administration	8.50	3.60	12.10
IT O&M Labor on Capital IT Projects	4.80	4.30	9.10
Total	41.10	33.60	74.70

Findings	Impacts
<p>Applications are significantly under-supported – notably in Police and Fire</p> <p>Only 0.64 FTEs support Law, Safety, and Justice⁹ applications – a critical municipal services area. Planning and Development and Community Services receive insufficient application services as well, with 1.39 and 0.69 FTEs respectively. Public Infrastructure relies heavily on shadow staff¹⁰ for application support and even Support Services is understaffed given the City's breadth of applications in that particular areas.</p>	<ul style="list-style-type: none"> • Undermines Pasadena's ability to achieve its IT vision • Erodes the City's ability to provide ongoing, long-term support for core business applications • Impairs ability of the business units to take full advantage of the capabilities inherent in many of the City's high-end applications • Contributes to service delays

Applications are significantly under-supported.

Application Support by Functional Area (including shadow staff)



⁹ Police and Fire software (e.g., record management systems) are included within the Law, Safety, and Justice applications area.

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

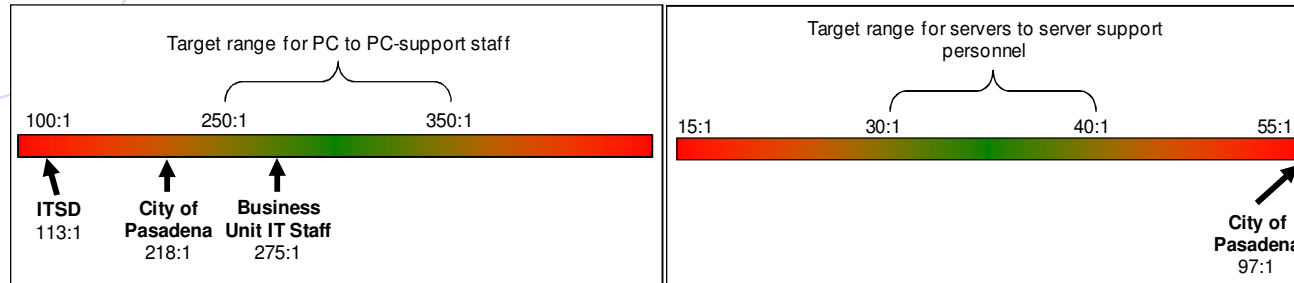
Findings	Impacts
<p>Citywide IT staff are insufficiently specialized – especially in customer services, IT planning, and IT administration</p> <p>Out of 85 City staff performing some sort of IT support task or function, 44 (~52%) of them allocate time to IT planning and 57 (~67%) of them allocate time to IT administration. Of these, the average labor effort per staff member was 0.11 FTEs for IT Planning and 0.21 FTEs for IT Administration. This indicates a significant lack of specialization among IT staff at the City. Analysis of other functional areas produced similar results.</p>	<ul style="list-style-type: none"> • Exacerbates service delivery inefficiencies • Confuses support services for business unit customers • Limits depth of IT staff expertise

Citywide IT staff is insufficiently specialized.

IT Specialization Analysis

	IT-Titled Staff Only		
	Number of people performing this task	Percent of these people spending less than 0.15 FTE on this task	Average FTE per person spent on this task
Major IT Functions			
Customer Services	47	40%	0.26
Help Desk (Tier 1)	23	61%	0.15
Tier 2 PC Support	27	67%	0.20
IT Planning	44	73%	0.11
IT Administration	57	58%	0.21

Findings	Impacts
<p>Pasadena's PC and server support ratios do not fall within PTI's target range</p> <p>Combined with the IT labor allocation described earlier, this indicates that the City has excess PC support capacity as well as excess server (not server support) capacity.</p>	<ul style="list-style-type: none"> Increases costs related to PC support Diverts support away from other key IT support functions



The City has no agreed-upon IT service management methodology or approach.

Findings	Impacts
<p>The City has no agreed-upon IT service management methodology or approach</p> <p>Without an agreed and communicated citywide vision for IT, service delivery tends to be reactive rather than proactive. Operations and maintenance priorities frequently shift and efforts are often prioritized based on “squeaky wheel gets the grease” rather than on well-defined, well-understood criteria. Notable concerns include:</p> <ul style="list-style-type: none"> Poor prioritization of IT service requests Inconsistent communication regarding status Lack of clearly understood roles, responsibilities, and contacts 	<ul style="list-style-type: none"> Leads to an inability to effectively support ongoing operations and maintenance of technology investments Leaves some business units resistant to centralized IT service delivery Promotes business unit confusion regarding who to contact for IT support Limits skill set specialization because IT staff are often asked to perform an excessively broad range of duties
<p>IT service accountability is not measured or monitored</p> <p>Pasadena does not currently utilize formal benchmarks (e.g., customer satisfaction surveys, incident response time reporting) to evaluate IT service delivery, negatively impacting the City's ability to enforce accountability.</p>	<ul style="list-style-type: none"> Leads to an inability to effectively support ongoing operations and maintenance of technology investments Leaves some business units resistant to centralized IT service delivery

IT service accountability is not measured or monitored.

2

Findings	Impacts
<p>Many business users perceive that ITSD:</p> <ul style="list-style-type: none"> • Ineffectively collaborates with other departments • Does not understand business needs • Offers poor application support and training • Lacks sufficient IT skills in some areas: <ul style="list-style-type: none"> ✓ Business analysis ✓ Project management ✓ Customer relationship management ✓ Business process change/reengineering 	<ul style="list-style-type: none"> • Contributes to business unit frustration • Inhibits business functions as departments remain uninformed and/or uninvolved • Hinders the City's ability to effectively analyze business needs, implement appropriate solutions and manage large scale projects • Fosters dissatisfied end users, unexpected scope creep, budget overages, and inconsistent timelines • Reduces IT support capabilities
<p>Pasadena's IT staff are not adequately cross-trained and lack backup support for key applications</p> <p>Frequently, IT personnel do not have appropriate skills or prior knowledge to effectively respond to continuing service needs or issues when colleagues are unavailable.</p>	<ul style="list-style-type: none"> • Contributes to business unit frustration • Fosters dissatisfied end users, unexpected scope creep, budget overages, and inconsistent timelines • Reduces IT support capabilities
<p>No single individual has responsibility for IT security</p> <p>Although the City appears to have strong network security, the City has not formally designated any individual with IT security officer or policy-setting responsibilities.</p>	<ul style="list-style-type: none"> • Leaves IT security dependent on ad hoc efforts • Over time, increases likelihood of a security vulnerability
<p>Some business users express concerns regarding IT support coverage</p> <p>The lack of off-hours IT support presents significant risk for public safety, which operates on a 24/7 basis. Additionally, technology infrastructure maintenance conducted just outside of normal 8 to 5 business hours frequently disrupts business units that operate on non-standard schedules, such as Public Works or Finance and Information Services during budget season.</p>	<ul style="list-style-type: none"> • Limits support for business units that operate on non-standard schedules such as police and fire • Decreases operational efficiency

Technical Infrastructure

Technical infrastructure refers to the hardware, networks, databases, and operating systems that support the City’s 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 is beginning to utilize server virtualization¹¹ Most of Pasadena Water & Power’s server environment has been virtualized. ITSD recently pilot tested virtualization approaches and plans for a broader implementation in the near future.</p>	<ul style="list-style-type: none"> Decreases physical servers and associated costs Utilizes hardware more efficiently Reduces server-related “carbon footprint”
<p>Pasadena employs robust network security for external threats The City’s firewalls, security procedures, monitoring tools, and spam filtering ensure that technology assets continue functioning and important data remains inaccessible to unauthorized parties.</p>	<ul style="list-style-type: none"> Ensures strong defense against viruses, and spam originating outside of the City’s core network
<p>The City’s fiber network is secure and reliable Pasadena experiences little to no unplanned network outages</p>	<ul style="list-style-type: none"> Minimizes disruptions to business operations Increases end user confidence

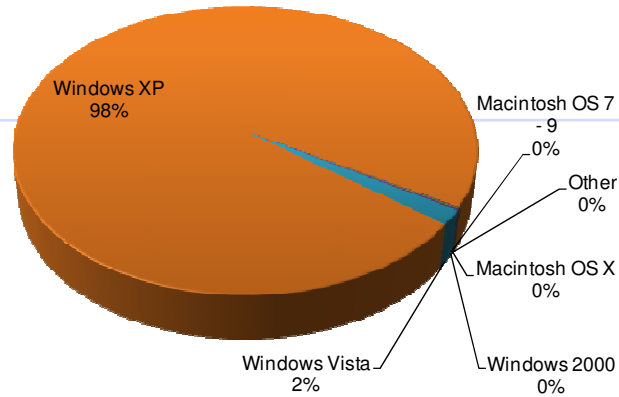
Finding	Impacts
<p>Nearly all of Pasadena’s PCs are standardized on a single personal computer operating system More than 98% of the City’s PCs run on Windows XP (as indicated by the graphic below). Note that Microsoft ceased mainstream support for Windows XP in April 2009 but offers security patches (free) and extended support (by contract) until April 2014.</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 infrastructure maintenance costs

The City is beginning to utilize server virtualization.

¹¹ The use of software to emulate multiple server environments on one physical server.

