The City of Carson City
Information Technology Assessment Report
Prepared by:

October 12, 2016
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This Information Technology Assessment Report was developed for the City of Carson City, Nevada, by NexLevel Information Technology, Inc.
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Section 1 – Introduction

1.1 – Scope and Objectives

This Information Technology (IT) Assessment Report was developed for the City of Carson City, Nevada (City) by NexLevel Information Technology, Inc. (NexLevel) to document how effectively the City governs, manages, and delivers information technology services. The information provided in this report was derived from:

- An online IT User Satisfaction Survey
- Interviews conducted with key user department stakeholders, subject matter experts (SMEs), and policy advisers
- Interviews conducted with the City’s IT Manager and staff
- An Information Technology Best Practices Assessment that provides an analysis of the City’s conformance to a set of information technology best practices

City Background

The City of Carson City has a metropolitan government that combines the functions of the City and the County and is the capital of the State of Nevada (Ormsby County and Carson City were consolidated by an act of the Nevada Legislature in 1969). The City retains much of the organizational structure of the County including a Board of Supervisors, separate elected officials including the Sheriff, District Attorney, Clerk, Assessor, and District Court Judges in addition to a City Manager and departments typically associated with a municipal government.

From its founding in 1858, the City has grown to a population of more than 54,000 in 146 square miles.¹ The City estimates that when fully developed, the population could reach 80,000. The most recent version of the

1 United States Census, estimated population as of July 1, 2015, http://www.census.gov/quickfacts/table/PST045215/32510,00

Carson City Five-Year Strategic Plan², published in May, 2015, identified leveraging technology as one of the objectives and strategies for efficient government with the objectives of:

- Reducing reliance on paper by increasing electronic capabilities
- Providing the necessary tools, within budget, to support job efficiency and productivity
- Providing reliable technology infrastructure for the organization
- Improving and expanding the use of technology by employees
- Improving access to City information for residents and visitors

The City has a hybrid information technology environment in which the City’s Information Technology Department (ITD) has specific responsibilities such as the support of City-wide information technology infrastructure and applications, while some City departments, such as Public Works, are responsible for supporting their own information technology infrastructure and applications, at times in cooperation with ITD, but without a clear demarcation of responsibilities between ITD and the user departments. The focus of this report is on the services provided by ITD and touches on departmental information technology services only where they interact with services provided by ITD.

Terminology

To avoid confusion, concepts and observations in this report regarding the use of information technology in general are spelled out (“information technology”) or abbreviated as “IT”, while “IT organization or ITD” are used for references to the City’s Information Technology Department.

1.2 – Document Organization and Contents

This report contains the following sections:

1. **Introduction** (this section), which provides information regarding the scope and objectives of this project and the relationship of

² http://carson.org/transparency/strategic-plan
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this report to the overall project scope, background information regarding the City of Carson City, role of the IT Assessment Report in the overall process of developing an IT Strategic Plan, and an Executive Summary

2. IT Assessment, which provides a summary of the findings resulting from each component of the assessment including the interviews with key user stakeholders, interviews with the City’s IT Manager and staff, and an assessment of the degree to which the City’s practices and procedures conform to information technology best practices; and

3. Recommendations, which provides specific recommendations for actions that should be taken by the City based on the findings of the assessment, along with suggested steps that the City should take to implement the recommendations.

1.3 – Role of IT Assessment Report

An additional product of the work related to the development of the IT Assessment is the development of a preliminary portfolio of proposed IT projects which will provide the foundation for the Prioritization Workshop that will help shape the City’s IT Strategic Plan.
1.4 – Executive Summary

“Conventional process structures are fragmented and piecemeal, and they lack the integration necessary to maintain quality and service. They are breeding grounds for tunnel vision, as people tend to substitute the narrow goals of their particular department for the larger goals of the process as a whole.” – Michael Hammer, “Reengineering Work: Don’t Automate, Obliterate,” Harvard Business Review, July-August, 1990

1.4.1 – Changes in Information Technology

One of the most profound changes in the public sector in recent years has been the shift from using information technology as a back-office, basic function (where the focus was often on reducing costs) to using information technology as an integral, and often mission-critical, component of how the City delivers services to the community. Continuing innovations in products and services have brought IT out of the computer room and into the hands of internal users and the public and out of the workplace and the home and into the mobile environment. This has resulted in significant changes in user and public expectations for the availability and usability of information technology products and services.

Seemingly overnight, business applications that worked well enough for individual departments have become obsolete as have the processes that local governments have developed to govern the use of these applications. New requirements such as the ability to effectively share processes and information across the enterprise, the importance of ensuring the currency and accuracy of information, and the ability to deliver useable information to decision makers are changing how business applications are used.

In this environment, local governments often find that they are challenged to manage their total cost of ownership (TCO) for information technology while obtaining a reasonable level of business value (in this context, business value is defined as the degree to which information technology services are aligned with, and support, citywide objectives and priorities) for their investments in information technology.

Figure 2, IT Governance and Business Value (below), is based on NexLevel’s experience that IT governance is an effective means of ensuring that cities maximize the business value that they obtain for their investments in information technology. In this model, IT governance is an enterprise-wide, collaborative process that is driven by senior management and that enables the effective delivery of IT services by aligning technology goals with business goals, allocating resources, and ensuring that the organization is committed to the effective use of IT. It is very difficult to effectively manage and deliver IT services without some form of IT governance.

As depicted in Figure 2, IT governance (in the middle of the diagram) is driven by a number of factors including:

- The City’s business vision and priorities, as set by the City’s leadership, which provide the framework for making decisions
regarding the City’s information technology objectives and priorities

- Other factors that drive the City’s information technology priorities including City-wide and departmental business needs, information technology needs (such as the need to refresh, renovate, and/or replace components of the City’s information technology environment), and resources (including funding, IT staff, infrastructure, and applications)

- The City’s IT Strategic Plan, which provides the roadmap that guides the IT governance process by providing a long-term plan for how the City is going to procure, deploy, and support information technology

IT governance provides the framework for the delivery of IT services to the City’s internal user community, the public, and other government entities. In general, IT service delivery models range from being highly centralized (where the focus is on standardization) to being highly decentralized (where the focus is on agility and responsiveness), but nearly every local government has some form of hybrid information technology service delivery model, similar to Carson City. These hybrid service delivery models include business applications that are either centrally supported or supported by departments (often with the assistance of external IT service providers).

Hybrid IT service delivery models are the product of a number of factors, but frequently, they are found where a City has made a conscious choice to empower departments to handle their information technology needs as they see best (but often without sufficient guidelines) or where departments have stood up services on their own since the central IT organization was unable to effectively respond to their needs.

While a hybrid information technology service delivery model promotes both agility and responsiveness to community needs (both important considerations), it can also result in a higher total cost of ownership (TCO) for IT and contribute to the City realizing less value for its investments in IT (ROI). This combination of increased cost and reduced value can result from investments in separate business applications that provide highly similar functionality, or investments in applications and/or technologies that appear to be promising but that fail to live up to expectations. For these reasons, effective IT governance is critical for organizations with a hybrid IT environment.

1.4.2 – Summary of IT Assessment

The information technology assessment was developed based on information obtained through a survey of City users, interviews with key stakeholders, interviews with the management and staff of ITD, and the completion and review of a IT best practices checklist which NexLevel then reviewed with the City’s Chief Information Officer (CIO), who also serves as ITD’s department head.

Overall, the IT assessment found that:

- Although many of the City’s stakeholders are appreciate of the recent improvements in the performance and responsiveness of ITD; some are still in a “wait and see” mode, and some are not convinced that this improvement in performance has benefitted their organizations or that it is sustainable. ITD is seen as still not being fully committed to communication, transparency, and collaboration

- From a process standpoint, the user stakeholders are primarily thinking in terms of their specific information technology needs and priorities and less concerned about City-wide process and information sharing

- The City is generally highly conformant to the IT best practices for IT governance, IT service delivery, support for business applications (although some of the applications themselves are problematic due to factors such as age and obsolescence), infrastructure, security / information protection, and IT administration although there is room for improved conformance in all of these categories
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A number of factors are inhibiting the City’s ability to fully realize the benefits of IT conformance including over-aged IT infrastructure, inconsistent year-over-year funding for information technology priorities and infrastructure refreshment, the absence of a linkage between information technology priorities and the City’s overall objectives and priorities, and the organization and staffing of ITD.

1.4.3 – Summary of Recommendations
The recommendations provided in Section 3 of this report include:

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2.1 - The City should establish a more formal process for IT governance:</td>
<td>▪ Improve the ability of the City to leverage existing information technology investments, reduce total cost of ownership, improve return on investment, and encourage re-use of existing information technology assets</td>
</tr>
<tr>
<td>3.2.2 – The City should plan for the replacement of applications and infrastructure that are nearing obsolescence:</td>
<td>▪ Ensure the sustainability of IT services and applications and ensure that City services can be continually supported</td>
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<tr>
<td>3.2.3 - The City should reconsider the division of responsibilities for IT support:</td>
<td>▪ Better define the respective responsibilities of ITD and user departments so that ITD can become more focused on proactive work to improve staff productivity. With better definition, ITD can develop service metrics and provide service level agreements</td>
</tr>
<tr>
<td>3.2.4 - The City should reconsider the organization and staffing of ITD:</td>
<td>▪ Restructure ITD to become more user-focused and to better support the City’s user communities and the public</td>
</tr>
<tr>
<td>3.2.5 - The City should develop a Business Application Portfolio:</td>
<td>▪ Enable ITD to better track the business applications being used to ensure that the City obtains the highest possible return on its investments in information technology through application re-use and the sharing of business processes and information across departments</td>
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### Recommendations

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<th>Recommendations</th>
<th>Objectives</th>
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<tr>
<td><strong>3.2.6 - The City should adopt a consistent approach to information technology refreshment:</strong></td>
<td>▪ Improve ITD and staff productivity by replacing older, maintenance-intensive devices on a regular basis</td>
</tr>
<tr>
<td><strong>3.2.7 - ITD should adopt additional IT best practices:</strong></td>
<td>▪ Improve ability of ITD to sustainably and consistently deliver IT services to the City’s user community and provide the basis for continuous improvement in the delivery of IT services</td>
</tr>
</tbody>
</table>
| **3.2.8 - The City should take steps to ensure the security and sustainability of its IT environment (network security, business continuity, and disaster recovery):** | ▪ Improve the ability of the City to protect information from destruction / disclosure by hackers by adopting procedures for the detection and mitigation of cyber-security threats and for the recovery from them  
  ▪ Improve the ability of the City to ensure that mission-critical business applications and available as needed and that they can be successfully recovered following a disaster |
Section 2 – IT Assessment

2.1 – IT Assessment Overview

The IT Assessment provides a detailed picture of how the City governs information technology objectives and priorities, manages information technology, and delivers information technology services to the user community. This provides a baseline that defines where the City is today, where it needs to be, and the gap between the two.

As depicted in Figure 3, Components of Information Technology Assessment, NexLevel’s evaluation of how the City governs, manages, and delivers IT services was developed based on information from:

- The “Voice of the User” Survey
- A series of interviews with City decision-makers, stakeholders, and subject matter experts
- A series of group and individual interviews with IT managers and staff members
- A high-level assessment of the City’s IT staffing
- An assessment of the City’s business applications
- An assessment of the degree to which the City’s information technology operations and practices conform to a set of best practices

The IT Assessment and the resulting recommendations are comprehensive and are thus not driven by any single factor; but represent the consensus of NexLevel’s consulting team based on the totality of the information collected, along with the consultants’ cumulative experience in managing IT organizations and conducting similar engagements. The experience of the consulting team is particularly important in considering, reconciling, and weighing the results obtained from each component of the IT Assessment, which can sometimes vary as a result of the different methodologies used to capture the information.

For example, when there is a variance between the results of the “Voice of the User” Survey and the interviews conducted with key user stakeholders, the interviews are given greater weight since, unlike the survey, the interviews are conducted face-to-face. The in-person approach of the interviews enables the consultants to ask follow-up questions to better assess whether the information being provided is consistent with
information obtained in prior interviews and represents an objective assessment, from the users’ perspective, of how the organization governs, manages, and delivers information technology services.

Regardless of the source of information, NexLevel’s approach is to validate the concerns expressed by the user community, and to provide the City with actionable recommendations designed to improve IT service delivery, increase organizational efficiency, and enhance information security.

2.2 – Summary of “Voice of the User” Survey

Between June 10, 2016 and June 24, 2016, NexLevel conducted an on-line survey of City employees to assess their satisfaction with the support they receive from ITD. Of the approximately 575 City employees invited to take the survey, 193 employees participated (a 34% response rate, which is typical for similar surveys conducted by NexLevel). The detailed results of the user survey were provided to Carson City in a separate document.

In terms of the demographics of the respondents, three departments (Health and Human Services, Fire, and the Sheriff) accounted for nearly 44% of the responses (84) and just over 38% (74) of the respondents identified themselves as being an executive, manager, or supervisor.

