

# INFORMATION TECHNOLOGY

## Executive Overview

The five-year municipal technology vision for the City of Newton is an integral part of the business framework as the administration continues to build a livable, sustainable, model city for the 21<sup>st</sup> century. Business practices, customer expectations and technology evolve and converge in new areas; the current solutions need to remain flexible to remain viable and sustainable. The Information Technology Department conducts regular department interviews of needs analysis, regular discussion with support staff, weekly technology cluster meetings as well as research via the internet, third party value added resellers and consultations in order to protect the City's Investments.

The explosive technological evolution has changed the way business is conducted everywhere. From mainframes to smartphones, from server farms to cloud storage, Newton continues to create a new municipal technological paradigm. In the past twenty-five years the IT Department has migrated from a group of ten programmers and a single network support person to seven network/ applications specialists and two programmers.

Current trends include moving applications and software from dedicated servers to virtual servers with storage area networks, in order to establish a downsized yet more versatile IT infrastructure that reduces the data center footprint, is easier to administer and significantly reduces energy costs. "Cloud computing" shifts technology from internal infrastructure solutions to cloud-based strategies that deliver increased functionality and flexibility using a mix of public and private cloud-based application and platform services. Data security and data privacy will remain paramount requiring automated capabilities that detect, assess, and respond immediately to threats.

During the past several years, technology has become more local, social and mobile, with smart phones capable of acting as standalone computer devices that can take pictures, search the Internet, and send emails and text messages. It is anticipated that a desire for an improved "user experience" will drive the creation of more layered approaches in application design with the emphasis on increasing citizen services and untethering desktop workers by providing wireless devices, increased mobility, and improved efficiency for employees and citizens alike.

Establishing a vision and positioning the City of Newton for the future requires a continuous evaluation of current infrastructure, applications, security, and customer interfaces, an understanding of the future of technology, and the development of a blueprint for investments in and modernization of the City's technology.

## **Fiscal Year 16 Projects and Accomplishments**

As of spring 2015, completion of the city-owned fiber network became a reality. Redundant loops of fiber have been run to all City facilities and the City has recently awarded the contract for the active electronic equipment to “light” the fiber. The City will now have a redundant fiber connection to every city building and the support of a 25 year Corning Warranty through the installer. This city-wide network will deliver top quality voice, data and video to any city or school building in Newton, accommodating new uses over the fiber using existing connections or additional fibers for many years to come.

The City is in the second year of virtualizing the computer room onto a Storage Area Network (SAN). Entire departments are now on virtual servers eliminating department specific, application specific and shared servers. Approximately 50% of the City’s servers have been converted into virtual servers and have simplified account access and improved security.

The server based backup systems have also been consolidated into an all-encompassing SAN-based solution which is more cost effective, efficient, easier to use, requires less maintenance and finally eliminates tapes and tape drives.

Sungard’s Finance Plus and Community Plus systems have also been moved into a virtual environment. Additionally, the City’s MUNIS (Receivables) system will be virtualized in FY16.

With the addition of fiber to all buildings the City has been able to mirror its storage area network (SAN) for disaster recovery at a second site on dedicated fiber. This allows the technology department to fully recover if something were to compromise the mission critical primary systems, and continue to offer resources and data to all who depend upon it to serve the public.

Working with a company specializing in cyber security, the City conducted its first vulnerability assessment and penetration testing project to test the security of firewalls and networks. The City immediately implemented all recommendations and will continue these assessments on an annual basis in order to reduce the City’s susceptibility to cyber threats, and improve security policies and procedures. The City has duplicated firewalls, internet connections and load balancing equipment in order to provide the utmost security while ensuring uptime.

Using wireless Cisco equipment declared surplus by Newton Public Schools, the IT Department was able to install secure internal and public accessible wireless to all Fire Stations, Parks & Recreation, the Senior Center and Jackson Homestead. Once the fiber has been activated the City will install similar wireless to the remainder of the municipal buildings.

With the advent of reliable and redundant City-owned fiber, the IT department began a Voice Over IP (VoIP) replacement plan to upgrade the City’s 15 year old phone systems. The voice mail server had far exceeded any reasonable expectations of server life long ago and was

therefore the first system to be virtualized. New phones have been installed in Treasury, IT, the Executive Office and Parks & Recreation at the Kennard Estates. Additional installations are planned for Public Buildings, Inspectional Services and DPW throughout Fiscal Year 2016.

The IT Department was an integral part of the team that worked with the Treasury and FIS (Financial Information Systems) Departments to develop and implement fully integrated applications to provide citizens 24/7 access from any internet enabled computer to conduct business with the City. For the sake of a consistent citywide solution a bid was researched and written by FIS and Treasury to find a third party payment processing company. IT assisted early on by helping negotiate the logistics of Parks & Recreation processing approximately 7000 credit card transactions in a few days in February by using camp reservation software by Peak Systems and a direct interface to City Hall Systems' payment processing solution. This not only brought efficiency to a personal best for Camp Fair but also significantly reduced the risk of compromised security. Working with the Treasury Department, IT will continue to bring standardized payment solutions to all departments for both counter and web.