Nearly all of Pasadena's PCs are standardized on a single personal computer operating system.

PC Operating Systems



2

Finding	Impacts
<p>Telecommuting works well Through interviews and focus groups conducted by PTI during the assessment phase, users report consistent success logging into the City network remotely and using telecommuting tools.</p>	<ul style="list-style-type: none"> • Allows employees to access applications and information while away from City offices • Streamlines business processes • Increases end user satisfaction
<p>Field connectivity is reliable for mobile workers (e.g., Public Works, Fire, Parks and Recreation) Users reported satisfaction and success conducting business away from City campuses.</p>	<ul style="list-style-type: none"> • Extends employees' ability to access information and services while in the field • Reduces trips to main facilities – increasing operational efficiency • Delivers valuable municipal services to stakeholders where they live and work
<p>The City's telephone and radio systems are undergoing significant upgrades (ICIS & IVR/IWR replacement).</p>	<ul style="list-style-type: none"> • Reduces telephony expenses • Increases infrastructure efficiencies • Reduces infrastructure maintenance costs and labor effort • Diminishes server-related "carbon footprint"

Contrary to best practices, the City's server environment is widely dispersed.

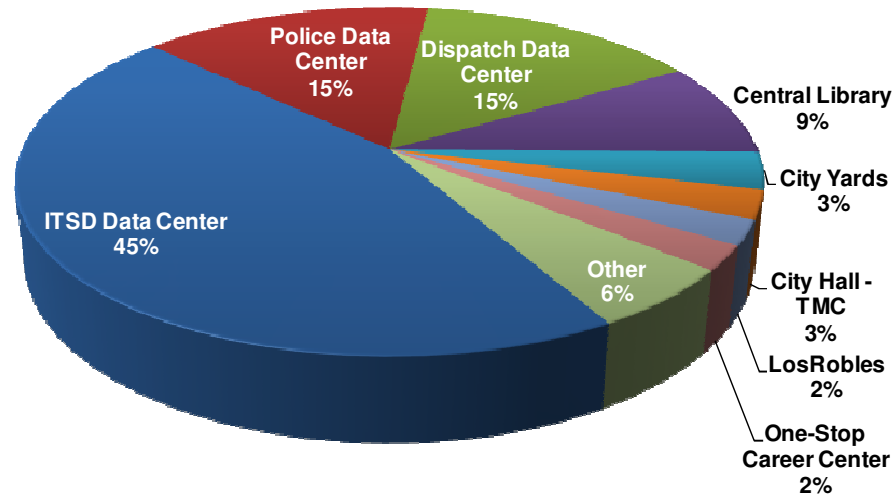
Opportunities for Improvement

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

Finding	Impacts
<p>Contrary to best practices, the City's server environment is widely dispersed</p> <p>Pasadena supports four data centers: ITSD, police, dispatch, library. Each of these requires redundant data storage infrastructure, monitoring tools, backup power, and environmental controls. In addition, 43 servers are located in 11 closets or ad hoc environments.</p>	<ul style="list-style-type: none"> • Distributes server hardware among facilities – increasing expenses and labor effort compared to centralized models • Houses servers in locations with suboptimal security, power and environmental controls • Complicates disaster recovery and continuity of operations planning • Increases the City's IT-related "carbon footprint"

2

Physical Server Locations



The City does not have a formal disaster recovery plan.

Finding	Impacts
<p>The City does not have a formal disaster recovery plan</p> <p>Pasadena has not developed or tested an approach to continuing operations in the event of a disaster.</p>	<ul style="list-style-type: none"> • Weakens Pasadena’s ability to resume operations in the even of a major service interruption or local natural disaster
<p>Pasadena lacks a backup data center</p> <p>Although backup tapes are stored offsite, the City does not maintain an emergency backup data center to resume municipal operations in the event of a major catastrophe or outage that renders the data centers in the Police building inoperable.</p>	<ul style="list-style-type: none"> • Increases risks surrounding operations during and/or after a disaster or emergency • Potentially decreases Pasadena’s ability to provide needed services – especially during an emergency
<p>Server virtualization is not widely implemented</p> <p>Only the Water & Power department consistently employs virtualization to optimize server utilization and reduce costs.</p>	<ul style="list-style-type: none"> • Raises costs associated with maintaining excess hardware • Increases server support requirements
<p>The City lacks citywide technology standards</p> <p>Pasadena does not have common enterprise configurations for PCs, printers, scanners, servers, or wireless devices.</p>	<ul style="list-style-type: none"> • Reduces bulk purchasing opportunities • Complicates IT support
<p>Pasadena does not have a formal approach to information sharing and database management</p> <p>The City reported using a variety of different database platforms, including Oracle, SQL, Microsoft Access, and a number of proprietary databases. No clear criteria exist for making DBMS product determination.</p> <p>In addition, end users reported records management and data stores, redundant data across departments, and insufficient storage capabilities.</p>	<ul style="list-style-type: none"> • Complicates the City’s data storage environment • Increases difficulty associated with integrating existing information • Expands the City’s data storage requirements
<p>Some departments report that the City’s procedures surrounding security are too restrictive</p> <p>Business users reported ponderous and bureaucratic security restrictions.</p>	<ul style="list-style-type: none"> • Hinders third-party vendor support for key applications • Slows or delays business operations

2

Network connections to some remote sites are slow.

Finding	Impacts
<p>Network connections to some remote sites are slow (e.g. community centers)</p> <p>Some outlying locations (e.g., community centers) experience sluggish response due to inadequate bandwidth.</p>	<ul style="list-style-type: none"> • Impedes worker productivity • Leaves the City poorly positioned for future high bandwidth applications
<p>City buildings lack wireless network access and internet connectivity is not available in city conference rooms</p> <p>Most conference rooms do not offer Internet connectivity and none have wireless access points.</p>	<ul style="list-style-type: none"> • Limits operational efficiency while on city campuses • Creates a barrier to information access while in staff and team meetings

Other Considerations

This section describes other considerations surfaced by PTI during the assessment phase. These findings focus primarily on Pasadena's application portfolio – although an in-depth review of the City's business software was beyond this project's scope.

Applications

Applications center on the software used to support core business functions. PTI reviewed Pasadena's software inventory and gathered additional application information through interviews and focus groups.

Strengths

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

Finding	Impacts
<p>Nearly all business functions have some level of automation</p> <p>Some core city functions with automation in place include: human resources (P2K), timekeeping (IntelliTime), public safety (NetRMS and Premier), permitting (Tidemark) and utility billing (ECIS).</p>	<ul style="list-style-type: none"> • Enhances municipal services • Supports business operations • Streamlines business processes • Increases productivity
<p>The City has implemented several market-leading software products</p> <p>Leading automation software and supported business functions include: PeopleSoft Financials (finance), Horizon (library management), Firehouse (fire records management), and ActiveNet (parks and recreation).</p>	<ul style="list-style-type: none"> • Provides ample software capability to meet Pasadena's business needs • Offers large user groups for increased software support and feedback • Over time, typically increases software reliability and functionality
<p>Pasadena is currently redesigning its website and is deploying a new content management system</p>	<ul style="list-style-type: none"> • Improves transparency and accessibility of city government • Reduces customer traffic at city facilities • Potentially reaches a broader audience

Nearly all business functions have some level of automation.

The City's application portfolio is not well architected and lacks integration.

Opportunities for Improvement

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

Finding	Impacts
<p>The City's application portfolio is not well architected and lacks integration</p> <p>Most of the Pasadena's major applications are not integrated. A significant portion of electronic data at the City resides in personal or departmental applications.</p>	<ul style="list-style-type: none"> • Silos data and information in one-off solutions – inhibiting efficient business operations and data sharing • Requires redundant data entry – increasing data errors • Places a higher reliance on institutional knowledge • Hampers decision support capabilities
<p>Pasadena's current website design and capabilities are out-of-date</p> <p>Through interview and focus groups conducted by PTI, city staff indicated that the City's current website offers limited self-service functions and features.</p>	<ul style="list-style-type: none"> • Limits online citizen self-service • Hinders public information access
<p>Future support for Pasadena's permitting automation (Tidemark) is uncertain</p> <p>Since Accela's purchase of Tidemark, Accela has begun to migrate users to its newer product, Automation. Although Accela offers this migration path, the upgrade is quite expensive and it is unclear how long Accela will continue support for the City's existing permitting application.</p>	<ul style="list-style-type: none"> • Jeopardizes the City's permitting processes and associated revenue • Potentially subjects Pasadena to the risks associated with operating unsupported software (e.g., system failure, system incompatibilities, software bugs) • Threatens a significant, unplanned replacement or upgrade expense
<p>The City has limited business intelligence capability</p> <p>Pasadena currently has no decision support or business intelligence automation.</p>	<ul style="list-style-type: none"> • Provides inadequate and/or slow information for decision-making • Impairs the City's ability to make knowledgeable business decisions
<p>Pasadena has a fragmented approach to maintenance management automation</p> <p>The City reported more than a dozen software applications supporting various maintenance management business processes – most of which are custom developed.</p>	<ul style="list-style-type: none"> • Impedes the adoption of standard maintenance processes across the City • Requires redundant data entry • Impairs data gathering and attendant decision making

2

* * * * *

After validating these findings in a series of workshops and follow-up interviews, PTI developed recommendations designed to build upon Pasadena's existing strengths and address the opportunities for improvement identified in this chapter. Chapter 3 presents these recommendations.