Just over 64% of the respondents (124) contact ITD between 1 and 5 times per month (approximately half contact ITD 1 to 2 times, and half contact ITD 3 to 5 times). The top four reasons that users contact ITD for support include:

- Desktop computer (109 responses)
- Network connections / performance (84 responses)
- Printer issues (82 responses)
- Internet (70 responses)

Key IT service metrics from the user survey included:

- Of the 180 individuals who responded to the question regarding their satisfaction with the time it takes ITD to solve / correct their problem, 164 (91.1%) indicated that they were satisfied (including individuals who reported that they were somewhat satisfied, satisfied, or very satisfied)
  - Of the 176 individuals who responded to the question regarding their satisfaction with the communications on issue resolution from ITD, 154 (87.5%) indicated that they were satisfied
  - Of the 180 individuals who responded to the question regarding follow-up on the service provided, 159 (88.3%) indicated that they were satisfied

The survey also asked individuals who identified themselves as executives, managers, or supervisors, questions regarding ITD’s understanding of the City’s overall business objectives and departmental business processes:

- 39 of 45 respondents (86.7%) reported that were satisfied with ITD’s understanding of the City’s overall business objectives
- 38 of 44 respondents (86.4%) reported that they were satisfied with ITD’s understanding of departmental business functions

NexLevel’s observations include:

- The survey participants feel that ITD is generally doing a very good job of supporting the user community
- A lot of effort is going into the support of items (desktop computers, network connections / performance, and printers) and it is possible that the City and ITD could take steps to reduce and better handle this workload, thus freeing up ITD staff for other activities that could be more important for the City
2.3 – User Stakeholder Interviews

In the course of the IT Assessment, NexLevel conducted interviews with:

- City Manager
- Assessor
- Carson City’s Visitors Bureau³
- City Clerk
- Community Development
- District Attorney
- District Court / Justice Court
- Finance
- Fire
- Human Resources
- Juvenile Court
- Library
- Parks and Recreation
- Public Works
- Senior Center
- Sheriff’s Office
- Treasurer

2.3.1 – Responsibility for IT Services

IT services and support are provided to the City’s user community by a variety of service providers including ITD, Public Works, the State of Nevada (including the State’s Administrative Office of the Courts [AOC]), and external service providers. The interviews conducted by NexLevel did not limit users to just those services provided by ITD, but rather allowed the users to address all concerns and requirements irrespective of the particular service provider(s) involved. This was done to obtain a better perspective of:

- The range of user information technology concerns and requirements
- The City’s need for information technology governance and its scope
- Opportunities to reduce the City’s total cost of ownership for IT
- The need, if any, to rationalize the demarcation of IT service delivery responsibilities

2.3.2 – Summary of User Concerns and Requirements

A number of common themes emerged in the course of the user interviews including:

- Some of the users expressed the concern that while ITD does a good job of responding to basic infrastructure issues that its support of business applications is not as good. Common issues regarding business applications included:
  - A lack of depth in staffing and experience so that if a key ITD staff member is out of the office there is no backup for that person
  - Problems with the application of software patches, releases, and new versions, with some of the City’s business applications being seriously out of date

³ The Visitors Bureau is not part of the City but receives IT services from the City and their web-site is hosted on a City-owned server
A feeling that there is no vision or plan for the management of business applications including the next steps for HTE

- Long-standing problems with network connectivity to City facilities east of Stewart including Fire Station 52, Juvenile Court, Juvenile Probation, District Court, and the Clerk / Recorder’s office
- The users appreciate recent improvements in service delivery but remain wary of ITD’s long-term commitment to customer support. Public Works and the Sheriff’s Office expressed concern that while they have seen additional attention from ITD, that this attention has not resulted in tangible service improvements
- Concern over what is seen as a lack of communication with the user community regarding network and other infrastructure upgrades and slow responses to hardware and other issues that arise in the wake of these changes
- Some issues seem to linger a long-time without any communication to the users regarding the status of the issue and the plan for resolution

NexLevel’s Observations on User Concerns and Requirements

NexLevel developed several observations in the course of the user interviews including:

- The City’s operations are generally siloed with departments more focused on their particular business processes than they are on the integration of processes and information with other departments
- The City’s applications are similarly siloed. With the exception of the Finance system, there are few enterprise applications nor do the users know what applications are available to them, what other departments are doing, nor are they knowledgeable of the City’s overall application strategy
- While the users have varied expectations of ITD, they are unclear as to what services (and levels of service) ITD should be providing and how the quality of those services should be measured. Similarly, users tend to have more confidence in specific ITD employees than they do to in reporting issues to the Help Desk – the ability to talk to a person that they know is important to many of the users
- Users also tended to be unclear as to the specific entity responsible for specific IT services, for example, security cameras are supported by Public Works, not ITD
- Although users acknowledge that ITD has changed for the better, they are still concerned the quality of the IT services they receive is still dependent on which ITD staff member takes their call

2.3.3 – Interview Summaries

City Manager

The City Manager has a number of priorities for information technology including:

- Create more efficiency in the delivery and use of information technology services, particularly through the progressive reduction in the City’s reliance on manual processes
- Continue to improve the City’s abilities to enable the public to access city information and services (i.e., Carson City Connect), with emphasis on “Smart City” capabilities while maintaining traditional services for members of the community who have not adopted computer technology
- Better leverage existing information technology assets, such as GIS, for access to real-time information regarding events in the City as well as to better deploy City assets to emergencies and other situations
- Use information technology to enable a culture of continuous improvement (the City is making use of Kaizen Events to promote process improvements)
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- Develop a fiscally-sustainable plan for the refreshment / replacement of aging applications including SunGard / HTE (used for HR and Finance) that would enable the City to become more nimble and agile in responding to community expectations
- Implement a sustainable staffing model for IT support including cross-training

Assessor

The Assessor is “getting by” with a makeshift arrangement of information systems including HTE, GIS, the Apex drawing software\(^4\), EMC’s Documentum product (primarily for document imaging with very little document management), and AS/400 applications developed and supported by Advanced Data Systems (ADS) which is used by 15 of 17 counties in the State.\(^5\) ADS is located in Carson City and the City has been using their software for nearly four decades. The Assessor has a major web-presence and makes all of their information and services available online. The Assessor noted a pending amendment to the State Constitution, SJR 13\(^6\), if approved by the voters, will change the basis for property valuation from replacement cost to market value, and cap property taxes at 1.25% of this year’s market value. This will require the Assessor to re-appraise some 20,000 parcels.

Although Carson City Public Works is assuming operational responsibility for GIS from Douglas County, the City does not yet have a formal plan for the governance and maintenance of the ESRI GIS application and the information in it. As a result, the Assessor is concerned about parcel fabrication (i.e., the maintenance of existing parcels and the creation of new parcels through sub-division).\(^7\) GIS is a key business application for the Assessor’s office and it is important that the Assessor be recognized as a key stakeholder for GIS.

Issues and concerns that the Assessor has with information technology and ITD support include:
- The Apex drawing software is not backwards compatible so that drawings created in older versions of Apex cannot be edited in newer versions
- The lack of cross-training in ITD limits their ability to support the Assessor
- Would like to have an application that provides a single point of access (for both internal users and the public) for property information that is presently divided up between ADS, HTE, and GIS
- The Assessor would like to have remote access capabilities

Carson City’s Visitors Bureau

The Visitors Bureau is not part of City government but purchases services from ITD including hosting of its web site (http://visitcarsoncity.com/) and for use of the financial system. The Bureau reported that the City’s network can be slow at times, especially after lunch, prompting them to contract with Charter Communications for wireless service. HTE has been problematic for the Bureau; QuickBooks (although limited in functionality) was faster and more flexible for them.

The Bureau feels that they have received responsive support from ITD. If they have an urgent problem they call a contact in ITD directly, and use the general Help Desk number for non-urgent matters.

The Bureau has a major focus on social media (using 8 to 9 platforms) but have to go off the City’s network to access and update them. They have developed a mobile app and will also deploy two to three kiosks for visitors in strategic locations plus take mobile kiosks to events. The app provides geo-location capabilities and plots restaurants, shops, and events.

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\(^4\) Apex Software, https://www.apexwin.com
\(^5\) http://www.adsnv.com
\(^6\) http://openstates.org/nv/bills/78/SJR13/
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City Clerk / Recorder

The Clerk performs a wide-range of responsibilities including agenda management and the recording of minutes for the City’s Board of Supervisors (BOS), City-wide records management, recording bills of sale for real property and liens, voter registration, issuance of marriage licenses and birth certificates and relies on a variety of information systems including HTE, Documentum, and Granicus. Although the Clerk is officially the custodian of records for the District Court, the Court is handling both filing and records management under the aegis of the Clerk’s office.

The Clerk does not have any issues with ITD support; however, they are experiencing a number of issues including:

- The voting system used for elections is due for replacement, but this is dependent on funding from the State (the system is operated by an external service provider using a dedicated server)
- Granicus has proven very cumbersome to use and there is a need to revisit its implementation and configuration
- Although the City has Documentum for document imaging and management, the functionality provided by the product is not sufficient (including the lack of functionality for selective redaction of information in documents) to permit the City to move away from hard copy documents. The Clerk’s office has looked at other applications including Helios (used in Douglas County) and Tyler (used in Washoe County)

Community Development

Community Development handles a number of matters including development permits, licenses for special events, and business licenses. Key applications for Community Development include HTE (fees from business license issuance and renewals are manually receipted and sent over to Finance), ADS (Assessor), Active.NET, GIS, Pictometry, and Documentum. Community Development plans to implement electronic submittal and plan checking for construction plans beginning in December of 2016. Community Development has been researching the possibility of implementing a technology fund through permit fees and that the developers have been generally supportive of the concept.

Community Development makes extensive use of GIS (some users are on GIS throughout the day) as well as historical information on microfilm. They also get a number of public records requests for items such as occupancy permits, etc.

Future plans include:

- Greater use of mobility
- More information in GIS for both developers and residents
- More efficiency in permit processing, push less paper, make more information and services available on-line

Community Development felt that ITD support is good, but they experienced some network connection problems and they are concerned that only one person in ITD is highly familiar with the AS-400. They also noted that HTE has been burdensome to use, in particular they have experience difficulties in generating reports.

District Attorney

The office of the District Attorney serves as both the City Attorney (with a focus on Civil matters, boards and commissions, etc.) as well as the prosecution of criminal matters. Applications being used by the District Attorney include JustWare (from New Dawn, now Journal Technologies), the Sheriff’s Tiburon (now TriTech) RMS, and the District Court’s CourtView case management system (from CourtView Justice Solutions), State applications (such as IJIS), information from the Assessor, as well as historical information contained in a legacy AS/400-based application.

The District Attorney uses Microsoft Outlook for calendaring and scheduling and have procured MS Surface Pro tablets to take into Court (primarily for Criminal and Juvenile at this point; some tablets have been procured for Civil but they do not have sufficient budget for full
deployment in Civil). They found Documentum to be complicated and are using the document management capabilities in JustWare instead. Overall, they characterized that they are “moving slowly, but getting there,” in terms of increasing their adoption of information technology.

The District Attorney’s office is largely financing information technology out of its own budget with the exception of City-wide applications such as HTE for budgeting and payroll (a side note to the use of HTE is that a representative of the DA’s office has to pick-up “payroll” every other Friday – and with the adoption of direct deposit this largely consists of remittance advices, which could be e-mailed to recipients or made available on-line).

The State is buying a victim notification system and the DA’s office expects to make use of it (they presently get paper notifications regarding the scheduling of parole hearings and the resulting dispositions).

The DA’s information technology needs and concerns included:

- The ability to get more information electronically, especially from Corrections, and automated alerts when new information is uploaded such as when the Sheriff uploads new images to VeriPic
- The phone system has been problematic; the hand-sets have proven to be unreliable and are being replaced by the City
- Support for the City’s web-page has been very limited and the DA would like to source support for their pages and upgrade the functionality and information provided on their pages
- They have experienced a long wait for security cameras and would like to see the improved audio/visual facilities in conference rooms
- Limited follow-up from ITD on services provided or the status of items that were being worked on and that ITD is not proactive

**District Court**

The District Court is a general jurisdiction court. The Juvenile Court and Juvenile Probation operate separately from the District Court. The District Court has a Citrix-based desktop environment (supported by the State’s Administrative Office of the Courts) that provides access to the CourtView case management system (JWorks) which is hosted by the State through its SilverNet network. Other applications in use include video arraignment, HTE (financial functions), Tiburon, Documentum, Courthouse Technology JMS (juror selection), and JAVS (courtroom A/V and logging).

Traffic Citations are electronically transmitted to the District Court by the State (Brazos) while criminal complaints from the District Attorney are filed manually.

The District Court maintains an inventory of PCs and generally replaces four to five PCs each year.

In general, the Citrix environment and applications are working well for the District Court although there are sometimes problems whenever the City and/or the State implement network upgrades. The Citrix virtual environment has also been somewhat problematic since it is user-based (the desktop follows the user) rather than device-based.

Future IT needs include:

- Improving public access including the deployment of kiosks (such as at DMV so the public can pay outstanding fines and fees that are blocking vehicle registration, etc.)
- Upgrading or replacing JAVS in 2018 (grant funding may be needed)
- Providing an interface between Tiburon and CourtView

**Finance**

Finance is the primary user of the HTE application and uses it for a range of business functions including payroll, budget, project accounting, fixed...
assets, AP, etc. There are few automated interfaces to HTE so all financial transactions handled by other departments (such as fees from the payment of business licenses) are recognized in HTE through the use of journal entries. Similarly, property tax assessment and collection are handled by the Assessor and Treasurer using ADS software that is not integrated with HTE and this requires the use of journal vouchers and manual data entry into HTE to recognize the revenue.

Finance relies on ITD for HTE support, but ITD has few staff members who know the system well and has to bring back a retired programmer as a part-time employee to handle some requests. Although most employees are paid through direct deposit, the City is still printing some payroll checks and printing payment stubs for all employees. Finance would like to generate the payment stubs as PDFs and e-mail them to employees (which would also be helpful to the departments which have a person stop at City Hall every other week to pick up the stubs).

Finance also has desktop computers that are “outdated” and “really slow” that should be upgraded or replaced.