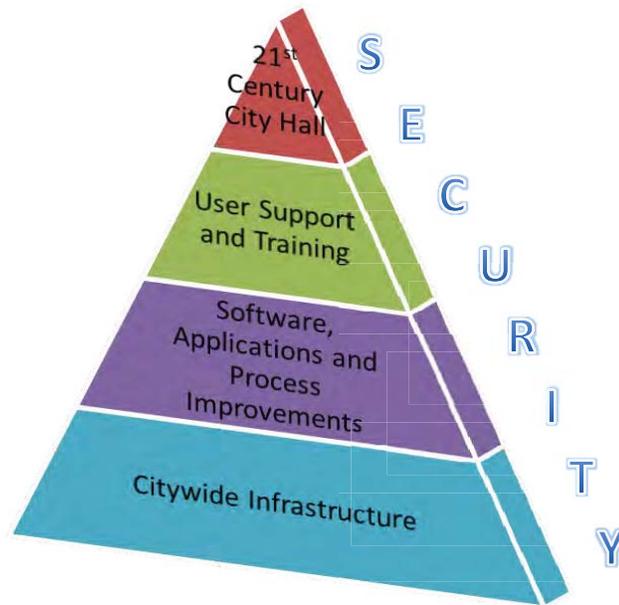
Working under the direction of the Mayor's Office, the IT Department created the DataStat performance management system. Solutions offered by software developers were very appealing and offered great insight into the process of metrics and charting trends but none provided the level of interpretation of the data that the City was searching for. Therefore, using the city website, an inexpensive web-based charting program and Microsoft Excel, the IT Department duplicated the traits that were valued and paved its own solution, meeting the needs of the city and expectations of the administration.

As the City's web servers approached 5 years in age, the IT Department began to research the possibility of having the site hosted outside of the city by a "tier three" service provider guaranteeing uptime, high availability and redundancy through multiple data centers. As a result, the City has implemented a cost-effective, efficient solution for offsite hosting of the City's website.

As stated in the opening of this report technology changes will continue to drive changes in behavior and society. It is imperative that the City position itself to take advantage of cloud based applications, increased applications for mobile devices, and continued developments for ease of citizens interacting with City Hall.

## Categorizing Citywide Needs - Overview

Four broad categories have been defined to construct a framework for better interpretation and planning. These four categories: Citywide Infrastructure, Software/Applications and Process Improvement, Security, and User Support/Training form the basis of all detailed initiatives and technology concerns.



### Citywide Infrastructure

**Components:** Physical Plant, Fiber, Copper, Redundancy, Data Centers, Wireless, Convergence, and the future of Voice, Data and Video.

**Overview:** Providing the city with an infrastructure capable of handling current and future technology needs is the foundation upon which all projects, both current and future, will rely. Due to the aging infrastructure, the majority of the immediate needs identified in the FY14-FY19 Technology Plan centered on this component.

Installation of a modern, redundant fiber network was a primary need. It was paramount in enabling the City to build a mirror-imaged, disaster-prepared system capable of keeping financial systems, public safety, and other critical data available in the event of catastrophe and was also a critical component as the Newton Public Schools move their technology forward. The “loop” design ensures a secondary path to any location and with “spanning tree enabled switches” costs for multiple paths can be kept in check. Extra fiber strands will allow dedicated connections outside of the data network for special projects, security initiatives, one time interactive projects as well as live feeds to NewTV.

The City phone system was installed in the early 2000’s. The system is a conventional service with many limitations. The installation of a state of the art fiber network will now allow a

systematic upgrade to a scalable, mobile, robust VoIP offering many opportunities, such as elimination of phone wiring, cost savings, and improved functionality such as auto attendant, voice mail, ring groups, advanced reporting, and even “roaming” capabilities. VoIP will also be able to eliminate long distance calls by using the Internet instead of the phone company.

Demand for network bandwidth continues to be a challenge for the Newton Public Schools. Support for “Bring Your Own Device” (BOYD) is fast becoming a component of education in the 21<sup>st</sup> century. Current projections anticipate each student will bring an average of 2 mobile devices to school. Providing a wireless network to handle this demand is critical; providing enough bandwidth upstream requires scalability, management and redundancy in front of these wireless endpoints.

Inasmuch as “Bring Your Own Device” (BYOD) has already arrived at the Newton Public Schools and the Newton Free Library, there is no doubt that municipal areas will be next. Policies, practices and procedures must be implemented prior to this arrival. Municipal challenges in this new, mobile environment include the technological ability to meet Freedom of Information Act (FOIA) requests and the protection of the information of constituents. While the expectation is that more desktops will be replaced with mobile solutions to better address evolving job requirements and the ever-growing demand for access to real-time data, securely delivering that data into the field will become a high priority challenge.

While the physical plant is established, all IT entities continue to invest in Storage Area Network (SAN) solutions with virtual servers hosting the applications that access this data. The virtual server framework provides efficiencies such as power conservation (reducing dedicated server foot print), ease of administration, and downtime reduction. SAN technology allows for similar efficiencies managing disk storage devices as a separate network subsystem rather than being physically connected to each server. This architecture allows for quickly assigning additional storage space from the SAN to individual physical or virtual servers and managing SAN disk space efficiently from the central SAN system. The continued investment in virtual servers and SAN technology will save the City time as well as money.

Consolidating data centers frees up time, environmental and maintenance costs, valuable office space, and centralizes equipment and security. After the initial investment of time and money to consolidate sites, the ongoing savings will easily outweigh the consolidation costs.

### **Software, Applications, and Process Improvements**

**Components:** 21<sup>st</sup> Century City Hall, Financial Systems, Email and Calendaring System, Asset Management, Work-Order Processing, Integrated Solutions, Increased Operational Efficiencies, Better Decision Making, Coordinated Resources, Interdepartmental Collaboration, Increased Communication with the Public

**Overview:** The City of Newton currently has several enterprise applications that address the needs of many departments:

- Finance Plus - The payables system;
- Community Plus - Permit, licensing and code enforcement system;
- Munis - Receivables system;
- GIS - Geographic Information Systems;
- Hansen - Resource and project tracking for Public Works;
- QED - Public Safety system;
- ISYS - Document Indexing;
- Laserfiche - Document Scanning;
- Exchange in the Cloud - The City email and calendar system;

Universal applications that meet the needs of many departments but built on a shared core module allow everyone to share information, stay informed, and minimize software and server maintenance, licensing and support. Adding modules or applications to a few robust systems performing the needs of many independent groups brings a value of consistency and fluidity that extends far beyond that of silo solutions that cater only to individual groups. Legacy applications should be evaluated and removed before their shortcomings compound into farther reaching issues. Legacy services can be added in to existing enterprise-wide applications with minor modifications to processes. Therefore, before any new systems are procured, a full review of the current functionality and how it can be used to address the challenge at hand will be conducted.