2



Chapter 3 Recommendations

This chapter describes specific recommendations for improving the efficiency and effectiveness of IT at the City – aligned with Pasadena’s strategic goals.

Recommendations

Once again, our recommendations are organized along the following three IT focus areas.

- IT Decision Making
- IT Service Delivery
- Technical Infrastructure

PTI validated these recommendations with the project’s steering committee at a Recommendations Validation Workshop. Within each focus area, we present our recommendations in a preliminary order of precedence, although many may be implemented concurrently. As this chapter indicates, the City will need to develop a detailed transition plan to achieve the desired outcomes.

IT Decision Making

IT decision making represents a foundational element of effective IT service and support because it directs how Pasadena plans for, allocates and manages its IT resources. The recommendations outlined this section target improvements to the IT governance structures, roles, responsibilities, tools, and processes at the City of Pasadena.

Implement a citywide forum for making major IT investments.

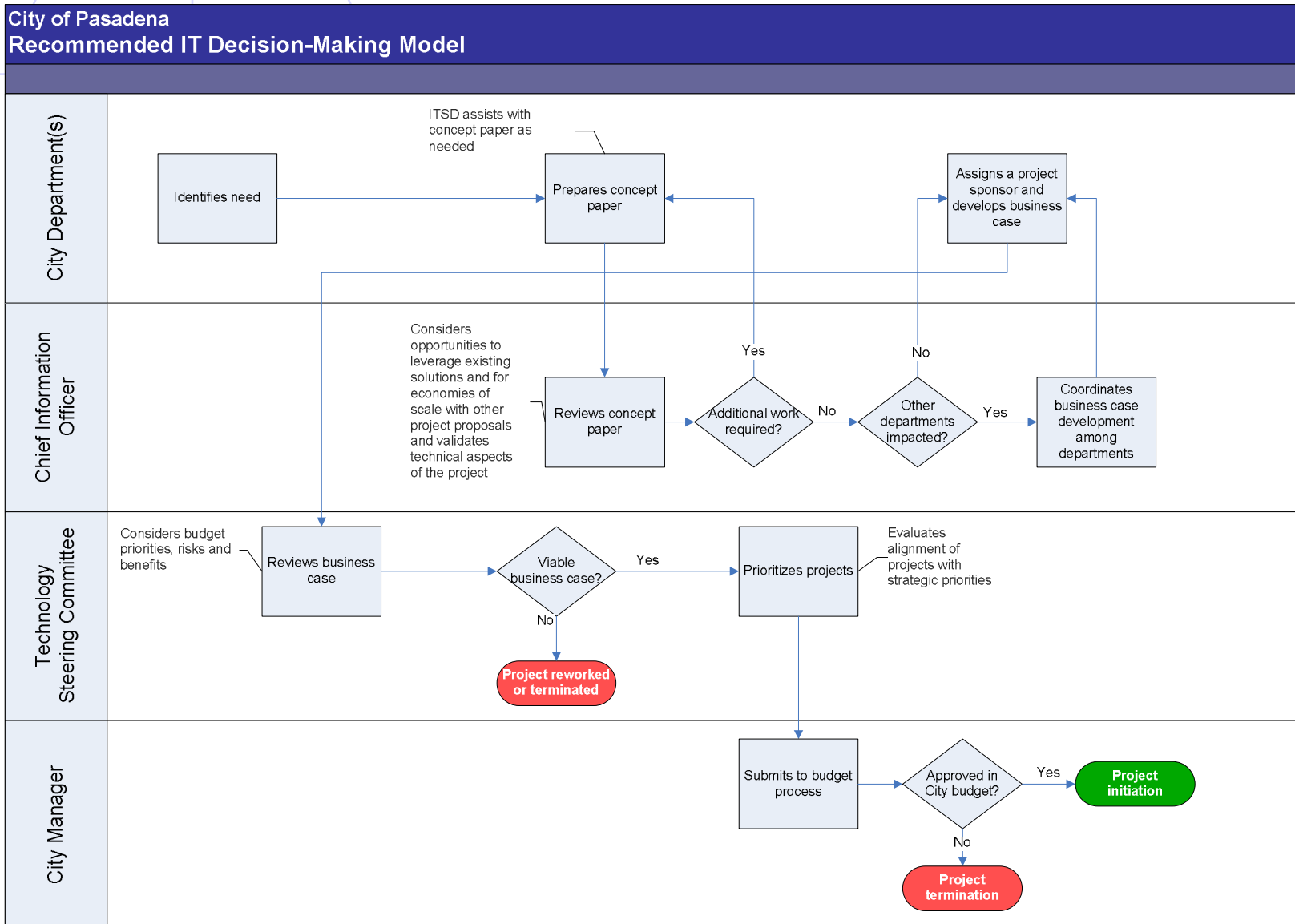
Recommendation	Benefits
<p>Implement a citywide forum for making major IT investment decisions</p> <p>Adopt the structured IT governance model described on the following pages. Clearly define stakeholder roles and responsibilities, decision-making policies and processes, and project prioritization criteria. Establish tools to support decision-making and project evaluation. Communicate decision-making processes and outcomes to stakeholders.</p>	<ul style="list-style-type: none"> • Involves the right stakeholders at the right time in the decision making process • Ensures IT decision makers reliably and consistently make informed IT planning and investment decisions – aligned with city strategic goals and objectives • Leads to IT investment decisions that are fully supported by an appropriate business impact assessment and financial analysis • Clearly defines objective project prioritization criteria • Improves allocation of limited resources • Enhances communication with key stakeholders • Builds trust and confidence among departments regarding the decision-making process and IT investment decisions • Supports shared IT investments
<p>Create and implement an IT organization transition plan</p> <p>Include a defined approach to: business unit buy-in, new senior-level staff recruitment, interim IT operations, and risk management. Establish criteria for transferring commodity IT services staff and for co-location.</p>	<ul style="list-style-type: none"> • Facilitates the smoothest possible shift in Pasadena’s IT service delivery approach • Safeguards the City’s interests as staffing changes occur • Keeps IT systems running during the transition period • Helps establish and maintain a culture of high-quality IT service delivery

3

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

Recommended IT Decision-Making Model

3



The following graphic outlines recommended roles and responsibilities associated with the citywide IT governance model shown on the previous page. In addition, the Technology Steering Committee will develop explicit criteria (e.g., enterprise impact, regulatory compliance, cost) for identifying projects that qualify as major IT investments.

IT Decision Making Roles and Responsibilities

City Departments	<ul style="list-style-type: none">◆ Identify customer needs and wants◆ Develop initial project proposal◆ Lead development of concept paper and business case – with ITSD assistance◆ Present business case to the Technology Steering Committee
Chief Information Officer	<ul style="list-style-type: none">◆ Reviews department project concept papers◆ Provides input on IT standards and exceptions◆ Assesses multi-department impacts◆ Coordinates business case development among departments◆ Communicates process to city departments
Technology Steering Committee	<ul style="list-style-type: none">◆ Takes an enterprise view on improving business processes via technology◆ Ensures effective communication across divisions regarding proposed investments – for both external customers and internal needs◆ Provides final project prioritization and evaluates alignment with strategic priorities
City Manager	<ul style="list-style-type: none">◆ Reviews citywide project prioritization◆ Submits project to budget process◆ Provides feedback and status updates to staff

3

The figure on this page outlines components for two key tools utilized within the recommended IT decision making model: a concept paper and a business case.

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 city and IT strategic plans

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
 - ✓ Disposal of old technology
 - 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

Use capital funds for major IT investments, including implementation labor.

Recommendation	Benefits
<p>Create a director-level Chief Information Office (CIO) position</p> <p>Define and fill a CIO position that reports directly to the City Manager’s office. The CIO will have responsibility for IT leadership and performance, maintain the City’s IT vision and strategic direction, and provide executive-level input on IT resources, capabilities, and potential investments.</p>	<ul style="list-style-type: none"> • Provides an executive-level view of technology at the City • Strengthens IT leadership • Creates a focal point for IT performance and accountability • Elevates the importance of IT in achieving the City’s strategic goals
<p>Use capital funds for major IT investments, including implementation labor</p> <p>Pay for large IT projects using debt rather than operating revenues.</p>	<ul style="list-style-type: none"> • Clarifies the cost of annual IT operations and maintenance • Mitigates large annual fluctuations in IT O&M spending • Expands funding opportunities for major IT projects
<p>Improve the IT O&M funding model:</p> <ul style="list-style-type: none"> • Define a catalog of IT services: <ul style="list-style-type: none"> ✓ Align with private sector offerings ✓ Categorize as baseline or supplemental • Determine true cost of these services • Directly fund IT baseline services and recover monies from non-general funds through existing cost allocation methods 	<ul style="list-style-type: none"> • Aligns IT charges with services • Increases transparency of IT O&M funding • Distinguishes core IT services from supplemental IT services • Builds business user confidence in IT support • Facilitates sourcing decisions surrounding specific services by providing accurate internal costs for comparison purposes