Fire

Fire relies on a variety of business applications including the FireHouse Records Management System, Tiburon’s (now TriTech) CAD system, TeleStaff for shift bidding, call outs, and time reporting, Target Solutions for training, and Sansio EMS Reporting (a cloud-based EMS solution). Fire also uses iPads, GIS, NeoGov for onboarding new Firefighters. Fire noted that while the support from ITD has improved, they are still facing some significant IT issues including:

- They are running a very old version of TeleStaff (approximately eight years since the last upgrade)
- There have been delays in upgrading Firehouse (there is “no real support” from ITD) (software version control and license upgrades in general have been a problem)
- Network connectivity issues, especially at Fire Station 52 at the airport

- The lack of a central point of contact for support in ITD – issues tend to be moved around in ITD and ITD’s ability to effectively collaborate with vendors is limited (support issues “ping pong” between the vendors and ITD)
- Fire is also experiencing some problems with the new Fleet Management system that has been implemented by Public Works including the inability to schedule service appointments or to see unit status online, and to estimate total cost of ownership vs. replacement cost and be able to carry this information into the budget planning process

Future needs include:

- A collaboration tool such as SharePoint
- They need a 911 call to pop-up on the MDT screen with a map (CAD – GIS integration), but mapping has been slow due to GIS

Health and Human Services

Health and Human Services (HHS) is responsible for a variety of public programs including environment and epidemiology programs, health and sanitation inspections for public eating establishments, and operating a clinic. HHS uses the State’s SilverNet for internet access and uses a variety of applications including Sweeps (an older application with a Pervasive Btrieve database that supports inspections), eClinical, several web-based applications for billing, and the City’s HTE application for payroll / human resources. The City hosts HHS’s web-page and the department has two grant-funded staff members who maintain the content on the web-site and various social media sites. They use Carson Connect “a little bit,” but health-related complaints are kept in Sweeps rather Carson Connect. Field inspectors have been equipped with Microsoft Surface Pros and download copies of the Sweeps database in the morning and upload their inspection results in the evening.

HHS feels that their information technology infrastructure is adequate for the present and that they have been able to make some great strides recently. HHS does not get automated data feeds from EMS and this
impacts the ability of HHS to detect trends (especially for epidemiology and environmental impacts and has experienced some network problems accessing the eClinical application).

HHS was appreciative of the services provided by ITD, citing their recent help with HIPAA compliance.

Human Resources

Human Resources is dependent on siloed business applications including HTE and NeoGov as well as manual processes. HR inputs all new hires and changes to personnel into HTE and has a full-time data entry person to support payroll. HR sees the need for a Human Resources Management System (HRMS) that might be part of a new ERP system to replace HTE that would provide additional functions including:

- An interface between the HRMS and NeoGov
- An employee performance evaluation system
- Automated Personal Action Forms (PAFs) – should be part of new HRMS
- An Employee Portal and benefit enrollment

HR would like to make greater use of NeoGov, they have just "scratched the surface" of what the application has to offer. HR also sees the need for a Training/Computer Lab – for continuing training of existing employees and orientation / training of new employees.

Juvenile Court

Juvenile Court is presently upgrading to the new version of CourtView (JWorks), uses JAVS for court reporting, is using Excel templates for Arbitration / Mediation, and uses Microsoft Outlook to calendar hearing dates and to send reminders to external users including Juvenile Probation, the State’s Department of Children and Family Services (DCFS), and private attorneys. Juvenile Probation has been experiencing network problems – e-mail and downloads are very slow – and the situation has gotten worse since ITD switched them to an external service provider (Charter) in an attempt to resolve the network performance issues. Their telephones are on the same network and also experiencing problems.

They have a number of IT-related concerns including:

- Getting a link between CourtView and the City’s web-site to automatically transfer filing and payment information to the case management system
- They have experienced multiple hardware issues, including a hardware issue in the Courtroom

Juvenile Court would like to have an e-filing capability in the future.

Juvenile Probation

Juvenile Probation is similarly located east of Stewart and is experiencing the same network problems as Juvenile Court. Downloading of attachments and even the deletion of spam is slow. Juvenile Probation uses CaseloadPRO to manage probation officers’ caseloads but is now being faced with additional fees to migrate the City’s enhancements and modifications to the new release. Their budget is extremely tight and they are deferring the replacement of vehicles or computers.

Referrals come to Juvenile Probation from the Sheriff’s Office, there is no interface between Tiburon and CourtView but the referrals are sent as PDF documents which eliminates some of the data entry. They emphasized that they are a “field agency” and they need to “empower officers in the field,” by giving them tools to manage their caseload, providing them with access to information (i.e., have all information about a subject person and their family before they knock on a door) and enabling them to capture interview results immediately afterwards.

They are presently cleaning up reports and working to develop analytics to assess program effectiveness and to identify the factors that make programs effective. They are also looking at ways to streamline the process including finding ways to use automation to supervise subjects on
probation and replacing manual processes, such as sign-in, with automated processes.

Library

The Carson City Library has adopted “A Strategic Plan for Learning” entitled “Level UP(!)“ which includes technology initiatives designed to expand its service offerings to the public. One objective stated that “By providing learning opportunities in computers, health, finances and adult and early literacy, the Carson City Library joins the City in building economic stability and opportunity.”

The Library places significant emphasis on the future use of technology and access to information. This is driven, in part, by a desire to provide new and enriching offerings to the public. Specific Library technology objectives include:

- Expanding website and technology for a digital branch reemphasizing the importance of libraries embracing the world of conversation, community, and collaboration using technology tools
- Purchasing furniture designed to use technology, increase collaboration and creativity
- Sustaining investments in technology with updated hardware, software and digital equipment. Ensure Wi-Fi works with adequate speed and capacity. Maintain partnership with Charter Communications.
- Providing portable technology tools and expertise that can be accessed outside of the Library and in any location

While much of the current technology infrastructure is provided by outside entities (State Library and regional vendors such as Charter Communications), the Library does utilize as small level of support from ITD. Library information technology needs included:

- Access to the City’s shared data from the two staff PCs currently attached to the City communications network
- Availability of expanded phone features that are not currently available to Library staff
- Installation of Wi-Fi access points within the Library
- Installation of security cameras outside the building and at door locations (volunteer and staff access control)
- Remediation of problems with the Library Sign Board (it was operational until fiber cable was installed)
- Increased bandwidth for fiber into Library for improved access
- Use of mobile access for traveling staff (when outside the main facility)
- Additional training for better use of the HTE finance application
- Accessing the City’s downtown Wi-Fi
- Expanded web-site and new functionality (similar to new City site)

Parks, Recreation and Open Space

The Parks, Recreation and Open Space Department (Parks) provides a wide-range of services for the Community including the Aquatic Facility, the Community Center and Bob Boldrick Theater, the Carson City Fairgrounds, and the Multi-Purpose Athletic Facility (MAC). The Community Center has meeting rooms which are used for a wide variety of events including City meetings. Parks makes use of a variety of information systems and other technologies (i.e., for audio/visual systems, lighting systems, consoles, etc.).

The business applications being used by Parks include:

- Active.NET for public program and facility reservations and cashiering
- Carson City Connect, Social Media, and the City’s web-site
- Central irrigation control system (RainMaster) (needs to be upgraded)
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- City applications including Granicus and HTE
- Bar code system (Watson)
- GPS tracking and GIS
- SmartBoards and Smart Scoreboards
- Macromedia (Adobe) FreeHand for floor layouts
- MS Outlook for event calendars

IT-related issues for Parks include:

- Active.NET is working for them but feel that they haven’t been able to make full use of the functionality provided. They have also experienced some Java and browser compatibility issues between Active.NET and HTE
- They would like to get Parks facilities into Accela so that they can generate condition of facilities (condition index) reports and CIP reports, track inventory, and track items such as playground safety inspections
- The department is paying for information technology upgrades out of their own budget, but ITD generally does not provide training so feel that they are generally on their own. Although Parks expressed the belief that the Help Desk has been very responsive, they general feel that “Parks is at the bottom of the Totem Pole” for ITD
- Time reporting is handled manually. Employees enter their time using manual timesheets which are then picked up from all of the locations and brought to administration where they are then entered into HTE
- Information published to the City’s web-page does not automatically update Carson Connect so have to manually updated both sites

- The video surveillance systems at the facilities are out of date and do not provide full coverage and, as a result, vandalism, illegal dumping, and fires have been serious issues for them
- Parks does not use the City’s work order system – Public Works prints off the work orders for them and Parks updates the printed work orders and sends them back to Public Works. Public Works is also responsible for tree management and uses an application but Parks does not have access to it
- They are still “working out the bugs” with Granicus for putting in staff reports and synchronizing the information between carson.org and Socrata (strategic plan performance measures)
- While the City’s “Chat Now” feature for the public is getting a lot of use, Parks is concerned that many of the questions are related to content that is already available on their web-page – they are also concerned that the web-page needs to be updated
- Many of the full-time staff members are carrying two cell phones (one for City use and one for personal) despite the City providing a stipend
- Reliable wireless access at the Community Center is important since events sponsors have their own ticketing applications

Parks also discussed a number of facility issues that are significant but not within the scope of this report, including expanding the use of keyless entry systems to reduce the number of keys in use and to provide temporary access to venues for exhibitors and/or event sponsors, lighting system controls (some facilities have Musco controls, some do not), lighting systems that are obsolete or no longer functioning, and electronic scoreboards that are deteriorating.

Public Works

Public Works is one of the largest users of information technology in the City and stated that IT permeates everything that they do. Public Works is also highly involved in radio communications including the “Quad County Interconnect” for Public Works and Public Safety with plans to migrate to
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RoIP (Radio over IP) for Public Safety. They are working to implement eRPortal (a web-based product from http://www.erportalsoftware.com) in place of Cartegraph as their computerized maintenance management system (CMMS) and were just bringing the City’s GIS system back in-house from Douglas County at the time of the interview. At present they are the most active City department using Carson Connect and would like to integrate it with GIS in the future.

In addition to accessing the City’s standard business applications, office applications, and e-mail, Public Works supports separate networks, including the Industrial Network for specialized applications such as SCADA and an administrative network. They also use a number of software tools such as AutoCAD, Planit 2000 (for capital projects) and a variety of MS Access databases and Crystal Reports for backend reporting.

Future projects include:
- Construction Management software
- Expansion of GIS including making ESRI the center for asset management information, and updating the information in the system (i.e., Eagleview Pictometry)
- Water modeling software
- Improved mobile information and file sharing capabilities including Office 365
- Learning management software (including Grammarly)
- Developing a remote access strategy so that field users can have the same basic desktop in the office or when working remotely

Public Work’s view is that its progressive, “can do” approach to information technology created a rift with ITD and some overlap / redundancy between the information technology infrastructures deployed and supported by Public Works and by ITD. Although the department has seen an improvement in ITD capabilities and responsiveness since then, Public Works remains concerned about the ability of ITD to meet their requirements.

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Senior Center

The Mission of the Carson City Senior Center is: “To enhance the quality of life and autonomy of individuals 60+ through the facilitation and provision of a broad continuum of services and support including: nutrition, activities, information and referral, education, opportunity for peer interaction with concern for mental, emotional and physical well-being, and to foster and develop low cost senior housing.”

The use of technology within the Senior Center in support of their mission is currently limited; however, the Center would like to offer better technology services and enhanced capabilities to its members. The Center is supported through a combination of City budget, gifts and fund raising activities.

Current technology includes a computer lab (12-15 devices) which was purchased through gifts and fund raising, supported by a private service provider, and not connected to the City’s network. The PCs provide basic functionality to members (Internet, Microsoft Suite, etc.). The Senior Center also has PCs for staff members that are connected to the City’s network.

The Senior Center would like to expand its use of technology by:
- Expanding the availability and inventory of computer classes for seniors
- Providing loaner PCs for members of the community who are generally confined to their residences
- Replacing the old public address (PA) system
- Improving the building access system (key card)
- Adding security cameras around the Senior Center parameter
- Utilizing tablet PCs for staff assessments to replace paper and re-entering data
- Expanding the web-site to allow for on-line donations and applications for volunteer service
• Implementing a client data software package to track clients more effectively
• Tracking software for facility/service utilization
• Increasing the level of support from City IT to help with access to data (shared drive), audio/visual equipment, and consulting on how to better utilize technology

Sheriff’s Office

The Sheriff’s Office (SO) uses a wide range of information technology to support operations, patrol, and investigation, including:

• Tiburon 7.10 (now TriTech) for Computer Assisted Dispatch (CAD) and Records Management (RMS) – the SO uses a third-party service provide to monitor the Tiburon servers
• TeleStaff (shift management and time recording) – the time is then manually entered into HTE for payroll
• Panasonic Tough Books in patrol vehicles with USB air cards and NetMotion (mobile security and optimization)
• JLink for sharing information with other law enforcement agencies
• Taser Body cameras (on-going implementation) and Evidence.com (watching for NHP report to the State Legislature)
• Mobile license plate readers
• Civil process software (ADS) on AS-400
• Documentum (AS-400)
• Brazos (State of Nevada, for transmission of traffic citations to Court)
• Propertyroom.com (for disposal of items)
• GIS (including importation of GIS data into the CAD system using the Maverick utility program) 8

Radio systems (including towers and consoles) are supported by Public Works. The SO has concerns about the state of the City’s radio infrastructure including failing radios and some dead zones) and hopes that revenues will be available by the end of FY 18 to remediate some of these items.

The SO provided the following input about ITD’s services including:

• They liked that someone was available at the Help Desk starting at 7:00 AM [note – ITD has since changed the Help Desk schedule to 08:00 – 17:00 due to the low call volume in the morning]
• The SO reported that ITD’s willingness to collaborate with departments to find solutions is problematic, there was significant “push back” from ITD when the SO tried to fix wireless telephone problems in the building and when the SO requested a dedicated Intranet to facilitate the exchange of information between units and shifts
• ITD’s organization is not clear to them, they just call the Help Desk, there is no manager in ITD that is responsible for helping the SO resolve information technology issues
• While the new Help Desk staff members have been very effective, the SO is of the opinion that ITD does not effectively follow-up on the status of service requests and projects and that it can take a long-time for ITD to complete tasks such as hooking up a large monitor, obtaining a Smart Board, installing Crystal Reports on a single PC (at the time of the interview, this request had been pending for six weeks), and connecting cameras in the jail that were installed four years ago but that are still not in operation
• There is a perception in the City that ITD sometimes pushes updates and patches out too quickly and this impacts the ability of the Sheriff’s Office to get their work done in a timely manner. The SO believes that ITD should verify that updates and patches will work in user environments before pushing them out

8 http://911mapping.com/maverick.htm
The Sherriff’s office felt that they would benefit from having an IT resource on site to better respond to critical issues

ITD has problems with tracking projects and reporting on project status and there is some doubt as to the effectiveness of ITD’s Help Desk system. The Sherriff’s Office feels that ITD needs to provide a work order system that works for the users

ITD has challenges in priority setting and reporting status back to the departments, if ITD has an escalation process it does not seem to be working

After-hours support is problematic; it can three to four hours for ITD to respond. This has become critical since personnel in Dispatch no longer have administrate rights to handle common issues

The present network security settings are overly restrictive – they can’t even access You Tube [note – this only apply to a limited number of PCs]

Information technology needs include:

- A dedicated Intranet for the SO - this has been done in Washoe County with good results
- Reliable printers and telephones
- More accurate information in GIS for Dispatch
- Stationary license plate readers at key locations in the City
- An integrated utility program for forensic investigation of cell phones / smart phone (they presently have five separate applications to cover all device types)
- Radio network improvements

**Treasurer**

The Treasurer is responsible for the processing of payments for property taxes, utilities, and parking, etc. They are using the ADS system along with the Assessor (and which is used by nearly all of the counties in the State) and they are handling processing for some 18,000 taxable parcels largely manually including the quarterly posting of payments into ADS and preparing deposits by hand. The Treasurer is interested in implementing a process for property taxes similar to utility billing where the bills are scanned and the data upload to the application.

