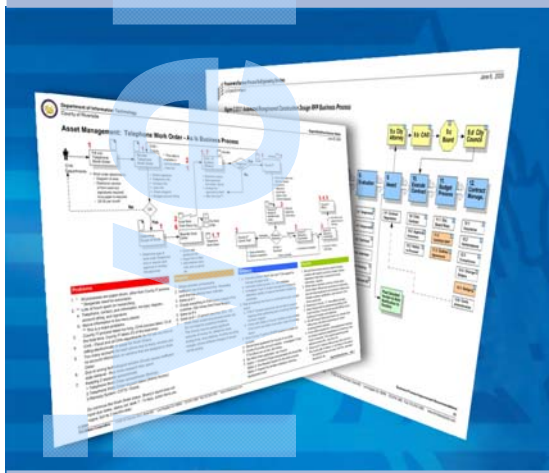


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City of Pasadena IT Strategic Plan

ITSP & Implementation Roadmap: Part 3 – Implementation Roadmap

March 28, 2011



ThirdWave

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Section 1

Introduction

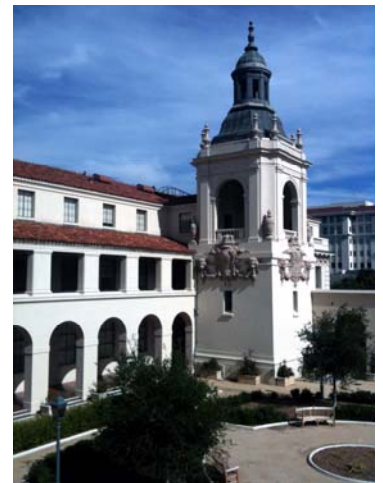
1.1 Introduction to the Implementation Roadmap

This document provides the City of Pasadena's ITSP 5 Year Implementation Roadmap (Roadmap), including ***phased and prioritized Information Technology initiatives, as well as addressing the sustainability of the ITSP with IT human resources.***

Based on the previous deliverables, the ITSP Findings & Recommendations and the Cost-Benefit Analysis documents, this document addresses the acquisition and implementation of Strategic Business Technologies. The IT Strategic Plan Findings & Recommendations articulates “what” should be undertaken - this document is a management tool defining the “when” and at what “cost” the ITSP initiatives might be carried out.

The following pages address a number of key implementation issues that lay out a sound Implementation Roadmap that will ensure the successful deployment of the ITSP, and sound investments in the technologies uniquely required by the City of Pasadena:

- The criteria used to prioritize ITSP Initiatives
- Implementation time frames over a 5 year timeline
- ITSP budget estimates by year
- Human Resources required to sustain the ITSP implementation





1.2 ITSP Vision Statement

The ITSP Implementation Roadmap will foster a transformative framework for how the City of Pasadena leverages its Information Technologies.

The City will embrace information technology as a strategic enabler, embedding it as a critical and fundamental component in all that the City does, while ensuring its use and application is aligned with and supportive of the efficient and responsive delivery of services to all of the City's constituents – its residents, businesses, institutions and visitors.



By aligning Information Technology in support of the business of city government, the City of Pasadena will become a more agile organization that is better able to adapt to changing conditions and pressures.

Through investment in Information Technology, the City will develop and implement innovative approaches for improving the quality and delivery of needed services to its constituents.

1.3 Goals

The goals of the ITSP Implementation Roadmap are to:

- Develop a high performance, scalable and reliable Citywide IT infrastructure that supports the dynamic requirements of the City.
- Align the City's IT initiatives with the City's overall business objectives while ensuring departmental responsibilities and priorities are recognized and taken into account.
- Invest in IT systems based on a rational and impartial assessment of both the tangible and intangible benefits and a realistic assessment of project costs and risks.
- Reduce the cost of operations or service delivery or improve the quality of services delivered to customer through IT investment. Systematically assess and document the benefits realized from IT initiatives.
- Deliver IT services in a cost-efficient manner.
- Approach IT initiatives as a partnership between the Department of Information Technology (DOIT) and individual departments.



1.4 Guiding Principles

The following provides a list of guiding principles related to the use of Information Technologies at the City of Pasadena.

Leadership:	City management at all levels will embrace technology as a strategic enabler and will encourage their staffs to utilize IT to improve the way they do their jobs and deliver services to customers.
Communications:	There will be effective communications between departments and DOIT to keep all parties involved and informed on the progress of IT initiatives and IT trends. The City will keep the public informed on the use of technology in the City.
Accountability:	Create an environment that encourages accountability through service level agreements, performance measures and individual responsibility.
Enabler:	While technology must be viewed as a critical and strategic investment, it must be balanced with the recognition that IT systems are merely enablers and not ends themselves.
Enterprise-Wide:	Encourage an enterprise-wide approach when managing the City's data and utilizing technology in order for the investments to be effectively leveraged in the future by departments, businesses and constituents.
Proven Technology:	Implement contemporary, but proven technologies that maximize future options by emphasizing open standards. Applications should use Commercial Off-the-Shelf software and should be web based, wireless ready and GIS enabled, where appropriate and applicable.
Efficiency:	Decisions regarding funding for technology initiatives should be based on the review and assessment of a comprehensive business case that takes into account both the tangible and intangible costs and benefits of the project.
Strategic Investments:	IT assets, systems, skills and support operations will be viewed as strategic investments that are critical in attaining department and City business objectives.
Partnerships:	The City will maintain partnerships with outside organizations to undertake collaborative efforts in the provision of information and services and obtain expert advice and knowledge of IT trends.
Accessibility:	Implement technology that provides all internal and external customers easy and timely access to data and information. The City will strive to make data available for the benefit of the public subject only to the need to protect the privacy of individuals.



Section 2

Strategic ITSP Initiative Prioritization

2.1 ITSP Initiative Prioritization for the ITSP Roadmap

The Findings & Recommendations document identified close to one hundred possible solutions for enhancing the Information Systems used at the City of Pasadena over the next five years. Technology solutions included more than fifty (50) strategic IT initiatives; the balance is comprised of operational and policy recommendations related to the use, operation and management of the City's IT portfolio.

IT solutions identified in the requirements definition phase of the project were vetted and consolidated to produce the final list used for the prioritization process. The final step of the ITSP process is what is contained in this report.



2.2 Strategic Enterprise IT Initiatives

The figure on the following page provides a list of the final technology initiatives identified in the course of the ITSP project. Unless otherwise noted, most technology initiatives were identified in Discovery / Requirements Definition phases of the project (e.g., online customer surveys, management interviews, end user workshops and IT Focus Groups). Other initiatives were identified by the City's ITGC and directly by departments in the ITGC's "Call for Projects." ITSP initiatives are grouped by type.



Figure 2.2.1: ITSP Initiatives

No.	Type	ITSP Initiatives
Infrastructure		
1.	I 1	INFRAST Virtual Desktop Infrastructure ¹
2.	I 2	INFRAST Network Core Router Lifecycle Replacement ¹
3.	I 3	INFRAST Consolidate Data Centers ¹
4.	I 4	INFRAST SAN Replacement ¹
5.	I 4	INFRAST Server / Network Infrastructure Lifecycle Replacement ¹
6.	I 6	INFRAST Integrate the DOIT and DOT Fiber Networks
7.	I 7	INFRAST City Fiber Expansion ¹
8.	C 1	COM SYST Improve Wireless Local Service
9.	C 2	COM SYST Voicemail & Unified Messaging ¹
Hardware		
10.	HW 1	HW Replace Aging PCs
11.	HW 2	HW Continue Server Virtualization Program
12.	HW 3	PERIPH Digital Cameras with Digital Date Stamp *
13.	HW 4	PERIPH Remittance Processing
14.	HW 5	HW Implement Imaging Systems Hardware
15.	HW 6	HW Provide Walk Up Kiosks
Software		
Department Applications		
16.	DA 1	D APPS Electronic Health Records (Health)
17.	DA 2	D APPS Parking Management System ¹ (DOT/Finance)
18.	DA 3	D APPS Develop Property History DB Application (DOT)
19.	DA 4	D APPS Intelligent Transportation System (SAFETEA-LU) ¹
20.	DA 5	D APPS Implement Attendance Tracking (HR)
21.	DA 6	D APPS Upgrade Q-Flow (Permitting)
22.	DA 7	D APPS Library Statistics Application (Library)*
23.	DA 8	D APPS Multi-space Meter Project ¹ * (DOT)
24.	DA 9	D APPS Public Works Street Light Inventory ¹ * (Public Works)
25.	DA 10	D APPS Police Records Management System, Interfaced to FMS GIS (Police)
26.	DA 11	D APPS Customer Information System ² (Water & Power)
27.	DA 12	D APPS SCADA ² (Water & Power)
28.	DA 13	D APPS Smart Grid ² (Water & Power)
29.	DA 13	D APPS GIS System Enhancements ² (Water & Power)

^{1.} ITSP initiatives identified in the ITGC's Call for Projects, funded in most cases

^{2.} ITSP Initiative identified by PWP, funded in most cases

* Low hanging fruit, low cost initiatives with considerable public benefit



Figure 2.2.1: ITSP Initiatives: continued

No.	Type	ITSP Initiatives	
Enterprise Applications			
30.	EA 1	SW ENTER	SharePoint 2010 Upgrade ¹
31.	EA 2	SW ENTER	ePersonality Self Service Module / Enhancement ¹
32.	EA 3	SW ENTER	Replace Land Management System
33.	EA 4	SW ENTER	Enterprise Content Management System
34.	EA 5	SW ENTER	Update Existing Parcel Database
35.	EA 6	SW ENTER	Develop GIS DOT Applications
36.	EA 7	SW ENTER	PC Power Management Software
37.	EA 8	SW ENTER	Finance / HR System ERP (Enterprise Resource Planning)
38.	EA 9	SW ENTER	Public Records Act System Application
E-Government Applications			
City E-Government Applications			
39	EGOV1	CITY E-GOV	Complete City Website Conversion (Enterprise)
40	EGOV2	CITY E-GOV	Online Permitting Applications (Enterprise)
41	EGOV3	CITY E-GOV	Online Inspection Application (Enterprise)
42	EGOV4	CITY E-GOV	Online Work Order Application (Enterprise)
43	EGOV5	CITY E-GOV	Asset Management Application (Enterprise)
44	EGOV6	CITY E-GOV	Consolidate Electronic Employee Directories (Enterprise)
45	EGOV7	CITY E-GOV	Insurance DB & E-Forms (Enterprise)
46	EGOV8	CITY E-GOV	Online Purchasing Application (Enterprise)
Customer E-Government Applications			
47	EGOV9	CUST E-GOV	Online Appointment Scheduling (Enterprise)
48	EGOV10	CUST E-GOV	Online Customer Service Requests (Enterprise)
49	EGOV11	CUST E-GOV	Online Accounts (Enterprise)
50	EGOV12	CUST E-GOV	Online Payments (Enterprise)
51	EGOV13	CUST E-GOV	Online Application Submittals (Enterprise)
52	EGOV14	CUST E-GOV	Library: Research / Reference Services
53	EGOV15	CUST E-GOV	Online Parking Garage: View space availability
Systems Integration			
54	S 1	SI	PRC Application Program Interfaces (Fire)
55	S 2	SI	CAD & Firehouse Interface (Fire)

¹ ITSP initiatives identified by the ITGC's Call for Projects, funded in most cases
² ITSP Initiative identified by PWP, funded in most cases
* Low hanging fruit, low cost initiatives with considerable public benefit



2.3 Prioritization Criteria & Process

The criteria to assess and prioritize ITSP initiatives were developed in collaboration with the City’s IT Governance Committee (ITGC). Prioritization criteria included a broad range of performance parameters aligned with the City’s business objectives and tangible internal and customer benefits. The following describes the framework and process employed to prioritize ITSP initiatives.

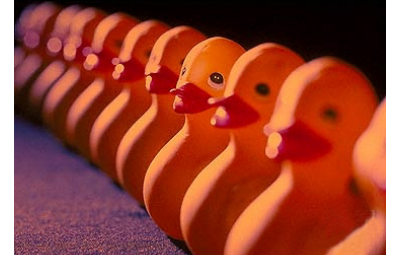


Figure 2.3.1: ITSP Initiative Prioritization Criteria

Initiatives meeting one of the bullet/criterion listed below received 1 point; those meeting two bullets/criteria received 3 points; and those meeting all three bullets/criteria received 5 points.

Prioritization Step 1: Application of Criteria		Ratings
1. Contributes to Strategic IT Infrastructure / Enterprise Architecture		
• Provides the architecture / infrastructure required to implement other key projects		1
• Facilitates collaboration with and within government.....		3
• Enterprise solution – highly leverageable, benefiting several business units.....		5
2. Fosters Internal Operational Efficiencies		
• Improves business practices and aligns them with departmental goals.....		1
• Breaks down barriers to sharing of data		3
• Supports / Improves the safety of City employees		5
3. Improves External Service Delivery		
• Significantly improves customer service		1
• Web enables services for faster/easier service to the public.....		3
• Supports / improves the safety of the public.....		5
4. Legally Mandated		
• Not legally mandated		0
• Legally mandated.....		5
5. Ease of Implementation		
	Months	
• Short timeline	< 6 months	5
• Medium timeline	6 - 12 months	3
• Long timeline.....	> 12 months	1

Prioritization Step 2: Cost - Benefit Analysis

The following data will be applied after ITSP initiatives have been prioritized in formulating the ITSP Implementation Roadmap:

- Cost Benefit Analysis
- Funding Availability



Prioritization Step 3: City Council Strategic Goals

Prioritized Projects were reviewed in light of the City Council Strategic Goals:

- Maintains fiscal responsibility and stability
- Improves, maintains, and enhances public facilities and infrastructure
- Increases conservation and sustainability
- Improves mobility and accessibility
- Supports and promotes quality of life and the local economy
- Ensures public safety

Per the ITGC meeting on January 6, 2011, the following pages provide a preliminary list of prioritized ITSP projects. The initiatives reflect the combination of priority ratings (as developed with the ITGC) in addition to the consideration of system dependencies and best practices. Consequently, the priority scores (shown under the “Score / P” column) are not strictly sorted mathematically. (Asterisked initiatives were identified by DOIT / Department, outside the ITSP project.)