3

Recommendation	Benefits
<p>Define and report upon a key set of IT performance measures</p> <p>Work collaboratively with the business units to define specific IT performance targets. Develop a process to measure and regularly report on service levels.</p>	<ul style="list-style-type: none"> • Builds consensus around IT service levels and performance targets • Increases IT service accountability by providing measurable and comparative key IT performance indicators • Aids managers and operational staff in making timely, knowledgeable IT decisions
<p>Establish a formal PC replacement fund</p> <p>Compile an accurate, up-to-date citywide PC inventory. Identify the upgrade, replacement, or retirement schedules for staff computers. Establish funds to upgrade or replace them as they near end-of-life. Once the economy improves, the City should consider creating replacement funds for servers and major applications as well.</p>	<ul style="list-style-type: none"> • Avoids large, unplanned and unbudgeted expenditures to upgrade or replace IT assets • Ensures business users have reliable, modern technology • Helps establish a sustainable computer system across the City
<p>Establish a formal server and network infrastructure replacement fund</p> <p>Identify the upgrade, replacement, or retirement schedules for servers, network components, and associated remote management tools. Establish funds to upgrade or replace them as they near end-of-life.</p>	<ul style="list-style-type: none"> • Avoids large, unplanned and unbudgeted expenditures to upgrade or replace key IT assets • Increases network and application responsiveness • Helps establish a sustainable server and network infrastructure

Recommendation	Benefits
<p>Develop an enterprise application and data management strategic plan</p> <p>Evaluate Pasadena's existing business automation. Prioritize future application investments. Develop a long-term implementation plan.</p>	<ul style="list-style-type: none"> • Provides a roadmap for the City to enhance business automation • Smooths costs and human resource implementation requirements • Identifies and prioritizes application investments based on Pasadena's strategic goals
<p>Conduct a PeopleSoft replacement study</p> <p>Utilize a comprehensive assessment of finance/human resource software options to inform the City's approach to automating this business function.</p>	<ul style="list-style-type: none"> • Informs management decision making • Ensures that investments in finance and human resources automation align with Pasadena's business needs and strategic goals
<p>After IT reorganization, evaluate outsourcing opportunities</p> <p>Vendors in this market typically require certain levels of infrastructure standardization, specific technical architectures and/or clear IT staffing organization as a condition of executing a service agreement.</p>	<ul style="list-style-type: none"> • Ensures that Pasadena selects the sourcing approach that best fits with its business needs and strategic goals
<p>Continue pursuing regional IT partnerships</p> <p>Expand the use of shared resources through the metropolitan area. Opportunities exist in Geographic Information Services (GIS), emergency management services and planning, police records management, and technical infrastructure development.</p>	<ul style="list-style-type: none"> • Realizes economies of scale – lowering costs • Expands citizen services • May enhance management information

IT Service Delivery

PTI's recommendations in this area speak to IT staffing improvements and customer service enhancements geared toward answering the key strategic IT service delivery issues facing the City.

Recommendation	Benefits
<p>Centralize commodity IT services:</p> <ul style="list-style-type: none"> • Customer support (e.g., help desk, PC support) • Infrastructure support (e.g., server administration, network administration) • IT contract management (e.g., software license and maintenance agreements) • IT procurement (e.g., bulk purchasing) 	<ul style="list-style-type: none"> • Improves management and control of clearly delineated IT service areas (e.g., Customer Services, Infrastructure Services) • Enhances internal customer service • Removes duplication of infrastructure-related and customer service labor from the departments • Improves IT operational efficiency and staff productivity • Positions the City for ongoing optimization of its allocation of IT resources
<p>Regarding application support:</p> <ul style="list-style-type: none"> • Centralize support for enterprise software, including: GIS, eGov, finance, human resources, document management • Retain departmental application support in business units, unless department choose to contract with central IT for this service¹² 	<ul style="list-style-type: none"> • Helps Pasadena receive maximum value from its application software • Places business-specific application support staff where they're most useful • Engenders appropriate business process knowledge among application support staff • Highlights opportunities for business application training
<p>Co-locate IT support staff within business units as appropriate</p> <ul style="list-style-type: none"> • Where needed, deploy tier 2 support staff in proximity to large quantities of City PCs • Position infrastructure services staff near their respective data centers and switch rooms 	<ul style="list-style-type: none"> • Places customer services and infrastructure support staff where they can be most productive • Increases IT staff efficiency and responsiveness • Builds positive customer relationships • Encourages collaboration among IT staff

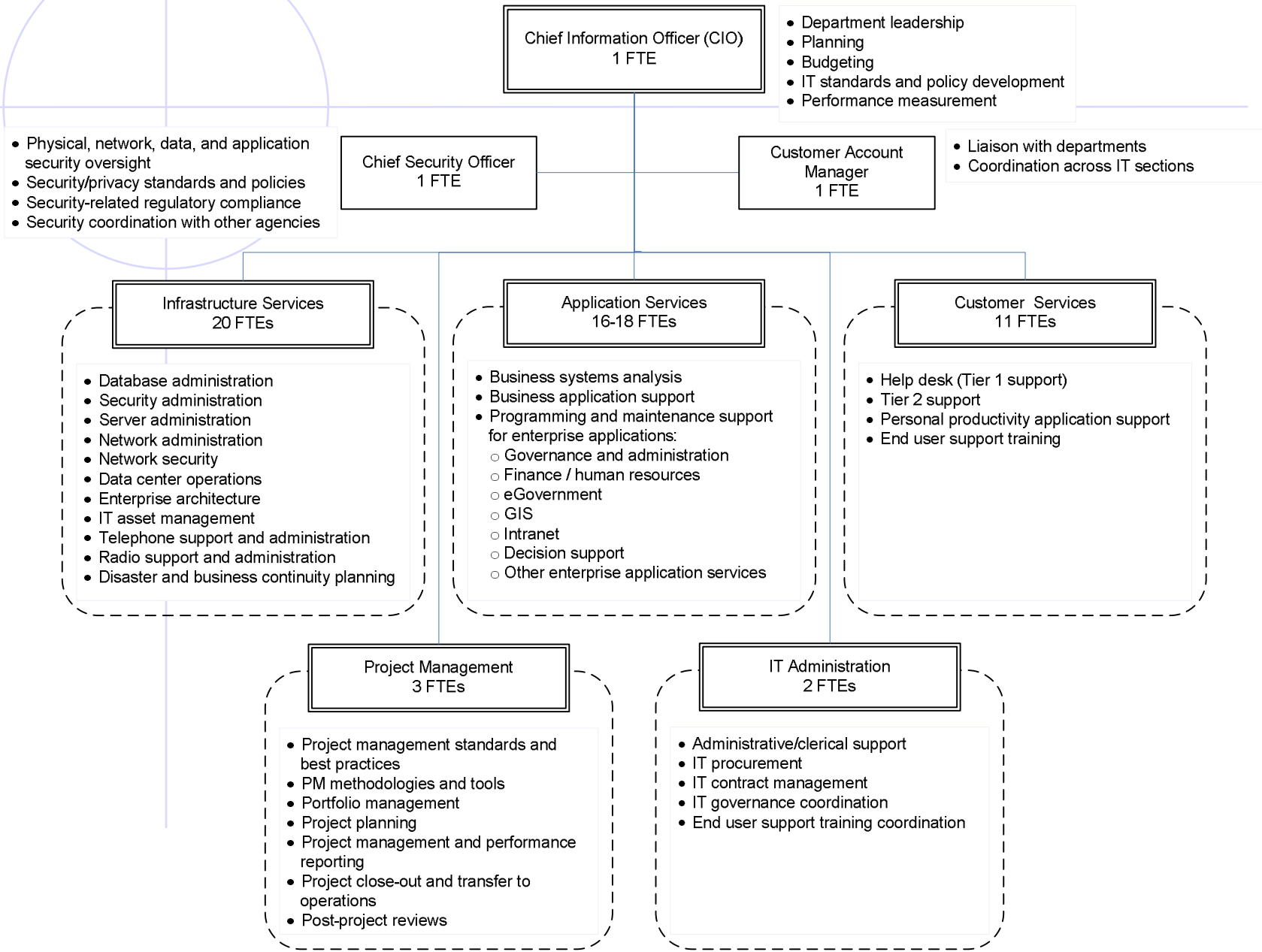
¹² As a best practice, Pasadena should centralize support for enterprise applications (e.g., financial management, document management, eGovernment). However, IT staff supporting non-enterprise applications (e.g., Police RMS, maintenance management, permit management) can be deployed to the business units as either direct reports or co-located central IT staff.