One of Mayor Warren's key initiatives is the development of a state of the art website capable of enabling residents, business owners, or contractors to conduct their business with the City remotely at any time – day or night. An inventory of the forms, service requests, payment types, applications and public information requests numbers close to 1000.

Requirements of a 21<sup>st</sup> century municipal website include the following:

- Online applications - not just forms for printing or mailing;
- Multiple options for online payments for items such as licensing and permitting;
- Ability to securely query the information systems for public data;
- Work with the City's website or in the cloud;
- Ensure the safety of the City's data;
- Be mobile friendly for both the inside and outside facing parties;

Universal solutions enabling applicants to visit one "counter" or webpage, find all information, forms, feedback and an acceptable payment procedure will increase efficiencies and customer satisfaction while reducing counter lines, as well as business and resident frustration.

The City has standardized on “City Hall Systems”, a third party vendor to handle credit card transactions from the various City systems. This conversion needs to be done one application at a time and therefore will take several months to implement.

### **Security**

**Components:** Disaster Recovery, Alarms, Monitoring, Video Based-Security, Policy, Consistent Solutions across Departments.

**Overview:** There are many facets to security that must be addressed, specifically the following:

- Protection from the Internet – the domain of firewalls, routers, up to date operating systems that remain current with patches and fixes;
- Protection from users – education and awareness will help prevent employees from bringing and using unsecured devices in the work place;
- Protection from disgruntled or departing staff – an early warning system covering all manner of employee departure initializing standard protective steps to ensure the safety of data and equipment. Standardize onboarding and terminations;
- Protection during remote access – Every department has key employees who remotely access systems. Even during catastrophic weather events that leave the city shutdown to all but essential personnel, there are still many people doing business as usual.

The protection of the City’s data and networks begins on the inside. The City must continually review and upgrade security systems and practices to address new concerns that were historically non-issues. With the installation of new technology and solutions the City must remain vigilant in the fight to eliminate potential exploits so as to protect the City, its employees and its residents.

Video monitoring of schools, public buildings, public spaces, weather forecasts, traffic, and known crime zones, to insure the safety of students and the community are a high priority. Responsibility varies by location and audience. Consistent solutions that work across all departments will provide efficiency, enable cooperation, and will enable the consolidation of back end equipment to conserve server needs, licensing, and maintenance and support costs.

Additionally, the City will need to standardize storage of historic video, develop consistent means of retrieval, and insure compliance with State and Federal laws while protecting the rights of all citizens.

### **User Support & Training**

**Components:** Training for IT Staff and End Users, Enhanced User Awareness of Technological Opportunities, Opportunities for Remote Access, BYOD Awareness

**Overview:** In-house training for technical staff is critical in preserving the City's IT investments. Rapid changes in technology and solutions require frequent, in-depth training and re-education on these new or updated systems and solutions.

Keeping the IT staff knowledgeable in current applications is only one piece of the challenge; training for users and documentation of processes must be available. Time and again functions and processes that are performed infrequently are often the source of mistakes. The best training practices include repetition. If that is not an option, frequent training opportunities are critical to keeping all staff current.

Ensuring all employees are aware and informed of changes in policy and how it affects them should have a structure and delivery mechanism that insures everyone remains knowledgeable.

Training delivery methods have evolved as well. New methods of training such as pre-recorded classes available from the internet/intranet, sophisticated FAQ web pages, even user groups can supplement the old teacher-pupil system.

## FY2016 – FY2020 Needs Analysis by Department

### Dept 101 – Clerk of the Board, Board of Aldermen, City Clerk, Elections

**Clerk of the Board FY17-FY21 Needs:** Agenda Management, Enhanced Website Search, Community Plus for Special Permits

**Clerk of the Board:** Providing searchable access to the information held by the Clerk of the Board is perhaps the greatest technology challenge for the Board of Aldermen and the staff of this department. Successes include the use of ISYS for internal document management. Along with the Law Department, BOA uses ISYS to track every Microsoft Office document. The file systems date back to the mid-1980's and have experienced exponential growth in both file size and quantity. IT has converted these departments to the SAN where disk space and processing power can be allocated as needed.

The Board also uses the Civica website system for organization in displaying agenda, minutes and pertinent files associated with the Full Board as well as the six standing committees. The biggest drawback for the Board of Aldermen and the City as a whole is the poor search functionality on the site. The issue seems to be a lack of full compatibility between the City's proprietary content management system and the major search engines. The city has begun an overhaul of the website to use fresh modern code enabling new modules and functionality, the most current technology and a much better index function with all major search engines. It is hoped the new site will be ready to go live by mid-December 2015.

Equally challenging has been the identification of a robust agenda management system. The successful system must be able to take input from all other departments, allow splitting, and assignment to multiple standing committees. With the formation of the Charter Committee, the face of the Board of Alderman could change quite drastically in the next few years. This in turn will change how the committees function and will also impact the processes involved. It is the recommendation of the Clerk of the Board of Alderman to hold off on further research until the City has determined how the new board will function. It is quite possible that solutions already demonstrated may actually work with a redesign of Newton's processes.