Figure 2.3.2: Preliminary Prioritized ITSP Initiatives

ITSP Initiative Criteria

1. Contributes to Strategic IT Infrastructure / Enterprise Architecture
2. Fosters Internal Operational Efficiencies
3. Improves External Service Delivery
4. Legally Mandated
5. Ease of Implementation

Ratings:

1. Low
3. Medium
5. High

No.	IT Type	ITSP #	ITSP Initiatives	Score	Criteria				
				P	1	2	3	4	5
1	SW ENTER	EA 8	Finance/HR System ERP (Enterprise Resource Planning)	25	5	5	5	5	5
2	HW	HW 1	Replace Aging PCs	14	5	3	3	0	3
3	INFRAS	I 1	Virtual Desktop Infrastructure*	14	5	3	3	0	3
4	COM SYST	C 1	Improve Wireless Local Service	15	5	5	5	0	0
5	D APPS	DA 1	Electronic Health Records (Health)	15	1	5	3	5	1
6	INFRAS	I 2	Network Core Router Lifecycle Replacement*	14	5	3	3	0	3
7	SW ENTER	EA 1	SharePoint 2010 Upgrade*	14	5	3	1	0	5
8	CITY E-GOV	EGOV 1	Complete City Website Conversion: Enterprise	14	5	3	3	0	3
9	INFRAS	I 3	Consolidate Data Centers	14	5	5	3	0	1
10	D APPS	DA 2	Parking Management System*	14	3	3	5	0	3
11	INFRAS	I 4	SAN Replacement*	12	5	3	1	0	3
12	SW ENTER	EA 2	ePersonality Self Service Module / Enhancement *	11	3	3	0	0	5
13	HW	HW 2	Continue Server Virtualization Program	10	3	3	3	0	1
14	INFRAS	I 5	Server/Network Infrastructure Lifecycle Replacement *	10	5	3	1	0	1



Figure 2.3.2: Preliminary Prioritized ITSP Initiatives: continued

ITSP Initiative Criteria

1. Contributes to Strategic IT Infrastructure / Enterprise Architecture
2. Fosters Internal Operational Efficiencies
3. Improves External Service Delivery
4. Legally Mandated
5. Ease of Implementation

Ratings:

1. Low
3. Medium
5. High

No.	IT Type	ITSP #	ITSP Initiatives	Score	Criteria				
				P	1	2	3	4	5
15	SW ENTER	EA 7	PC Power Management Software	8	1	1	1	0	5
16	D APPS	DA 13	Smart Grid (PWP)	14	5	5	3	0	1
17	D APPS	DA 14	Customer Information System (Water & Power)	12	5	3	3	0	1
18	D APPS	DA 15	GIS System Enhancements (Water & Power)	16	5	5	3	0	3
19	SW ENTER	EA 3	Replace Land Management System	14	5	3	5	0	1
20	INFRAST	I 6	Integrate the DOIT and DOT Fiber Networks	12	5	3	3	0	1
21	INFRAST	I 7	City Fiber Expansion*	10	5	3	1	0	1
22	SW ENTER	EA 4	Enterprise Content Management System	16	5	5	5	0	1
23	CUST E-GOV	EGOV 9	Online Appointment Scheduling	20	5	5	5	0	5
24	CITY E-GOV	EGOV 2	Online Permitting Applications	20	5	5	5	0	5
25	CITY E-GOV	EGOV 3	Online Inspection Application	20	5	5	5	0	5
26	CUST E-GOV	EGOV 10	Online Customer Service Requests	20	5	5	5	0	5
27	CUST E-GOV	EGOV 11	Online Accounts	15	5	5	5	0	0
28	SW ENTER	EA 5	Update Existing Parcel Database	15	5	5	5	0	0
29	CITY E-GOV	EGOV 4	Work Order Application	13	5	3	5	0	0
30	D APPS	DA 12	SCADA (PWP)	12	1	5	3	0	3
31	HW	HW 3	Digital Cameras with Digital Date Stamp	20	0	5	5	5	5
32	HW	HW 4	Remittance Processing	18	5	5	5	0	3
33	CUST E-GOV	EGOV 12	Online Payments	13	5	3	5	0	0
34	HW	HW 5	Implement Imaging Systems Hardware	16	5	5	3	0	3
35	SI	DA 10	Police Records Management System: Interfaced to FMS & GIS	16	3	5	5	0	3
36	D APPS	DA 3	Develop Property History DB Application (DOT)	14	3	3	5	0	3
37	SW ENTER	E 6	Develop GIS DOT Applications (DOT)	14	3	3	5	0	3
38	CITY E-GOV	EGOV 5	Asset Management Application	14	5	3	3	0	3
39	CUST E-GOV	EGOV 13	Online Application Submittals	14	5	3	3	0	3
40	SI	S 1	PRC Application Program Interfaces (Fire)	12	1	3	5	0	3
41	SI	S 2	CAD & Firehouse Interface (Fire)	12	1	3	5	0	3
42	CITY E-GOV	EGOV 6	Consolidate Electronic Employee Directories: Enterprise	12	3	3	3	0	3



Figure 2.3.2: Preliminary Prioritized ITSP Initiatives: continued

ITSP Initiative Criteria

1. Contributes to Strategic IT Infrastructure / Enterprise Architecture
2. Fosters Internal Operational Efficiencies
3. Improves External Service Delivery
4. Legally Mandated
5. Ease of Implementation

Ratings:

1. Low
3. Medium
5. High

No.	IT Type	ITSP #	ITSP Initiatives	Score		Criteria				
				P		1	2	3	4	5
43	CITY E-GOV	EGOV 7	Insurance DB & E-Forms: Enterprise	12		3	3	3	0	3
44	D APPS	DA 4	Intelligent Transportation System (SAFETEA-LU)*	12		3	3	5	0	1
45	SW ENTER	EA 9	Public Records Act System Application (Enterprise)	10		3	3	1	0	3
46	CUST E-GOV	EGOV 14	Library: Research / Reference Services	10		1	3	3	0	3
47	COM SYST	C 2	Voicemail & Unified Messaging*	10		3	3	1	0	3
48	CITY E-GOV	EGOV 8	Online Purchasing Application: Enterprise	10		3	3	3	0	1
49	D APPS	DA 5	Implement Attendance Tracking (HR)	9		3	3	0	0	3
50	D APPS	DA 6	Upgrade Q-Flow (Permitting)	9		0	3	1	0	5
51	CUST E-GOV	EGOV 15	Online Parking Garage: View space availability	9		0	3	3	0	3
52	D APPS	DA 7	Library Statistics Application (Library)	8		1	3	1	0	3
53	D APPS	DA 9	Public Works Street Light Inventory*	8		1	3	3	0	1
54	D APPS	DA 8	Multi-space Meter Project*	5		0	1	3	0	1
55	HW	HW 6	Provide Walk Up Kiosks	7		0	1	3	0	3

Note: While the priorities shown above are generally reflected in the Implementation Plan shown on the following pages, the order of some initiatives were revised due to available funding resources and other organizational considerations.



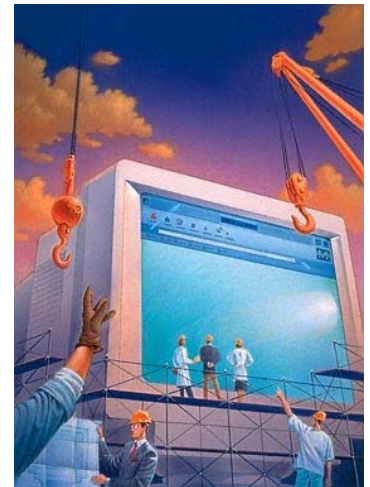
Section 3

ITSP 5 Year Implementation Roadmap

3.1 Implementation Roadmap Principles

The ITSP Implementation Roadmap (Roadmap) illustrates the prioritized sequencing and projected timelines for the ITSP initiatives over a 5 year period. The Roadmap represents the construction phase of the IT Strategic Plan.

The following pages provide a 5 year timeline along with yearly project schedules reflecting the final prioritized IT Initiatives identified in the ITSP Project *as of this writing*. However, it bears noting that the Roadmap (and in fact the ITSP documents: *Part 1: ITSP Findings & Recommendations, Part 2: Cost-Benefit Analysis and this document, Part 3: Implementation Roadmap*) are living documents. Acting as planning and implementation documents, all of these documents are subject to continuous review and adjustments as the City of Pasadena's business needs, financial position and Information Technology portfolio change.



3.1.1 Roadmap Framework

The ITSP Roadmap adheres to a framework comprised of a number of general operating principles, as outlined below:

1. **Build a solid and secure infrastructure foundation:** The Roadmap works to ensure that the City's communications infrastructure is sound, allowing for the deployment of various strategic business technologies. In general, the Roadmap reflects the importance and best



practice of upgrading infrastructure as a prerequisite to the deployment of departmental / enterprise applications.

- 2. Focus on economies of scale in the investment and deployment of initiatives:** The Roadmap focuses on moving the City away from stand-alone silo systems towards solutions that can be leveraged across multiple business units. For instance, E-Government applications in the Roadmap assume a “write-once – use many” approach, i.e., Online Payments address several online payment requirements across numerous departments. The figure below illustrates how the majority of the proposed strategic business technologies will achieve economies of scale by being leveraged across multiple departments, thus producing the highest return on investment possible.



Figure 3.1.1: Economies of Scale Solution & Investment Strategy

	Infrastructure	Hardware	Software Departments	Software Enterprise	E-Gov City	E-Gov Customer
Departments	Virtual Desktop Infrastructure Network Core Router Lifecycle Replacement Consolidate Data Centers SAN Replacement Server / Network Lifecycle Replacement Integrate the DOIT and DOT Fiber Networks City Fiber Expansion Improve Local Wireless Service Voicemail & Unified Messaging	Replace Aging PCs Continue Server Virtualization Program Provide Walk Up Kiosks, where appropriate Implement Imaging Systems Implement Scan Stations Remittance Processing Digital Cameras (with Digital Date stamp)	Electronic Health Records (Health) Parking Management System (DOT) Property History DB Application (DOT) Intelligent Transportation System (DOT) New Police RMS (Police) Implement Attendance Tracking (HR) Upgrade Q-Flow (Planning) Library Statistics Application (Library) Public Works Street Light Inventory (Public Works) Multi-space Meter Project1 (DOT) Customer Information System (Water & Power) SCADA (Water & Power) Smart Grid 2 (Water & Power) GIS System Enhancements 2 (Water & Power)	Implement PC Power Management Software New Finance/HR ERP System SharePoint 2010 Upgrade ePersonality Self Service Module/Enhancement Replace Land M management System Enterprise Content M management System Update Existing Parcel Database (Planning) Develop GIS Applications (DOT) Public Records Act System Application (Enterprise)	Complete City Website Conversion: Enterprise Online Permitting Application Inspection Application Work Order Application Asset Management Application Consolidate E-Employee Directories: Enterprise Insurance DB & E-Forms: Enterprise Online Purchasing Application: Enterprise	Online Appointment Scheduling Online Customer Service Requests Online Accounts: Set up / view account status Online Payments: Enterprise Online Application Submittals Library: Research / reference services Parking Garage: View space availability
City Attorney	●●●●●	●●		●●●●●		
City Clerk	●●●●●	●●		●●●●●		
City Manager	●●●●●	●●		●●●●●		
DOIT	●●●●●	●●		●●●●●		
DOT	●●●●●	●●		●●●●●		
Finance	●●●●●	●●	●●	●●●●●		
Fire	●●●●●	●●	●●	●●●●●		
Health	●●●●●	●●	●●	●●●●●		
Housing	●●●●●	●●		●●●●●		
Human Resources	●●●●●	●●	●	●●●●●		
Human Services & Rec	●●●●●	●●		●●●●●		
Library	●●●●●	●●		●●●●●		
Planning	●●●●●	●●	●	●●●●●		
Police	●●●●●	●●	●●	●●●●●		
Public Works	●●●●●	●●	●	●●●●●		
Water & Power	●●●●●	●●		●●●●●		



3. **Provide staff with the minimum tools of the trade:** This Roadmap focuses on providing staff with the fundamental tools needed to provide City services **and** interface with all of the City's constituents, i.e., contemporary PCs, Office Automation software, and web-enabled service delivery solutions.
4. **Recognize deployment prerequisites:** The Roadmap recognizes that deployment of certain solutions require up-stream system preparation, i.e., the completion of the City website in order to deploy online E-Commerce applications, ubiquitous remote access to data for City staff working in the field, and so on.
5. **Utilize parallel deployment approaches to fast track initiatives:** To the extent possible, based on available resources, ITSP initiatives will occur in parallel using staff with different skill sets appropriate to execute projects.
6. **Use IT best practices for the execution and management of ITSP initiatives:** All development and implementation projects will use formal industry standard methodologies and a uniform Enterprise Architecture, development tools and databases.
7. **Allocate sufficient IT staff resources to ensure sustainability:** The Roadmap currently includes 55 (fifty-five) ITSP initiatives of varying scale and complexity over the next several years. This represents a significant workload for IT staff that will be added to ongoing project work (and existing project back-logs). The Roadmap will require that the City place a higher level of importance on the IT organization, and its resources, to successfully deploy and effectively sustain the ITSP Roadmap.

3.2 5 Year Roadmap

The figure on the following page provides an overview of the proposed 5 Year Implementation Roadmap. In general, the 5 Year Roadmap follows the prioritization identified in section 2 of this document, with the exception of initiatives that were moved for other reasons, i.e., existing funding or because of their relationship to ongoing projects.



The ITSP Roadmap provides an enterprise view of the 5 year timeline. The following should be noted:

- Projects anticipated to be carried out by DOIT are shown with a solid bar.
- Projects requiring solicitation processes are shown with a light colored bar preceding the solid dark color bar indicating deployment timelines. These ITSP initiatives tend to be the larger projects of some scale and/or complexity. From a planning perspective, the solicitation timelines are important because they imply staff resources for the development of RFP documents, the formation of end user evaluation / selection committees, and the assignment of appropriate IT staff resources.
- Ongoing ITSP initiatives are shown with a dashed line.



