

Information Technology Strategic Plan



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Information Technology Strategic Plan

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Information Technology Strategic Plan

Strategic Plan Purpose, Background and Introduction

The Strategic Plan is developed to provide a clear, comprehensive document to effectively communicate the City's technology direction, policies, priorities and strategy. This plan is designed to support the objectives, goal and plans of the City of Wheat Ridge.

The Information Technology Division has successfully established tactical and strategic plans, standards and processes. This is helping Departments reach goals established to support City's agenda. This strategic plan includes system upgrade and replacement strategies and schedules.

The Information Technology Division developed guiding principles for the Department and has included those principles as part of this document. Performance and tools have been developed and implemented to help staff focus on guiding principles. These tools are also discussed within this strategic plan.

The success that the Information Technology Division has achieved since 2005 is closely coupled to the emphasis the Division has placed on hiring, training and retaining the highest quality, dedicated technical staff. This plan includes discussion of the strategy that will continue to be used to retain qualified and motivated team members. Also included in this strategic plan are vital fundamentals such as technology acquisition and major system prioritizing, and systems disaster recovery. While this plan does not include tactical plans, it does include highlights to current technology standards, major three-year technology projects, and five year staff projections. This plan will be reviewed and updated annually.

City Mission and City Council Strategic Goals

The Information Technology Division strategic plan is established with a clear understanding of the City Mission and strategic goals established by the City Council. Each year, feedback from the Department Directors, City Manager, Deputy City Manager and City Council are digested by the IT Division to review and update the IT Strategic Plan. The results are listed below and are included within this plan to use as a guide to align the Information Technology Strategic Plan with that of City Council and the City executive team.

Our City Mission is to provide personalized service at a high standard of excellence creating a financially sustainable city. We protect lives and properties, shape Wheat Ridge's future, enrich our citizens' lives, and engage our citizens.

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Information Technology Mission Statement

“The IT Division will evaluate, integrate and support innovative technologies to help internal and external customers achieve their goals, while effectively maximizing return on investment and providing cost effective methods for citizens, businesses, vendors and others to easily access information and conduct business with the City.”

This mission statement has been the foundation for customers’ service standards that are included within this plan.

The City of Wheat Ridge recognizes that Information Technology is serving an increasingly important role in the efficient and quality delivery of services to businesses and citizens. The Information Technology Division reports to the Deputy City Manager.

The IT Division has a vested interest in the City and therefore finds it essential that we build innovative solutions for the City of Wheat Ridge to ensure public value.

Information Technology Guiding Principles

Principle 1 – Personalized service: Customers are first priority, and will always be treated in a timely and respectable manner.

Principle 2 – High standard of excellence: Systems support and application development are centralized, eliminating the need for Departments to hire or convert existing staff within Departments into technology positions to support hardware or database applications. This centralized approach enhances organization efficiency by eliminating potential for islands of information, promoting opportunity for data sharing between applications and departments, and maintaining adequate depth of support for systems. This will provide for more customer satisfaction, problem prevention, technology standardizations and provide the best service available.

Principle 3 – Financially Sustainable: New system acquisition will be accomplished through a standard process and will meet the standardization goals as established by the IT Division. Replacement of hardware, software and network infrastructure will be budgeted and scheduled to prevent obsolescence and reduced organization efficiency. Hardware and software (customized and off-the-shelf solutions) standards are established and updated by the Information Technology Division and adhered to by all City Departments. Staff will purchase and implement off-the-shelf software for major applications as opposed to developing custom software when off-the-shelf software meets the majority of the City’s requirements.

Principle 4 – Protect Lives, Property, and Information: Access to and availability of public safety, communications and financial systems is crucial to the organization, and high system availability will be an on-going performance measure for the Division.

Principle 5 – Shape Wheat Ridge’s Future: Emerging technology will be evaluated by the IT Department to determine it has potential to transform processes and services. Technology staff must think outside the box, constantly looking for new and creative ways to explore technology.

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Sustained success in the use of any technology can only be achieved through the ability to hire, train and retain the most knowledgeable, dedicated technical staff.

Principle 6 – Enrich our Citizens’ (Customers) Lives: Data integration and sharing throughout the organization and with the public is a key evaluation factor in selecting and developing applications. City Staff uses IT resources in accordance with formally established policies.

Principle 7 – Engage our Citizens (Customers): Customers will have efficient methods to request IT services and to provide feedback on services provided by the Information Technology Division.