A centralized method to track Special Permits from inception to permit issuance detailing all documentation with updates and revisions as well as payments is yet another unmet need.

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**City Clerk FY17-FY21 Needs:** Dogs Database and Business Licensing into Community Plus

**City Clerk:** The City Clerk Dog's Database is expected to move into a new online version hosted by City Hall Systems well in advance of the March 2016 dog license renewal period. This solution allows the ability to directly pay online without the need a of City employee interface.

The business database continues to run as a stand-alone application that should be brought in to Community Plus in the short term.

The Births and Deaths databases are now hosted by the Commonwealth of Massachusetts.

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**Elections FY17-FY21 Needs:** Hardware upgrades for desktops.

**Elections:** Voter registration and election administration are two of the primary duties of the Election Commission. Managing the census database and interfacing with the Commonwealth's VRIS system is the other. With assistance from the IT department, election night automation and reporting is as advanced as any other city or town in Massachusetts. Live results are consistently posted within the hour of poll closings on election night.

A state sponsored solution is needed for efficiency in census collection.

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**Dept 103 – Executive Office**

**Executive FY17-FY21 Needs:** Enhanced support for mobility.

**Executive:** Small document tracking applications were designed in the past few years that efficiently enable departments to track the progress of documents requiring signatures. As a very mobile department, the biggest challenge from the Executive Office is enabling continuous remote access to staples such as email and calendars.

The Mayor's Office uses Code Red for the City's emergency warning system. The Executive Department also uses a subscription to Survey Monkey that is maintained by the IT Department. The Executive Department is relying on Datastat to ensure efficiencies and constituent satisfaction.

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**Dept 104 – Comptroller's Office & Newton Retirement System**

**Comptroller FY17-FY21 Needs:** Enable efficient online payment system.

**Comptroller/Financial Reporting:** Primary systems are Finance Plus and Microsoft Office. The Comptroller's Office relies heavily on the City website and intranet to relay financial information and forms. In recent years, the Comptrollers' office has made a great push to scan all documents and store as collections in the batches from which they were processed. This makes document retrieval infinitely quicker and negates the need for trips to a vault to search for hard copy. Online payments from many departments need to be created in such a way as to create further efficiencies for the financial departments (Comptroller, Treasury).

The Comptroller is very concerned with the abilities of Sungard Pentamotion since their announcement that Fidelity has bought the company. Support has been lackluster at best and the new version of the software had some problems in correctly executing the transition of the fiscal years. Additionally, the trial balance could not be exported to the Auditors and an in-house report writer was dispatched to accommodate this shortfall. Sungard is aware of the City's concerns and it is hoped that these concerns will be addressed quickly and that the company will return to being a reliable, responsive organization.

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**Newton Retirement System FY17-FY21 Needs:** Ongoing support, as needed.

**Newton Retirement System:** The Newton Retirement system is a separate entity that is intricately tied to the City's financial system. Therefore, the IT department provides PC support, recommendations on new equipment, and access to the City's network.

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#### **Dept 105 – Purchasing**

**Purchasing FY17-FY21 Needs:** Ongoing support with enhanced office automation, finance plus, and as otherwise needed.

**Purchasing:** Between Finance Plus for purchase orders and heavy use of the Civica "Bids and RFPs" module, office automation for Purchasing is very efficient.

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#### **Dept 106 – Assessing**

**Assessing FY17-FY21 Needs:** Assessing specific systems will soon be migrated to the storage area network; we expect to relocate the online Assessor's database to be hosted by Applied Geographics in the cloud.

**Assessing:** The Assessing Department uses the Vision database to manage the "valuation of property". Data is imported from Vision into Community Plus once per year. The department maintains a robust set of web pages that allow residents, businesses and realtors to query

property information online. Internal systems are slated for migration to the SAN, while the City is exploring the opportunity to move the web applications to the cloud of the Assessor's database systems developer. IT exports all building permits from Community Plus for import into the Vision system twice per year. This allows Assessing to be aware of where property valuations are likely to require review. Several of the Assessing department specific systems are approaching end of life and should be migrated to the storage area network.

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### **Dept 107 – Treasury**

**Treasury FY17-FY21 Needs:** Voice over IP phone system, enhanced online payment systems.

**Treasury:** The current state of computers, printers, server storage and staffing enable the Treasurer's office to operate in an efficient manner. The most significant technology needs for Treasury will be better online payment opportunities that eliminate data entry and a Voice over IP (VoIP) system that will enable new methods of functionality and customer service to better serve the public. Both of these needs have been addressed in FY15-FY16. VoIP was implemented and continues to be tweaked to meet the needs of Treasury; City Hall Systems, as mentioned throughout this discourse, is the new standard for accepting payments. IT will be updating a printer and many monitors over the next year.

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### **Dept 108 – Law**

**Law FY17-FY21 Needs:** More digitization using Laserfiche, automation of document transit and tracking and WestLaw enhancements.

**Law:** In general, the Law Department is a paper intensive group largely resulting from the nature of their jobs and the legal system in Massachusetts. Enhanced search capabilities and access to information are perhaps the most important technology needs of this department. The biggest new tool for a resource for the Law Department would be to scan, OCR and index the 30 looseleaf binders of Opinions that date back to the 1970's. This would prove invaluable and free up a vault's worth of space. There are twenty file cabinets, each with four drawers that could be scanned as well. We are looking in to scanning the opinions first as a test case.

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### **Dept 109 – Human Resources**

**Human Resources FY17-FY21 Needs:** PC replacement, training assistance, support for new software initiatives that dovetail with existing applications and processes.