Information technology needs include:

- Automated payments by telephone
- ADS replacement
- City-wide cashiering solution (the City’s internal auditor has recommended that a citywide cash management policy should be implemented)
2.4 – IT Interviews

ITD provides a range of services for the City including support for information technology infrastructure (servers, wired and wireless networks), business applications, and desktops. Key issues being faced by ITD include:

- The City’s continued reliance on a series of AS/400 based applications including HTE (finance / HR) and Documentum – the AS/400 and HTE are both approaching the effective end of their service lives with the HTE application not offering the same levels of functionality and ease-of-use as current ERP offerings
- A highly siloed IT environment across the City with little provision for application and/or information sharing between departments and varying degrees of information technology adoption across the City
- The division of responsibilities between ITD and departments such as Public Works that support some components of the City’s information technology environment creates difficulties in supporting the user community
- Limited funding for information technology as a result of constraints on the City’s overall budget which reduced the funds available for information technology refreshment
- Overcoming past leadership issues which left ITD a legacy of not being generally innovative, proactive, or responsive to user needs

Interviews conducted with ITD staff included:

- The City’s Chief Information Officer (CIO)
- The IT Manager and the Help Desk Staff
- The Information Management Officer (Web Support)
- Applications (Project Leader and Business Systems Analysts)
- Systems Administration

- Network Administration
- Audio/Visual Support

The results of these interviews are noted below.

Chief Information Officer (CIO)

The CIO is working to make ITD more innovative and responsive to user needs but is struggling with limited budgets for information technology refreshment. The CIO’s priorities include:

- Improving the delivery of IT services to the City’s user community by bringing in new staff members, bringing in new methodologies and tools, changing the culture within ITD, and working collaboratively with the City management and the user community. For some time, ITD has operated in an ad-hoc manner without formal project management and change management methodologies and the CIO would like to change this
- Improving the City’s information technology environment including eliminating single points of failure, replacing equipment that is nearing end-of-life (including network switches), and planning for the replacement of the AS/400 and the applications running on it
- Clarifying the demarcation of responsibilities for information technology between ITD and departments, such as Public Works, that have their own IT staffs and environments and improving collaboration with them
- Reorganizing ITD and ensuring that they have the right skills to respond to user needs. At the moment, seven of the ten persons in ITD report directly to the CIO

IT Manager and the Help Desk Staff

The IT Manager and the three staff members assigned to the Help Desk are the newest employees of ITD (all having been with the City for less than
two years). The Help Desk staff members have been very effective in responding to, and resolving, user issues and their effectiveness has made a major difference in city-wide perceptions of ITD. Their workload includes projects as well as support tasks (they estimate that the balance is about 50/50.

User requests come to the Help Desk either by an e-mail that automatically creates a ticket in Track-It or by telephone. Service requests that are received by telephone or in person are not always entered into Track-It (it was estimated that approximately 50% to 60% of the calls are entered into Track-It). The general process is that “whoever picks up the call owns it” and then refers the ticket to another ITD resource or escalates it as needed.

They hold two “run down” meetings daily (one in the morning and one in the afternoon) to assign tickets and to review status. They estimate that they receive approximately 30 calls / tickets per day and that the number of open tickets varies but is generally around 200 (at one point they had the number of open calls down to approximately 60, but projects and taking on additional work for A/V support has caused the number of open calls to increase). The oldest ticket in Track-It is almost two years old (for a project), although most are closed the same day.

Printing problems (device problems, print drivers, spooling problems, etc.), PC problems (including reboots and password issues) account for a large number of user issues. They are also rebuilding approximately three PCs per week.

They are building an internal knowledge base using SharePoint and estimate that they have around 1,000 articles in it at this time. They don’t feel that they have sufficient licenses for SharePoint to make the knowledge base more widely available and has considered using Wiki (an open source tool that is widely used in the industry) but that there was resistance from some ITD staff members regarding learning how to use Wiki.

The division of responsibilities in the Help Desk is very loose - in general they try to have one person in the field (when needed – to handle items that can’t be resolved remotely), one person in the office covering the telephone and Track-It, and one person working on projects. Some of the projects can be very substantial such as handling the installation of an upgrade for the Tiburon CAD/RMS, which took about one-month of full-time effort and four to five months of part-time effort.

They are using Dameware from SolarWinds (http://www.dameware.com) for the remote management of desktops and this generally works well for them, but it doesn’t work for Macs so they are getting a tool from Apple. It was also reported that the IT asset management and billing systems were cumbersome to use. Items that the Help Desk felt would improve the delivery of services to the user community include:

- Equipping desktops with solid-state drives to improve performance and reduce disk failures
- Implementing SharePoint to share information within ITD and with the user community
- Providing additional training for users
- Re-designing business processes
- A consistent approach to device maintenance and refreshment

Information Management Officer (Web Support)

ITD has a staff member who is coordinating the City’s social media usage and policy and is the administrator for the City’s innovative “Chat Window” – which has been helpful in finding out what information visitors to the City’s web-site are most interested in and whether they can easily find it. The City has a social media policy that is old and needs to be updated so ITD is manually managing postings on Facebook and other social media sites – and sometimes this leads to disagreements with departments as to what should be posted.

The Information Management Officer is working with the departments to improve the City’s web-site including updating content and giving the site a
more consistent structure from page to page to make it easier for members of the public to access information and online services.

Applications (Project Leader and Business Systems Analysts)

The Project Leader supports a wide-range of programs and services including the migration of information from GIS to CAD, support for Documentum, elections software for the Clerk, the jury management system for the District Court, the case management system for the District Attorney, FireHouse and TeleStaff for the Fire Department, Tiburon CAD/RMS for the Sheriff, and printers and plotters.

The Project Leader also supports Track-It for ITD as well as the backup process. [ITD was migrating from CommVault for their backups to “Dell Data Protection | Rapid Recovery” (AppAssure) at the time of the interview since the existing disk array was nearly full and the tape system was eight years old and nearing end of life. The migration has since been completed with a few exceptions]. The new backup process is based on a “disk to disk to cloud” methodology that is more efficient.

The Business Systems Analysts similarly perform a wide range to tasks including:

- Handling back-up tapes

It was noted that the City’s online payment application is an in-house, custom developed application and is not integrated with HTE so that journal vouchers are created to recognize online payments in the financial system. The City is planning to migrate to a third-party payment service.

Some of the AS/400 support issues require the services of a retired staff member who is an experienced RPG programmer [meaning that the AS/400 is being used to emulate older IBM systems including System 36 and System 38].

Systems Administrator

Systems administration is responsible for all of ITD’s servers from the hardware level (including the application of patches), active directory, virtualization of servers, and some applications. They are still migrating to Windows Server 2008 R2 (which should be supported through 2020) and would like to upgrade to Windows Server 2012 before then. Approximately 90% of the servers are virtualized with only specialized applications running on native physical servers.

The server room at City Hall has an uninterruptable power supply (UPS) that can provide power for forty-five minutes and the stand-by generators are configured to come online after 5 minutes (Facilities is responsible for testing the generators).

The City is using GWAVA Retain (https://www.gwava.com) for archiving e-mail messages. At this point the City is retaining all e-mail messages indefinitely pending resolution of an apparent ambiguity in Nevada Revised Statutes regarding retention requirements.

The City does not have a network security specialist; they do not have a formal cybersecurity plan; and have never had an independent entity perform a network penetration test to identify potential vulnerabilities.
The City has a disaster recovery (DR) facility at the Sheriff’s Office (approximately six blocks from City Hall) and ITD has a warm, stand-by site prepared to go live, but the software was not approved so the site is not active.

**Network Analyst**

The City has one staff member that has formal responsibility for the City telecommunications / network resources, assisted by the Systems Administrator and staff members from the Help Desk. The City has gone from fourteen separate phone systems (approximately ten years ago) to a single, unified, VoIP system with considerable savings (from approximately $10,000 per month to less than $1,500 per month). The City’s network includes 15 to 20 separate locations linked by fiber, T-1 lines, and radio with point-to-point and point-to-multi-point connections.

Network concerns include connectivity problems to some remote facilities, switches and routers that are nearing end-of-life and that must be replaced, and a single firewall and connection to the Internet that has no backup. They try to keep as up to date as possible and use SolarWinds for networking monitoring and management. Wiring closets are inspected every six months and most are secured, but some are used for other purposes and some are shared with Public Works (PW maintains a separate networks for internal admin and SCADA).

The server room was characterized as a mess, since too many people have access to it, and when responding to problems do not always follow standard procedures or document what they have done. They have a D/R site at the Courthouse in the event of a problem at City Hall and have mobile network kits that can be deployed in the field as needed.

It is estimated that most network traffic consists of e-Mail, access to the Internet, and file transfers and that they average about 10% utilization at any given time.

**Audio/Visual Support**

Support for audio/visual had been contracted out by the City to the Brewery Arts Center and has recently been brought in-house including a part-time employee. For the present, ITD is providing the support. The scope of the City’s A/V activities are considerable and include broadcasting government meetings (including meetings of the Board of Supervisors) and maintaining programming provided on City channels. A good deal of the A/V equipment (such as cameras, switching systems, editing software, etc.) will need to be replaced in the near-term and the facilities in the Community Center’s Sierra Room may need to be upgraded as well.
2.5 – Assessment of IT Staffing

Table 1, Representative City IT Spending and Staffing, reflects data that was compiled from eleven full-service cities by NexLevel in 2013/14. The two key metrics in this table are FTEs per IT FTE, and IT Staffing as a Percentage of Entity-wide FTEs (excluding part-time / seasonal staff).

<table>
<thead>
<tr>
<th>Description</th>
<th>Average</th>
<th>Carson City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity-wide FTEs</td>
<td>795</td>
<td>575</td>
</tr>
<tr>
<td>IT FTEs</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>Entity-wide FTEs Per IT FTE</td>
<td>38</td>
<td>52</td>
</tr>
<tr>
<td>IT Staffing as % of Entity-Wide FTE</td>
<td>2.7%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

There are several caveats to this analysis:

- Some entities have hybrid information technology environments with some applications and infrastructure supported by user departments rather than by the central IT organization, often with individuals in non-IT classified positions performing information technology functions. These positions are seldom counted when entities report the number of staff members in their IT organizations.

- The scope of duties for the IT organization can vary between entities. GIS support, for example, is not always located in IT, and some entities use external service providers for items such as printer repair and maintenance and the deployment of desktop PCs.

- Entities generally do not count contractors as part of their IT headcount, so their actual IT staffing may be higher than what was reported.

- Some entities provide information technology services to others on a contract basis, and these users are not always reported (thus making the number of end-users per IT staff member seem lower than actual).

- Organizations using Tier-1 ERP applications typically have higher IT staffing requirements.

- New development causes a temporary spike in headcount. Known as “stand-still costs”, these are incurred when organizations need to support existing business applications and their supporting infrastructures while implementing applications to replace them. Typically stand-still costs can amount to 50% of the prior year’s support budget for the application.

While this analysis can be useful in validating IT staffing projections, for all of these reasons cited above, organizations should develop their IT staffing requirements from the “ground up” based on specific organizational requirements including the scope of services to be provided, expected service levels, etc.

Nonetheless, the metrics indicate that for 575 FTEs, IT staffing could be as many as 15 FTEs, and suggests that ITD might be understaffed for the number of users supported.
2.6 – Core Business Applications

In the course of the IT assessment, NexLevel performed a review of the City’s core business applications (software products that support City operations excluding general office software such as word processing, e-mail, and spreadsheets and 3rd party applications used for reference only).

Figure 4 – Business Application Lifecycle and Viability

Figure 4, Business Application Lifecycle and Viability, provides a perspective of the lifecycle of an application from it being a prototype, to its emergence as a product, through its maturity, and finally, to a phase where the product is maintained but not enhanced. As an application matures, it gains both functionality and viability as the vendor becomes more adept in supporting the application and assisting organizations in its implementation.

Eventually, many products reach a stage (“Maintenance”) where the vendor continues to support it (such as correcting reported defects and keeping the product compatible with current web-browsers) but seldom adds new functionality or features. The maintenance stage may continue for some time; however, eventually a product reaches the point where reductions in the user base reduce maintenance revenue so that it is longer economically feasible to support it. When this happens, the vendor may announce the end of support for the product, contract support to a third-party, or sell it. Since replacing a business application can be a complicated, multi-year process, organizations with effective application portfolio management processes usually begin planning for the replacement of business applications early in the maintenance stage.