Information Technology Core Beliefs

WE BELIEVE in personal service and knowing our customers.

WE BELIEVE in being efficient and effective by providing a quality service delivery to the customer, a service which is sensitive and responsible to customer’s needs and expectations, and which is effective in terms of achieving desirable impacts within the community and the city.

WE BELIEVE in being responsible both fiscally and personally by where governmental expenditures are not wasteful and are responsible in terms of spending within established budget parameters. We will be accountable for decisions and choices and hold others to the same standard.

WE BELIEVE in being valuable and an asset to the customers by being responsive, accessible, flexible, educative, informative and meeting and anticipating the needs of the organizational environment.

WE BELIEVE in having integrity. Being honest, truthful, respectful, equitable, and trustworthy and adhering to those qualities.

WE BELIEVE in cooperative teams. Departments should be a part of, and not apart from, the city it serves, striving to develop an open atmosphere and awareness, of interdependence and sharing.

WE BELIEVE in empathy for people by being courteous, sincere, friendly, caring, and accepting.

WE BELIEVE in pride by having good employees, building lasting relationships and maintaining a good environment.

In sum, WE BELIEVE in maintaining a government which is progressive and innovative, where professionalism, honesty and integrity prevail, where pride in work and credibility are of paramount importance, where effective planning for technological and change is a constant process, and where the freedom to exercise professional judgment is encouraged and supported.

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Information Technology Customers

The Information Technology Division provided services for internal customers and to a limited degree, external customers. Businesses and citizens frequently use the Web site as an alternate avenue to gain access to information and services. Tactical plans include expanded and more utilization of current applications to further enhance productivity and increase the number of customers using services directly provided by the Information Technology Division. The Information Technology Division provides services for the groups listed below:

City Council – responsible for serving as the legislative and governing body of the City. City Council adopts laws, ordinances, and resolutions stating City policy, holds public meetings on a variety of community issues, meets with groups and businesses, attends local, county, regional, state and national meetings on issues that have municipal impact.

City Manager's Office – responsible for providing overall administration for the City in accordance with City Council policies and issues. These responsibilities include preparing and executing the City budget, special projects management, overall coordination of capital projects, tracking municipal impacts of state and federal legislations, public information and serving as key communicators with City Council, citizens and staff.

City Treasurer's Office – This office is responsible for the investment of all City funds, along with the daily monitoring of the City's cash flow, plus signing all City checks.

Administrative Services Department – This department is responsible for Human Resources, Purchasing, Sales Tax, and the Finance Department. These Departments are responsible for collecting, accounting and reporting financial information related to all City revenues and expenditures, issuing and managing City debt, collecting, auditing and enforcing City sales and use tax, administering benefits and managing funds related to the City. The Information Technology Division is part of the Administrative Services Department.

Community Development Department – They are responsible for long-range land use, transportation planning and implementation, providing strategic economic development opportunities, providing for safe building construction through building project review, permitting, inspection and zoning functions, and developing strategies for improving the overall quality of life.

Municipal Court – This office is responsible for all phases of running a municipal court.

Parks & Recreation Department - responsible for acquiring, designing, constructing and maintaining parks, trails and open space; operating the recreation center and curriculum planning and implementing programs, sports leagues, senior activities and special events.

Police Department – responsible for enforcing all laws and ordinances, providing a safe environment for the residents, businesses, and visitors to the community; protecting through patrol and traffic operations, case investigations, code enforcement activity, enhanced communications, and animal control functions; interacting with the community to educate them

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on crime prevention, criminal activity, drug activity and awareness, traffic safety, and pet ownership. This department provides professional response to citizen's request for service.

Public Works – The Public Works Department is responsible for maintaining and constructing City owned streets, sidewalks, bridges, traffic control devices, and stormwater drainage ways, creation and maintenance of accurate City ROW maps, for the review of civil engineering documents for all private and public developments occurring within the City of Wheat Ridge, for transportation planning including the maintenance & design of traffic signals and associated devices, etc., as well as providing overall maintenance of the City's vehicles. The Public Works Department provides recommendations to the City Manager and the City Council on future Public Works programs.

The General Public – Anyone that accesses the City information systems not listed above.