**Human Resources** Finance Plus is the primary application for HR and the most important need may be additional training and a revision of the Standard Operating Procedures for proper and consistent use of the system. The Human Resources Department continues scanning records into a database on the same Laserfiche system as originally purchased by the Assessing Department. HR recognizes that an interface of these scanned documents with the employee records within Finance Plus would be a boon to efficiency. As with other departments such as Treasury, digital signatures coupled with a redesign of internal processes could bring speed and great efficiency to solutions such as the job applicant and the personnel application processes.

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### **Dept 111 – Information Technology**

**Information Technology FY17-FY21 Needs:** The department will need to maintain a full complement of staff and sufficient annual appropriation of funding to enable the realization of the technology vision.

**Information Technology:** Currently in the process of absorbing responsibility for the City's phone system, the IT department may require additional personnel to oversee Voice over IP, configure routers and work with the team to plan further implementation and enhancements.

Project management is now receiving full attention from senior staff members. The department continues to increase capacity of the Storage Area Network, Disaster Recovery System and Backup systems as the City continues server consolidation.

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### **Dept 114 – Planning & Development**

**Planning FY17-FY21 Needs:** Smartboard, laptop and audio system for basement conference room; laptops for mobile employees, additional portable folding AV cart for home and away events, licenses for ISYS and/or Laserfiche.

**Planning & Development:** The Planning and Development Department requires significant resources; from bandwidth to disk space, to file sharing and web presence. Additionally, a document indexing system, such as ISYS, would enable better opportunities for staff members to access information. The City has invested heavily in Laserfiche, a scanning-centric document management system. Both of these solutions could help automate planning as well as enhance lost time searching for documents.

The Planning and Development Department also consistently meets with and presents to the public and requires a simple system, easily launched, and equipped with high quality audio and visual opportunities.

Most of the hardware needs of the Planning Department have been met or addressed. Additional laptops and a standardized audio recording device are near future equipment needs.

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### **Dept 115 – Public Buildings**

**Public Buildings FY17-FY21 Needs:** Remote access with enhanced connectivity, digital bridge to span disparate systems.

**Public Buildings:** The Public Buildings Department is a remote department with many employees managing critically important large projects, constantly in meetings at construction sites and elsewhere; therefore, mobility is critical. Administration on Eliot Street is a never-ending tidal wave of paperwork with duplicate entry of information between disparate systems.

Near future plans for this busy department include rewiring the premises, installing a power over Ethernet (POE) switch, upgrading to VoIP and installing a public/private wireless network.

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### **Dept 118 – Financial Information Systems**

**Financial Info Systems FY17-FY21 Needs:** Continue support for the department.

**Financial Info Systems:** FIS is the gatekeeper for the administration of the data for Finance Plus and Munis. The IT department oversees user administration, hardware support, and works alongside FIS in projects such as the recent upgrade of Finance Plus and Community Plus and the move away from dedicated servers to the storage area network.

It is anticipated that a staggered replacement of check printers will happen in the next fiscal year.

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### **Dept 201 – Newton Police Department**

**Police Department FY17-FY21 Needs:** Implement enhanced Police Wireless, migrate to IT SAN, converge support staff, new CJIS system, a solution to better manage auctioning of overtime hours. Police online data dashboard (Crimesight) should be resurrected and fully operated/managed in-house.

**Police:** From dispatch to detectives, the Police network is quite sophisticated. Drawbacks are the distributed database and file systems running on older devices. Many Police Applications are not future scalable and inhibit security updates and current web browsers. The support staff at Police is limited and would be better served if these systems (PCs, hardware, networking) were brought onto the City network and SAN to allow better administration by a full staff and allow the Police IT Specialist to focus more on application upgrades for forward compatibility.

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### **Dept 210 – Newton Fire Department**

**Fire Department FY17-FY21 Needs:** Reliable software for the Mobile Data Terminals, additional training, quality inside support for EOC and applications such as LUA, shared permitting and inspections in Community Plus.

**Fire:** In the past year the IT Department has assisted in the implementation of many technology initiatives in the Fire Department. With the recent assumption of Emergency Operations, a new EOC has been assembled at Fire Headquarters. With assistance from IT much equipment has been purchased, networks have been built, and processes have been defined. The LUA application has enabled smart phones to take a step forward in assisting emergency operations requirements. Advancing the use of Community Plus will benefit all without additional cost.

IT continues to work with NFD on the implementation of the first fleet of mobile data terminals in Fire vehicles and expects continued adjustments for enhanced support.

Fire has many opportunities for inspections and permitting. The City is confident that Community Plus will create efficiencies and will enable two-way communications with the inspectors from other departments.

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### **Dept 220 – Inspectional Services**

**Inspectional Services FY17-FY21 Needs:** Broader Community Plus use, eGov portal for applications and payments, major scanning project, new portable device initiatives.

**Inspectional Services:** A very public facing department, ISD has a very good system in Community Plus already in place. However there are many areas where the system is not yet utilized. The facets that can enhance public services are many and require some time to properly deploy, but with the current skill set and experience in the department, future enhancements are attainable.

The eGov portal is the web interface in front of Community Plus and is intended to allow high volume contractors the ability to apply for permits and pay for them online. It allows contractors or their office managers to handle the paperwork from their desks. This should alleviate the need for many of the high volume contractors to visit City Hall, creating efficiencies both for the contractors as well as staff at City Hall. Additionally, this will free up time at the ISD counter to enable the “one time” visitors, often homeowners, with many questions and relative lack of experience, more time with the building inspectors.

A front counter eGov portal for visitors and training will allow city staff to set prospective contractors up on site with assistance and support so that in the future they will be able to manipulate the application swiftly and correctly.