Using this model, NexLevel has prepared a recommended disposition of each of the core business applications including:

- **Assess** – The City should assess emerging business applications to identify and begin tracking promising solutions
- **Retain** – The City should continue to use the business application
- **Evaluate** – The City should perform an evaluation to determine whether continued use of the business application is consistent with the City’s business needs and priorities
- **Enhance** – The City should retain the business application, but plan to enhance it by augmenting the business functionality provided
- **Expand** – The City should expand the use of the application
- **Renovate** – The City should retain the business application, but plan to update the application’s supporting technology
- **Replace** – The City should plan for the replacement of the business application and begin setting aside funds for this purpose with the objective of replacing it as soon as practicable
Table 2, Core Business Applications, provides a summary of NexLevel’s findings. Information for each application includes:

- The business functions provided by the application
- The name of the application, product or service
- The organization or entity responsible for the support of the business application (ITD, a department, or a commercial software provider)
- The department(s) that sponsor the application (i.e., who are the primary users of the application and who control the budget)
- Other users of the application
- The application’s status based on NexLevel’s assessment of its continued viability and the viability of its supporting technology
# The City of Carson City

## Information Technology Assessment Report

### Table 2 – Business Application Matrix

<table>
<thead>
<tr>
<th>Business Function</th>
<th>Product or Service</th>
<th>Vendor</th>
<th>User Sponsor(s)</th>
<th>Other Users</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenda Management</td>
<td>Granicus</td>
<td>Granicus</td>
<td>City Manager</td>
<td>All City Departments</td>
<td>Retain</td>
</tr>
<tr>
<td>Applicant Tracking</td>
<td>NeoGov</td>
<td>NeoGov</td>
<td>HR</td>
<td>Retain, Expand</td>
<td></td>
</tr>
<tr>
<td>Asset Management</td>
<td>eRPortal</td>
<td></td>
<td>Public Works</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Body Camera Video Management</td>
<td>Evidence.com</td>
<td>Taser</td>
<td>Sheriff</td>
<td>Evaluate</td>
<td></td>
</tr>
<tr>
<td>CAD/RMS</td>
<td>Tiburon</td>
<td>Sheriff</td>
<td>Fire (CAD)</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Case Management</td>
<td>JustWare</td>
<td>New Dawn (1)</td>
<td>District Attorney</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Case Management</td>
<td>CourtView / JWorks</td>
<td>CourtView Justice Solutions (2)</td>
<td>District Court</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Case Management</td>
<td>Caseload PRO</td>
<td>Caseload PRO</td>
<td>Juvenile Probation</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Citizen Contact (CRM)</td>
<td>Carson City Connect</td>
<td>Accela</td>
<td>City Manager</td>
<td>Parks, Public Works</td>
<td>Retain, Expand (3)</td>
</tr>
<tr>
<td>Civil Process</td>
<td>ADS</td>
<td>Sheriff</td>
<td></td>
<td></td>
<td>Replace</td>
</tr>
<tr>
<td>Clinic Management (EMS / PM)</td>
<td>eClinical</td>
<td>GroupONE</td>
<td>HHS</td>
<td>Retain</td>
<td></td>
</tr>
<tr>
<td>Court Recording</td>
<td>JAVS</td>
<td>JAVS</td>
<td>District Court</td>
<td>Juvenile Court</td>
<td>Retain, Evaluate (4)</td>
</tr>
<tr>
<td>Document Management</td>
<td>Documentum</td>
<td>EMC</td>
<td>None</td>
<td>Clerk, Assessor, District Court</td>
<td>Renovate, Expand (5)</td>
</tr>
<tr>
<td>EOC Incident Management</td>
<td>WebECO</td>
<td>Intermedix</td>
<td>Fire</td>
<td>EOC participants</td>
<td>Retain (6)</td>
</tr>
<tr>
<td>EMS/ePCR</td>
<td>Sansio</td>
<td>Sansio</td>
<td>Fire</td>
<td></td>
<td>Retain</td>
</tr>
<tr>
<td>Finance / HR / Treasury</td>
<td>HTE</td>
<td>SunGard</td>
<td>Finance, HR, Treasury</td>
<td></td>
<td>Renovate, Evaluate (7)</td>
</tr>
<tr>
<td>GIS</td>
<td>ARC/GIS</td>
<td>ESRI</td>
<td>Public Works</td>
<td>Assessor, Sheriff, Fire</td>
<td>Retain (8)</td>
</tr>
<tr>
<td>Health Inspection Tracking</td>
<td>Sweeps</td>
<td>Custom</td>
<td>HHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online Payment</td>
<td>Custom</td>
<td>ITD</td>
<td>Treasurer</td>
<td></td>
<td>Replace</td>
</tr>
<tr>
<td>Property Tax Assessment / Collection</td>
<td>ADS</td>
<td>ADS</td>
<td>Assessor, Clerk, Treasurer</td>
<td></td>
<td>Evaluate, Replace</td>
</tr>
<tr>
<td>Recreation Registration / Cashiering</td>
<td>Active.Net</td>
<td>Active.Net</td>
<td>Parks</td>
<td>Community Development</td>
<td>Retain</td>
</tr>
<tr>
<td>RMS</td>
<td>FireHouse</td>
<td>Firehouse Software (Xerox)</td>
<td>Fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduling and Time Reporting</td>
<td>TeleStaff</td>
<td>Kronos</td>
<td>Sheriff, Fire</td>
<td></td>
<td>Retain</td>
</tr>
</tbody>
</table>

**Notes:**

1. Application hosted by the State of Nevada and accessed through SilverNet
2. Now Journal Technologies
3. Expand use and integrate with work-order systems
4. The District Court may consider other solutions
5. The City should port Documentum from the AS/400 and expand the use of document management
6. WebECO is not currently under vendor support
7. HTE is presently running on the AS/400, the City should host it as an interim step then decide whether to remain with the application or replace it
8. The City has recently brought support for GIS back in-house and support for GIS will be provided by Public Works
2.7 – IT Best Practices Assessment

As part of the development of the IT Assessment Report, ITD and NexLevel performed an assessment of the degree to which the City and ITD conform to a set of information technology best practices. This section of the report provides a detailed review of this assessment and an analysis of the gap between the City’s and ITD’s current level of conformance and a target level recommended by NexLevel. As noted earlier, the scope of this IT Assessment is limited to the City-wide responsibilities for the governance of information technology and ITD’s responsibilities for the management and delivery of information technology services. Components of the City’s IT environment that are entirely supported by individual departments are not considered in this best practices assessment.

Figure 5 – Levels of Best Practice Conformance

2.7.1 – Best Practices Maturity Model and Conformance

Figure 5, Levels of Best Practice Conformance, provides a conceptual framework that NexLevel uses to depict IT best practices conformance based on a maturity model. The model is based on five levels of maturity ranging from “Frontier” (where the IT organization is largely unstructured) to levels of progressively higher conformance to best practices as organizations adopt well-defined and repeatable processes.

The characteristics of each of the levels in the maturity model are as follows:

- **Frontier Level**: Organizations at the Frontier Level have fewer than 20% of their processes in compliance with best practices. This level of maturity is characteristic of new and/or re-organized IT organizations.

- **Reactive Level**: Organizations at the Reactive Level generally have well developed procedures including formalized procedures for incident reporting and tracking and are committed to customer service but spend a disproportionate amount of their time and resources “fighting fires.” Organizations at this level of maturity tend to be primarily focused on managing the cost of information technology rather than finding a balance between cost and value.

- **Proactive Level**: Organizations at the Proactive Level have many of the same attributes as organizations at the Reactive Level, but with the key difference that they continually seek to improve service delivery by finding long-term solutions to common problems such as improving user competency, self-reliance, and training so that they do not need to call IT for support as often. This is the “turning point” for many organizations since they are better able to use their IT resources for strategic purposes rather than reactively responding to the same problems. These organizations are often focused on the value that they obtain for their investments in information technology.
**Service and Value Level:** Organizations at the Service and Value Level have more than 80% conformance to IT best practices. They continue the trend towards value and generally derive much higher returns for their investments in information technology, although at greater expense. The Service and Value Level is not seen as frequently in the public sector except where organizations provide services (for a fee) to neighboring jurisdictions although some organizations find that some components of the Service and Value Level (particularly at the higher end, i.e., greater than 90% conformance) are useful particularly with regard to community engagement.

The vertical dotted line between the Reactive and Proactive levels of the model illustrates a key metric regarding IT best practice conformance. Organizations with less than 50% conformance are generally reactive in responding to user needs, while those with better than 50% conformance are generally proactive and are better able to anticipate user needs. NexLevel has observed that many organizations achieve between 40% to 60% conformance to the IT best practices and, as a result, often have some of the characteristics of both the Reactive and Proactive levels of the model.

NexLevel recommends that organizations work to achieve at least 50% compliance with best practices (i.e., on the border between the Reactive and Proactive levels), with 65% being a reasonable target considering both the costs related to achieving this level of conformance and the value of the benefits that are obtained.

**Caveats Regarding Best Practices**

Several cautions about IT best practice conformance are appropriate. Although NexLevel attaches considerable importance to best practice conformance as an essential building block for the effective delivery of IT services, an IT organization need not meet or exceed every best practice in order to provide effective customer service. A higher degree of conformity to best practices, however, generally enables an IT organization to better sustain service delivery levels over time and to more successfully cope with external and internal factors that have the potential to disrupt the ability to effectively deliver IT services.

NexLevel has noted that a high degree of conformance to the IT best practices does not necessarily result in user satisfaction. NexLevel believes that this is due to the difference between IT best practice conformance and the ability of the IT organization to deliver services that are consistent with user expectations.

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![Diagram of Factors Enabling IT Service Delivery](link)

**Figure 6 – Factors Enabling IT Service Delivery**

As depicted in Figure 6, Factors Enabling IT Service Delivery, the ability of an IT organization to execute (i.e., to provide IT services that are responsive, sustainable, and agile) is dependent not only on best practices conformance but also on enabling factors such as organizational mission and vision, organizational culture, as well as IT funding and IT organization and staffing. Each is briefly discussed below:

- **Organizational mission and vision:** Organizations with well-defined business plans including detailed statements of their mission and vision are generally better prepared to align their
investments in information technology with their business objectives and priorities

- **Organizational culture**: Culture, especially with regard to an organization’s continuing commitment to the strategic governance of IT and to user ownership for information technology, also plays a key role in the delivery of effective IT services

- **IT funding**: This is one of the most common limiting factors. Funding plays a key role in ensuring that the IT organization has the resources needed to keep business applications and the infrastructure supporting them on current versions/releases and that patches are applied in a timely manner

- **IT organization and staffing**: IT staffing (which is often related to funding) has a significant impact on service delivery. The best practices are heavily weighted toward the development and use of formalized procedures and supporting documentation since these provide the basis for sustaining and improving services and service levels
  - Procedures and documentation enable IT staff to be more productive but are not a substitute for sufficient IT staff (considering the number, experience, and qualifications of the staff members). Similarly, if the procedures and documentation are out of date because there are insufficient resources to keep them current, best practice conformance does not necessarily translate into improved service delivery
  - Organizational structure also plays a key role in determining the effectiveness of IT services, since IT organizations that are structured and staffed to support infrastructure are not necessarily well equipped to support end-users

If we were to compare two organizations, each needing similar IT services and service levels and each having the same degree of conformance to the IT best practices, the organization with the most enabling factors (especially with regard to IT funding, organization, and staffing) will obtain greater benefits.

### 2.7.2 – Dimensions of IT Best Practices

As depicted in Figure 7, IT Best Practices Model, NexLevel uses a comprehensive list of best practices that are categorized into six separate dimensions to evaluate the organization’s compliance with best practices. The dimensions are separated into three categories and include:

- **City Leadership / Management Team**: The organization’s leadership/management team is responsible for conformance to the IT best practices for IT Governance, particularly the alignment of the information technology spending and priorities with the organization’s overall objectives and priorities

- **City Leadership / Management Team and IT Organization(s)**: Those dimensions where the City’s leadership/management team (and sometimes the user community as well) share ownership for IT best practices conformance with the IT organization(s) involved. These dimensions include:
The calculation of best practice conformance is based on a multi-step process that included:

- NexLevel asked the City to provide an assessment as to whether the IT best practice factor was applicable or not (inapplicable factors are not considered in the assessment), and then whether the City was of the opinion that it was fully in conformance with the best practice (“Y”), partially in conformance (“O”), or not in conformance (“N”)

- A score was developed based on the City’s assessment of its conformance to the IT best practices. Items reported as being in full conformance (“Y”) were given a score of 3, items reported as being partially conformant where scored 1 or 2 indicating whether the City is substantially or minimally conformant with the IT best practice, and non-conformant items (“N”) were given a score of 0

- NexLevel reviewed the City’s self-assessment and made any adjustments based on information obtained through the user interviews and the interviews with ITD staff

- The percentage of conformance was then calculated based on the total score for the assessment factors in each of the best practice dimensions divided by the maximum score in the dimension

Table 3, City’s Conformance to IT Best Practices by Dimension, provides an itemization of the findings of the assessment for each dimension of IT best practices. These results were then plotted by dimension and level of organizational maturity in Figure 8, IT Best Practices Conformance.
Table 3 – City’s Conformance to IT Best Practices by Dimension

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Factors in Dimension</th>
<th>City Responses</th>
<th>Max Score</th>
<th>City Score</th>
<th>City Pct.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Governance</td>
<td>31</td>
<td>28</td>
<td>84</td>
<td>43</td>
<td>51.2%</td>
</tr>
<tr>
<td>Service Delivery</td>
<td>36</td>
<td>36</td>
<td>108</td>
<td>53</td>
<td>49.1%</td>
</tr>
<tr>
<td>Business Tech. Applications</td>
<td>27</td>
<td>27</td>
<td>81</td>
<td>33</td>
<td>40.7%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>44</td>
<td>44</td>
<td>132</td>
<td>64</td>
<td>48.5%</td>
</tr>
<tr>
<td>Security / Info Protection</td>
<td>33</td>
<td>33</td>
<td>99</td>
<td>60</td>
<td>60.6%</td>
</tr>
<tr>
<td>IT Administration</td>
<td>25</td>
<td>25</td>
<td>75</td>
<td>42</td>
<td>56.0%</td>
</tr>
<tr>
<td>*** TOTAL:</td>
<td>196</td>
<td>579</td>
<td>295</td>
<td></td>
<td>50.9%</td>
</tr>
</tbody>
</table>

Each of the rings in Figure 8 represents a level in the IT best practice maturity model, with the outer most (red) ring representing the Frontier Level of organizational maturity (the lowest level of conformity to best practices) and the core of the diagram representing the Service and Value Levels (the highest degree of conformity to best practices). In between, the orange band represents the Reactive Level of the maturity model and the light yellow band represents the Proactive Level of the maturity model.