Trends in Information Technology

The Manager of the Information Technology Division and staff monitor trends in the technology field, and purchase, evaluate and implement new technologies that have the potential to enhance services to internal or external customers or improve organization efficiency. This document does not describe all trends and emerging technologies, but does highlight several key technology trends that provide opportunities to improve services and efficiency within the City of Wheat Ridge. Some of the major trends being tracked and explored within the Information Technology Division include:

- ***Expanding capabilities of Web based technology***

Web technology will continue to promote and support disintermediation – the practice of providing services directly to the customer without the participation of City government. Also impacted by this trend will be the ability to expand services on the City's Employee Intranet and the ability to provide browser-based access to new software applications. E-government is defined as the transformation of public-sector internal and external relationships through Internet-enabled technologies to enhance communications and optimize government service delivery.

Advancing web technologies will help the City expand web usage in four primary areas:

Government to Citizen — includes, but is not limited to, account inquiry and payments, recreation registration, building permit filing, inspection scheduling, ticket payment processing, and others.

Government to Business — includes, but is not limited to, sales tax filing and payments, building permits, professional licenses, et cetera.

Government to Government — includes, but is not limited to, such applications as sexual-offender information, criminal information, Geographical Information Systems (GIS), water and resource information et cetera.

Government to Employee — includes, but is not limited to, human resources management, employee self-service applications like timesheet entry, policies and procedure, et cetera.

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• *Voice and Data Integration*

Integration of voice and data using the same communication lines is called Voice over Internet Protocol (VOIP). VOIP could potentially provide additional efficient services for citizens and employees. Cost and fault tolerance is no longer a major factor in deployment. Mitigating the potential problems associated with the technology has been addressed. In 2016, the City of Wheat Ridge implemented upgraded and 2nd generation hardware for the ShoreTel VOIP phone system.

• *High Speed Fiber Wide Area Networks*

The City is taking every opportunity to improve network performance and reliability to remote facilities via leased fiber connection to each remote site where it is financially sustainable and warranted. In June of 2010 two heavy use locations did come online with fiber connectivity. This trend will continue until all City facilities are online with fiber. In 2013 the remaining three facilities did come online and now provide the City facilities with complete fiber access. In 2016, Fiber speeds were increased 50% to accommodate the load and utilization.

• *Mobile Apps*

The creation of the Department of Homeland Security is a result of the attack of September 11, 2001. It has heightened the focus on security for all governmental agencies. We have implemented a number of improvements to help ensure the security of our equipment and more importantly data. Gartner Dataquest, a technology research firm, believes the potential opportunity behind homeland security-related IT initiatives will be significant. To this end we have implemented physical access controls and now focusing on Cyber Security.

• *Advanced Security*

Increased need for security will help to accelerate two-factor authentication options and physical access technologies. Decreasing prices for such technologies has created opportunities for the city to consider advanced authentication techniques such as badge readers and logon authentication. In 2006 the City of Wheat Ridge implemented a badge and access control system enterprise wide. In 2018 the City will implement advanced two factor authentication as required by the FBI and other state agencies for public safety.

• *Cloud Computing*

Cloud computing is a central method of providing software and services via an internet browser or ports. We call these services Software as a Service (SAAS). SAAS means no upfront cost in hardware or software on the provider side, with a pay as you go model for subscribing to the service. Private Cloud is very similar to cloud computing environment. However, it is implemented within the walls of the organization and is controlled by the IT Division. It is designed to offer the same benefits of Cloud but the organization assumes the cost of the hardware, software and infrastructure.

Customer Service Performance

The Information Technology Division supports several servers that host applications for all City employees as well as those servers used by external customers. The availability of networks and servers is crucial to these customers to perform everyday duties and therefore is of the highest priority to the Information Technology Division. Much emphasis and progress has been made on

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upgrading hardware and software. In addition, the network hardware has been upgraded to work more efficiently and reduce failures.

The availability of the network is expected to surpass a 98% uptime. The definition of uptime is time which a user can access the files necessary to do their job and not whether an individual component is running. Hardware failures including communications lines account for almost all down time. The City has all modern servers as of 2018 and with all with the technology mentioned above should allow us to easily surpass the 98% goal.

Systems Availability Performance

The Information Technology Division supports numerous computer servers hosting applications for all City employees as well as external customers. The availability of networks and servers is crucial to these customers in accomplishing their goals and is a high priority for the Information Technology Division. The Division has implemented several policies and procedures to help ensure maximum system availability for its customers. Performance standards measuring system availability were established in 2006 and continue to be monitored. System availability performance standards are as follows:

- Telephone and voice mail system availability – 98% uptime
 - Windows based systems (Police Computer Aided Dispatch, Recreation Point of Sale and Registration, Financials, Office Automation, Recreation Registration, Building Permits) - 98%
- The Information Technology Division has not always met these performance standards. In 2014 the goal is to achieve system availability of 99%. The goal is to improve upon these numbers.