In the field the push is for better mobility, smaller devices, reliable connectivity and secure access to all pertinent data. While most of this has been delivered, the push for smaller devices and broader data access continues.

Sharing the system, especially with the Fire and Health Departments promotes a consolidation of data that allows a new level of information sharing. The IT Department is in the early phases of rolling out licensing and permitting solutions.

The City is currently determining the best approach to scanning the entire contents of the ISD parcel records. ISD personnel are currently working with the Clerk’s Office and the City Archivist to develop a viable plan.

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#### **Dept 401 – Department of Public Works**

**Public Works FY17-FY21 Needs:** Update “Roads Manager” program to include degradation curves to assess annual changes in road conditions; Identify a comprehensive Asset Management program that incorporates all streets, sidewalks, water, sewer, and storm water infrastructure; Expand the use of mobile devices to increase efficiencies and productivity;

**Department of Public Works:** Public Works uses the “Roads Manager” software program, which includes a uniform Pavement Condition Index (PCI) rating for all roads in developing the annual paving plan. The PCI data has been updated in calendar year 2015. Overseen by the City Engineer, the data was submitted to VHB. The contractor has provided assistance to accomplish the following:

- i. Improve pavement degradation curves so that the City can more accurately assess annual changes to street conditions, and

- ii. Update road repair strategies to be more inclusive of all paving and preventive maintenance methodologies to more fully evaluate options to improve and maintain road conditions annually.

Additionally, D.P.W. uses Hansen Asset Management software to streamline the work processes, track and report inventory, and schedule maintenance programs. As a result of the age of the software, replacement is recommended. Public Works, Parks & Recreation, the Public Buildings Department, IT and the Mayor's Office will begin exploring a comprehensive, modular system that incorporates the requirements of many large and small silo applications that are department specific. The City will issue a Request for Information in order to evaluate current Asset Management Systems. The GIS system will be at its core.

This plan would identify the assets, their GPS coordinates and characteristics, useful life expectancy, maintenance and replacement schedules, cost estimates, and include GIS overlays to help identify points of conflict and opportunity. Included in the program would be a consolidated work order system that could be used by all and correlate directly to or replace Customer Service/WebQA. This would significantly improve the efficiency and effectiveness of the department.

Expanded use of mobile devices to increase efficiencies and productivity would also prove beneficial to the department. Examples include immediate reporting from the field, completing work orders on site and the ability to give current and live data on road conditions and projects. Mobile device management will also be needed as the use expands. The City will need to have the resources to remote wipe, update software and secure city data on smart phones, tablets, etc. as their use increases. VoIP should also be implemented to streamline the communication between the customer service department, water billing department and residents.

Several projects are entering the planning or testing phase which will provide noticeable benefits to the City:

**GPS fleet tracking:** will allow the city to provide real time data of plowing operations and street conditions. Accurate data displaying vehicle location brings the capability of deploying the closest vehicles quickly to respond to hazardous road situations.

**ROAM:** a remote street light monitoring and control system may provide energy savings and reduce the number of street light outages by providing wireless control and measurement.

**SCADA (Supervisory Control and Data Acquisition):** This system will provide remote monitoring and control of the city's water pumping system and allow the Department of Public works to respond quickly to any abnormalities within the system including sudden changes in water pressure. Predictive maintenance will also be a benefit which will allow for proactive rather than reactive planning.

### **Dept 501 – Health & Human Services**

**Health & Human Services FY17-FY21 Needs:** Migrate applications into Community Plus, additional employees may need mobility solutions.

**Health & Human Services:** One of the pioneering departments in a push to use Social Media to inform the public, the Health Department has expanded their services, their staff and their technology needs. The Health Department, along with Fire, Law and IT has formed a Social Media team to raise awareness of opportunities and pitfalls in using social media in 2015.

There are many opportunities for permitting and licensing to join in Community Plus as well as annual and recurring inspections and liquor-related events. These are huge commitments that require a lot of preparation and process. The IT Department looks forward to incorporating more systems as a result of the successful implementation of the sidewalk-service restaurant permitting module.

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### **Dept 502 – Senior Services**

**Senior Services FY17-FY21 Needs:** Public and private wireless, PC replacement as needed.

**Senior Services:** The Newton Senior Center on Walnut Street serves as a multipurpose building for seniors over the age of 50, and Veterans of any age. There is an administration network connected by fiber to city hall and there is a public access network that enables visitors to access the Internet as well as seasonal opportunities such as having their taxes done by a professional online. As technology makes its way further into the retirement age bracket, it is anticipated that there will be increased demand for wireless internet access on the public side. Assistive listening technologies for public access to amplified voice systems would also benefit the patrons of the building.

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### **Dept 503 – Veterans' Services**

**Veterans' Services FY17-FY21 Needs:** Technical support and training as needed.

**Veterans' Services:** As a result of the restructuring of the delivery of services to the City's population of Veterans, the Veteran Services Officer will now spend 50% of his/her time at City Hall and 50% at the Newton Senior Center. Therefore, it is imperative that he/she be equipped with a laptop with wireless access to the administration network in each building.

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### **Dept 601 – Newton Free Library**

**Newton Free Library FY17-FY21 Needs:** Enhanced internet access, increased bandwidth on wireless, consolidation and redundancy of routers and firewalls, attention to 5 year PC replacement plan

**Newton Free Library:** The Newton Free Library has made great strides in recent years solidifying their network infrastructure, improving the wireless network available for public use and reducing the number of servers in use by virtualization.