Recommendation	Benefits
<p>Establish a project management office</p> <ul style="list-style-type: none"> • Implement project management standards and best practices • Provide project management methodologies and tools • Manage project portfolio and resources • Report on project performance and conducts post-project reviews • Handle project close-out and transfer to operations 	<ul style="list-style-type: none"> • Positions the City to adequately manage the City's current and future needs in project management • Increases the probability of successful project implementation • Standardizes project management practices, specifying implementation • Supports both citywide and business unit implementation efforts
<p>Establish a Chief Security Officer position</p> <ul style="list-style-type: none"> • Manages and implements citywide security policy • Handles all aspects of security • Works closely with infrastructure services • Coordinates security with other agencies and regional partners 	<ul style="list-style-type: none"> • Positions the City to adequately manage the City's current and future information security needs • Ensures that security protocol and processes align with City strategic goals and don't overly restrict business operations
<p>Establish a Customer Account Representative position</p> <ul style="list-style-type: none"> • Coordinate service across the different IT sections • Work with departments to assess business and service needs • Manage the formal IT service methodology • Review IT service performance measures • Provide key input into the City's IT strategic direction • Collaborate with the human resource department to develop and implement a business user training program 	<ul style="list-style-type: none"> • Engenders customer service ethos within the central IT organization • Fosters positive relationships between central IT and business units • Increases IT staff understanding of City business needs • Improve citywide collaboration

Recommendation	Benefits
<p>Establish a formal IT service management methodology:</p> <ul style="list-style-type: none"> • Develop and report upon IT service accountability and performance measures • Implement a professional help desk • Institute change management for major projects and initiatives • Utilize a portfolio approach to manage IT assets • Extend IT support hours • Develop annual work plans for baseline and supplemental IT services 	<ul style="list-style-type: none"> • Increases IT support response times and overall customer service quality • Provides additional detail surrounding problem resolution – improving management decision making • Improves confidence in the use of technology across the City • Aligns IT support with Pasadena business needs and IT service delivery best practices • Ensures sufficient resources and preparation for system replacements and upgrades • Effectively plans for current and future IT service needs
<p>Increase IT staff specialization</p> <p>Clarify help desk (Tier 1) and Tier 2 customer support responsibilities – differentiating these from business analysis and application support roles. Invest in training on current technologies and languages (e.g., .net, XML, Java).</p>	<ul style="list-style-type: none"> • Enhances Pasadena’s customer service and business analysis capabilities • Streamlines operations • Leads to increased employee productivity

The diagrams, graphics, and tables on the following pages address the first six (6) IT service delivery recommendations presented above.

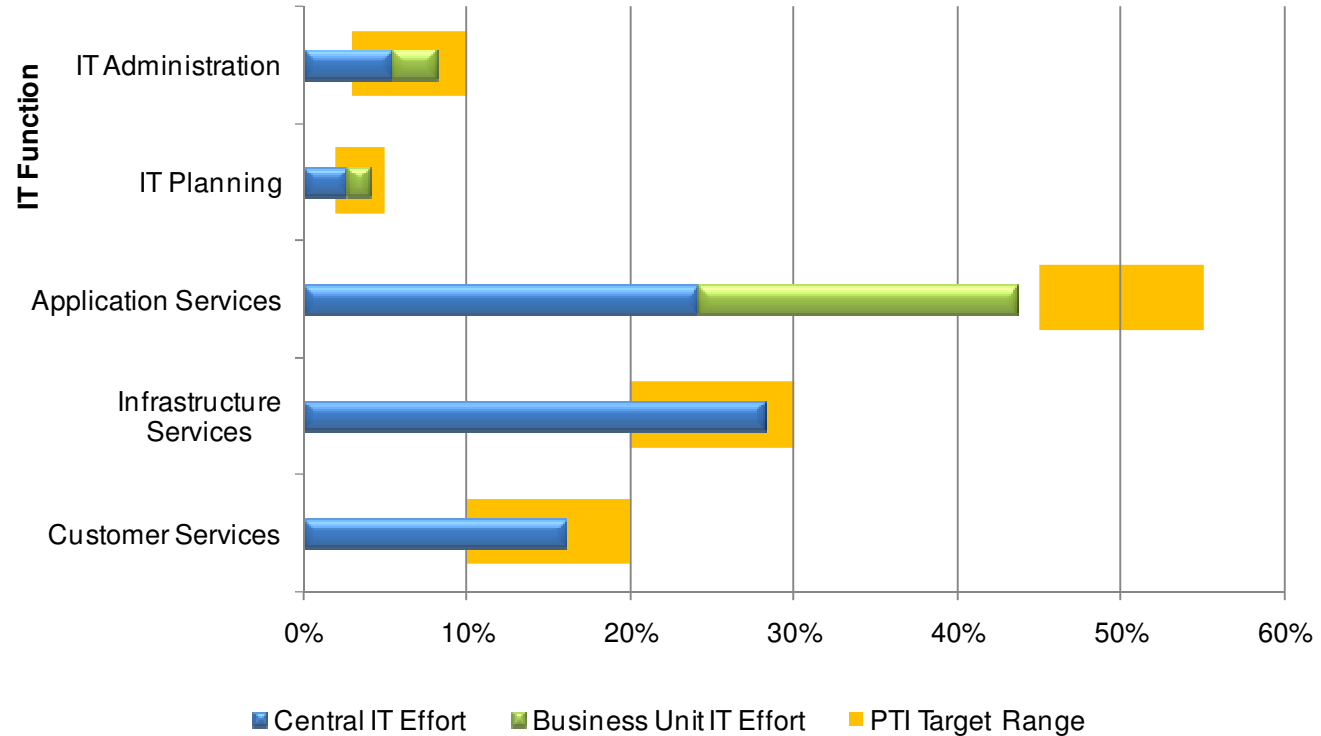
Recommended Central IT Organization Model



As the following charts indicate, adopting PTI's IT staff reorganization and allocation recommendations more closely aligns citywide IT labor with PTI's target ranges. Note that *the largest improvement occurs in the application support discipline* – ensuring that Pasadena can take full advantage of the business improvements inherent in its software applications to improve overall operational efficiency and service quality.

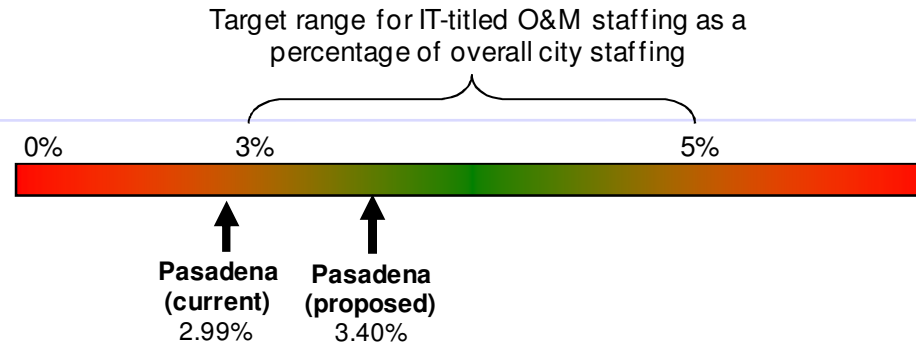
The figure below depicts PTI's proposed distribution of Pasadena's IT-titled labor effort across the five IT functions. The blue segments denote the proportion of the work to be performed by ITSD staff, while the green segments represent IT-titled staff in other departments. The yellow rectangles indicate PTI's target range for each IT function.

City of Pasadena Proposed IT Staffing Allocation Relative to PTI's Target Ranges



The following graphic demonstrates PTI's proposed citywide IT staffing level. The green zone represents a strategically optimal range of IT labor.

Current and Proposed IT Staffing Levels



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 business unit IT labor, and the last three columns represent total citywide IT labor. Columns labeled “current” indicate Pasadena’s existing IT labor allocation. Columns labeled “target” indicate PTI’s recommended IT labor allocation, and the “net change” column calculates the difference between the current and target IT staffing levels. The rows classify labor effort into the five IT functions defined earlier.

Current and Recommended IT Staffing Allocation

	Central IT Effort			Business Unit IT Effort			Citywide IT Effort		
	Current	Target	Net Change	Current	Target	Net Change	Current	Target	Net Change
Customer Services	3.70	12.00	8.30	8.60	0.00	(8.60)	12.30	12.00	(0.30)
Infrastructure Services	16.40	21.00	4.60	6.10	0.00	(6.10)	22.50	21.00	(1.50)
Application Services	4.90	18.00	13.10	8.90	14.50	5.60	13.80	32.50	18.70
IT Planning	2.80	2.00	(0.80)	2.10	1.00	(1.10)	4.90	3.00	(1.90)
IT Administration	8.50	4.00	(4.50)	3.60	2.00	(1.60)	12.10	6.00	(6.10)
IT O&M Labor on Capital Projects*	4.80	0.00	(4.80)	4.30	0.00	(4.30)	9.10	0.00	(9.10)
Total	41.10	57.00	15.90	33.60	17.50	16.10	74.70	74.50	(0.20)

*This row represents IT O&M labor currently allocated to capital IT projects

PTI evaluates application services labor effort in seven distinct categories. The following table categorizes major city applications into each of those areas.

Major Pasadena Applications by Area

Application Area	Major Applications
Law, Safety and Justice	MotoCAD, Premier, NetRMS, FireHouse, Legal Files, Legal Solutions
Public Infrastructure	Cascade, Bizlink, ECIS, Underground Service Alert, MVRs, PeakNet
Planning and Development	Tidemark, PropertyLink
Community Services	Horizon, ActiveNet, Volunteer Works, Adashi, HMIS, EPIC, SWEEPS
Governance and Administration	Business Objects, Data Warehouses, Election Web site
Support Services	PeopleSoft, P2K, DocStar, Questys, IntelliTime, City Vision, ArcGIS (ESRI)
eGovernment (Web/Internet)	SharePoint, CMS400.net, WebTrends, TrumbaConnect

3

The table below presents PTI's recommended IT labor effort by application area. PTI determined the target application services support levels based on Pasadena's current application portfolio.