Technology Standards

In order to provide a high level of customer service while maintaining a reasonable level of FTEs within the Information Technology Division, the City must develop and support technology standards. The IT Department implemented technology standards in 2005 and updates those standards annually to adjust for new technologies, needs and strategies. Deviation from standards may be approved by the Information Technology Division to meet a selected vendor requirement or when a Department's need clearly demonstrates that conformance to technology standards will negatively impact their goals. Policies and technology purchase approval processes have been established to ensure compliance with standards. The current year architecture standards and security in the areas of server hardware, operating system software, database software, office productivity software, and network hardware are listed below:

Telecommunications Infrastructure

The telephone system consists of multiple and redundant ShoreTel telephone switches, integrated voicemail, faxing and Auto Attendant System services at all sites. The telephone system currently has 500 extensions and voice mailboxes serving every Department in the City. The wiring system transports both voice and data transmissions to all these users. Both the wiring and telephone systems are reliable with major downtime averaging less than five days per year. The expansion, maintenance and repair of the infrastructure are performed by Century Link under the supervision of the Telecom lead. All programming, setup and installation of phone equipment is done by this team.

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Telephone Services

Current Configuration – as of 2018.

Currently the City telephone network topology is a standard hub and spoke configuration.

Telephone Circuitry

All the off sites are linked via circuits provided by Century Link, except where noted.

Telephone Equipment

All the sites have a ShoreTel VOIP phone system and voice mail system and backup analog hard lines.

Future Telecommunication Plans

In 2019, the City of Wheat Ridge will perform an upgrade to the Voice over Internet Protocol (VOIP) capable ShoreTel software. The ShoreTel system unified all telephone equipment to ShoreTel to create a seamless telecomm network. Upgrades to the system take on average 4 hours to complete.

Information Technology Services Supported

The Information Technology Division is comprised of three major functional areas responsible for support of City technology. The detail on current systems supported and the scope of responsibilities in each of the areas of the Information Technology Division include:

Major System Applications

IT is responsible for coordinating the development of interfaces, maintenance, support and upgrades to these applications. The planned expansion of our current enterprise systems and the City's Web site directly supports the mission of the IT Division by providing alternate, cost effective methods for citizens and businesses to access information and conduct business with the City. Some of the City's major applications maintained by the Information Technology Division include:

- Citywide email and scheduling system and SMTP gateway
- Police Computer Aided Dispatch, Records Management, and Field Reporting.
- ADG Financial, Payroll and Human Resources, Building Permit System, Cash Receipt Systems, Court Case Management, Code Enforcement
- Parks & Recreation Point of Sale, Facility Scheduling and Class Registration
- Geographic Information Systems
- Fleet Management System
- Microsoft Office for office productivity
- Microsoft SQL Server, MySQL and Progress for various database applications
- Document Management
- Email content filtering system
- Citywide Anti-virus
- Automated deployment and assets management system

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- Security Application
- ESRI Graphical Information Systems (GIS)
- VueWorks asset management system
- Web Site

Software Management

• The Software Management team provides technology solutions to customers within the City of Wheat Ridge to enhance their performance and productivity. Activities range from the simple task of directing an employee to appropriate tools, all the way through researching, developing, implementing, and maintaining major applications. The Team is always ready to provide technological assistance to give Wheat Ridge an edge in delivering services to its citizens. This Team works on the Web site development (Internet and Intranet), major system applications (Financials, Building Permit, Sales Tax, and Police CAD), and many standalone databases. The Team also manages the development of interfaces to enable data sharing between applications.

Web

- Over 22,000 citizens, businesses and others visit the City's web site each day, representing more than 66,000 viewed pages and images (hits) monthly.
- City Web site, job postings, applications, purchasing, and public works, recreation pages are the most popular areas of the site.
- The Web supports over 500 pages, and over 855 graphic images.
- Other interactive services offered on the City's Web site include: Job Applications, email Registration (Activities Guide).
- All of the City Standard Construction Details, City ROW Maps, City monumentation information, and PW Development Review requirements are all available.
- Parks amenities, recreation schedules, City code and other reference information are also available to users of the City's Internet site.