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### **Dept 602 – Parks & Recreation**

**Parks & Recreation FY17-FY21 Needs:** Upgrade equipment, additional wiring for phones and data, re-evaluate “Sportsman” software to potentially include under an umbrella application such as the Hansen replacement.

**Parks & Recreation:** As a remote site with high mobility requirements, Parks and Recreation may best be served with a fleet of portable devices that provide access to the city data network and also serve double duty as payment terminals for their many program registrations. Hardware upgrades for remote sites were completed at Gath Pool and Crystal Lake. In the future a dozen summer camps could all utilize similar devices on a shared, private wireless solution. Mobile devices that support standard video feeds back to City Hall and the Internet would assist in determining resource assignment during weather related events. A very data intensive department with high visibility web pages that require timely updates, reliable access from the office and the field are prime requirements for efficiency.

Future opportunities for Parks and Recreation include use of GIS or the Hansen replacement to assist endeavors ranging from tree maintenance and inventory to centrally organizing all of the green spaces for which they are responsible. Moving the tree maintenance permitting into Community Plus should alleviate busy work and make the system more efficient as well as sharable.

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### **Dept 603 – Historic Newton**

**Historic Newton FY17-FY21 Needs:** Wireless access, equipment upgrades

**Jackson Homestead:** The History Museum now has its collections in multiple locations: the Jackson Homestead, Durant-Kenrick, and the archives in the Newton Free Library. Consequently, staff mobility is becoming more important. With the anticipated overhaul of Jackson Homestead slated for fiscal year 2016 it will be important to address issues of connectivity.

With the rebuilding of much of the new portion of the building, requests for a move of the communications closet and additional wiring are on the horizon. With the challenges of transition, it may be best to upgrade them to VoIP as soon as possible to enable mobility.

## Five Year Technology Plan

Category	Dept # - Description	Overview	Year of Implementation								
			Funding Source	Estimated Cost	Prior Year	FY17	FY18	FY19	FY20	FY21	
Software & Process Improvements	111 - Upgrade Data Domain on City Hall SAN	EMC DataDomain DD2500. The current DataDomain DD620 has a maximum capacity of 8.3 TB and is currently at 49.7% capacity with weekly full and daily incremental backups that are only kept for 3 months. The DD2500 has a maximum capacity of 133 TB so we could hold data longer and I would prefer a year rather than a quarter. <b>Impact: We will be forced to do this at some point. It would be better to do it at our convenience than waiting for problems to arise.</b>		\$ 70,000		\$ 45,000.00				\$ 25,000.00	
Infrastructure	111 - VoIP Corrections	Customer Service / Fire HQ Install not done properly; Station #4 and Station #7 do not connect to our data networks, thus are not properly installed, either. While these work fine independently, their cohesion with the big picture is critical. <b>Impact:</b> Not updating these silo VoIP projects leaves a gap in public safety and customer service.	Cable Licensing Fees	\$ 6,000		\$ 6,000.00					
Infrastructure	111 - Voice Over IP for remainder of City Hall and the Library, rewrite as needed	Funding to upgrade Treasury and Executive as well as the Voice Mail server were in the FY15 IT budget. FY16 includes Public Buildings and the new Parks & Recreation location. Next steps will be continuing on to all other Departments in City Hall and the Library which will allow new opportunities for communication and better interaction with our network; administration as it ties in with our Active Directory system will increase internal customer service efficiencies. <b>Impact: Our conventional phone system is merely a phone system. It doesn't interact with video or data, support is limited, equipment is beyond it's useful life.</b>	Cable Licensing Fees	\$ 50,000		\$ 50,000.00					
Citywide Infrastructure	111 - City Infrastructure and Security	Building Access Security, Badges, Alarms, Intercom and Video Monitoring. By establishing a standard for the city, using the VoIP solution and the city fiber as a core, build a system to offer better safety to the City, it's residents and it's resources.	Cable Franchise Fees, Operating Budget	\$ 929,000	\$ 413,000	\$ 210,000	\$ 180,000	\$ 70,000	\$ 36,000	\$ 20,000	
21st Century City Hall	111 - Additional Funding for BOA/War memorial Project	Working with the Board of Aldermen, Arts in the Parks and NewTV, as well as recognizing the need for varying requirements, additional funding will be required to meet the myriad needs of vastly differing areas. <b>Impact: Presentations from the City should meet a level of expectation that should be associated with a 21st Century City Hall.</b>	Cable Licensing Fees	\$ 90,000		\$ 50,000.00	\$ 20,000.00				