The width of the bands is proportional, with the bands representing the Reactive and Proactive levels being the widest since they represent a range of 60% compliance with best practices. NexLevel has plotted the results of the assessment for each of the best practice dimensions within the rings (the target points) and then connected them together to depict where the City is from an overall perspective in relationship to the maturity model.

As depicted, the City’s conformance to the IT best practices ranges from the upper tier of the Reactive Level (Business Technology Applications) to just above the lower tier of the Proactive Level (Security / Information Protection). Overall, the City is approximately 51% conformant to the IT best practices which would put it just on the border between the Reactive and Proactive levels of the maturity model.

Table 4, Comparative Conformance to IT Best Practices, places these results in perspective. Between 2014 and this year, NexLevel performed eleven similar IT assessments. Carson City scored higher in IT Governance and exceeded the average score for Service Delivery, Business Technology Applications, Security / Information Protection, and IT Administration, and fell short of the average only with regard to Infrastructure.
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Table 4 – Comparative Conformance to IT Best Practices

<table>
<thead>
<tr>
<th>Best Practice Dimension</th>
<th>Best Practice Conformance</th>
<th>Carson City</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Average</td>
</tr>
<tr>
<td>IT Governance</td>
<td>10%</td>
<td>34%</td>
</tr>
<tr>
<td>Service Delivery</td>
<td>30%</td>
<td>42%</td>
</tr>
<tr>
<td>Business Tech. Applications</td>
<td>20%</td>
<td>34%</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>15%</td>
<td>52%</td>
</tr>
<tr>
<td>Security / Info Protection</td>
<td>35%</td>
<td>52%</td>
</tr>
<tr>
<td>IT Administration</td>
<td>20%</td>
<td>42%</td>
</tr>
<tr>
<td>Overall Conformance</td>
<td>26%</td>
<td>43%</td>
</tr>
</tbody>
</table>

Information Technology Governance

Status: **Much Better than Average**

Summary of IT Best Practice Conformance:

The City is 51.2% conformant to the IT best practices for IT Governance and this corresponds to the border between the Reactive and Proactive levels of the Maturity Model. The average conformance in the dimension is 34% and the previous highest rating was 50%, so this is an area of strength for the City.

Best Practice Strengths:
- The development and maintenance of a Business Strategic Plan for the City that includes specific objectives and measurements and that is periodically updated
- The delivery of information and services to the public through its web-site and its continuing development of these functions including Carson City Connect and “Chat”
- The involvement of user stakeholders in information technology projects including the development of project charters (new)
- Procedures for keeping the user community informed as to the status of IT projects and software updates, etc.
- Internal processes within ITD to facilitate communication and collaboration

Best Practice Weaknesses:
- A limited approach to IT governance
- The lack of formal IT project and resource management
- A siloed IT environment with little provision for process and information sharing
- The absence of a formal IT Strategic Plan (including a plan for replacement of infrastructure and applications that are reaching obsolescence) as well as a formal plan for Digital Government / Community Engagement
- Limited IT funding
- The City does not have a project management oversight function

The factors contributing to the assessment within each of the dimensions are discussed in detail below, including:

- An indication of where the City’s conformance to the IT best practices falls
- A summary of the assessment findings
- A discussion of IT best practice strengths and weaknesses
Service Delivery

**Status:** Better than Average

**Summary of IT Best Practice Conformance:**
The City is 49.1% conformant to the IT best practices for service delivery and this corresponds to the border between the Reactive and Proactive levels of the Maturity Model. The average conformance in this dimension is 42% and the previous highest rating was 63%, so while the City is better than average, there is room to improve IT service delivery.

**Best Practice Strengths:**
- ITD operates a Help Desk that provides a single point of contact (via telephone or e-mail) for users
- The Help Desk uses BMC’s Track-It service desk management system which is an industry leading product, although estimates as to the number of Help Desk tickets that are actually entered into Track-It vary
- The services being provided by the Help Desk are appreciated by the user community and have played a role in changing user satisfaction with ITD’s services
- ITD has remote access tools and to the extent possible, schedules maintenance activities so as to not impact the user community
- ITD has formal processes for the monitoring of system and network performance

**Best Practice Weaknesses:**
- ITD has not developed a service catalog, service metrics, or service level agreements with the user community
- ITD does not make Track-It available to the users to check the status of their requests (although Track-It has this functionality)
- ITD does not have a formal approach to managing and measuring the effectiveness of the Help Desk nor does ITD use the data in Track-It to identify trends and common problems being experienced by users
- ITD has not deployed self-help features for the user community
- ITD does not have formal change management and escalation procedures

Business Technology Applications

**Status:** Better than Average

**Summary of IT Best Practice Conformance:**
The City is 40.7% conformant to the IT best practices in this dimension and this corresponds to the upper third of the Reactive Level of the Maturity Model. The average for conformance in this dimension is 34% and the high is 43%. So the City is toward the high-end in this dimension.

**Best Practice Strengths:**
- The City’s enterprise applications are generally centralized and supported by ITD (i.e., HTE, Documentum, etc.) along with mission-critical applications (Police and Fire CAD/RMS)
- ITD does not have a formal resource management plan to allocate resources to these applications, but staff member assignments ensure minimum coverage
- ITD provides oversight for departmental applications or services that are supported by vendors
- ITD reviews most IT purchases and generally ensures that applications that are acquired and/or supported by departments conform to City standards

**Best Practice Weaknesses:**
- The City does not have a formal enterprise architecture including standards for City-wide process and information sharing
- The City has not fully defined departmental requirements for the availability / recovery of business applications
- The City does not have procedures in place to ensure the ownership, security, and integrity of information that is stored in external applications or services (such as Dropbox)
- ITD does not maintain an Applications Portfolio for the City including tracking the status of vendors and products
- The City does not have procedures in place to ensure the appropriate use of ad-hoc applications based on products such as MS Access
- The City does not have a formal process for evaluating and approving the use of cloud-based services
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Infrastructure

Status: Slightly worse than Average

Summary of IT Best Practice Conformance:
The City is 48.5% conformant to the IT best practices in this dimension and this corresponds to the border between the Reactive and Proactive levels of the Maturity Model. The average conformance in this dimension is 52% and the high is 74%.

Best Practice Strengths:
- The City’s wired and wireless networks are generally well supported. ITD maintains documentation for the networks, they are protected by firewalls, and the wireless network has separate SSIDs to separate City employees with City-issued devices, City employees with personal devices, and guests on the network
- With regard to Internet access, the City has an acceptable use policy that is signed by all employees and has installed tools to begin reporting on intrusion attempts, to filter content, and to report policy violations by City users
- ITD provides secure remote access with VPN (GoToMyPC is also used on occasion although this is not a secure as a VPN connection). Vendors that need remote access must also sign the CJIS security document
- ITD has ad-hoc standards for hardware and software that are generally known to ITD staff but not formally documented
- The City’s main server room at City Hall is located within a secure office space, is relatively free of clutter, and protected from fire and flooding

Best Practice Weaknesses:
- Although the City’s main server room is in a secure office space, access to the server room is not controlled, there is no log to record entrance to the server room nor is there video surveillance of the facility
- In general, ITD does not have documentation for key components of the City’s IT infrastructure (an effort to develop documentation is in progress)
- The cleanliness and organization of wiring closets varies across the City – ITD does not inspect these frequently nor does ITD have complete documentation for them

Security / Information Protection

Status: Better than Average

Summary of IT Best Practice Conformance:
The City is 60.6% conformant to the IT best practices in this dimension and this corresponds to the border between the Reactive and Proactive levels of the Maturity Model. The average conformance in this dimension is 52% and the high is 81%.

Best Practice Strengths:
- ITD has password management procedures in place and formal processes for requesting network access
- The City has a formal user security policy and ITD is working to include the security policy in new employee orientation
- The City has a formal policy for the security of City-owned mobile devices
- ITD performs system backups on a routine basis using CommVault Disk to Disk to Tape and is migrating to Dell Data Protection – the backups include critical application information, configuration settings, and system software
- Servers are configured for high-availability and disks are mirrored
- The City has plans for business continuity and disaster recovery (however there is some question as to the currency and completeness of these plans) – the DR plan may not have been updated for 5 years
- The City has an EOC and conducts regular drills to ensure that the EOC can function as needed and has made provisions for an alternate EOC (mobile command center)

Best Practice Weaknesses:
- ITD does not have a formal plan for the identification and remediation of single points of failure in the City’s IT environment
- ITD does not have an independent entity perform perimeter or other testing of the City’s network to ensure that is secure and to identify and remediate possible security threats
- The City has an emergency operations center but has not continued software support for the WebEOC software
IT Administration

Status: Better than Average

Summary of IT Best Practice Conformance:
The City is 56% conformant to the best practices in this dimension and this corresponds to the lower tier of the Proactive Level in the maturity model. The average conformance in this dimension is 42% and the high is 61%.

Best Practice Strengths:
- ITD has an organization chart, job descriptions, and the functional responsibilities for each position have been defined (but not always documented)
- ITD generally (but not always) reviews the procurement of IT equipment and services (Public Works being an exception)
- ITD meets with external vendors as needed to ensure conformance with City policies and procedures and has positive vendor relationships
- ITD handles IT license renewals in a timely manner
- ITD maintains a hardware and software inventory for those items supported by ITD including a current inventory of desktops, mobile devices, printers, etc.
- The City has a formal process for submitting requests for IT products and services

Best Practice Weaknesses:
- ITD does not have a resource management plan nor does it track the amount of time staff members work on specific projects. ITD does not have a tactical work plan to ensure that staff members know what their priorities are and what progress is being made in completing these assignments
- ITD has limited succession planning in place to ensure that critical skills and competencies can be maintained
- Documentation is not always complete or current. Information is contained in a variety of repositories including staff member files, SharePoint, etc.
- ITD does not have an IT contract tracking and management process in place

2.8 – Gap Analysis

Figure 9, Gap Analysis, depicts the gap between the City’s current level of conformance (approximately 51%) and a recommended goal of 65% conformance that NexLevel believes will enable the City to better meet internal and community expectations. The size of the gap, in percentage points, is less important than the significant opportunities to improve IT service delivery, total cost of ownership, and return on investment that accrue to organizations which are more proactive in using information technology.

The other item to consider is while the City is nominally on the border between the Reactive and Proactive levels of the maturity level, that a number of factors, including the City’s unstructured IT environment, IT funding, and IT staffing are limiting the ability of the City and ITD to translate best practice conformance into effective IT service delivery. The recommendations provided in Section 3, will enable the City to better realize benefits for its investments in information technology.
2.9 – SWOT Analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>Change in leadership has improved IT image and performance</td>
<td>Bifurcated IT environment with limited demarcation</td>
</tr>
<tr>
<td>Newer IT staff more motivated and responsive</td>
<td>Limited resource management</td>
</tr>
<tr>
<td>Starting to develop documentation and procedures</td>
<td>Limited customer-focus (communication, collaboration, follow-up)</td>
</tr>
<tr>
<td>Infrastructure reliable but aging</td>
<td>Firefighting takes precedence over planning</td>
</tr>
<tr>
<td></td>
<td>Aging business applications (e.g., HTE)</td>
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<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve ROI for IT investments through the expansion of IT governance and through the alignment of IT priorities and resources with City-wide priorities and objectives</td>
<td>Limited ability to successfully complete and support IT projects</td>
</tr>
<tr>
<td>Improve delivery of IT services to internal and external user communities</td>
<td>Increased TCO for IT and limited agility as a result of decentralized IT environment</td>
</tr>
<tr>
<td>Promote continuous improvement</td>
<td>Limited ability to sustain IT services in the event of natural disasters and other events</td>
</tr>
<tr>
<td></td>
<td>Continued reliance on AS/400</td>
</tr>
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</table>

**Figure 10 – SWOT Analysis**

Figure 10, SWOT Analysis, provides a summary of the strengths, weaknesses, opportunities, and threats identified in the course of the IT Assessment. There is a close relationship between these items since the City’s ability to realize the potential opportunities and mitigate the potential threats is dependent on its ability to leverage its strengths (particularly the recent improvements in the ability of ITD to manage and deliver IT services) while addressing the weaknesses.

With regard to information technology:

- The City’s strengths include the improved ability of ITD to support user requirements and meet user expectations through a change in management and additional staffing (particularly the Help Desk), ITD is working to improve documentation, and although it is aging, the City’s IT infrastructure is still reliable.

- Weaknesses include The City’s bifurcated IT environment, residual distrust of ITD’s ability to meet user needs, a limited customer-focus within ITD, a lack of planning within ITD which leads to “firefighting” and short-term issues taking precedence over long-term needs.

- If the City can leverage its strengths and mitigate its weaknesses, then it may be able to realize significant opportunities to improve the delivery of services to the user community and the public and to increase the return on its investments in information technology.

- If the City does not act, then it is likely that the City may encounter threats to its ability to sustain the delivery of IT services to the user community and public.

As noted in the Gap Analysis, the City’s conformance to the IT best practices tells only part of the story, since without changes in the factors that limit the ability of ITD to execute (including the City’s mission and vision, culture, the funding for information technology, and the organization and staffing of ITD), the City will not be able to better realize the return on its investments in information technology.
Section 3 – Recommendations

“The secret of success is not predicting the future; it is creating an organization that will thrive in a future that cannot be predicted.” –Michael Hammer, author and noted authority on Business Process Re-Engineering

3.1 – Introduction

NexLevel’s approach is to help our clients maximize the use of resources to feasibly reduce the most common and probable obstacles faced by agencies in the effective use of information technology. The recommendations provided in this report were developed by NexLevel based on our experience in working with local government agencies and with an emphasis on identification of activities that have high value. Some of these can be accomplished with existing resources, while others will require augmentation of City resources. NexLevel understands that it is much easier to prescribe change than to implement it, and that no public or private sector organization has sufficient resources to take on all possible information technology governance and delivery best practices. Consequently, these recommendations are pragmatic and conditioned by real-world considerations.