Systems Management

The Systems Management Team is responsible for the administration, security and data integrity of the centralized Windows servers. These servers are home to applications that support the City's Emergency Services, Municipal Court, Financials, Document Management, Parks and Recreation, Community Development, Office Automation, Internet, and Intranet. This Team also provides installation, configuration and troubleshooting services for all personal computers at five City facilities. Furthermore, this Team provides hardware, software and consulting services for all Departments on existing technologies and provides strategic direction for the acquisition and use of new technologies. This Team also operates a Help Desk that provides troubleshooting services to Departments for the efficient utilization of computerized systems.

As part of the Systems Management team, the Telecommunications/Networking Team is responsible for managing all City-owned and leased voice and data communications equipment and networks within and between more than six City locations. This group's responsibilities include:

- Installation, configuration, administration, troubleshooting, security, and data integrity for 45 Windows 2012-R2/2016 Servers and 375 Windows 10 personal computers in over five City facilities.

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- Consulting services for all Departments on existing technologies and strategic direction and project management services for the acquisition, implementation and use of new technologies.
- Administration for 400 Windows and 375 Exchange email accounts.
- Support for wireless hardware and software used by the City's Public Safety departments for all mobile applications including Dispatch and Field Reporting.
- Administration of the Purchase Program for the replacement of City personal computer hardware.
- Software Compliance and License Management.
- Systems security includes virus protection, content screening and spam filtering.
- Delivery of IT Help Desk services for all City employees who access any of the City's computerized systems.
- Support for mission-critical systems, 24 hours a day, 365 days a year.
- Data backup and recovery services for all centralized systems.
- Average support calls in excess of 200 per month.

Human Resources for Information Technology

Successful technology staff recruitment, selection, training and retention are vital to advance the use of technology and achieve long-range strategic plans within the City of Wheat Ridge.

Recruitment of Technology Staff – The City of Wheat Ridge uses a recruitment and selection process for technology staff that includes application screening, comprehensive job-specific testing, experience verification, and situational interview process that assist management in selecting the most qualified, best fit candidate for technology positions. Past employer references and full criminal background checks are completed and considered prior to extending an offer for a technical position. Newly hired technology staff is given specific project objectives to provide employee direction and serves as an assessment tool for management to determine additional training needs.

Training – Technology training helps employees to maintain and increase productivity and serves as a motivator and retention tool for those who strongly desire to advance their knowledge and skills. To the extent possible, on-line training provides a means to maximize training opportunities and reduce the expense associated with training.

Retention – Low staff turnover reduces training expense, helps retain organization specific knowledge, and helps the Information Technology Division maintain a high level of productivity and output. The Information Technology Division will provide an environment that promotes competitive wages and benefits, training opportunities, professional growth, empowerment, recognition, and teamwork. The Division has had a 20% turnover rate in 2005, however over the past 10 year the turnover rate has been 0%. The five-year technology staff plan shows additional positions that will be needed to maintain support for current systems and to support future growth and systems.

Five Year Staff Projections

During each budget preparation period, the Information Technology Division will prepare a comprehensive staffing projection to determine future staff requirements to maintain current

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levels of support for existing systems and to support additional new systems and customers. Projections are based on historic trends as well as scheduled projects and upgrades. Some of the variables and trends used to project future staffing requirements include:

Number of employees using IT supported technology: 325

Total PCs supported: 375

Annual Scheduled PC and server replacements: 50

Number of desktop supported applications: 40

Total Windows accounts supported: 375

Number of network nodes supported: 425

Number of Internet connections provided: 350

Number of major software applications supported: 25

Number of Internet pages and applications supported: 500

Number of remote locations supported: 5

Number of Wireless Users: 140

Based on this model, the IT Division will be requesting the following additional staff during the next five years. Staff for 2019 has been authorized by City Council as part of the 2019 budget. Additional staff indicated is subject to City Council authorization.