- The number in the column titled “M” indicates the approximate number of months to carry out an initiative.
- ***The timing of ITSP initiatives are subject to change based on the availability of funding, either at the department or enterprise level. The Implementation Roadmap is not cast in concrete.***



Figure 3.2.1: Overall 5 Year Implementation Roadmap

YR.	No.	Type	ITSP Initiatives	2011/12	2012/13	2013/14	2014/15	2015/16
YR 1	1	HW	Replace Aging PCs			304,800	304,800	304,800
	2	SW	PC Power Management Software	DOIT				
	3	INFRAST	Virtual Desktop Infrastructure	500,000	250,000			
	4	COM SYST	Improve Wireless Local Service	DOIT				
	5	INFRAST	Network Core Router Lifecycle Replacement	225,000				
	6	INFRAST	Consolidate Data Centers	50,000	150,000	150,000	150,000	
	7	HW	Continue Server Virtualization Program	30,000	30,000	30,000	30,000	30,000
	8	INFRAST	Server / Network Infrastructure Lifecycle Replacement	150,000	150,000	150,000	150,000	150,000
	9	INFRAST	SAN Replacement	300,000				
	10	D APPS	Electronic Health Records (Health)	500,000	28,000	28,000	28,000	28,000
	11	SW ENTER	Finance System / ERP (Enterprise Resource Planning)		3,000,000	400,000	400,000	400,000
	12	SW ENTER	SharePoint 2010 Upgrade	25,000	1,500	1,500	1,500	1,500
	13	CITY E-GOV	Complete City Website Conversion: Enterprise	30,000				
	14	D APPS	Parking Management System	75,000	15,000	15,000	15,000	15,000
	15	SW ENTER	ePersonality Self Service Module/Enhancement	25,000	5,000	5,000	5,000	5,000
	16	SW ENTER	Replace Land Management System	-	750,000	150,000	150,000	150,000
	17	D APPS	Library Statistics Application *	5,000	5,000	5,000	5,000	5,000
	18	D APPS	Multi-space Meter Project *	7,500	7,500	7,500	7,500	7,500
	19	PERIPHERAL	Digital Cameras with digital date stamp *	2,000				
	20	D APPS	Public Works Street Light Inventory *	Funded				
	21	D APPS	Intelligent Transportation System (SAFETEA-LU)	Funded	Funded			
	22	D APPS	Customer Billing System (ECIS)	Funded	Funded			
	23	CITY E-GOV	Online Accounts (Enterprise)	DOIT				
	24	CITY E-GOV	Online Payments (Enterprise)	DOIT				
	25	CITY E-GOV	Online Application Submittals	DOIT				
YR 2	26	D APPS	SCADA		Funded			
	27	D APPS	Smart Grid		Funded			
	28	D APPS	GIS System Enhancement		Funded			
	29	HW	Remittance Processing		50,000	10,000	10,000	10,000
	30	INFRAST	Integrate the DOIT and DOT Fiber Networks		185,000	-	-	-
	31	INFRAST	City Fiber Expansion		75,000	75,000	-	-
	32	SW ENTER	Enterprise Content Management System (Enterprise)		248,000	126,250	236,380	106,900
	33	HW	Implement Imaging Systems Hardware		30,000	30,000	30,000	30,000
	34	CUST E-GOV	Online Appointment Scheduling (Enterprise)		DOIT			
	35	CITY E-GOV	Online Permitting Applications (Enterprise)		130,000	16,000	16,000	16,000
	36	CITY E-GOV	Online Inspection Application (Enterprise)		160,000	20,000	20,000	20,000
	37	CUST E-GOV	Online Customer Service Requests (Enterprise)		DOIT			-
	38	COM SYST	Voicemail & Unified Messaging		100,000			
YR 3	39	D APPS	New Police RMS, Interface to FMS & GIS,			700,000	100,000	100,000
	40	CITY E-GOV	Online Work Order Application (Enterprise)			85,000	16,000	16,000
	41	D APPS	Develop Property History DB Application			DOIT		
	42	SW ENTER	Develop GIS DOT Applications			DOIT		
	43	CITY E-GOV	Asset Management Application (Enterprise)			130,000	16,000	16,000
	44	SW ENTER	Update Existing Parcel Database (PPD)			DOIT		
YR 4	45	SI	PRC Application Program Interfaces				50,000	
	46	SI	CAD & Firehouse Interface				50,000	
	47	CITY E-GOV	Consolidate Electronic Employee Directories (Enterprise)				DOIT	
	48	CITY E-GOV	Insurance DB & E-Forms (Enterprise)				DOIT	
	49	SW ENTER	Public Records Act System Application (Enterprise)				DOIT	
	50	CUST E-GOV	Library: Research / reference services				DOIT	
YR 5	51	CITY E-GOV	Online Purchasing Application (Enterprise)					200,000
	52	D APPS	Implement Attendance Tracking					25,000
	53	D APPS	Upgrade Q-Flow (Permitting)					5,000
	54	CUST E-GOV	Online Parking Garage: View space availability					DOIT
	55	HW	Provide Walk Up Kiosks					6,000
	Yearly Subtotals				1,924,500	5,370,000	2,439,050	1,791,180
				13,172,430				



3.2.1 Year 1 Timeline & Assumptions

The following provides an overview of the Year 1 Roadmap and corresponding assumptions.

Figure 3.2.1.1: Year 1 Timeline

Yr.	No.	Type	ITSP Initiatives	M	2011/12	2012/13	2013/14	2014/15	2015/16
YR 1	1	HW	Replace Aging PCs	OG	[Timeline bars across all years]				
	2	SW ENTER	PC Power Management Software	2	[Timeline bar in 2011/12]				
	3	INFRAS	Virtual Desktop Infrastructure	12	[Timeline bar in 2011/12]				
	4	COM SYST	Improve Wireless Local Service	2	[Timeline bars in 2011/12, 2012/13, 2013/14, 2014/15, 2015/16]				
	5	INFRAS	Network Core Router Lifecycle Replacement	6	[Timeline bar in 2011/12]				
	6	INFRAS	Consolidate Data Centers	6	[Timeline bar in 2011/12]				
	7	HW	Continue Server Virtualization Program	OG	[Timeline bars across all years]				
	8	INFRAS	Server / Network Infrastructure Lifecycle Replacement	10	[Timeline bar in 2011/12]				
	9	INFRAS	SAN Replacement	4	[Timeline bar in 2011/12]				
	10	D APPS	Electronic Health Records (Health)	12	[Timeline bar in 2011/12]				
	11	SW ENTER	New Finance/HR (ERP) Systems	12	[Timeline bar in 2011/12]				
	12	SW ENTER	SharePoint 2010 Upgrade	4	[Timeline bar in 2011/12]				
	13	CITY E-GOV	Complete City Website Conversion: Enterprise	4	[Timeline bar in 2011/12]				
	14	D APPS	Parking Management System (DOT)	12	[Timeline bar in 2011/12]				
	15	SW ENTER	ePersonality Self Service Module/Enhancement	4	[Timeline bar in 2011/12]				
	16	SW ENTER	Replace Land Management System	12	[Timeline bar in 2011/12]				
	17	D APPS	Library Statistics Application (Library)	3	[Timeline bar in 2011/12]				
	18	D APPS	Multi-space Meter Project (DOT)	3	[Timeline bar in 2011/12]				
	19	PERIPHERAL	Digital Cameras (Digital Date stamp)	1	[Timeline bar in 2011/12]				
	20	D APPS	Public Works Street Light Inventory (Public Works)	8	[Timeline bar in 2011/12]				
	21	D APPS	Intelligent Trans. System (SAFETEA-LU) (DOT)	12	[Timeline bar in 2011/12]				
	22	D APPS	Customer Billing System (ECIS) (Water & Power)	12	[Timeline bar in 2011/12]				
	23	CUST E-GOV	Online Accounts (Enterprise)	6	[Timeline bar in 2011/12]				
	24	CUST E-GOV	Online Payments (Enterprise)	9	[Timeline bar in 2011/12]				
	25	CUST E-GOV	Online Application Submittals (Enterprise)	6	[Timeline bar in 2011/12]				

Year 1 Initiatives

Infrastructure

1. HW

Replace Aging PCs (Enterprise)

The City maintains over 2,000 desktop and laptop computers, including those in public labs. A study conducted during summer 2010 concluded that over 50% of desktops are over five years old and cannot be upgraded to Windows 7. Replacing desktops every four years is important to support software updates from vendors and to leverage new capabilities and features. This initiative will entail refreshing the City's outdated PCs and upgrading them to Windows 7 on an ongoing basis over several years.

Duration: Ongoing

2. HW

PC Power Management Software (Enterprise)

This initiative will entail implementing PC Power Management software, which the City currently has. This Green initiative could reduce the power energy consumption by 20 – 60% and save the City \$25.00 – \$60.00 / year for each computer.

Duration: 2 months.



- 3. INFRAST Virtual Desktop Infrastructure (Enterprise)**
This initiative will entail carrying out a Desktop Virtualization Program (which will reduce license, administrative, staff support costs). Virtual desktop infrastructure is a technology that can deliver Windows 7 and other operating systems through a thin client device, an existing physical desktop, or remotely through the Internet. The technology is poised to reduce IT operating costs, and increase performance and flexibility for office, field and remote staff.
Duration: 1,000 virtual desktops to begin in FY2012, additional 600 to begin in FY2013.
- 4. COM SYST Improve Wireless Local Service (Enterprise)**
This initiative will entail DOIT staff working more closely with existing wireless carriers to improve local coverage in meeting the needs of City staff requiring wireless connections while working in the field.
Duration: Ongoing.
- 5. INFRAST Network Core Router Lifecycle Replacement (Enterprise)**
This project supports the lifecycle replacement of core routers providing data network service to all City facilities and to the City data centers. The project includes the purchase of router equipment.
Duration: 6 months.
- 6. INFRAST Consolidate Data Centers (Enterprise)**
The City supports three data centers with no failover capabilities across the sites. The primary data center, located in high risk leased space, supports most City departments and enterprise systems; the second site supports Police systems and the third site supports Water & Power systems. The data center supporting Police systems is under consideration to become the primary site once the legacy Computer Aided Dispatch and Records Management System is removed and a redesign study can be completed.
Duration: 6 months.
- 7. HW Continue Server Virtualization Program (Enterprise)**
This initiative will entail continuing with an ongoing effort of server virtualization.
Duration: Ongoing
- 8. INFRAST Server / Network Infrastructure Lifecycle Replacement (Enterprise)**
This initiative will entail assessing and replacing aging servers, including a phased Server O/S upgrade to Windows 2008 R2, starting the oldest servers first. The Green initiative could save the City up to \$700 / year for each virtualized server.
Duration: 10 months.
- 9. INFRAST SAN Replacement (Enterprise)**
This initiative will entail replacing an existing storage area network (SAN) purchased with a support agreement expiring in early 2011. The SAN is a heavily utilized piece of hardware and maintains the majority of business critical applications and data. Continuing to operate on an older SAN platform represents a higher risk of downtime and possible data loss. Providing the level of application uptime for business critical systems experienced in the past, will require replacing this system.
Duration: 4 months.



Enterprise & Departmental Applications

- 10. D APPS Electronic Health Records (Health)**
This initiative will entail implementing an imaging system to produce Electronic Health Records at the Health Department.
Duration: 12 months.
- 11. SW ENTER New Finance/HR (ERP) System (Enterprise)**
This initiative entails replacing the existing disparate ERP systems including: PeopleSoft (implemented in 1997), PowerPlan, CityVision, and the recently upgraded ePersonality. The proposed system should offer the complete suite of contemporary ERP systems, including (at a minimum) Finance, Budget, HR, Procurement, etc.
Duration: 12 months, preceded by a 12 month solicitation process.
- 12. SW ENTER SharePoint 2010 Upgrade (Enterprise)**
This initiative entails upgrading the existing SharePoint software, which is a tool that can be leveraged as an enterprise resource.
Duration: 4 months.
- 13. CITY E-GOV Complete City Website Conversion (Enterprise)**
This initiative entails completing the conversion of the City's website pages from the old design to the new Graphical User Interface standard, which was developed in 2010.
Duration: 4 months.
- 14. D APPS Parking Management System (DOT)**
This initiative will update / improve the City's parking permit management and citation processing business process via a new software package. Parking permits are currently managed as a paper process that precludes the efficient transfer of information to the citation issuing and processing software that is currently in use. The new parking management system will enable electronic issuing of overnight permits and allow the City to limit the number of purchases made via TOPEK/TOPEDO. The new system will include point of sale processes that will provide the City the ability to audit at the cashier level. This initiative will also require upgrading the handheld citation devices.
Duration: 12 months.
- 15. SW ENTER ePersonality Self Service Module/Enhancement (Human Resources)**
This initiative entails implementing the Manager Self Service module, which brings work that a manager must perform related to their staff directly to them using ePersonality (the City's Payroll/HR application) via a WEB based logon. The City has the software to carry this initiative out but may require professional services for implementation.
Duration: 4 months.
- 16. SW ENTER Replace Land Management System (Enterprise)**
This initiative entails replacing the existing, outdated Tidemark System. This solution was identified in several requirements definition workshops, and would benefit several City departments and the public, with regards to permits, code enforcement and other key City services. The replacement system should:
 - Provide key land management features/functions carried out by municipalities.



- Provide a fast and easy Graphical User Interface.
 - Provide enterprise features and functions.
 - Provide Web-enabled capabilities and online access to records.
 - Provide integration to the City's IVR, GIS, and ECMS.
 - Provide a variety of reports.
 - Allow for migration of existing Tidemark data into the new system.
- Duration: 12 months, preceded by a 12 month solicitation process.

17. D APPS

Library Statistics Application (Library)

This initiative entails implementing one electronic repository for library statistical data meeting the following high level functional / technical specifications:

- Web front end with DB back end (SQL).
- Provide canned and Ad Hoc reports.
- Provide varying levels of accessibility / security: Read Only, write, delete / report creation / printing.
- Have ability to modify the database structure.
- This application will replace the existing Word, Access, emails and Excel files, providing Web access, data entry validation, and built-in QC.
- Provide ability to export data.
- Incorporate the data from existing data sources, including paper and Access files.
- This solution could be a leading Library system, using a Software as a Service (SaaS) model.

Duration: 3 months.

18. D APPS

Multi-space Meter Project (DOT)

This initiative entails testing new multi-space meters. It is anticipated that these meters will cut costs associated with meter maintenance (batteries, configuration, and credit card processing fess) and enhance customer service and enforcement. These meters are solar powered, thus aid in the City's sustainability efforts.

Duration: 3 months.

19. PERIPHERAL

Digital Cameras (Digital Date Stamp) (Health)

This initiative will entail providing Health inspectors with digital cameras to be used in restaurant and vector inspections.

Duration: 1 month.

20. D APPS

Public Works Street Light Inventory (Public Works)

This initiative entails the inventory of the City street lights to establish the priority of streets. This will include the review, selection and purchase of necessary software and hardware for obtaining street light inventories and synching the information with the City's GIS program. The project will be completed in FY2012.

Duration: 8 months.

21. D APPS

Intelligent Transportation System (SAFETEA-LU) (DOT)

This initiative entails the continuation of an existing DOT project with two components:

Transit Vehicle Arrival Information System (TVAIS): will include equipping the ARTS bus fleet with vehicle location (GPS), predicting vehicle arrival time and



transit stops and providing this information to patrons through signs at selected bus stops, the Internet, and phone systems using Interactive Voice Response (IVR).