Current and Recommended Application Services IT Labor Allocation

Application Area	Central IT Effort			Business Unit IT Effort			Citywide IT Effort		
	Current	Net Change	Target	Current	Net Change	Target	Current	Net Change	Target
Law, Safety and Justice	0.05	(0.05)	0.00	0.31	3.69	4.00	0.35	3.65	4.00
Public Infrastructure	0.00	0.00	0.00	0.95	3.55	4.50	0.95	3.55	4.50
Planning and Development	0.24	(0.24)	0.00	1.00	2.00	3.00	1.24	1.76	3.00
Community Services	0.00	0.00	0.00	0.46	2.54	3.00	0.46	2.54	3.00
Governance and Administration	0.10	1.91	2.00	1.75	(1.75)	0.00	1.85	0.16	2.00
Support Services	3.38	9.62	13.00	1.66	(1.66)	0.00	5.04	7.96	13.00
eGovernment (Web/Internet)	0.00	3.00	3.00	1.78	(1.78)	0.00	1.78	1.22	3.00
	3.76	14.24	18.00	7.90	6.60	14.50	11.66	20.84	32.50

It is important to recognize that the new IT service delivery model represents a target end state. Shifts in IT labor effort should take place incrementally. In addition, the FTEs quantified in this analysis aggregate the partial labor effort of many individuals, as most staff work in more than one major IT discipline. For example, the 12.30 FTEs shown above as the current citywide effort devoted to customer services are composed of 47 individuals across the City.

Correspondingly, simply moving individual personnel may not achieve the desired result – and will certainly not provide the correct mix of skill sets. In short, **achieving these recommendations will require significant human resources planning – as well as some difficult management decisions.**

Technical Infrastructure

Technical infrastructure provides the foundation for the business software that streamlines city operations and automates critical business functions. It includes the hardware, system software, databases, operating systems, and network components that support Pasadena's application architecture. The recommendations are directed toward providing the City with a cost-effective, secure, responsive, and reliable computing environment.

Consolidate servers into two data centers.

Recommendation	Benefits
Develop and communicate agreed-upon citywide technology standards	<ul style="list-style-type: none"> • Ensures standardization of both problem resolution processes and personal computer configurations • Simplifies both business unit and IT staff training • Leverages bulk purchasing opportunities to reduce overall IT costs • Provides useful reference material to both IT staff and decision makers
Consolidate servers into two data centers – eliminating ad hoc and closet server rooms	<ul style="list-style-type: none"> • Reduces costs associated with data center operations • Reduces data center space requirements • Simplifies infrastructure services and support • Offers redundant network and data storage capabilities

Recommendation	Benefits
<p>Optimize server and network infrastructure</p> <ul style="list-style-type: none"> • Continue investment and implementation of server virtualization and SANs • Replace aging servers and network components on a regular cycle • Leverage the replacement cycle to continually improve and optimize hardware 	<ul style="list-style-type: none"> • Modernizes the City's application/technology architecture • Enhances storage and infrastructure management • Keeps city servers current and able to efficiently host critical business applications • Improves network responsiveness • Increases both IT operational efficiency and business unit staff productivity • Avoids large, unplanned and unbudgeted expenditures to upgrade or replace IT assets
<p>Conduct an IT security assessment</p> <p>Subsequent to a thorough initial assessment, Pasadena should schedule annual third-party security and data center audits.</p>	<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, DDoS¹³ attacks) security threats
<p>Develop and test disaster recovery plan to support continuity of operations</p> <p>This plan should incorporate the use of a backup data center and provides an opportunity to leverage regional partnerships.</p>	<ul style="list-style-type: none"> • Provides the City with a site for assuming data center operations if the primary site becomes non-operational • Allows the City to continue operations and provide essential services in the case of a disaster
<p>Expand wireless on city campuses and add network connections in conference rooms</p>	<ul style="list-style-type: none"> • Increases business user productivity • Enhances management information access during key meetings

¹³ A Distributed Denial-of-Service (DDoS) attack is one in which a multitude of compromised systems "attack" a single target by requesting large amounts of information from it, thereby causing denial service for users of the targeted system.

Recommendations Alignment with Strategic Goals

As described earlier, it is critical that Pasadena's IT decisions and investments align with its strategic goals. PTI's recommendations clearly support the City's strategic defined goals, as demonstrated by the table below.

Recommendations Alignment with Strategic Goals

		Strategic Goals					
		Fiscal Responsibility	Public Infrastructure	Sustainability	Accessibility	Local Economy	Public Safety
IT Decision Making Recommendations							
DM.1	Implement citywide IT decision making	✓	✓	✓	✓	✓	✓
DM.2	Create and implement an IT organization transition plan	✓					
DM.3	Create a director-level CIO position	✓					
DM.4	Use capital funds for major IT investments	✓	✓				
DM.4	Improve the IT O&M finding model	✓					
DM.5	Define and report upon IT performance measures	✓					
DM.6	Establish a formal PC replacement fund	✓					✓
DM.7	Establish a server and infrastructure replacement fund	✓					✓
DM.8	Develop an enterprise application strategic plan	✓	✓	✓	✓	✓	✓
DM.9	Conduct a PeopleSoft replacement study	✓					
DM.11	After IT reorganization, evaluate outsourcing opportunities	✓		✓			
DM.12	Continue pursuing regional IT partnerships	✓	✓	✓			✓
IT Service Delivery Recommendations							
SD.1	Centralize commodity IT services	✓		✓	✓		
SD.2	Reallocate application support labor		✓	✓	✓	✓	✓
SD.3	Co-locate IT support staff within the business units		✓	✓	✓	✓	✓
SD.4	Establish a project management office	✓					
SD.5	Establish a Chief Security Officer position	✓					✓
SD.6	Establish a Customer Account Representative position	✓			✓		
SD.6	Establish a formal IT service management methodology	✓		✓			
SD.7	Increase IT staff specialization	✓	✓	✓	✓		✓
Technology Infrastructure Recommendations							
TI.1	Develop and communicate citywide technology standards	✓		✓			
TI.2	Consolidate servers into two data centers	✓		✓			
TI.3	Optimize server and network infrastructure	✓		✓	✓		
TI.4	Conduct an IT security assessment	✓	✓				✓
TI.5	Develop a disaster recovery plan	✓	✓	✓	✓		✓
TI.6	Expand wireless access on city campuses	✓	✓	✓	✓		

3

Conclusion

Over the next few years, the City of Pasadena is likely to face continuing budget reductions. Through these difficult financial times, the City will be forced to make difficult management decisions, many of which will lead to staff reductions and/or decreased spending on goods and services. However, our recommendations suggest that Pasadena maintain IT current staffing and spending levels.

Implementing a new approach to IT governance, reorganizing IT service delivery and consolidating IT infrastructure will yield significant benefits and truly enable the City to maintain its high level of municipal services within forthcoming budget constraints. Conversely, reducing IT budgets will hinder business operations by requiring more labor effort to accomplish the same work and degrading overall City services.

Going forward, Pasadena's success depends on effectively implementing new approaches to IT decision making and IT service delivery. Key success factors include:

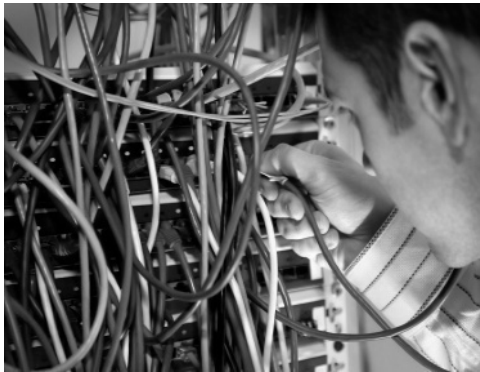
- **Strong citywide IT leadership**
- **A close partnership between central IT and business units**
- **A detailed and thoughtful transition plan**
- **Clear understanding of citywide business needs and drivers**
- **A commitment to rigorous IT decision making**
- **Willingness to redesign and/or reengineer inefficient business processes to better leverage available technology**

Accordingly, the recommendations described in this chapter can deliver significant benefits – aligned with the City's strategic goals – as depicted on the table on the following page.