## Five Year Technology Plan

Category	Dept # - Description	Overview	Year of Implementation								
			Funding Source	Estimated Cost	Prior Year	FY17	FY18	FY19	FY20	FY21	
Software & Process Improvements	111 - Networking Enhancements	Upgrade our "Fatpipe" load balancing equipment. Proactive measure to ensure, as network demand increases, our electronics will be able to accommodate the need. Impact: <b>We will need more bandwidth to begin using SIP (Session Initiation Protocol - runs over our internet connection) to reduce phone costs to Verizon</b>		\$ 25,000		\$ 25,000.00	\$	\$	\$	\$	\$
21st Century City Hall	111 - Planimetric mapping	Planimetric mapping – this would give us driveways, curbs, sidewalks and maybe other surface types. Importantly, it would also give us impervious surface. We got a quote that was for about \$45K with the aerial photos. IF we need to re-acquire the photos, it could be part of this project. Impact: Adds a level of detail that we have never had. Would assist greatly in answering many questions negating site visits.		\$ 20,000		\$ 20,000.00					
Infrastructure	602 - UPS & Generator for Parks & Rec.	Too deep in the woods to gamble without one. Impact: Impact: Building would be down. Especially during snow and tree removal periods, Parks must stay online and available.		\$ 12,000		\$ 12,000.00					
Software, Applications and Process Improvements	101 - Enhanced Website search	Site indexing leaves much to be desired and too much to chance. Better method of indexing and retrieval, especially for committee-oriented pages and documents is critical for a transparent City Hall. We have not yet found a solution that works with Civica.	In IT Annual Budget	\$ -							
Software, Applications and Process Improvements	104 & 107 - Enable Online Payments	Ongoing project, we do not expect a cost to be associated with this project, merely a significant investment in employee time.	No additional cost	\$ -							
Software, Applications and Process Improvements	101 - Agenda Management	Web-based database managed system capable of supporting all of the needs of our Board of Aldermen as well as their subcommittees, tracking items from inception to final approval. We continue to look for an acceptable solution. It will not be cheap and will probably generate a hefty annual fee.	TBD	\$ 70,000		\$ -	\$ -	\$ 50,000	\$ 10,000	\$ 10,000	
Software, Applications and Process Improvements	101 - Community Plus for Business Licensing	Migrate from Microsoft Access applications into Community Plus allows better data sharing, eliminates silos.	FY16 Budget	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	
Software, Applications and Process Improvements	101 - Community Plus for Special Permits	Special permits in Community Plus allows cross department collaboration and a logical means to track related documents.	No additional cost	\$ -							
Citywide Infrastructure	101 - Hardware Upgrades for Election PCs	Part of our annual 20% replacement project	In IT Annual Budget	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	
Citywide Infrastructure	103 - Enhanced Mobility Support	Enable anywhere access to working documents for Executive office as well as other departments, especially those frequently involved in after hours and off-site meetings. Equipment upgrades include iPads, laptops, subscription based internet access, secure gateways to our data, and consistent solutions for all users.		\$ -							



# Five Year Technology Plan

Category	Dept # - Description	Overview	Year of Implementation							
			Funding Source	Estimated Cost	Prior Year	FY17	FY18	FY19	FY20	FY21
Software, Applications and Process Improvements	201 - Move CrimeSight to a City maintained web server	Police online data dashboard managed in-house. Currently disabled.	No additional cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software, Applications and Process Improvements	201 - New CJIS system	Criminal Justice Information System provides timely data to Police, delivery methods will be changing soon.		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software, Applications and Process Improvements	201 - New Telestaff system	New Time and Attendance Software System	Probable in FY16 Budget	\$ 123,000	\$ -	\$ 75,000	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000
Infrastructure	201 - Public Safety SAN	Mirrored SAN hosting all virtual servers for Police and Fire. SANs will be located at Police and Fire, connected by the fibers in our bisector as well as on the hub ring.		\$ 240,000	\$ -	\$ 75,000.00	\$ 75,000.00	\$ -	\$ 20,000.00	\$ 20,000.00
Citywide Infrastructure	201 - Wireless for all buildings	Consistent public and private wireless access in Headquarters, Annex and Garage buildings.	In FY15 Budget	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software, Applications and Process Improvements	210 - Bring new licensing into Community Plus	Fire Alarm Licensing. Inspections should be in Community Plus.	No additional cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
User Support & Training	210 - Finalize MDT's	IT stepped in to assist Fire in finalizing the Mobile Data Terminals, ensuring access anywhere in the city and supporting OS challenges inherent to emergency vehicle use.	No additional cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software, Applications and Process Improvements	220 - Community Plus for Special Permits	Working with all involved departments, begin using Special Permits to track payments, application dates and documents.	No additional cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Software, Applications and Process Improvements	220 - eGov and online payments	After CommPlus 9 implementation, we will enhance eGov to accept online applications and payments for high volume contractors.	In FY16 Budget	\$ 6,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Citywide Infrastructure	401 - Remove rogue wireless upgrade to standard	Violation of telecommunications policy, we have been reducing the ease of adding systems on to our network but do realize the need for legitimate wireless access in all city buildings.	In FY15 Budget	\$ 5,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000
Software, Applications and Process Improvements	501 - Migrate standalone licensing to Comm Plus	Alcohol licensing into Community Plus would be a huge advantage for HHS this winter.	In FY15 Budget	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Citywide Infrastructure	502 - Wireless for Senior Center	Public and Private access enabling mobility for all	In FY15 Budget	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Citywide Infrastructure	601 - Consolidation and redundancy of routers	Library demands continue to increase; load balancing and availability for all manner of BYOD devices continues to escalate.		\$ 40,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 5,000	\$ 5,000
Citywide Infrastructure	601 - Enhanced Internet Access	Expand bandwidth with MinLib, Comcast and RCN		\$ 20,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000
Citywide Infrastructure	601 - PC Replacement Plan	Five year replacement plan - PCs in use up to 13 hours per day, 7 days per week.	In FY15 Budget	\$ 20,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000
Citywide Infrastructure	601 - Upgrade wireless bandwidth	Current system maxes out often		\$ 20,000	\$ 10,000	\$ -	\$ -	\$ -	\$ -	\$ -
Citywide Infrastructure	602 - Re-evaluate Sportsman	A very good system, not perfect, requires more data entry than expected.	Review Only	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Citywide Infrastructure	602 - Tree Permitting	Bring this application into Community Plus.	No additional cost	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Grand Total, All Projects</b>				<b>Estimated Cost</b>	<b>Prior Year</b>	<b>FY17</b>	<b>FY18</b>	<b>FY19</b>	<b>FY20</b>	<b>FY21</b>
				<b>\$ 590,500</b>	<b>\$ 731,000</b>	<b>\$ 493,000</b>	<b>\$ 393,000</b>	<b>\$ 144,000</b>	<b>\$ 75,000</b>	