Traffic and Parking subsystem: will include upgrades to the City's traffic management center (TMS) to provide multi-modal functionality, a parking guidance system and installation of fiber optics along San Gabriel Blvd., between Colorado Blvd. and La Tierra St. This component also includes equipping City owned parking structures in the central business district with equipment to notify the public on the number of available spaces at each structure. This information will be shared with the public through signs at the parking structures and the Internet. Duration: 12 months / ongoing.

22. D APPS

Customer Information System (CIS) (Water & Power / Enterprise)

This initiative will implement an enterprise CIS, providing customer billing for Water, Power, Refuse, and Sewer Services. System enhancements and upgrades are planned to add functionality to the CIS to enable the system to interface with MVRS meter reading software to read AMR and Probe Meters; bill and read interval data of large customers using MV90xi Commercial Customer Remote Meter Reading; bill and read interval data for selected residential, small and medium meters for the load research project; investigate the use of Mobile Dispatching of Service Orders in conjunction with the Field Service Automation program; provide and interface meter information to the GIS project; pilot new payment methods such as balance billing, preferred pay date, direct credit card payment; pilot enhanced interfaces with IWR to allow customers to start/stop service, change address, request service, update account information all through the Pasadena Water and Power web site.

Duration: 12 months, ongoing, preceded by a 12 month solicitation process.

23. CUST E-GOV Online Accounts (Enterprise)

This will entail the development of an online application allowing the public to establish and view one uniform customer service account with the City. This application will be used to provide online an E-Commerce account for the public to do online payments for a variety of services. At a minimum, this application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- Planning
- Public Works
- Water & Power

Duration: 6 months.

24. CUST E-GOV Online Payments (Enterprise)

This will entail the development of an online payment application allowing the public to make secure online payments for a variety of transactions with City departments. This application will be leveraged across all E-Commerce solutions deployed at the City. At a minimum, this E-Government application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- DOT
- Finance
- Fire
- Health



- Housing
 - Library
 - Planning
 - Public Works
 - Water & Power
- Duration: 6 months.

25. CUST E-GOV Online Application Submittals (Enterprise)

This will entail implementing a web-enabled online application submittal capability that can be leveraged across any department having that requirement. This application will be leveraged across several business functions:

- Energy Efficiency Rebates
- Home Buyer
- Utility Services
- Rental Assistance / Section 8 Housing

3.2.2 Year 2 Timeline & Assumptions

The following provides an overview of the Year 2 Roadmap and corresponding assumptions.

Figure 3.2.2.1: Year 2 Timeline

Yr.	No.	Type	ITSP Initiatives	M	2011/12	2012/13	2013/14	2014/15	2015/16
YR 2	26	D APPS	SCADA (Water & Power)	12					
	27	D APPS	Smart Grid (Water & Power)	12					
	28	D APPS	GIS System Enhancements (Water & Power)	6					
	29	Peripherals	Remittance Processing (Finance)g	6					
	30	INFRAST	Integrate the DOIT and DOT Fiber Networks	12					
	31	INFRAST	City Fiber Expansion	OG					
	32	SW ENTER	Enterprise Content Management System (Enterprise)	OG					
	33	HW	Implement Imaging Systems Hardware	OG					
	34	CUST E-GOV	Online Appointment Scheduling (Enterprise)	6					
	35	CITY E-GOV	Online Permitting Applications (Enterprise)	12					
	36	CITY E-GOV	Online Inspection Application (Enterprise)	6					
	37	CUST E-GOV	Online Customer Service Requests (Enterprise)	6					
	38	COM SYST	Voicemail & Unified Messaging	6					

Year 2 Initiatives

Departmental & E-Government Applications

26. D APPS SCADA (Water & Power)

This initiative provides for the implementation of distribution automation to enable remote and automated switching of distribution feeder switches, fault interrupters, circuit breakers, automated meter infrastructure (AMI), and Smart Grid deployment. This project is required to mitigate any damage resulting from any outages or equipment failures. The project enables PWP to operate distribution switches, circuit breakers, and communications systems remotely, saving valuable time, and preventing more extensive damage to the distribution system. This project will also include any advanced/intelligent metering required by legislation. This initiative will



allow the City to comply with NERC cyber-security requirements and improved reporting.

Duration: 12 months, ongoing.

27. D APPS

Smart Grid (Water & Power)

This initiative is specific to the Water & Power utilities, and will provide regulatory compliance in a number of areas, system reliability and customer service requirements. The Smart Grid initiative will include:

- Communication Technology
- Acquisition of a Meter Data Management System (MDMS)
- Distribution System Automation
- AMI

Duration: 36 months, ongoing.

28. D APPS

GIS System Enhancements (Water & Power)

This initiative will entail updates and enhancements to the existing GIS and the development of a number of GIS applications required by Water & Power business units.

Duration: 12 months, ongoing support afterwards.

29. PERIPH

Remittance Processing (Finance)

This initiative entails implementing electronic remittance processing to conform to Check 21, a federal law designed to enable banks to handle more checks electronically, which should make check processing faster and more efficient. The speed of check-processing already has increased in response to check-system improvements other than Check 21. Check-processing speeds should continue to increase, over time, as banks make further operational changes in response to Check 21. The primary benefits will be the speed at which money is moved to the City's account and a reduction in the amount of paper handling, as well as improved daily reconciliation in Municipal Services.

Duration: 6 months

30. INFRAS

Integrate the DOIT and DOT Fiber Networks (Enterprise)

This initiative entails integrating the DOIT and DOT fiber networks, and leveraging the two networks to meet needs related to City facility and traffic system connections, and sharing of data and video across the two networks for City staff and future public use. This would initially include: updates to fiber network documentation to allow sharing of information in the City's GIS-based fiber records management system; interconnection of the two fiber networks at key locations; and fiber connections for Fire Station 33 on Lake Avenue and the traffic signals at New York Drive and Bradley Street.

Duration: 12 months

31. INFRAS

City Fiber Expansion (Enterprise)

The City's current fiber network provides a source of revenue through leases to local institutions and telecommunications firms, and provides key connections between City facilities, eliminating the need for expensive leased lines. Expansion of the fiber network would allow for connection of additional City facilities (eliminating recurring leased line costs) and possible revenue generation.



Leveraging other City projects presents the opportunity to greatly reduce the cost of fiber network expansion. The incremental cost of adding a conduit to another street trenching project (e.g., utility undergrounding or power conduit construction) is significantly smaller than constructing additional fiber network independently/separately, estimated at \$5 to \$10 per foot versus \$125 per foot for a stand-alone project.

This initiative also supports the City's participation in the Tri-Cities' (Glendale, Burbank and Pasadena) exploration of areas for greater regional cooperation and cost savings associated with IT projects and operations. Glendale and Burbank have already connected their fiber networks. Interconnection of the Glendale and Pasadena fiber networks would also eliminate current ongoing expenses for leased telecommunications lines in both cities, including services linking Glendale libraries to Pasadena and Pasadena Fire to the Verdugo Fire Communications Center.

Duration: This project is a multi-year effort, to be implemented as other City projects present opportunities for fiber network expansion. Evaluation of a fiber link to Glendale will be completed during FY2012.

32. SW ENTER Enterprise Content Management System (Enterprise)

The City currently uses what is considered a non-enterprise level document / records management system (ECMS). Additionally, the City lacks a formal document / records management program to address the needs of all City departments. The need for an ECMS came up in most of the requirements definition workshops and management interviews. This initiative entails implementing a leading enterprise ECMS with the following system features and functions:

- Imaging
- Content Management
- Records Management
- E-Forms
- E-Signatures (work with 3rd party authentication)
- Automated Workflow

The ECMS initiative will include the development of a standard taxonomy (document indexing scheme) and updated records retention schedule prior to rolling out the systems (both best practices). The ECMS will be rolled out in three phases:

- Year 1: City Clerk, Planning, Public Works, DOT, DOIT
 - Year 2: Council, City Manager, Fire, Health, Library, City Attorney
 - Year 3: Housing, Water & Power, Finance, HR, HS&R, Police
- Duration: 36 months, 3 – one year phases.

33. HW Implement Imaging Systems Hardware (Enterprise)

This initiative is part of the ECMS deployment, including scanners for departments as appropriate.
Duration: 3 – one year phases.

34. CUST E-GOV Online Appointment Scheduling (Enterprise)

This will entail the implementation of an online appointment scheduling application aligned with the City's E-Government framework and strategy. This application will



be used by the public to schedule appointments with a number of City Departments, including Health, Police, and any other business units that require customer appointments.

Duration: 6 months.

35. CITY E-GOV Online Permitting Applications (Enterprise)

This will entail the implementation of a contemporary permitting application aligned with the City's E-Government framework and strategy. This application will be used to provide robust permitting capabilities at the City, e.g.: automate the following:

- Permit application, review, and approval and inspection processes
- Route application for review
- Upload plans and associated documents
- Create inspection reports
- Generate certificates of occupancy
- Be a mobile solution

At a minimum, this application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- DOT
- Fire
- Planning
- Public Works
- Water & Power

Duration: 12 months. This application will require approximately 6 months for the purchasing process.

36. CITY E-GOV Online Inspection Application (Enterprise)

This will entail the implementation of a contemporary permitting application aligned with the City's E-Government framework and strategy. This application will be used to provide robust inspection capabilities at the City, e.g.: automate the following activities and inspection data:

- Code enforcement process
- Opening cases
- Scheduling inspections
- Recording violations
- Coordinating and documenting resolutions
- Property ownership
- Inspection results, including digital photos, notices, violations and notes
- Offer a mobile solution

This solution could be a component / module of the online permitting application noted above.

Duration: 6 months.

37. CUST E-GOV Online Customer Service Requests (Enterprise)

This will entail the implementation of an online customer service request application aligned with the City's E-Government framework and strategy. This application will be used to allow the public to request a wide variety of services from one place on the City's website from various City departments.



- City Manager
- DOT
- Housing
- Planning
- Public Works

At a minimum, this application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- DOT
- Fire
- Planning
- Public Works
- Water & Power

Duration: 6 months.

38. COM SYST

Voicemail & Unified Messaging (Enterprise)

This initiative entails a voicemail upgrade to replace the twenty year old system supported today. After the upgrade is complete the City will be able to support current messaging and collaboration technologies. This project proposal is to consolidate the two solutions and provide a greater feature set, while reducing operational costs. Some of the key business objectives are:

- Replace the aging, feature poor, existing voicemail system with a modern, feature rich solution.
- Reduce the hardware, software, and maintenance costs associated with the existing voicemail system.
- Increase the value of voicemail and voice activated systems, to the end user.
- Simplify administration, and offer greater control to system administrators.
- Give the end users more control over their voicemail/messaging experience.

Unified Messaging in Microsoft Exchange Server 2010 helps reduce the time and money the City spends managing voicemail, while helping staff be more productive. Voicemail is consolidated into the universal inbox, along with email and other message types, enabling staff to manage all their business communications in one place.

Duration: 6 months.



3.2.3 Year 3 Timeline & Assumptions

The following provides an overview of the Year 1 Roadmap and corresponding assumptions.

Figure 3.2.3.1: Year 3 Timeline

Yr.	No.	Initiative	M	2011/12	2012/13	2013/14	2014/15	2015/16
YR 3	39	D APPS	New Police RMS (Police)	12				
	40	CITY E-GOV	Online Work Order Application (Enterprise)	6				
	41	D APPS	Develop Property History DB Application (Police)	6				
	42	D APPS	Develop GIS DOT Applications (DOT)	6				
	43	CITY E-GOV	Asset Management Application (Enterprise)	9				
	44	SW ENTER	Update Existing Parcel Database (Enterprise)	6				

Year 3 Initiatives

Departmental & E-Government Applications

39. D APPS

New Police Records Management System (RMS) (Police)

This initiative entails the procurement and implementation of a new Records Management System (RMS) for the Police Department. The proposed system should provide rigorous features and functions to adequately support the needs of the Police, i.e., the following common capabilities:

- Calls for Service
- Incident Reporting & Management
 - Initial incident Report
 - Supplemental Report
 - Report Review
- Investigative Case Management
 - Assign Investigator
 - Case Monitoring
 - Conduct Investigation
 - Charging
 - Case Disposition
- Traffic Incident Reporting
- Field Contact Cards
- Protection Orders & Restraint
- Permits & Licenses
- Equipment & Asset Management
- Fleet Management
- Personnel Management
- Internal Affairs
- RMS Reports
- RMS Interfaces to CAD, Local/Regional/State/Federal Systems

The specific needs of the RMS needs are to be determined.

Duration: 12 month deployment proceeded with a 9 month solicitation process.



Note: The ITSP project only addressed two out of many technology requirements for the Police Department. Outstanding issues are numerous and include, but are not limited to, the following:

- Interoperability with other agencies / first responders, i.e., LA RICS (Regional Interoperable Communication Systems) a federally funded program, LA County, and LA Fire.
- Capacity to store voice / data information with other agencies, i.e. COP-LINK, a regional RMS.
- Predictive policing.
- On Board Computers, which are dated and wearing out.
- In car cameras, systems which are no longer supported.
- Jail Recording System that is obsolete, capturing slow (jerky video) with a limited capacity to share data. Police staff currently has to store video on memory sticks. A new camera recording system with audio is required.
- Police would like a long term CAD / RMS system shared with other municipalities, i.e., a Tri-city solution between the cities of Glendale, Burbank, and a Regional Community center, i.e., Verdugo Hills. (There are 23 agencies that use the West Covina for CAD / RMS, the City of Pasadena feels exposed should West Covina no longer support the system.)

All of the above fell outside the domain of the ITSP Project. ThirdWave recommends that these issues be assessed in a separate IT Strategic Planning effort, if they are not being addressed already.

40. CITY E-GOV Online Work Order Application (Enterprise)

This will entail the implementation of a web-enabled Work Order application to help manage maintenance and project-related work including, but not limited to, the following:

- Routine work
- Corrective work
- Preventive Maintenance work
- Emergency work
- Project, shutdown and outage work
- Environmental, Health and Safety work

At a minimum, this application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- DOT
- Public Works
- Water & Power

Duration: 6 months.

41. D APPS Develop Property History DB Application (Police / Enterprise)

This will entail the development and implementation of a web-enabled Property History Database Application. At a minimum, this application will be initially leveraged across the following business units, and eventually by any department requiring this functionality:

- DOT
- Fire
- Planning



- Public Works
 - Police
- Duration: 6 months

42. SW ENTER Develop GIS DOT Applications (DOT)

GIS is an enterprise system that utilizes spatial data (for mapping and analysis) for a wide variety of applications. GIS applications were identified in several requirements definition workshops, and would benefit many City departments.