Alignment with Strategic Goals

Pasadena's Strategic Goals:	PTI's Recommendations:
Fiscal Responsibility	<ul style="list-style-type: none"> • Improve citywide IT decision making – ensuring maximum return on IT investment • Leverages capital resources to expand IT investment • Increase IT service delivery efficiency • Reduce infrastructure expenditures • Encourage use of shared IT resources • Align IT funding methods with IT services and City strategic goals • Establish technology replacement funding to sustain and up-to-date technology environment
Public Infrastructure	<ul style="list-style-type: none"> • Maintain network and server infrastructure • Pursue regional partnerships • Appropriately secure information assets • Increase support for Public Infrastructure applications
Sustainability	<ul style="list-style-type: none"> • Streamline operations and increases efficiencies to support sustainable business practices • Minimize IT-related carbon “footprint” • Optimize use of available IT resources • Continue utilizing mobile technologies to reduce trips and minimize redundant data entry by City staff
Accessibility	<ul style="list-style-type: none"> • Increase IT decision making transparency and accountability • Provide consistent, reliable and responsive IT service and support
Local Economy	<ul style="list-style-type: none"> • Improve support for applications that will support local business and economic growth
Public Safety	<ul style="list-style-type: none"> • Ensure that City staff have up-to-date technology • Secure key IT assets and information • Prepare the City to continue operations in the event of a disaster • Build a foundation for improving Law, Safety, and Justice automation

3



Appendix A List of Participants

Over 75 city stakeholders – including city executives, 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/Division
George Aleman	Management Analyst	PW/BSFMD
Ed Anderson	BT/EP Coordinator	Public Health
Maria Archuleta	Principal Accountant	Finance
Dan Augustyn	Management Analyst V	Finance / ITSD
Steve Augustyn	Principal Operations Specialist	Transportation
Michele Bagneris	City Attorney	City Attorney
Michael Beck	City Manager	City Manager
Nathan Boyd	Network Systems Supervisor	Finance / ITSD
Richard Bruckner	Director of P&D	P & D
Brigida Campos	Librarian III	Library (Information Services)
David Chau	Senior Information Systems Engineer	Water and Power
John Chiasson	Senior Engineering Aide	W/P/Engineering
Phyllis Currie	GM of PWP	PWP
Dennis Downs	Fire Chief	Fire
Vic Erganian	City Treasurer	Finance
Rebecca Estrada	Division Manager	Public Health
Karyn Ezell	Director of HR	Human Resources
Julian Fan	Applications Development and Services Supervisor	Finance / ITSD

A

A

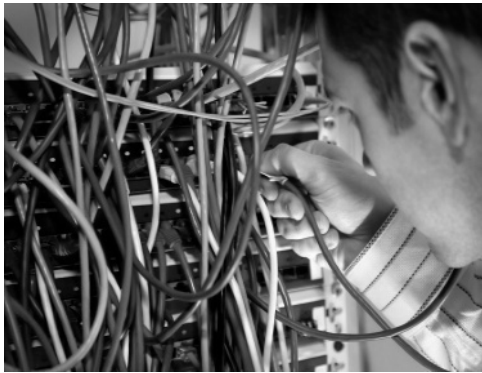
Name	Position/Title	Department/Division
Mark Fasick	Fire Marshal	Fire
Rebecca Fleming	Staff Assistant IV	Transportation
Casty Fortich	IT Manager	PWP
Andy Green	Director of Finance	Finance
Raphael Guillen	Management Analyst V	Human Services and Recreation
Brenda Harvey-Williams	Finance and Management Services Administrator	Public Works and Finance
Larry Hammond	Purchasing Administrator	Finance
Diane Hansen	Police Supervisor	Police
Keith Horgan	DISA III	Finance
Kevin Hughes	Telecom Manager	Finance / ITSD
William Huang	Director of Housing	Linda Vista
Denis Imler	Deputy Fire Marshall	Fire and Administration
Candy Jara	Division Manager	Public Health
Mark Jomsky	City Clerk	City Clerk
Pam Kietzman	Management Analyst V	P&D
Bill Kimura	Division Manager Public Health	Health and Environmental Health
Anne Lansing	Project Planner	Housing
Patricia Lane	Director	HS & R
Sam Lam	DISA III	Public Works
Phillip Leclair	IT Operations Manager	Finance / ITSD
Rockman Leung	IT Analyst I	Police

A

Name	Position/Title	Department/Division
Stephen Leung	Operator Assistant	Fire
Harriet McGinley	Administrative Officer	P&D
Bernard Melekian	Police Chief	Police
Ernest Montoya	Human Resources Manager	Human Resources
Robert Monzon	Management Analyst V	City Clerk
Onik Nazarian	IT Analyst II	Housing
Yvette Nero-Scott	Management Analyst	Housing
Pablo Oliva	Technical Analyst II	Information Services
Rod Olquin	BNR Manager	P&D / BNR
Martin Pastucha	Director	Public Works
Charles Peretz	Management Analyst V	Public Works
Neville Pereira	Principal Plans Examiner	P&D
Wendy Petry	Police Administration	Police and Communications
Susan Poster	Librarian III	Library (Information Services)
John Pratt	Chief Information Officer	Finance / ITSD
Jessie Ramirez	Human Resources Analyst	Human Resources
John Reimers	Management Analyst III	P&D
Mario Real	Information Systems Analyst I	Human Services and Recreation
Bob Ridley	Controller	Finance
Bryan Sands	IT Manager	Library (Information Services)
Jan Sanders	Director	Library (Information Services)

A

Name	Position/Title	Department/Division
Lori Sandoval	IT Planning and Project Manager	Finance / ITSD
Sean Singletary	Associate Engineer	Public Works and Engineering
Lisa Stinstrom	DISA III	Planning and Development
Mylene Tam	IT Analyst II	Fire
Levon Thomassian	Service Center Supervisor	Finance / ITSD
Norma Thorres	PR Services Manager	Finance
Michael Tse	Associate Engineer	PWP/Engineering
Patrick Tucker	Customer Service Manager	Water and Power
Conrad Viana	Engineer	Transportation
Beth Walker	Principal Librarian	Library
Dr. Takashi Wada	Director of Health	Public Health
Rodney D. Wallace	Lieutenant	Police
James Weckerle	HazMat Specialist	Fire and Fire Prevention
Mike Woolson	Management Analyst III	Transportation
George Aleman	Management Analyst	PW/BSFMD



Appendix B IT Staffing Detail



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

- **Customer Services** – labor related to directly helping end users utilize IT systems and services (e.g., help desk, tier 2 support)
- **Infrastructure Services** – labor related to implementing and maintaining the organization's computers, systems software, and connectivity (e.g., servers, networks)
- **Application Services** – 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 presented on the following pages reflect ongoing operations and maintenance (O&M) labor expressed as a percentage of 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.

The table below presents a breakout of technology staffing levels and allocation between Information Services (IS) and the City's business units.

IT-titled Staff Labor Distribution*			
	IT FTE	% of all City IT FTE	% of all City FTE
ITSD	36.32	55.4%	1.66%
Other City Business Units	29.23	44.6%	1.33%
Total City IT FTE	65.55	100.0%	2.99%

*Excluding shadow staff and capital project labor

The table below summarizes the technology labor effort related to each of the IT disciplines.

IT Labor Effort									
IT Functions	ITSD	ITSD Allocation	Business Units' IT FTE	Business Units' Allocation	Shadow IT Staff FTE	Shadow IT Staff Allocation	Citywide IT FTE	Citywide Allocation	
Customer Services	3.66	5.2%	8.60	12.2%	0.17	0.2%	12.42	17.6%	
Infrastructure Services	16.44	23.2%	6.12	8.6%	2.71	3.8%	25.26	35.7%	
Application Services	4.94	7.0%	8.87	12.5%	1.79	2.5%	15.60	22.1%	
IT Planning	2.77	3.9%	2.05	2.9%	0.10	0.1%	4.93	7.0%	
IT Administration	8.52	12.0%	3.60	5.1%	0.40	0.6%	12.51	17.7%	
Total:	36.32	51.4%	29.23	41.3%	5.17	7.3%	70.72	100.0%	

The following table presents a detailed overview of the City's *application support discipline* staffing levels. These numbers are representative of the effort devoted to support for software of a particular business function area.

IT-Titled Staff - Application Area Labor Effort						
Application Services	ITSD FTE	ITSD Allocation	Business Units' FTE	Business Units' Allocation	Citywide IT FTE	Citywide Allocation
Law, Safety and Justice	0.05	1.3%	0.31	3.9%	0.35	3.0%
Public Infrastructure	0.00	0.0%	0.95	12.0%	0.95	8.1%
Planning and Development	0.24	6.3%	1.00	12.7%	1.24	10.6%
Community Services	0.00	0.0%	0.46	5.8%	0.46	3.9%
Governance and Administration	0.10	2.5%	1.75	22.2%	1.85	15.8%
Support Services	3.38	89.9%	1.66	21.0%	5.04	43.2%
eGovernment (Web/Internet)	0.00	0.0%	1.78	22.5%	1.78	15.2%
Total:	3.76	100.0%	7.90	100.0%	11.66	100.0%

The following tables present summary data for the staffing matrix, completed and verified by the City during the assessment phase of this project, for FTE counts and labor costs. Due to the nature and sheer 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 used in the staffing matrix follow the summary tables.