2007 – Successfully Add 1 FTE GIS Systems Specialist

2010 – Denied: Request 1 FTE GIS Technician & 0.5 FTE IT Support Technician

2011 – Denied: Request 1 FTE Web Engineer

2012 – No Request made

2013 – No Request made

2014 – Denied: Request 1 FTE GIS Technician & 0.5 FTE Help IT Support Technician

2015 – No Request made

2016 – Denied: Request 1 FTE GIS Technician & 0.5 FTE Help IT Support Technician

2017 – No Request made

2018 – Denied: Request 1 FTE GIS Technician & 0.5 FTE IT Support Technician

2019 – Denied: Request 1 FTE GIS Technician & Approved 1.0 FTE IT Support Technician

Information Technology Organizational Structure

1.0 FTE Information Technology Manager

1.0 FTE Network Administrator

1.0 FTE GIS Analyst

1.0 FTE Sr. IT Support Technician

1.0 FTE Sr. IT Support Technician

1.0 FTE Help Desk Technician

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System Security and Disaster Recovery

Security

The greater use of computer technology and the results of September 11, 2001 have increased the awareness of security in all forms. Increased reliance on computer technology to support mission critical services, along with an escalating risk of computer infiltration and corruption by outside individuals, has necessitated a heightened focus on securing computer resources. A broad, multi-facility network and Internet connectivity have amplified security risk. The Information Technology Division has been proactive in implementing multiple layers of protection for IT supported technologies. Without a comprehensive security plan and industry best practices in place, even the best systems can be compromised. All City servers, located at City Hall, are physically secured in an environmentally controlled computer room with restricted access. Access is limited to IT staff and a limited number of other employees who require access to the room to perform their jobs. Multiple security tools, practices and procedures have been implemented during the last several years to protect the systems against unauthorized access and viruses. Some of these include:

Security Patches – Security patches for operating systems, applications, and databases are reviewed and installed on an ongoing basis. The IT Division has automated and managed those (approved by IT) security patches in order to be more efficient.

Security Policies - Complete user and technical security policies are reviewed and updated annually.

Cyber Security - Information Technology staff regularly reviews the Symantec CERT web site and other resources to maintain current knowledge of cyber security alerts and product vulnerabilities. This information is used to fortify City systems against threats.

Firewalls - The City uses two physical firewalls to provide enterprise-class integrated network security services and to establish multi-layered defense for all City computer servers. The main firewall is placed between the internal network and the Internet. A second firewall is in place to secure a data line that allows the Police Department to access the Colorado Bureau of Investigations. The main firewall interacts with content filtering software.

Virtual Private Networking (VPN) – This VPN feature of the firewall allows a secure 256-bit encryption connection from the Internet to the City’s internal network, providing a secure method for IT technical staff and designated personnel to access internal resources. Users are challenged for a password by the firewall and by the internal servers. All access to systems is logged and may be reviewed when necessary.

Internet Content Filtering – The City uses an integrated comprehensive content filtering system to enhance security and support appropriate Internet use policies. The master database of restricted web sites is automatically updated daily.

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Telephone System - All telephone systems are housed in locked rooms. Each City facility and all maintenance ports are physically disconnected from the outside network. All normal maintenance is performed on site, and access to outside trunks is restricted via passwords from callers outside of the system. Remote administration can securely be performed by the respective hardware vendors.

Virus Protection & Malware and Detection - The Information Technology Division has multiple levels of virus protection for internal systems. Electronic mail is initially screened and filtered for viruses through a gateway mail and spam filter server. Second, it is scanned through an anti-virus utility when it enters the City's email server. When the email is routed from the email server to the users' mailboxes, it is again scanned with anti-virus software at each workstation. The locally installed anti-virus software scans local files and removable media for viruses. Virus definition files are automatically updated continuously on the server and workstations.

Online Transaction Security for Citizens and Businesses – The City subscribes to Verisign's and GeoTrust's services to guarantee on-line customers that the website legitimately runs under the auspices of the City of Wheat Ridge, and that all information sent to the site under an 128/256 Bit SSL session is encrypted, protecting against disclosure to third parties.

Wireless Data Encryption - All wireless networks are authorized and installed by Information Technology staff to ensure that the most recent and secure wireless network encryption standards are in place. WPA and/or WEP for data encryption are required on wireless installations.

Virtual Local Area Networks - VLANs are used to increase network performance, improve manageability, ease network tuning and increase security.

Password Controls - City employees' access to the various software packages is controlled by the use of passwords and specific login menus that provide access only to the applications and services an employee is authorized to use. Industry standard enterprise password strength complexity has been deployed.

Annual Comprehensive Security Assessment – The City secures the expertise of an outside security firm (GTRI) annually to assist in conducting internal and external system exploitation testing and to assist the City with fine-tuning security policies and fortifying systems.

Windows Security on PCs – Windows security features are used to prevent non-administration staff from installing new programs on desktop computers. Local files and Network files are protected by the Windows NTFS file systems security.