DOT: Identified a number of applications they would like to take from existing Excel databases into spatially oriented applications in iMAP, including:

- Traffic Inventories
- Complaint Tracking System (Call Tracking System and Complaints)
- Traffic investigations (currently in progress with DOIT)

Duration: 6 months

Land Management System (Planning): This initiative will entail replacing the existing, outdated Tidemark System.

Duration: 6 months

43. CITY E-GOV Asset Management Application (Enterprise)

This task will entail implementing a web-enabled asset management application that can be leveraged across several departments with that requirement, including Police and Water & Power.

Duration: 6 months. This application could be developed by the City or purchased as a COTS application. The latter would require a solicitation phase of approximately 6 months.

44. SW ENTER Update Existing Parcel Database (PPD)

This initiative will create a temporary APN line work in the Land Management System, and GIS load slip / service slip databases. A complete centralized address database, with attributes based on purpose, will be developed.

Duration: 6 months. This update could be developed by the City or a Vendor. The latter would require a solicitation phase of approximately 6 months.



3.2.4 Year 4 Timeline & Assumptions

The following provides an overview of the Year 4 Roadmap and corresponding assumptions.

Figure 3.2.4.1: Year 4 Timeline

Yr.	No.	Initiative	ITS	2011/12	2012/13	2013/14	2014/15	2015/16
YR 4	45	SI	PRC Application Program Interfaces	6				
	46	SI	CAD & Firehouse Interface	6				
	47	CITY E-GOV	Consolidate Electronic Employee Directories (Enterprise)	6				
	48	CITY E-GOV	Insurance DB & E-Forms (Enterprise)	5				
	49	SW ENTER	Public Records Act System Application (Enterprise)	8				
	50	CUST E-GOV	Library: Research / reference services	6				

Year 4 Initiatives

E-Government Applications & Systems Integration

- 45. SI PRC Application Program Interfaces (FIRE)**
 This task will entail programming an interface for maintaining data connectivity across the PRC/CAD system and the EMS Patient Tracking System. These systems are used in the emergency response process.
 Duration: 6 months.
- 46. SI CAD & Firehouse Interface (Fire)**
 This initiative will entail interfacing the CAD and Firehouse systems used in the Fire Department emergency response processes, and possibly provide data connectivity across other systems, i.e., across systems: PRC, Firehouse & EMS Patient Tracking System, e.g.:

 - PRC/CAD to Firehouse
 - Firehouse to Firehouse Mobile
 - Firehouse Mobile to Firehouse

Duration: 6 months.
- 47. CITY E-GOV Consolidate Electronic Employee Directories (Enterprise)**
 This initiative will entail consolidating two existing directories as an internal online database application.
 Duration: 6 months.
- 48. CITY E-GOV Insurance DB & E-Forms (Enterprise)**
 This initiative will entail developing an online application that will allow departments to maintain a database of vendor insurance information, utilizing E-Forms.
 Duration: 6 months.
- 49. SW ENTER Public Records Act System (PRAS) Application (Enterprise)**
 This initiative entails implementing a web-based application to process public records requests, providing the following functionality:

 - Enterprise system available to all departments.
 - These department users all have access privileges:
 - City Attorney
 - Executive Secretary
 - Public Records Contact



- Department Heads or their Designees
- Accessibility:
 - Each department will have access to their requests
 - The City Attorney will have access to all departments
- Provide status of request, by Department.
- Provide ability to track key dates.
- Provide automatic ticklers of pending due dates.
- Provide ability to assign a unique Control Number
- Provide a Public Request Log, viewable to all:
 - Index No.
 - Description of Request
 - Dept. Distribution List
 - When mailed
 - Notes Section
- Provide tracking if the Requestor paid.
- Provide archive of responses by Index Number to staff / management with access privileges.
- Leverage an Enterprise Content Management System, with redaction capability (i.e., for SS #).
- Download Public Records Request form as an E-Form, with a drop down list of departments and who to email the request to; timeline, cost and confirmation request was received.

Duration: 8 months.

50. CUST E-GOV Library: Online Research / Reference Services (Library)

This initiative entails the development and implementation of online research and reference services for the City of Pasadena library system. This online application was rated the most desired Customer Online Service in the online survey used to gather input from the Pasadena community and residents.

Duration: 8 months.



3.2.5 Year 5 Timeline & Assumptions

The following provides an overview of the Year 5 Roadmap and corresponding assumptions.

Figure 3.2.5.1: Year 5 Timeline

Yr.	No.	Initiative	ITS	2011/12	2012/13	2013/14	2014/15	2015/16
YR 5	51	CITY E-GOV Online Purchasing Application (Enterprise)	12					
	52	D APPS Implement Attendance Tracking (Human Resources)	9					
	53	D APPS Upgrade Q-Flow (Planning)	6					
	54	CUST E-GOV Online Parking Garage: View space availability	6					
	55	HW Provide Walk Up Kiosks	1					

Year 5 Initiatives

E-Government & Departmental Applications

- 51. CITY E-GOV Online Purchasing Application (Enterprise)**
 This initiative entails the development of a web-enabled online purchasing application with the following features and functions: Online Vendor Registration, Requisition, Solicitation, Award and Contract Management modules.
 Duration: 12 months.
- 52. D APPS Implement Attendance Tracking (Human Resources)**
 This initiative entails a department solution to implement a web-enabled attendance tracking application in the Human Resources Department.
 Duration: 6 months.
- 53. D APPS Upgrade Q-Flow (Planning)**
 This initiative entails a department solution to upgrade the existing Q-Flow system in the Planning Department.
 Duration: 6 months.
- 54. CUST E-GOV Online Parking Garage: View space availability (DOT)**
 This initiative entails implementing an online parking garage application for the primary use of the public.
 Duration: 6 months.
- 55. HW Provide Walk Up Kiosks (Planning)**
 This initiative will entail providing walk up kiosks for web-enabled applications deployed in the Planning and Public Works Departments, typically related to permits and inspections, and any other related web-enabled applications. These PCs will require touch screen technology.



Section 4

ITSP 5 Year Budget Estimates

4.1 Budget Estimate Considerations

The following figures provide high level budget estimates for the funding requirements for a phased multiple year implementation of the City of Pasadena ITSP. In general, the ITSP budget estimate only includes initiatives identified in the course of the project. For instance, the cost of ongoing IT projects and the cost of existing proposed projects not addressed in the ITSP were not incorporated into this budget estimate.





Figure 4.1.1: 5 Year ITSP Budget Summary: One Time & Ongoing Costs

YR.	No.	Type	ITSP Initiatives	2011/12	2012/13	2013/14	2014/15	2015/16
YR 1	1	HW	Replace Aging PCs			304,800	304,800	304,800
	2	SW	PC Power Management Software	DOIT				
	3	INFRAST	Virtual Desktop Infrastructure	500,000	250,000			
	4	COM SYST	Improve Wireless Local Service	DOIT				
	5	INFRAST	Network Core Router Lifecycle Replacement	225,000				
	6	INFRAST	Consolidate Data Centers	50,000	150,000	150,000	150,000	
	7	HW	Continue Server Virtualization Program	30,000	30,000	30,000	30,000	30,000
	8	INFRAST	Server / Network Infrastructure Lifecycle Replacement	150,000	150,000	150,000	150,000	150,000
	9	INFRAST	SAN Replacement	300,000				
	10	D APPS	Electronic Health Records (Health)	500,000	28,000	28,000	28,000	28,000
	11	SW ENTER	Finance System / ERP (Enterprise Resource Planning)		3,000,000	400,000	400,000	400,000
	12	SW ENTER	SharePoint 2010 Upgrade	25,000	1,500	1,500	1,500	1,500
	13	CITY E-GOV	Complete City Website Conversion: Enterprise	30,000				
	14	D APPS	Parking Management System	75,000	15,000	15,000	15,000	15,000
	15	SW ENTER	ePersonality Self Service Module/Enhancement	25,000	5,000	5,000	5,000	5,000
	16	SW ENTER	Replace Land Management System	-	750,000	150,000	150,000	150,000
	17	D APPS	Library Statistics Application *	5,000	5,000	5,000	5,000	5,000
	18	D APPS	Multi-space Meter Project *	7,500	7,500	7,500	7,500	7,500
	19	PERIPHERAL	Digital Cameras with digital date stamp *	2,000				
	20	D APPS	Public Works Street Light Inventory *	Funded				
	21	D APPS	Intelligent Transportation System (SAFETEA-LU)	Funded	Funded			
	22	D APPS	Customer Billing System (ECIS)	Funded	Funded			
	23	CITY E-GOV	Online Accounts (Enterprise)	DOIT				
	24	CITY E-GOV	Online Payments (Enterprise)	DOIT				
	25	CITY E-GOV	Online Applicatoin Submittals	DOIT				
YR 2	26	D APPS	SCADA		Funded			
	27	D APPS	Smart Grid		Funded			
	28	D APPS	GIS System Enhancement		Funded			
	29	HW	Remittance Processing		50,000	10,000	10,000	10,000
	30	INFRAST	Integrate the DOIT and DOT Fiber Networks		185,000	-	-	-
	31	INFRAST	City Fiber Expansion		75,000	75,000	-	-
	32	SW ENTER	Enterprise Content Management System (Enterprise)		248,000	126,250	236,380	106,900
	33	HW	Implement Imaging Systems Hardware		30,000	30,000	30,000	30,000
	34	CUST E-GOV	Online Appointment Scheduling (Enterprise)		DOIT			
	35	CITY E-GOV	Online Permitting Applications (Enterprise)		130,000	16,000	16,000	16,000
	36	CITY E-GOV	Online Inspection Application (Enterprise)		160,000	20,000	20,000	20,000
	37	CUST E-GOV	Online Customer Service Requests (Enterprise)		DOIT			-
	38	COM SYST	Voicemail & Unified Messaging		100,000			
YR 3	39	D APPS	New Police RMS, Interface to FMS & GIS,			700,000	100,000	100,000
	40	CITY E-GOV	Online Work Order Application (Enterprise)			85,000	16,000	16,000
	41	D APPS	Develop Property History DB Application			DOIT		
	42	SW ENTER	Develop GIS DOT Applications			DOIT		
	43	CITY E-GOV	Asset Management Application (Enterprise)			130,000	16,000	16,000
	44	SW ENTER	Update Existing Parcel Database (PPD)			DOIT		
YR 4	45	SI	PRC Application Program Interfaces				50,000	
	46	SI	CAD & Firehouse Interface				50,000	
	47	CITY E-GOV	Consolidate Electronic Employee Directories (Enterprise)				DOIT	
	48	CITY E-GOV	Insurance DB & E-Forms (Enterprise)				DOIT	
	49	SW ENTER	Public Records Act System Application (Enterprise)				DOIT	
	50	CUST E-GOV	Library: Research / reference services				DOIT	
YR 5	51	CITY E-GOV	Online Purchasing Application (Enterprise)					200,000
	52	D APPS	Implement Attendance Tracking					25,000
	53	D APPS	Upgrade Q-Flow (Permitting)					5,000
	54	CUST E-GOV	Online Parking Garage: View space availability					DOIT
	55	HW	Provide Walk Up Kiosks					6,000
Yearly Subtotals				1,924,500	5,370,000	2,439,050	1,791,180	1,647,700

* Indicates ITSP initiatives that are "low hanging fruit."

13,172,430



Section 5

ITSP Enterprise Level Cost-Benefit Analysis

5.1 Cost-Benefit Analysis Method

The ThirdWave Rapid Workflow CBA® methodology was used to quantify the opportunity savings (or Return on Investment) of proceeding with the implementation of the ITSP. The cost benefit analysis (CBA) employed the following methodology:

1. Define Requirements:

Rapid Workflow Process Models® identify business and service delivery needs (via problem / solution statements). Identify potential benefits (via quantifiable impacts / benefit statements).

2. Articulate a Prioritization Model

Work with the City to develop priority criteria and carry out the prioritization of ITSP initiatives.

3. Build Cost-Benefit Model

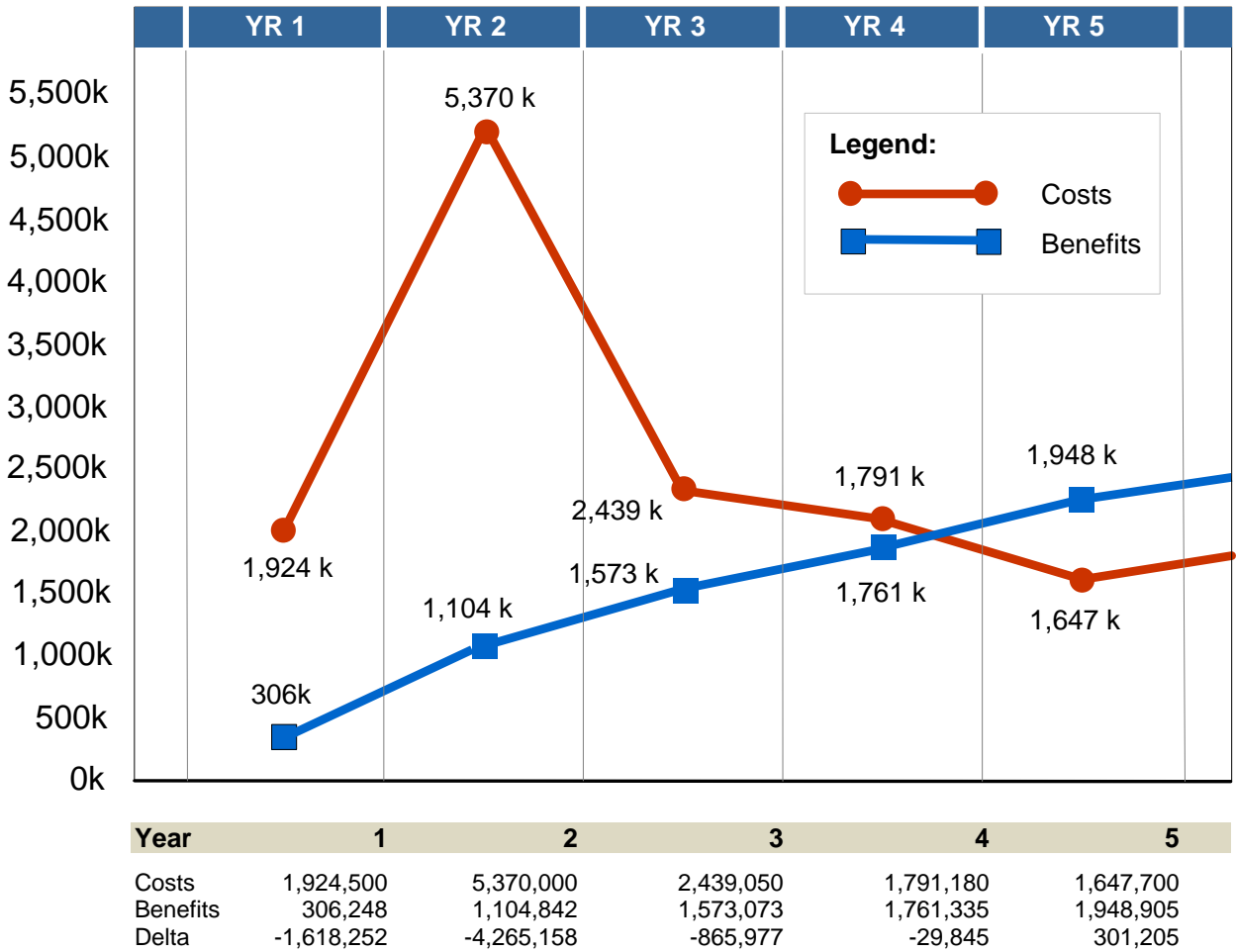
- Use the workshop solution statements to articulate IT solutions; research high level systems / labor costs, including one time and recurring costs to determine budget estimates for the total cost of ownership.
- Use the workshop Impact / Benefits statements to calculate potential benefits. Reference staff titles and stated inefficiencies documented in the Rapid Workflow® sessions. Research potential quantifiable benefits, including space, materials, staff labor, etc.
- Combine costs and benefits to produce a Cost-Benefit model.