B

	Central Org IT Staff	Business Unit IT Staff	FTE TOTAL
FTE Totals			
Customer Services	3.66	8.60	12.25
Help Desk (Tier 1)	1.20	2.36	3.56
Tier 2 support:	2.05	3.44	5.49
Personal Computer Support	1.55	2.66	4.21
Portable Device/Specialized Device Support	0.50	0.37	0.87
Personal Productivity Tool Support	0.00	0.48	0.48
Business Application Support	0.10	2.01	2.11
Training	0.31	0.79	1.10
Infrastructure Services	16.44	6.12	22.55
Personal Computer Administration	0.51	1.08	1.59
Database Administration	1.95	0.52	2.47
Security Administration	0.36	0.27	0.63
Data Center/Server Room Operations	0.42	0.71	1.12
Project Management	2.95	1.74	4.69
Server Administration:	2.53	1.34	3.86
Email/Calendar/ing Administration	0.48	0.13	0.60
File/Print Administration	0.48	0.21	0.69
Application Server Administration	0.36	0.29	0.65
Database Server Administration	0.12	0.35	0.47
Storage Administration	0.38	0.20	0.58
Other Server Administration	0.72	0.16	0.88
Communication Services:	7.74	0.45	8.19
Network Administration (WAN/LAN/Wireless)	2.07	0.37	2.44
Radio Support	1.70	0.02	1.72
Telephone Systems Support	3.97	0.06	4.03
Business Application Services	4.94	8.87	13.81
Law, Safety and Justice	0.05	0.31	0.35
Packaged application support	0.05	0.23	0.28
Custom application support	0.00	0.07	0.07
GIS support	0.28	0.00	0.28
Public Infrastructure	0.00	0.95	0.95
Packaged application support	0.00	0.65	0.65
Custom application support	0.00	0.29	0.29
GIS support	0.23	0.23	0.46
Planning and Development	0.24	1.00	1.24
Packaged application support	0.05	0.50	0.55
Custom application support	0.19	0.50	0.69
GIS support	0.23	0.20	0.43
Community Services	0.00	0.46	0.46
Packaged application support	0.00	0.46	0.46
Custom application support	0.00	0.00	0.00
GIS support	0.14	0.00	0.14
Governance and Administration	0.10	1.75	1.85
Packaged application support	0.10	1.52	1.61
Custom application support	0.00	0.23	0.23
GIS support	0.14	0.00	0.14
Support Services	3.38	1.66	5.04
Packaged application support	2.38	0.86	3.24
Custom application support	1.00	0.80	1.80
GIS support	0.14	0.48	0.61
eGovernment (Web/Internet)	0.00	1.78	1.78
Packaged application support	0.00	0.41	0.41
Custom application support	0.00	1.37	1.37
GIS support	0.04	0.06	0.10
IT Planning	2.77	2.05	4.83
Strategic planning & governance	1.13	0.52	1.65
Research and development	1.32	1.04	2.36
Disaster recovery/planning	0.32	0.49	0.81
IT Administration	8.52	3.60	12.11
Asset management	0.63	0.46	1.09
IT procurement	1.89	0.61	2.50
Standards and policies development	1.12	0.39	1.51
Customer Account Management	0.56	0.54	1.10
Administrative support	2.04	0.36	2.40
Departmental management	2.28	1.24	3.52
Geographic Information Systems	0.38	0.49	0.87
GIS Data Maintenance	0.38	0.49	0.87
Capital IT Projects	4.80	4.30	9.10
Capital IT Project Labor	4.80	4.30	9.10
Totals (excluding capital projects):	36.32	29.23	65.55

	Central Org IT Staff	Business Unit IT Staff	Cost TOTAL
Cost Totals			
Customer Services	\$ 321,455	\$ 861,418	\$ 1,182,873
Help Desk (Tier 1)	\$ 111,914	\$ 246,519	\$ 358,433
Tier 2 support:	\$ 165,799	\$ 325,762	\$ 491,560
Personal Computer Support	\$ 122,404	\$ 240,515	\$ 362,918
Portable Device/Specialized Device Support	\$ 43,395	\$ 31,349	\$ 74,743
Personal Productivity Tool Support	\$ -	\$ 53,898	\$ 53,898
Business Application Support	\$ 9,306	\$ 202,003	\$ 211,309
Training	\$ 34,437	\$ 87,134	\$ 121,571
Infrastructure Services	\$ 1,820,919	\$ 714,732	\$ 2,535,651
Personal Computer Administration	\$ 47,764	\$ 115,928	\$ 163,693
Database Administration	\$ 276,862	\$ 65,086	\$ 341,948
Security Administration	\$ 44,918	\$ 30,780	\$ 75,698
Data Center/Server Room Operations	\$ 46,689	\$ 79,066	\$ 125,755
Project Management	\$ 355,247	\$ 219,620	\$ 574,867
Server Administration:	\$ 285,228	\$ 154,854	\$ 440,082
Email/Calendar/ Administration	\$ 51,985	\$ 15,251	\$ 67,237
File/Print Administration	\$ 51,985	\$ 23,283	\$ 75,268
Application Server Administration	\$ 42,131	\$ 32,520	\$ 74,652
Database Server Administration	\$ 16,119	\$ 41,171	\$ 57,290
Storage Administration	\$ 44,302	\$ 23,134	\$ 67,437
Other Server Administration	\$ 78,704	\$ 19,494	\$ 98,198
Communication Services:	\$ 764,210	\$ 49,398	\$ 813,608
Network Administration (WAN/LAN/Wireless)	\$ 209,487	\$ 40,214	\$ 249,701
Radio Support	\$ 161,635	\$ 2,348	\$ 163,983
Telephone Systems Support	\$ 393,088	\$ 6,836	\$ 399,924
Business Application Services	\$ 623,304	\$ 941,144	\$ 1,564,447
Law, Safety and Justice	\$ 34,947	\$ 34,126	\$ 69,073
Packaged application support	\$ 7,199	\$ 25,704	\$ 32,903
Custom application support	\$ -	\$ 8,422	\$ 8,422
GIS support	\$ 27,748	\$ -	\$ 27,748
Public Infrastructure	\$ 23,598	\$ 142,403	\$ 166,001
Packaged application support	\$ -	\$ 78,337	\$ 78,337
Custom application support	\$ -	\$ 36,002	\$ 36,002
GIS support	\$ 23,598	\$ 28,064	\$ 51,663
Planning and Development	\$ 49,408	\$ 125,855	\$ 175,264
Packaged application support	\$ 7,199	\$ 56,816	\$ 64,015
Custom application support	\$ 16,599	\$ 46,672	\$ 63,272
GIS support	\$ 25,611	\$ 22,366	\$ 47,977
Community Services	\$ 15,299	\$ 23,978	\$ 39,277
Packaged application support	\$ -	\$ 23,978	\$ 23,978
Custom application support	\$ -	\$ -	\$ -
GIS support	\$ 15,299	\$ -	\$ 15,299
Governance and Administration	\$ 29,696	\$ 196,580	\$ 226,276
Packaged application support	\$ 14,398	\$ 166,178	\$ 180,575
Custom application support	\$ -	\$ 30,402	\$ 30,402
GIS support	\$ 15,299	\$ -	\$ 15,299
Support Services	\$ 465,367	\$ 254,235	\$ 719,602
Packaged application support	\$ 306,922	\$ 101,359	\$ 408,281
Custom application support	\$ 143,146	\$ 93,428	\$ 236,574
GIS support	\$ 15,299	\$ 59,448	\$ 74,747
eGovernment (Web/Internet)	\$ 4,987	\$ 163,967	\$ 168,953
Packaged application support	\$ -	\$ 46,670	\$ 46,670
Custom application support	\$ -	\$ 109,537	\$ 109,537
GIS support	\$ 4,987	\$ 7,759	\$ 12,746
IT Planning	\$ 378,315	\$ 236,131	\$ 614,447
Strategic planning & governance	\$ 164,427	\$ 71,768	\$ 236,195
Research and development	\$ 170,509	\$ 107,253	\$ 277,762
Disaster recovery/planning	\$ 43,380	\$ 57,110	\$ 100,490
IT Administration	\$ 993,835	\$ 485,391	\$ 1,479,227
Asset management	\$ 64,724	\$ 51,706	\$ 116,430
IT procurement	\$ 187,676	\$ 68,055	\$ 255,732
Standards and policies development	\$ 136,501	\$ 52,795	\$ 189,297
Customer Account Management	\$ 74,655	\$ 72,999	\$ 147,654
Administrative support	\$ 184,468	\$ 40,886	\$ 225,354
Departmental management	\$ 345,810	\$ 198,950	\$ 544,760
Geographic Information Systems	\$ 33,198	\$ 48,343	\$ 81,541
GIS Data Maintenance	\$ 33,198	\$ 48,343	\$ 81,541
Capital IT Projects			
Capital IT Project Labor	\$ 576,581	\$ 558,998	\$ 1,135,578
Totals (excluding capital projects):	\$ 4,137,828	\$ 3,238,816	\$ 7,376,644

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/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.

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.

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 citywide 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, Web sites 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, server 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.

Law, Safety, and Justice

Management and maintenance of the applications related to the administration and delivery of services within law enforcement, emergency services, fire services and court automation systems.

Public Infrastructure

Management and maintenance of the applications related to supporting the organizations utilities, transit, and transportation infrastructure, and other major physical assets.

Planning and Development

Management and maintenance of the applications related to the administration of the organizations planning and development automation, such as permit issuance, land use planning, code enforcement, etc.

Community Services

Management and maintenance of the applications related to the delivery of social services, health, and recreation.

Governance and Administration

Management and maintenance of the applications that support elections, legislative decision support, and related functions of the organization.

Support Services

Management and maintenance of the applications that are used to support to internal administrative needs.

eGovernment (Web/Internet)

Management and maintenance of applications related to design, maintenance, and development of internal and public-facing web pages and online services not covered by business applications in other categories.

Geographic Information System (GIS)

Management and maintenance of the applications related to the design, development, and maintenance of mapping layers, mapping data, and data conversion.

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 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 citywide IT standards and policies related to hardware, software, procurement, security, and staffing.

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.

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.