Disaster Recovery

As dependence on technology for service delivery and internal operations has expanded, so has the need for a comprehensive disaster recovery plan. Recovery plans are a work in progress and

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are updated each year. In 2003, uninterrupted power supplies, network hardware and servers were set up at a City-owned disaster recovery remote site to provide for rapid recovery following a disaster or damage to the computer facility and equipment at City Hall. The Windows servers are now located at the facility and are connected to the City's network for remote connectivity. Since March, 2006, the IT Division has the capability to work with our software vendors to restore a system in the event of a disaster. In addition, normal backups are physically relocated to the off-site safe to mitigate complete data loss at the City. Recovery plans are being drafted and updated on an annual basis.

The Information Technology Division will also quantify, validate, research, evaluate, recommend and implement an enterprise wide backup and disaster recover solution for the City of Wheat Ridge with an expected life span of five years. The City's current backup solution is entering the last phase of its life expectancy with two years left on the five year life cycle. Possible solutions would include a strategy that employs disk to disk to tape methodology. The City currently employs off-site storage venture with a storage partner Iron Mountain. Other devices that could be utilized are large Network Appliances or high speed and high capacity tape libraries.

Research is needed for the cost of technologies; capacity requirements quantified; and strategies examined; in order to fit the best technology with the needs of the City. The needs of the City along with "best industry practices" will ensure a solution that is viable and reliable. In addition, the backup storage solution must be expandable to accommodate more extensive use of video and data requirements based on existing and future projects. Having a backup solution that is scalable is critical to safeguard the data.

Technology Acquisition Process

The Information Technology Division provides advisory services to assist Departments in learning how technology can support their goals, and to assist them as they plan for new technology projects. A technology budget form was created to be used by Departments considering new technology projects. The technology budget request form is used in all budget preparation packets. This form aids Departments, in collaboration with the Information Technology Division, to consider and document several important aspects of a proposed technical project including: project scope, business need/justification for the project, on-going user and technical staff support requirements, training requirements, and cost. In most situations, Departments contact Information Technology staff prior to initiating any purchases of hardware or software. All purchase orders containing computer hardware, software or related technology are forwarded to the Information Technology Division for final review and approval. Compliance with standards and ease of integration with existing technology and data is achieved and enhanced through this approval process. Since 1998 the City has been on a three year replacement grid for all personal computers. In 2007 the grid was modified in to replace "power user" computers every three years and regular users ever five years. The "power users" only comprise of 8% of the users. The grid includes users who get the recycled three year old power computers. This plan has proven to be effective. New or replacement computers are purchased rather than leased. In 2009, the replacement grid has been expanded to five years for all users due to the Great Recession of 2008-2011.

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New Systems Strategic Implementation Planning and Prioritizing

Prior to 2005, the Information Technology Division independently prioritized the order in which new systems would be implemented. In 2005, prioritizations were made on replacement of a complete department's computers versus individual users, in order to simplify accountability of systems. The current systems the city purchases are very inexpensive and powerful, in that a single platform will accommodate 92% of user's requirements.

Network Infrastructure Architecture Standards

For security purposes, some specific hardware and configuration information is excluded from this document.

Local Area Network/Wide Area Network

The City of Wheat Ridge's computer network supports approximately 425 nodes (devices). Of these 425 nodes, there are 375 networked personal computers, all of which have the ability to browse the Internet. The Information Technology Division is purchasing software to enable us to monitor the connection to the Internet to ensure good performance and secure connections and adherence to IT Internet access policy. The City's networks are protected by a two tiered security check.

The Local Area Network (LAN) at City Hall is a collapsed backbone design with a quality switch at the core. All of the City's servers are connected to this switch. The uplinks to the desktop switches, located in the telephone closets on various floors, are also connected to this core switch. All of the devices at the City communicate at least 1000 megabits per second on Category 5e/6 Unshielded Twisted Pair (UTP) cable.

The City also has a Wide Area Network (WAN) to connect the five City facility locations to the computers at City Hall. These facilities include the Wheat Ridge public works garage, and all recreation facilities. At the core of the WAN is a Cisco switch. All remote facilities are served by Qwest connectivity.

Data Networking and Transport Standards

LAN Switches - LAN devices will be intelligent network "switches" that are capable of 10/100/1000.10,000 Mbps speeds, with 10,000 Mbps uplinks. Each of these devices will have the port security enabled.

City-wide Backbone - Switches are connected with 10 gigabit speed Fiber cable. The primary backbone providing services between five City facilities are connected to the network using 100 Mbps leased fiber connections.