The potential benefits derived are directly proportional to the investment made into the ITSP by the City. The sooner proposed ITSP initiatives are implemented - the sooner the City will begin to derive the benefits, and the greater those benefits will be.

Figure 5.1.1: Cost-Benefit Analysis Curve

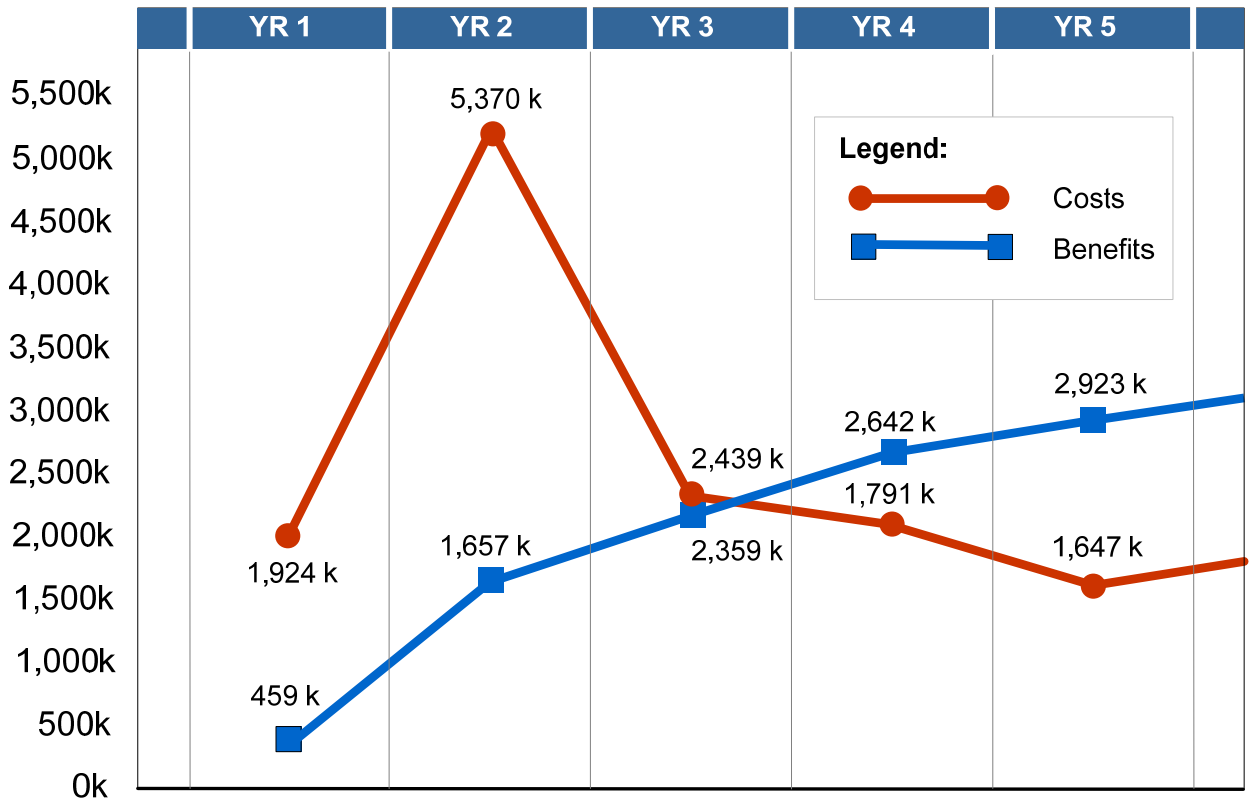


ThirdWave believes a more accurate picture of the fiscal opportunities the ITSP offers is shown in the figure on the following page, where the benefit numbers have been increased by 50%. We believe this is a reasonable scenario because, based on the project timeline and budget, the CBA above reflects a number of limitations:

- **Only one / two mission critical business requirements workshops** were held with each department.
- **Numerous existing business expense items that were identified were not fully calculated** given the limited project schedule and budget, i.e., the cost of paper, toner, and copier contracts, miles driven by field staff for lack of field access to data, and so on.
- Field surveys of current paper storage square footage were carried out in only **13 out of 55** facilities the City occupies.
- **Many** of the impacts pointed out in the Rapid Workflow® process maps lacked sufficient and/or specific data on operating cost and staff hours, which are needed to produce complete calculations of those costs.



Figure 5.1.2: More Realistic Cost-Benefit Analysis Curve



Year	1	2	3	4	5
Costs	1,924,500	5,370,000	2,439,050	1,791,180	1,647,700
Benefits	459,372	1,657,263	2,359,610	2,642,003	2,923,358
Delta	-1,465,128	-3,712,737	-79,441	850,823	1,275,658



Section 6

ITSP Sustainability, Human Resource Requirements

6.1 Importance of ITSP Sustainability

One of the most important facets of an IT Strategic Plan, which is often overlooked or not given proper attention, is the issue of sustainability. ITSPs typically identify lengthy lists of initiatives to be carried out over several years (as is the case with the City of Pasadena), which result in significant human resource requirements from the IT organization. Therefore, there are two issues of sustainability that must be considered:

1. Does the current IT organization have staff with the **required knowledge, skills and abilities** to sustain the proposed IT initiatives contained in the ITSP and Implementation Roadmap?
2. Does the current IT organization have **sufficient staff** (Full Time Equivalents) to sustain the proposed IT initiatives contained in the ITSP and Implementation Roadmap?



The following list of initiatives provides statistics on the proposed scale and complexity of the City's ITSP, which will encompass the following:

- **7 major infrastructure projects** including replacement, virtualization and/or consolidation of key infrastructure systems and subsystems, mostly slated to occur in Year 1.
- **2 major hardware refresh / virtualization projects** involving nearly two thousand PCs and hundreds of servers at the City.
- **14 major departmental applications**, of which 12 are Commercial Off-the-Shelf (COTs) applications and 2 are slated to be programmed by City staff.



- **8 major enterprise system implementations**, including Finance/ERP, Land Management, and Inspection / Permitting applications, of which 4 are slated to be developed by City staff.
- **14 E-Government applications**, including 11 fairly sophisticated interactive / transactional online applications, of which 4 are slated to be developed by City staff.
- **Approximately 39 (non-technology) IT / DOIT operational and management initiatives**, including the development and adoption of related policies, procedures and technical best practices – most of which are foundational in nature and will occur in Years 1 and 2 of the Implementation Roadmap. Many of these initiatives support the consolidation of DOIT.

Consequently, the ITSP will result in a number of outcomes that will require planning and preparation:

- DOIT will see a marked increase in staff workload and resource allocation demands.
- The ITSP will introduce approximately ten (10) projects per year over five years, some of which are of considerable scale and complexity – on top of existing projects and workload.
- While some of these projects will be carried out by vendors, ownership for most ITSP initiatives will be assumed by DOIT for ongoing support.
- The ITSP is being initiated at a time when DOIT is still transitioning from a distributed to a centralized business / service delivery model. DOIT still has work to do to convince half of the department heads at the City that the centralized model can effectively support their needs.

To DOIT’s credit, a number of activities have already taken place to better understand and carryout the IT consolidation. Furthermore, a comprehensive **IT Skills Inventory & Assessment** was completed by DOIT in late 2010. This data was referenced in this analysis.

6.2 DOIT Staff Skill Set Proficiencies

A comprehensive IT Staff Skills Inventory and Proficiency Testing were carried out by DOIT and PreVisor in November and December 2010, which produced a rich data set on DOIT staff skills and abilities. The figures on the following pages show the DOIT skill proficiencies test scores presented in a couple of different ways.

Figure 6.2.1, DOIT Staff Skill Sets BrainBench Proficiency Test Results, illustrates a summary of proficiency ratings of DOIT technical staff in various professional and technology areas, scoring staff as having one of five proficiency levels: Expert, Advanced, Proficient, Basic or Novice.





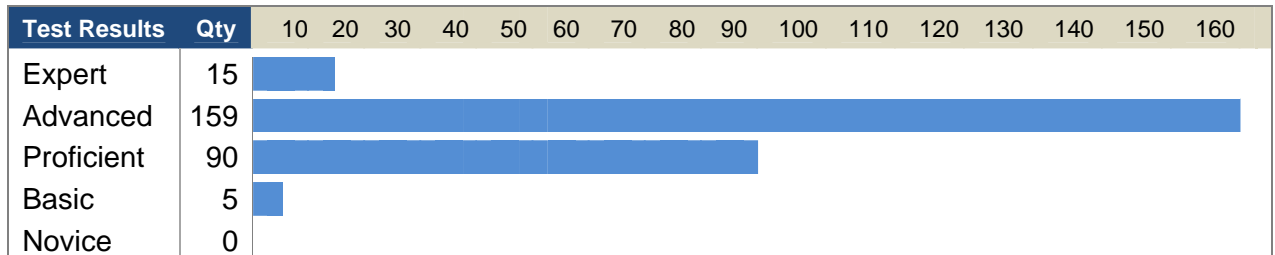
Figure 6.2.1: DOIT Staff Skill Sets BrainBench Proficiency Test Results

	Test Name	EXPERT (4.51 - 5.00)	ADVANCED (3.51 - 4.50)	PROFICIENT (2.51 - 3.50)	BASIC (1.51 - 2.50)	NOVICE (1.00 - 1.50)	
Infrastructure / Network. Communications	1 Cisco Networking Concepts			1			
	2 Citrix Administration		1				
	3 LAN/WAN Communications		1	1			
	4 Networking Concepts		2	1			
	5 Server Administration		7	1			
	6 Storage Area Networks (SAN) Concepts		1				
	7 TCP/IP Administration		1	1			
	8 Telecommunications Industry Knowledge		3	4			
	9 MS Windows Server 2003 Administration		1				
	10 MS Windows Server 2008 Administration	1	1	2			
		1	18	11	0	0	30
Database	1 Crystal Reports 11			1	1		
	2 Crystal Reports 9			6	1		
	3 Data Modeling Concepts		2				
	4 Oracle 10g Administration		1	1			
	5 Programming Concepts			1			
	6 RDBMS Concepts		2				
	7 SQL (ANSI)		2				
	8 SQL (ANSI) Fundamentals		5	2	1		
	9 MS SQL Server 2005 Administration		2				
		0	14	11	3	0	28
Programming	1 .NET Framework		2				
	2 HTML 4.0		2				
	3 PeopleTools 8.4		1	1			
	4 Visual Basic.NET		1				
	5 Web Design Concepts	1					
	6 Web Development Concepts		2				
	7 Programmer/Analyst Aptitude		4	3	1		
	8 Software Business Analysis			2			
		1	12	6	1	0	20
Office Automation	1 MS Outlook 2003 Fundamentals			1			
	2 MS Project 2002		2	3			
	3 MS Windows XP Desktop Administration		1	9			
	4 MS Word 2003 Fundamentals		1				
	5 Software Configuration Management		1	5			
		0	5	18	0	0	23
IT Industry	1 IT Industry Knowledge		1	2			
	2 Information Technology Terminology	2	10	1			
	3 ITIL Concepts		2	4			
	4 Project Management (2005)		4	6			
	5 Disaster Recovery and Planning		1				
		2	18	13	0	0	33
Customer Services	1 Customer Assistance	9	8				
	2 Technical Help Desk (Microsoft)		9	1			
	3 Telephone Etiquette		13	4			
	4 Computer Technical Support		2	9			
	5 Computer Electronics		2				
	6 Computer Fundamentals (Win XP)		3				
		9	37	14	0	0	60
Professional Skills	1 Customer Requirements Analysis		4	2			
	2 Business Communication	1	39	5	1		
	3 Business Writing		2	5			
	4 Coaching		5				
	5 Managing People (U.S.)		3	3			
	6 Problem Solving - Qualitative		3	2			
		1	56	17	1	0	75



The test data in the preceding figure was originally presented in alphabetical order; it was grouped into logical proficiency areas for this analysis, and provides a summation of all the tests scores. In general, DOIT is comprised of talented and experienced technical professionals with sound levels of proficiencies in a number of key IT test areas.

Figure 6.2.2: Summary of Proficiency Tests



The data presented above can be displayed graphically to provide a better illustration of the proficiencies of DOIT staff in a more granular level for each of the generic proficiency areas. (The following represent test scores not DOIT staff numbers, as there is not a one-to-one relationship between test scores and the number of DOIT staff.)