As depicted in Figure 11, Process for Implementation of Recommendations, NexLevel believes that communication with all internal and external stakeholders is central to the effective delivery of technology services. All other factors being equal, organizations that foster communication and collaboration (including change management) perform better than those that do not. The process for the implementation of changes in how organizations govern information technology, manage the delivery of IT services, and deliver IT services consists of multiple steps including: (1) planning; (2) the development and/or procurement of new procedures, applications, or information technologies; (3) their implementation and support; and (4) measurement and evaluation to ensure that the objectives have been realized and to document the lessons learned. The cyclical nature of the process provides the basis for continuous improvement and enables organizations to progress to higher levels of maturity and performance.

Figure 11 – Process for Implementation of Recommendations

The successful implementation of organizational and procedural changes must take into account behavioral and organizational culture factors as well. Change, even change that is ultimately beneficial, is subject to resistance, and skepticism. Research has shown that the changes that prevail are those that:

- Have engaged executive sponsors who develop and communicate their vision for the future to the organization
- Have immediate and tangible benefits
- Become anchored in the culture of the organization
3.2 – Recommendations

The recommendations provided below have been developed by NexLevel to enable the City to realize improvements in how it governs, manages, and delivers information technology services, with emphasis on recommendations that are actionable, achievable, and have measurable outcomes.

Figure 12, Recommendation Framework, illustrates the model used by NexLevel in the development and evaluation of the recommendations, looking for items that have high impact and, ideally, that can be implemented with a reasonable degree of difficulty (i.e., cost and risk). Nonetheless, organizations need to be strategic in their implementation of initiatives. For example, there may be times when projects that have low impact and low risk may be useful to evaluate new information technologies and/or implementation approaches with little risk to the organization.

The recommendations are placed into this frame of reference by Table 5, Summary of Recommendations, which provides information for each of the recommendations including the objective(s), the potential difficulty (cost / risk) to implement, the potential business impact, and the resulting priority. Each of the recommendations is then discussed in further detail, including:

- A discussion of the rationale(s) for the recommendation and the intended objectives
- The potential cost implications with regard to aspects of IT spending including staffing, hardware and software, and the use of external services
- The potential benefits (particularly with regard to reducing total costs of ownership and improving return on investment)
- The estimated impact and difficulty
- The high-level activities required to implement the recommendation
<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Objective(s)</th>
<th>Difficulty (Cost / Risk)</th>
<th>Business Impact</th>
<th>Priority</th>
</tr>
</thead>
</table>
| 3.2.1 - The City should establish a more formal process for IT governance       | ▪ Provide a balanced approach to the use of information technology that permits departments to respond to specific needs while ensuring that information technology spending and resources are aligned with City-wide directions and priorities  
▪ Improve the ability of the City to leverage existing information technology investments, reduce total cost of ownership, and improve return on investment, and encourage re-use of existing information technology assets | Low                      | High            | High     |
| 3.2.2 – The City should plan for the replacement of applications and infrastructure that are nearing obsolescence | ▪ Ensure the sustainability of IT services and applications and ensure that City services can be continually supported  
▪ Improve employee productivity through the elimination of manual workarounds and non-value added tasks and reduce the use of ad-hoc databases and spreadsheets for the storage and analysis of information  
▪ Enable the deployment of additional public-facing functions  
▪ Enable the use of information for decision-making and analytics | High                      | High            | High     |
<p>| 3.2.3 - The City should formalize the division of responsibilities for IT support | ▪ Formally define the respective responsibilities of ITD and user departments so that ITD can become more focused on proactive work that will improve user productivity. With better definition, ITD can develop service metrics and provide service level agreements | Low                      | High            | High     |
| 3.2.4 - The City should reconsider the organization and staffing of ITD         | ▪ Restructure ITD to become more user-focused and to better support the City’s user communities and the public | Medium                   | High            | High     |</p>
<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Objective(s)</th>
<th>Difficulty (Cost / Risk)</th>
<th>Business Impact</th>
<th>Priority</th>
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<tbody>
<tr>
<td>3.2.5 - The City should develop a Business Application Portfolio</td>
<td>▪ Enable ITD to better track the business applications being used to ensure that the City obtains the highest possible return on its investments in information technology through application re-use and the sharing of business processes and information across departments</td>
<td>Medium</td>
<td>High</td>
<td>Medium to High</td>
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<td>3.2.6 - The City should adopt a consistent approach to information technology</td>
<td>▪ Improve ITD and staff productivity by replacing older, maintenance-intensive devices on a regular basis</td>
<td>Medium to High</td>
<td>High</td>
<td>High</td>
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<td>refreshment</td>
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<tr>
<td>3.2.7 - ITD should adopt additional IT best practices</td>
<td>▪ Improve ability of ITD to sustainably and consistently deliver IT services to the City’s user community and provide the basis for continuous improvement in the delivery of IT services</td>
<td>Low to Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>3.2.8 - The City should take steps to ensure the security and sustainability of</td>
<td>▪ Improve the ability of the City to protect information from destruction / disclosure by hackers by adopting procedures for the detection and mitigation of cybersecurity threats and for the recovery from them</td>
<td>Medium to High</td>
<td>High</td>
<td>High</td>
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<tr>
<td>its IT environment (network security, business continuity, and disaster recovery)</td>
<td>▪ Improve the ability of the City to ensure that mission-critical business applications and available as needed and that they can be successfully recovered following a disaster</td>
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</table>
3.2.1 - The City Should Establish a More Formal Process for IT Governance

Whereas technology organizations were previously responsible for implementing and maintaining the infrastructure and centralized applications, these same organizations must now be service managers and service brokers in addition to service providers. In the past, network, systems, and database administrators were the core of IT organizations. Today, business analysts and project managers are needed to support departments with hybrid technology environments that include centralized, departmental, and cloud-based applications. This necessitates changes in how IT organizations are managed, staffed, and funded.

In order to provide an enterprise perspective it is important for organizations to make informed decisions regarding technology expenditures, where to spend the money, when, and on what. Organizations that do not have processes for technology management may survive, even thrive, but research has confirmed that:

- Organizations that align their IT strategies with their overall strategic business objectives obtain greater value (measured in terms of the return on investment [ROI]) for their investments in information technology than those that do not
- Organizations that integrate IT planning and business planning under a common framework are able to further reduce their total cost of ownership (TCO) for information technology and improve their ROI

More specifically, information technology governance helps ensure that:

- IT priorities and funding are aligned with the business goals and objectives (strategic alignment)
- IT is a business enabler and maximizes benefits (performance measurement)
- IT resources are used responsibly (resource management)
- IT risks are managed appropriately (risk management)

Critics often complain that information technology governance stifles organizational agility; however, the reality is that the converse is true: it enables agility by allowing organizations to allocate their technology resources to the most critical projects and to keep technology objectives aligned with business objectives and priorities.

Yet, despite the vital nature of information technology governance, organizations often struggle to establish and maintain it. Part of the problem is that technology is still relatively new compared to the traditional functions of organizations and the need for technology governance is not engrained in organizational culture in the same way as budgeting, for example. Just as it is not possible to run an organization without having well-defined procedures for budgeting, technology governance is vital for organizations that need to obtain the highest possible return for their investment in information technology.

In the absence of a formal IT governance process, decisions regarding technology directions and priorities can be inconsistent leading to the diversion of resources from long-term infrastructure projects, additional costs, delays, false starts, the adoption of applications and technologies that seem promising at first but that are dead-ends, and disagreement among departments as to the allocation of scarce resources. An ad-hoc process also makes it difficult to ensure the alignment of technology plans and priorities with its long-term goals. The key difference in a collaborative IT governance process is that the stakeholders, and not the IT organization, are responsible for the success of technology projects. As a result, more often than not, obstacles are overcome and projects succeed.

The need for an effective approach to IT governance is driven by a number of additional factors, including:

- Organizations need to change to remain effective. The research is compelling that organizations which integrate business and IT planning under a common framework utilize technology more effectively and are more agile and responsive
The public is increasingly aware of the cost of technology initiatives and public officials are exposed to criticism when these projects take longer than expected, involve additional costs, or do not meet their intended goals.

Business effectiveness is increasingly dependent on the sharing of business processes and information. When organizations consider replacing legacy applications, they need to find and maintain a balance between: (i) applications that are a better fit for departmental requirements and processes; and (ii) enterprise applications that provide economies of scale and facilitate the sharing of information, but that provide less flexibility in meeting departmental requirements.

Policy makers increasingly need real-time access to information and performance metrics.

Increased public demands for information have led to a greater need for transparency.

The increased deployment of public-facing applications including web pages, mobile apps, kiosks, and IVR systems not only makes the public aware of information system and service outages, but also of data accuracy and timeliness issues.

Finally, effective IT governance enables the IT organization to act as a change agent, rather than as a regulator telling users what they can and can’t do.

The lack of a formal information technology governance structure eliminates an effective forum to plan, communicate, manage, and coordinate technology projects or initiatives. The strategic direction, services provided, prioritization and approval for the expenditure of technology funds should not be left solely to the IT department; rather, these decisions should, at a minimum, be ratified by the business leaders within the organization.

Local governments often implement an information technology governance structure as depicted in Figure 13, IT Governance Structure.

NexLevel recommends that the existing Technology Governance Committee (TGC) (which is presently an extension of the Internal Finance Committee) be restructured as a broader, enterprise-level committee whose membership would consist of department heads and selected stakeholders with attendance and participation not delegated to others with less authority.

The TGC can also be supported by the use of user sub-committees that are created as needed to operate at a more detailed level for communities of interest within the City (such as financial systems users, public safety, GIS, etc.). These sub-committees provide a forum for collaboration between stakeholders, particularly where applications are used by multiple departments or where there is significant sharing of information.
The scope and responsibilities of the TGC should include:

- **Oversight of the Information Technology Strategic Plan**: Provide input to, and review of, technology project priorities and timelines
- **Strategic Direction/Alignment**: Provide input and feedback relative to each planned activity. This dialog will ensure appropriate priority and efficient and effective use of technology systems and services
- **Technology Project Review**: Review of technology projects for consistency and compliance with plans to ensure business systems are supported by the existing platforms and that they can be easily integrated, as needed, with other applications. An effective technology governance structure must also play a pivotal role as the implementation of technology projects progresses. Priorities may change and obstacles may be encountered; technology governance is needed to make informed decisions as to how best to allocate resources, re-align projects, and ensure the implementation continues to focus on the overriding technology objectives and business goals
- **Policy Guidance and Enforcement**: Review of technology policies and guidelines, approval of policies, and communication to staff to ensure compliance
- **Foster Communication**: Provide a forum for the interchange of ideas, review of technical implementations, and facilitation of intra-departmental communications

### Summary of Benefits

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<td>Improved information technology resilience / security</td>
<td>Direct</td>
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<td>Increased staff productivity</td>
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<td>Improved service delivery / operations</td>
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<tr>
<td>Reduced cost of information technology ownership</td>
<td>Direct</td>
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<tr>
<td>Improved return on investment for information technology</td>
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### Implementation

- The City Manager, CIO, and other key stakeholders should prepare and publish a charter for the TGC that defines its responsibilities, membership, and operation. It may be useful for the TGC to consider expanding the initial charter into a more formal Concept of Operations (ConOps) document
- The City Manager should convene the initial meeting of the TGC with the objective of ensuring that the participants are clear as to their roles and responsibilities
- The TGC should then meet as prescribed in the charter
3.2.2 – The City Should Plan for the Replacement of Applications and Infrastructure that are Nearing Obsolescence

The City has key components of its business application portfolio including the HTE application for finance and HR that is used by nearly every department in the City, its document management system (Documentum), and applications for property tax assessment and collection on an AS/400 platform that will be soon be unsupported. While IBM will continue to support mid-range computing through its i-series platforms; the ability of the City to continue to emulate older System 36 and System 38 environments or to support the applications running in these environments is very limited.

There are several pieces to this puzzle:

- Some of the applications, such as Documentum, can be migrated to Windows or Linux based platforms, although this may involve some additional licensing costs
- Some of the applications, particularly the applications provided by Advanced Data Systems (ADS) may not be able to be migrated to other platforms and the City may need to be prepared to run them on an AS/400 until such time as they can be replaced
- SunGard (now part of Fidelity National Information Services – FIS) will continue to provide maintenance support for HTE for the foreseeable future and provides a hosted solution for HTE (either in client/server mode using a VPN connection or using their Edge browser-based user interface) and this might provide an interim solution for the City pending the City’s decision as to whether to retain or replace HTE

NexLevel recommends that the City develop a plan to:

- Migrate as many of the applications as possible from the AS/400 to Windows-based versions as expeditiously as resources allow
- Migrate the on-premises installation of HTE to a hosted version (using the Edge browser-based interface if possible)
- Migrate applications (potentially including ADS) that cannot be ported to a Windows server environment to a hosted AS/400 environment until a decision can be made regarding their continued use / replacement (anticipating that a hosting service should have the resources to support older technologies for the time being)
- Decommission applications, such as the IT Asset Inventory, where the data can be moved to existing Windows-based applications or where the data can be migrated to a simple SQL or MS Access database [the Track-It application used by the City has asset management and change management functions]
- Identify those applications that might be left on the AS/400 on a “run to failure” basis although this is not optimal

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<td>Improved return on investment for information technology</td>
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Implementation

- ITD should develop an inventory of all the applications presently running on the AS/400 and recommend a disposition for each of the applications as outlined above, with emphasis on those options that can be accomplished with existing staff and budgetary resources
• ITD should develop cost estimates for each application and the cost impact in each fiscal year until all applications have been removed from the AS/400 and the platform can be decommissioned

• ITD should review the migration plan with the City’s management team and the TGC and prepare a work plan for migration of the applications

• ITD should provide updates to the TGC on progress to plan
3.2.3 - The City Should Formalize the Division of Responsibilities for IT support

At present the City and ITD do not have a clear definition of the services to be provided by ITD, the services to be provided by individual departments who assume responsibility for the maintenance and support of enterprise information, external service providers, the users’ responsibilities, or the metrics used to track service delivery. The City also does not have a clear definition of the responsibilities of user departments systems (such as Public Works assuming responsibility for the maintenance and support of the City’s GIS).