Telephone Services

The City has standardized on ShoreTel telephone switches. The size and mission of the facility to be served determine the make and model of these switches. Use of voice mail and auto attendants is also determined by the needs of the facility.

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Servers

The City has standardized on the Dell Power Edge line of servers for use throughout the City. This standard allows the Department to carry an inventory of spare parts available for use in most of the servers, decreasing downtime following system failures. The Department also carries vendor maintenance contracts on servers hosting mission-critical applications to further reduce downtime. The standard operating system for servers is Windows 2012 R2 or Windows Server 2016. The Department installs standard anti-virus software on each server for protection and administration. Some servers require additional software such as Microsoft Office 2016, and application specific software. Servers are replaced on a four to five year replacement schedule. Funds for all server replacements are authorized by City Council and included in the Information Technology Division operating budget.

Workstations

The City has standardized on white box desktops and Dell laptop personal computers. The standard operating system is Microsoft Windows 10. The standard suite of office productivity tools is Microsoft Office 2016 Professional. Also, every PC installed within the City includes standard anti-virus software, Microsoft Internet Explorer, Adobe Acrobat Reader, and WinZip. Additional applications are installed as required for specific job-related requirements. Personal owned and unapproved software is not permitted on City workstations.

Handhelds

The City has standardized on the iPhone 6s handhelds.

Databases

The City has standardized on Microsoft SQL server 2012-R2 or MySQL as the database for all new custom and purchased software applications if compatible. Support for legacy databases such as Microsoft Access databases will continue until applications using these databases are replaced.

Internet/Intranet

The City has standardized on Microsoft IIS 8 as the Web server software. The Information Technology Division installs and maintains web servers used to host all City information and services. In 2008 we installed a completely new web site design and structure. Civic Plus Content Management software is used to provide content contributors with the ability to update departmental information on the Internet.

Major Projects-Three Years

The Information Technology Division management team has developed a detailed 2009 work plan for each functional area. The major projects identified for 2013 through 2018 include the following:

Optimizing Existing Business Solutions – The City of Wheat Ridge has several core business systems. As with most software packages, there are several feature and modules that could be put to use but are not due to various forces and constraints. In order to utilize these systems, one must become familiar with what the systems are capable of and how it fits into the business

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processes of the departments. This could be accomplished by thorough training and hands on experience. Exploiting the software the City has already invested could make users become more efficient and provide an opportunity to expand our current use of the systems.

Interactive Web Forms – The plan is to begin to introduce interactive forms on the Web. The new Web site now had the ability to use Web based forms that citizens can fill in and submit interactively. Some of these will also take advantage of the on-line payment system we have.

Regional CAD/RMS – The plan is to upgrade to a County Wide records management and Computer Aided Dispatch system to leverage staff and resources to provide the best services possible to the Public. Completed in 2018.

Document Management – The City has installed an electronic document management package used by many municipalities which is developed by LaserFiche. An update is planned for 2019

Disaster Recovery Site Upgrades –. Research and price the proposed City's disaster recovery hot site to include servers and software for Financials, Building Permits, Court, Records Management Systems, Computer Aided Dispatch, email, fleet maintenance, GIS, and Viewworks System. Implementation begun in early 2007 to include, Financials, Building Permits, Court, Records Management Systems, Code Enforcement System and others are have been completed. Recovery site is hosted by the vendor as of 2008.

Security Audit – Work with outside vendor to conduct the annual comprehensive network and server security audit and implement changes to systems, policies and practices as required to further fortify City systems.

Microsoft Software Updates – Microsoft has unveiled several significant software upgrades such as Window 10, Office 2016, Server 2016, and Exchange 2016 that we have evaluated and implemented.

Completed Projects in 2018

Scheduled Hardware Upgrades – IT replaced and upgraded over 60 computers, 2 printers, and two city LAN Switches in 2018.

Police Wireless Technology Upgrade –In early 2018, new AT&T wireless smartphones were deployed to improve connection speeds.

Hardening of Security – Performed Phishing testing and conducted penetration testing, internal hardware/software audit, implemented best practices for hardware, software and user account security.

Implementation for Regional CAD/RMS – Installed, configured and tested new software.

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Upgrades – Performed upgrades to computer aided dispatch, Records Management System, wireless system, records management systems, sales tax web software, virtualization of servers, Municipal Courts video arraignment system and various applications.