Figure 6.2.3: Infrastructure / Networks / Communications Proficiencies

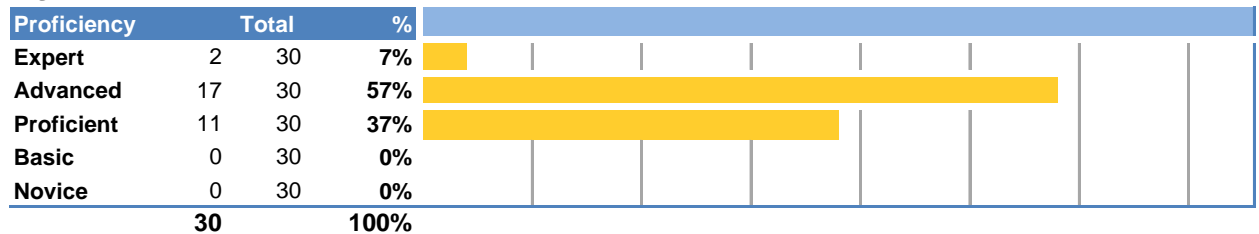


Figure 6.2.4: Database Proficiencies

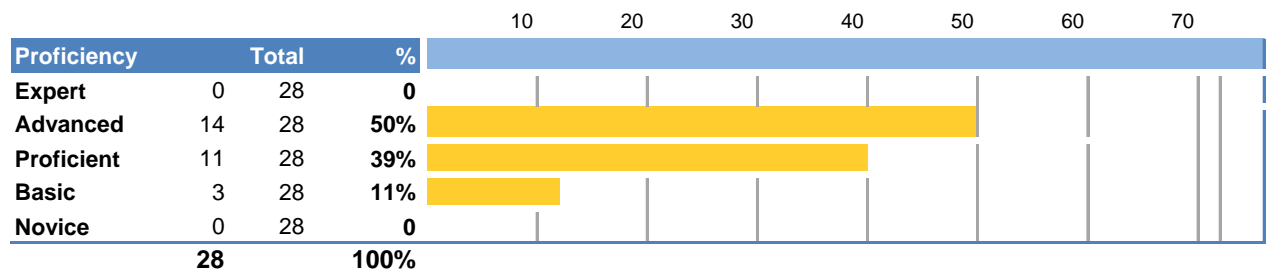




Figure 6.2.5: Programming Proficiencies

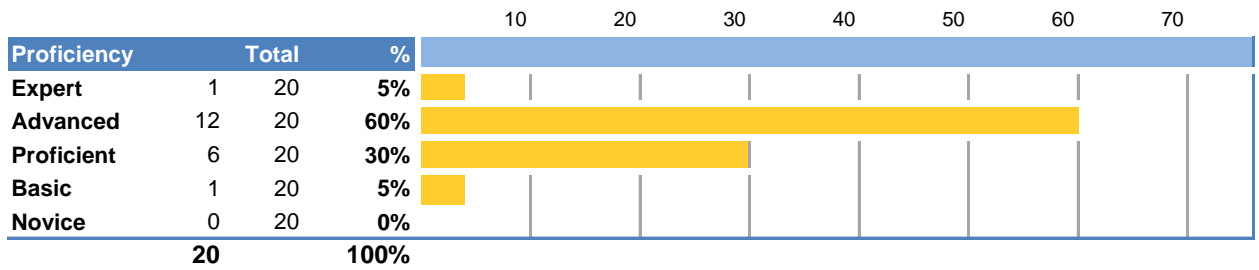


Figure 6.2.6: Office Automation Software Proficiencies

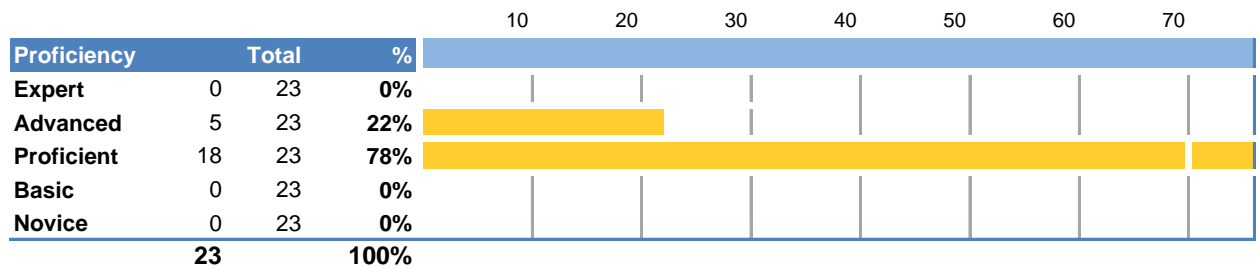


Figure 6.2.7: IT Industry Proficiencies

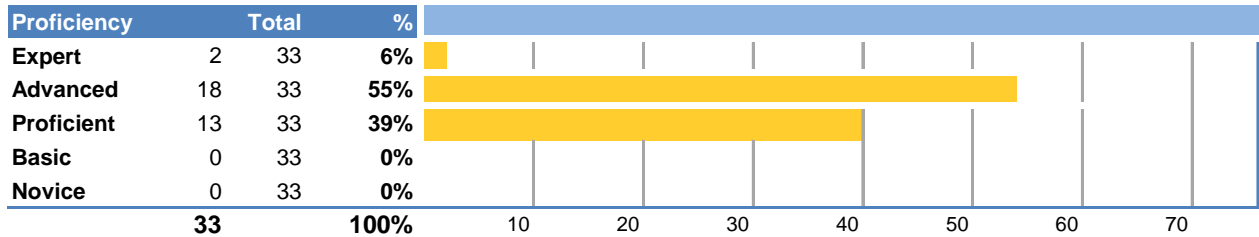


Figure 6.2.8: Customer Service Proficiencies

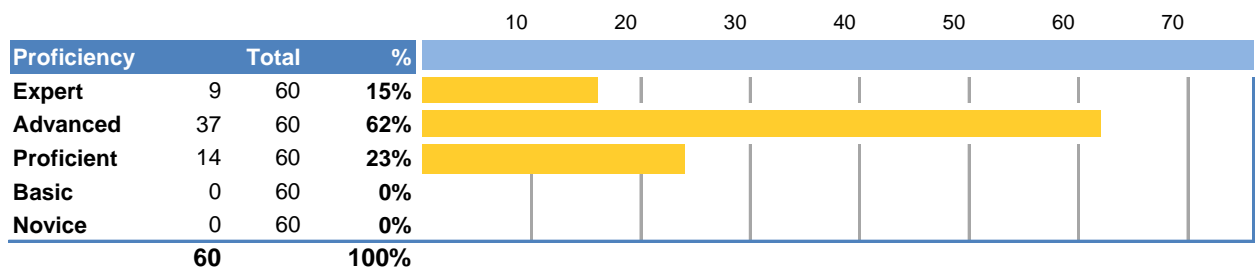
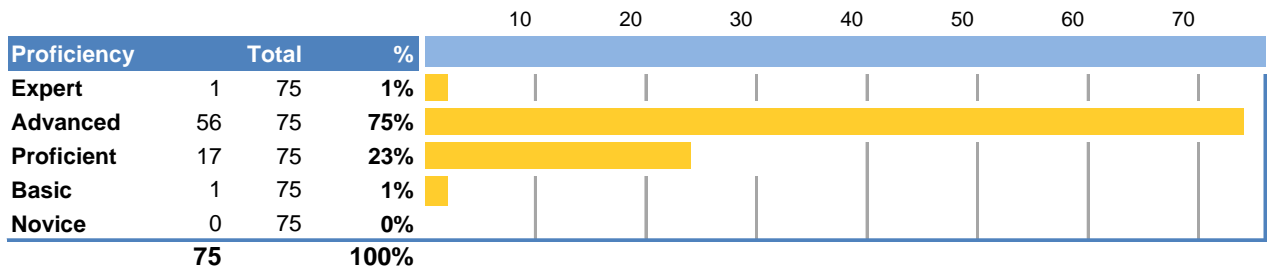




Figure 6.2.9: Professional Skill Proficiencies



6.3 Existing DOIT Staff Resources

ThirdWave conducted an assessment of DOIT’s existing make-up and staff Knowledge, Skills and Abilities (KSAs) in relation to the ITSP and Implementation Roadmap. This included review of a number of source documents to understand the existing DOIT organization and available human resources, including:

- DOIT organization chart and functional responsibilities
- DOIT Skills Inventory, November 2010
- DOIT Skills Assessment, December 2010
- PTI Study, November 2009



The data from these documents was used as the basis for the sustainability recommendations made in this document.

6.3.1 DOIT Resource Assessment

DOIT is currently comprised of two functional groups under the executive direction of a seasoned and accomplished CIO: Customer Support (19 FTEs) and IT Operations (37.5 FTEs) with a total of 60.5 technical professionals.

Under the framework of IT resource centralization that occurred last year, DOIT is continuing to fine tune the organization chart as of this writing. This analysis referenced the most current information available.



ThirdWave carried out a high level assessment of the current organization in an effort to identify possible exposures related to DOIT’s ability to sustain the ITSP Implementation Roadmap. Figure 6.3.1.1 on the following page illustrates the DOIT organization and staff levels, followed by finding statements.

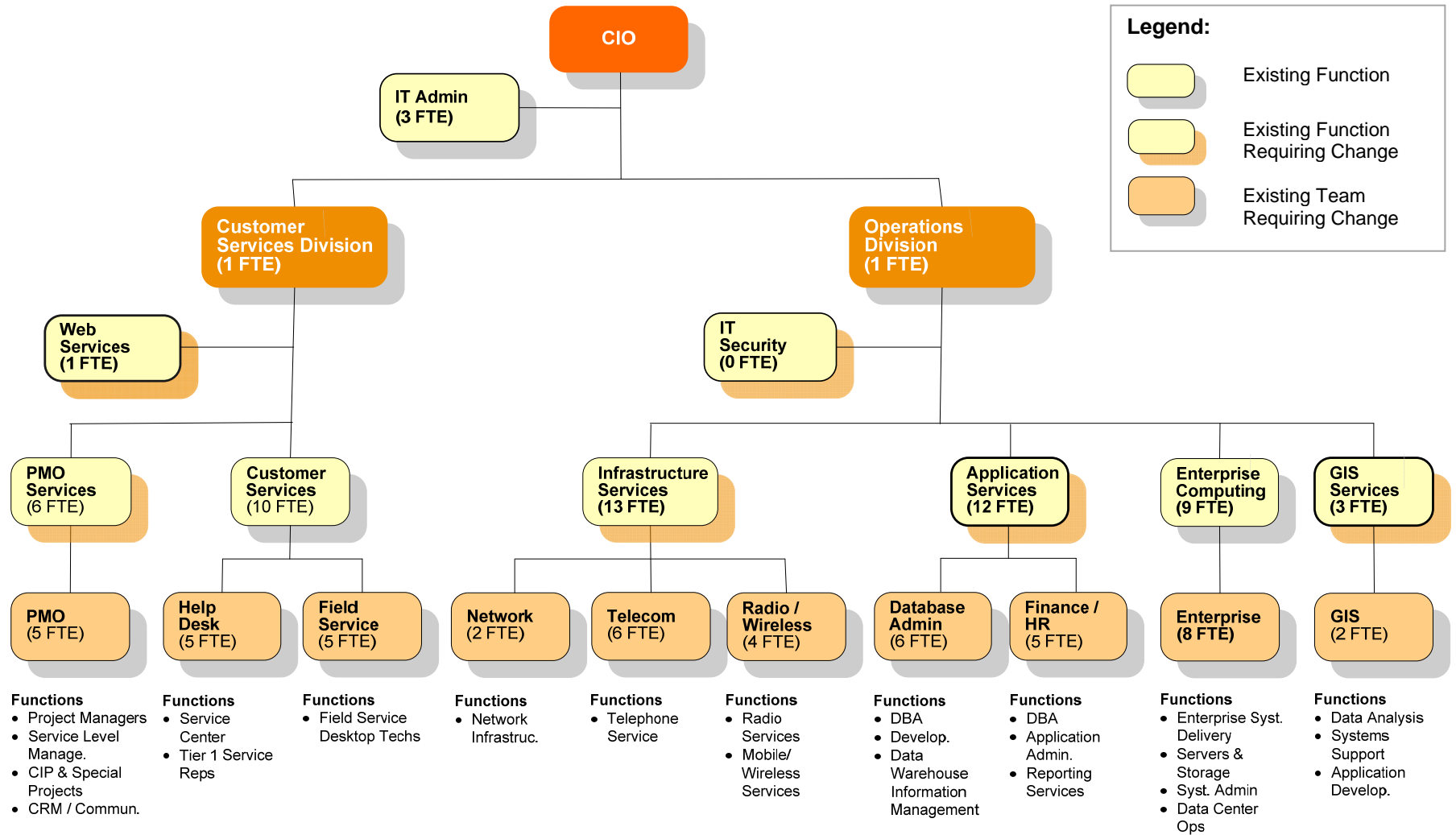


Figure 6.3.1.2 provides recommended organizational adjustments design around the ITSP and corresponding Implementation Roadmap.

It is important to note that ThirdWave did not analyze the existing DOIT project backlog or ongoing operational tasks as part of the ITSP project. Consequently, we have no baseline data on what workload currently consumes existing FTE resources. A staffing plan to consider current and ongoing operations is underway by DOIT, and will be presented to the ITGC at a future date (but will not be completed before the end of the ITSP project).



Figure 6.3.1.1: Existing DOIT Resources





While a detailed analysis of the specific duties of IT staff in the DOIT organization chart is beyond the scope of the ITSP project, the following observations can be made with regards to the existing organization's ability to sustain the ITSP Implementation Roadmap:

- **PMO:** The ITSP project identified abundant opportunities for business process improvement. Many of the department / enterprise applications to be deployed (whether purchased off-the-shelf or developed) will require business process analysis as the precursor to developing technical and functional specifications.

Findings: DOIT / PMO lack Business Process Analysts to capitalize on Business Process Analysis / Improvement best practices to sustain the ITSP Implementation Roadmap.

- **Web Services:** The ITSP Implementation Roadmap lays out a strategy heavily focused on E-Government solutions, i.e., internal / customer focused online service delivery and extensive use of web services.

Finding: The one (1) FTE shown on the existing organization chart will not be sufficient to sustain dozens of web-enabled applications / systems. The location of the Web staff is out of place. (***This is a high priority sustainability item.***)

- **Application Services:** The ITSP Implementation Roadmap lays out a strategy that will introduce 23 enterprise / departmental applications and approximately 14 E-Government applications.

Finding: The existing Applications Section currently supports a variety of existing applications including the Finance / HR systems and Database Administration, but lacks the Application Specialists that will be required to effectively sustain the breadth and number of proposed enterprise, departmental, and web-enabled applications articulated in the ITSP. The existing number of staff supporting the Finance/HR systems is probably adequate. (***This is a high priority sustainability item.***)

- **GIS Services:** The ITSP Implementation Roadmap lays out a number of enterprise and departmental GIS initiatives; some will replace existing systems and others will introduce numerous new GIS applications. While the City has centralized its IT resources, some departments are still carrying out GIS related activities; others lack GIS application programming resources (i.e., DOT and Police) to develop tools required in those business units. The latter will rely on DOIT to meet their GIS needs.

Finding: GIS is an enterprise system (similar to ERP and Electronic Document Management Systems). The existing GIS group is understaffed to support the enterprise GIS initiatives in the ITSP. It is also important to note that with implementation of the Land Management System in Year 2, there will be an increased emphasis. Three (3) FTEs are allocated but only 2 are currently filled. An additional GIS FTE should be phased in if justified by the department needs.

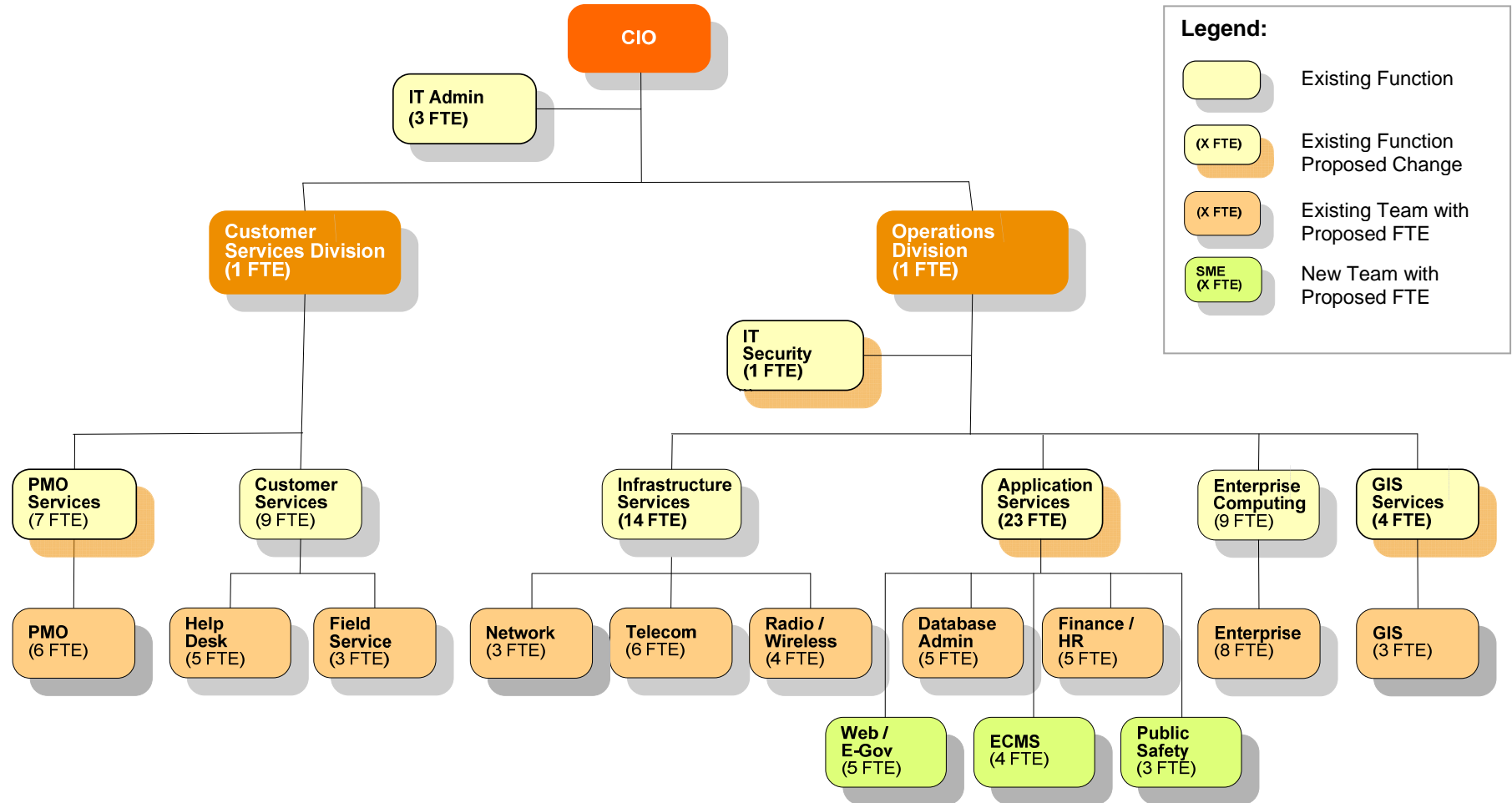


- **Infrastructure Services, Telecom:** The ITSP project identified many infrastructure projects in Years 1 and 2, some of considerable scale and complexity.

Findings: From a resource allocation perspective, the 3 FTEs currently responsible for these systems will be heavily taxed. This group will require assistance and/or additional resources during the initial Year 1 and 2 workload bubble.



Figure 6.3.1.2: DOIT Sustainability Org Chart



Legend:

- Existing Function Existing Function
- (X FTE) Existing Function Proposed Change
- (X FTE) Existing Team with Proposed FTE
- SME (X FTE) New Team with Proposed FTE

The proposed staffing changes are based on ITSP workload requirements.



The organization chart on the previous page identifies the following proposed ITSP sustainability recommendations.

- **Application Services:** Create three new centers of competency under Application Services, staffed with Application Specialists possessing knowledge, skills and abilities (KSAs) in each of the following respective systems:

- **E-Government Services:** This team will support web-enabled applications on the City Website in addition to web-enabled Commercial Off-the-Shelf applications across **all departments**. Typical applications will include:
 - The City's website environment (Web, Application and Database Servers)
 - Development and maintenance of interactive and transactional (E-Commerce) E-Government applications identified in the ITSP
 - Integrate web applications to Finance/HR (ERP) Systems, where appropriate
 - Provide end user training on E-Government applications, as required
 - Provide technical support on E-Government applications

It may be possible to staff this center of competency partially with existing staff by moving one person from the Help Desk and Database Admin groups, if these personnel possess the required KSAs. There may also be staff with pertinent skills in other departments to help support web-enabled applications. The E-Government Team should consist of Web professionals including (at a minimum): a Sr. Lead Web Developer, Web Developer, Web Designer, Web Developer, and Web Database Programmer, for a total of 5 professionals web application specialists.

- **ECMS Services:** This team will support Enterprise Content Management Systems deployed across **all departments**. Typical applications include:
 - Imaging Systems hardware & Software (Scanners / Image Capture Software)
 - Electronic Content Management Software
 - Electronic Records Management Software
 - E-Forms Software
 - E-Signature Software
 - Automated Workflow Software

Sustainability activities will include:

- Assisting the vendor in the Year 2 deployment, for knowledge transfer
- Carry out the Year 3 and 4 deployments across 10 City departments
- Interfacing the ECMS to other department / enterprise information systems
- Providing training to end users
- Providing technical support
- Providing ongoing maintenance and system upgrades

Knowledge, Skills & Abilities: The ECMS center of competency should consist of a team of ECMS professionals including (at a minimum) an Imaging Specialist, Document/Records Management Application Specialist, E-Forms/E-Signature/Automated Workflow Application Specialist, and a Database Administrator for ECMS related systems, for a total of 4 professional ECMS application specialists. (The center of competency is separate and apart from the City Clerk's staff.)



- **Public Safety Services:** Recognizing that **Police and Fire** have unique operational and technology requirements (i.e., 24x7 operations, criminal justice applications, etc.), this team would assemble Application Specialists with the knowledge, skills and abilities to sustain existing and proposed technologies identified in the ITSP for these business units. ITSP initiatives include asterisked items, in addition to other systems not specifically examined in the ITSP project but mentioned by the management team:
 - Records Management System (Police)*
 - Computer Aided Dispatch System (Police)
 - On Board / Mobile Data Computers (Police/Fire)*
 - Jail Recording System (Police)
 - Hand held computers / Inspection Applications (Fire)*
 - EPCR, Fire patient tracking and emergency medical billing system (Fire)
 - PRC Incident Reporting System (Fire)
 - Citations (Police)
- **PMO:** Introduce a Business Process Analysis / Improvement competency into the PMO Section. Given the need to develop/write many RFPs to support the ITSP, 1 FTE should be added to the PMO to address this best practice. (This position could pay for itself by mitigating change orders in the implementation of the Finance / ERP system alone.) Business process sustainability staff activities would include the following, which will be required in the implementation of all applications identified in the ITSP:
 - As-Is business process analysis
 - To-Be business process design / reengineering
 - Business functional and technical requirements definition
 - Technical specification development, used for system configuration, application development, or the development of solicitations (RFPs / RFQs).
- **GIS:** The organization chart shows 3 FTEs allocated to GIS but one position is vacant as of this writing. As identified in the ITSP, a GIS department of 2 (or 3) is insufficient to meet the GIS needs of a city the size of Pasadena. Several departments noted requirements for GIS application development, many of which will have an Internet component to them, including:
 - GIS applications, interfaces, or GIS-linked capabilities
 - DOT applications with various functionality
 - Utility related GIS applications
 - Police related GIS applications
 - Fire related GIS applications
 - Public Works GIS applications

Knowledge, Skills & Abilities: The GIS center of competency should be a team of GIS professionals conversant in the ESRI suite of products, including (at a minimum): a Sr. GIS Developer, GIS Data Analyst, GIS Database Programmer / Administrator and GIS Manager, for a total of 4 professional GIS application specialists.



- **Infrastructure Services:** The organization chart shows 4 FTEs allocated to Telecom and 3 FTEs to support Radio / Wireless technologies. These staff levels may not be sufficient to carry out the proposed infrastructure improvement identified in Years 1 and 2 of the ITSP. Without the benefit of a resource allocation analysis, it is difficult for ThirdWave to make a detailed recommendation in this case. However, it is safe to say that (unless existing staff have little work to do as of this writing, which is contrary to what was communicated in the IT Focus Groups), this team will require additional resources.

Knowledge, Skills & Abilities: The Infrastructure Services will require at least one additional person to participate on the identified infrastructure initiatives. Knowledge of WAN/LAN / Communications Networking and/or wireless communications will be key, particularly as City departments move towards an increased use of mobile devices and remotely accessed web-enabled applications.

- **IT Security:** Additionally, at the present, IT Security is identified as a requirement on the organization chart, but there is no FTE associated with it, and no one person tasked to manage IT security. (This responsibility is currently distributed.) Ideally, an IT Security FTE should address security requirements related to the network, applications, data, cyber security (a growing issue, particularly with PWP), etc.
- **PWP Support:** In the future, a similar center of competency might be set up to support PWP. At this point, ThirdWave did not have data to support that recommendation but it would ensure subject matter expertise with systems used in the utility industry. (PWP has initiated a discussion with ThirdWave to have an IT Strategic Plan developed for its business units.)

6.4 ITSP Sustainability Conclusion

6.4.1 Sustainability Strengths and Weaknesses

Based on ThirdWave's assessment of DOIT staff KSAs, the following strength and weakness conclusions can be drawn:

- DOIT has highly capable technical professionals with a **high level of proficiency** in the respective technical teams of the organization.
- The highest **number** of proficiency test scores applies to Professional Skills and Customer Service. The lowest **number** of proficiency test scores occurred in the areas of infrastructure and programming, which happen to be two of the most important sets of initiatives in the ITSP Implementation Roadmap. It is unusual to uncover this in city technology departments. ThirdWave typically finds technical skills more prevalent than the professional and customer service skills. Investing in technical skills to supplement the professional skills is recommended to best sustain the ITSP.
- More staff resources and/or higher proficiency levels will be required in the area of application programming to support the departmental, enterprise and E-Government applications identified in the ITSP, specifically web-enabled applications, Enterprise Content Management and GIS.



The figure below provides a summary view of the number of proficiency test findings for DOIT staff. (These numbers represent the number of test scores – not staff.)

Figure 6.4.1.1: Summary of Proficiency Tests By Technical / Professional Areas

Technical / Professional Skillsets	All Responses	10	20	30	40	50	60	70	
Professional Skills	71	[Bar chart showing 71 responses across the scale]							
Customer Services	39	[Bar chart showing 39 responses across the scale]							
IT Industry Knowledge	33	[Bar chart showing 33 responses across the scale]							
Office Automation	30	[Bar chart showing 30 responses across the scale]							
Database	26	[Bar chart showing 26 responses across the scale]							
Infrastructure / Network / Communications	24	[Bar chart showing 24 responses across the scale]							
Programming	18	[Bar chart showing 18 responses across the scale]							

6.4.2 ITSP Sustainability Conclusion

ThirdWave’s sustainability analysis identified a need to continue fine-tuning DOIT’s service delivery model to support the new suite of applications to be deployed in the next several years. The figure on the following page illustrates recommended ITSP sustainability staffing; however, the staffing chart does not address the adequacy of current staff levels to meet current projects and operational needs.

Future FTE numbers in the table address the anticipated level of effort required to support the ITSP. Resource requirements can be met in a variety of ways, including new staff, service contracts, changes in DOIT staff responsibilities, and leveraging IT staff still located within other City departments.



Figure 6.4.2.1: ITSP Sustainability Staffing

Department: DOIT					
Division	Section	Team	Exist.	Future	Net Change
	CIO		1	1	0
		Administration	3	3	0
Customer Services	Deputy CIO		1	1	0
	Web Services	-	1	0	-1
	PMO	PMO	6	7	1
	Customer Service	Help Desk: Tier 1	5	5	0
		Field Services: Tier 2	5	3	-2
Operations	Deputy CIO		1	1	0
	Security		0	1	1
	Infrastructure	Manager	1	1	0
		Network	2	3	1
		Telecom	6	6	0
		Radio / Wireless	4	4	0
	Applications	Manager	1	1	0
		Database Admin	6	5	-1
		Finance & HR	5	5	0
		E-Government	-	5	5
		ECMS	-	4	4
		Public Safety	-	3	3
	Enterprise Computing	Enterprise	9	9	0
	GIS	GIS	3	4	1
			60	72	12

It bears noting that ThirdWave’s analysis, as illustrated in the figure above, reached the same conclusion as the PTI Technology Infrastructure Analysis carried out in October 2009.

- DOIT is understaffed
- DOIT lacks sufficient Applications Specialists

While the City has made considerable progress in investing in a new technology organization, this is not enough to meet the new human resource needs that the **unprecedented volume of ITSP initiatives will require**, particularly Application Specialists. However, sustainability can be addressed incrementally, in concert with the rolling out of strategic business technologies, i.e., approximately 3 FTEs per year over the next 5 years, or as appropriate.

Achieving a successful implementation of the ITSP will require human resource planning and preparation. Demonstrating that the IT consolidation was the right decision will take sustained performance on the part of DOIT - to convince its customer base (City departments) that it can deliver exceptional customer services.



Although often overlooked, ITSP sustainability is a cornerstone to successfully implementing an ITSP. It will require investment in human resources, rigorous planning, and the same level of careful execution as implementing the ITSP technology initiatives. In doing so, the City will reap the fiscal benefits it seeks; departments will get the support they require; and the public will receive the extraordinary services they have come to expect from a great city like the City of Pasadena.