The keys to ensuring the effective delivery of services to the user community include:

- The development of a formal demarcation of IT support responsibilities which provides a baseline (but not a hard line) for the development of project charters and support agreements
- The development of project charters to clearly delineate the respective responsibilities of the IT service provider (whether ITD, a department, or an external service provider) and the users for specific applications. As discussed below, project charters address critical issues including application ownership and governance
- The development of a service catalog and supporting service level agreements (which define continuing services provided to the user community such as network and desktop support) which provide a “contract” between the IT service provider(s) and the users

Each is discussed below.

IT Service Demarcation

The City’s has a bifurcated information technology environment in which both ITD and at least one user department provide information technology services. Other departments obtain applications from other IT service providers such as the State of Nevada. While this environment has promoted agility and the deployment of solutions and services that might not have been otherwise been possible in recent years; the City needs to carefully govern this environment to minimize the potential long-term risks including:

- Increases in the City’s total cost of ownership (TCO) for information technology, and a decrease in its return for its investment for information technology
- Less ability to automate the sharing of information as well as to integrate information to support business intelligence and business analytics as a consequence of the number of business applications deployed, and the differences in information architecture between them
- Complications as a result of multiple vendor relationships and their varying market strategies

A general demarcation of responsibilities would provide a baseline for the management and support of this environment. The demarcation should consider both the respective abilities of ITD and departments to provide the services and the need for agility. As a general “rule of thumb”:

- ITD should be responsible for common City-wide elements of the IT infrastructure including wired and wireless networks, servers and storage devices supporting enterprise and shared applications, and user devices connected to the City’s networks including desktop and mobile PCs, printers, etc., as well as provisions for cybersecurity, business continuity, and disaster recovery
- Departments can assume responsibility for highly specialized applications (such as SCADA and GIS), and dedicated servers and networks that are not normally connected to the Internet
Project Charters

A project charter is essentially a project planning document that identifies:

- The project’s sponsors and stakeholders
- The scope and objectives of the effort
- The costs and benefits (usually a high-level summary of the business case)
- A summary of the concept of operations (ConOps) for the application
- The resource requirements (including both user and ITD resources)
- The high-level schedule (major milestones and deliverables)
- The participants in the project and their respective roles and responsibilities over the expected lifespan of the project - since these can change over time. This is particularly important when support for an application is spread over multiple entities such as ITD, a department providing IT services, or an external service provider

Please note that the contents (as well as the level of detail) may vary based on organizational priorities and the scope of the project, but that enterprise projects tend to require more comprehensive project charters.

Clarifying these at the outset of a project helps ensure project success by setting expectations for the resources and level of effort required for activities (that external software providers often leave to the client) including data conversion (including cleaning up information in the legacy system and reviewing the results of data conversion runs), preparation of test cases and acceptance testing, training, and revising internal processes and procedures to ensure that the features and functionality of the new application can be used as effectively as possible.

Although project charters are often collaboratively developed by the IT support organization, the users, and the external service providers involved, ultimately the organization’s executives will need to have the information they need to make informed decisions about priorities and resource allocation.

Service Catalogs

The service catalog defines the services that an IT organization provides, the respective responsibilities of the users and the IT organization, and the metrics used to measure the effectiveness of service delivery. Services are often described in terms of levels, i.e.:

- Level 1 – These are usually actions that the user, or a “super user,” can take to resolve common problems, with password resets being a common item often handled as Level 1 services. More complex services can also be performed (at least initially) by users who have access to a knowledge base or other self-help facilities
- Level 2 – These services are typically performed by the Help Desk, often with the use of software that enables them to remotely access a user’s desktop
- Level 3 – These services are typically performed by a specialist within the IT organization (such as database administrators or server administrators), or by an external service provider

Level 2 and Level 3 activities are usually covered by an escalation procedure (which is also defined in the service catalog) where the priority of a request can increase as it ages, and it can be escalated to IT management.

Service Level Agreements (SLAs)

SLAs provide the foundation for the management of the delivery of IT services and user expectations. The old adage that “you can’t manage (or for that matter, improve) what you don’t measure” directly applies to tracking service metrics for IT organizations. Service metrics are used to drive improvements and help focus staff and resources on what’s
important, but also support organizational priorities and provide a window on performance, culture and productivity.

Service metrics can be used to effectively:

- Drive the mission of the IT organization by focusing it on the delivery of services to the users
- Provide a foundation for the discussion of the scope of services provided by the IT organization, along with user expectations
- Make informed decisions regarding the allocation of resources
- Monitor and reward performance
- Continually improve both IT services and their delivery

Service levels should be negotiated with the users and then reviewed and approved by executive management (particularly where increased service level expectations may require the allocation of additional resources).

NexLevel recommends that SLAs should also be developed and included in contracts with external service providers including items such as: specified level of service, support options, enforcement or penalty provisions for services not provided, a guaranteed level of system performance as relates to downtime or uptime, a specified level of customer support and what software or hardware will be provided and for what fee.

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Implementation

- ITD, Public Works, and other departments that provide IT service should work to develop a draft demarcation of responsibilities. Issues that are identified in the process of developing the demarcation of services would be reviewed by the City Manager and referred to the City’s Technology Governance committee as needed. The completed demarcation of responsibilities should then be adopted by the TGC
- Project Charters should be developed for enterprise and major departmental projects and these should identify any proposed variances from the demarcation of responsibilities and provided to the TGC for review and approval
- ITD, and other departments providing IT services, should prepare a service catalog that reflects the demarcation of responsibilities and implement service level agreements as needed
3.2.4 - The City Should Reconsider the Organization and Staffing of ITD

Figure 14 – Present Organization of ITD

ITD’s present organization is depicted in Figure 14. This organization is largely an outgrowth of ITD needing to support the City as best as it could through an era of restricted budgets and limited resources and is not optimized to manage and deliver IT services to the City’s user community. Among the issues with the present organization is that it is too flat; seven of ten full-time positions report directly to the Chief Information Officer (CIO) and the role of the IT Manager is relatively new and not well-defined. As a result, the CIO spends more time on operational issues than on planning, innovation, and professional development.

ITD has taken on the responsibility for the support of Audio/Visual services (A/V). Although support for A/V is important to the City, it is diverting attention and resources from ITD’s core services (which are already stressed). It is anticipated that A/V support will be re-located within the City and is thus not accounted for in Figure 15, Proposed ITD Organization.

Figure 15 – Proposed ITD Organization

Figure 15 provides a different perspective on how an IT organization should be structured in order to be agile, responsive, and focused on service delivery. The proposed organization is based on four core services: enterprise applications support, customer support, network and systems support, and project management.

The organization is based on thirteen to fourteen FTE’s (excluding Administrative Support) which is an increase of two to three from the present staffing and the greater use of external services with the expectation that some of the services presently being provided by ITD staff, such as systems administration and network administration, could be largely shifted to cloud-based services and that these positions could then be phased out. The advantages of migrating internal services to the cloud include reductions in staff and overhead costs, improved continuity (staff
succession becomes less of a concern), and the ability to scale the services as needed. A related advantage is that internal personnel can then be shifted to higher-value tasks that require knowledge of the City’s operations and user community.

The key characteristics of this organization include:

- Customer Support would “own” the user relationship and would be responsible for following user support requests sent to the Help Desk (“tickets”) from the point of initiation through resolution and follow-up with the user to ensure that their request had been resolved in a satisfactory manner. Customer Support would also serve as the user’s advocate within ITD and generally responsible for coordinating ITD’s communication with the user community.

- The continuing increase in the number and sophistication of “advanced, persistent, cybersecurity threats” coupled with the City’s greater reliance on automation and mobility will require a security specialist within ITD, and the City might consider using a consultant in this role as an interim measure, although the City’s interests will best be served in the long-term by having a dedicated security specialist in ITD.

- Similarly, the City will need the assistance of a Project Management Officer, i.e., a trained project manager who in addition to managing projects would be able to assist and advise other project managers, and the City might also consider using a consultant in this role as an interim measure.

- Finally, the proposed organization provides for administrative support for ITD. This support could be provided by a shared resource.

- Sample, high-level position descriptions are provided at the end of this recommendation.

### Summary of Benefits

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<td>Direct</td>
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<tr>
<td>Improved service delivery / operations</td>
<td>Direct</td>
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<tr>
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<tr>
<td>Improved return on investment for information technology</td>
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### Implementation

- The City should consider the organization and staffing of ITD as one of the matters before the TGC, and should consider a phased implementation that includes:
  - Evaluation of the current workload and status of all ITD personnel with the objective of levelling workload, rationalizing responsibilities, and ensuring that each position has a back-up.
  - Changes that can be implemented, even provisionally, with existing staff and contracted personnel. The most critical of these being the establishment of the Customer Support Division, and the next most critical being the Security Officer (with the CIO filling the role of the Network and Systems Support Supervisor).
  - Changes that require the reclassification of positions and the recruitment of qualified staff members including the Project Management Officer, the Enterprise Applications Supervisor, and the Network and Systems Support Supervisor. The City should also reconsider the functions and responsibilities of the Business Systems Analysts. These additions / changes should be considered as resources permit.

- The City should periodically re-evaluate the organization and staffing of ITD to ensure that it has the skills and resources to meet the City’s needs.
### High-Level Position Descriptions

**Table 6 – High-Level Position Descriptions**

<table>
<thead>
<tr>
<th>Position Title</th>
<th>Typical Responsibilities</th>
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| Chief Information Officer| The City’s position of Chief Information Officer (CIO) combines the roles of both a CIO and a Chief Technology Officer (CTO) with responsibilities including:  
  a) Assisting the City in the formulation of information technology strategies and priorities, assisting in the governance of information technology, advising the City with regard to the formulation of IT policies and procedures, working with City departments to develop plans for the adoption of information technology to improve business processes, working with external entities (including the State of Nevada and neighboring communities) on matters related to the joint sharing of applications, information, and infrastructure; and  
  b) Managing the delivery of IT services to the City’s user community including ensuring that the IT Department adopts and consistently follows IT best practices, that the organization is providing services consistent with published service levels, and managing IT staff including performance appraisals and professional development. |
| Administrative Support   | Provides support for the administration of the department including assisting in the preparation of the budget, reviewing invoices, preparing purchase requisitions, tracking performance appraisals, and other administrative tasks as needed.                                      |
| Customer Support Supervisor| This classification replaces the existing classification of IT Manager.  
  The Customer Support Supervisor is responsible for the management of the Help Desk including updating the service catalog, developing service level agreements (SLAs) with the user community, monitoring the performance of ITD in meeting the service levels, managing the workload of the Help Desk, representing the user’s needs within ITD, and developing and implementing new user support services. All critical tickets are escalated to the Customer Support Supervisor. |
| IT System Technician      | The IT System Technician provides Second-level support for the user community from the Help Desk including working with users to identify and analyze IT-related problems and resolve including:  
  a) Answering, evaluating and prioritizing incoming telephone, voicemail, e-mail, and in person requests for assistance from users experiencing technical problems or requiring assistance from ITD  
  b) Responding to technical issues as they arise and resolving them either directly or in conjunction with other ITD staff members and escalating matters as needed to third-level support (Enterprise Applications and/or Network and Systems Support); and  
  c) Updating the status of tickets in the Help Desk system and providing information to users and IT management to ensure customer satisfaction and conformance to service levels.  
  Additional responsibilities include support for user desktop computers (PCs), notebooks, and mobile devices (as specified in the service catalog) including installs, moves, and changes, ensuring that all documentation is kept up to date, that desktop images and maintained and documented, and that updates and patches are applied as needed. The IT Systems Technician will also provide backup support (as needed) for the Network Administrator and the Systems Administrator. |
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<td>Enterprise Applications Supervisor</td>
<td>The Enterprise Applications Supervisor manages the work of the Business Systems Analysts and the Information Management Officer in working with the user community to ensure the effective and appropriate use of the City’s business applications and services. The Enterprise Applications Supervisor is responsible for the maintenance of the City’s Business Application Portfolio, Enterprise Application Architecture, and for working with the user community to identify requirements for new business applications or for new uses of existing business applications (promoting application re-use). The Enterprise Applications Supervisor also assists departments in the procurement of new applications and is the primary interface between the City and the vendors supporting the Business Applications, and provides information to the CIO regarding trends in enterprise applications and new products.</td>
</tr>
<tr>
<td>Business Systems Analyst</td>
<td>The Business Systems Analyst (BSA) assists the users in making the most effective use of business applications through business process reengineering and the development of specifications for the sharing of business processes and information across the City as well as assisting in the users in the definition of requirements for business continuity and disaster recovery. The Business Systems Analyst also assists the user community through the development of use cases and in the generation of reports using standard reporting tools (such as Crystal Reports) as well as online analytic processing (OLAP) for performance dashboards.</td>
</tr>
<tr>
<td>Information Management Officer (Web Master)</td>
<td>The Information Management Officer is responsible for administering the City’s web site and use of social media sites and assisting City users in making the most effective use of the web and social media in a manner that is consistent with the City’s policies. Provides input to the CIO and other City managers regarding new policies and procedures that might be required and recommends changes to existing policies and procedures based on experience in working with the user community and assists users as needed in developing, reviewing, and publishing content to the City’s web-site.</td>
</tr>
<tr>
<td>Network and Systems Support Supervisor</td>
<td>The Network and Systems Support Supervisor is the most senior and experienced technical staff member and is responsible for overseeing the management and operation of the City’s information technology infrastructure including the City’s wired and wireless networks, storage devices, and servers. Provides periodic reports to the CIO regarding network and device capacity, utilization, and performance, and recommends upgrades as needed to maintain the resilience and performance of the City’s information technology infrastructure. The Network and Systems Supervisor is responsible for working with the user community to develop and maintain business continuity and disaster recovery plans. The Network and Systems Support supervisor is responsible for managing the performance of the Security Officer, Network Analyst, and Systems Administrator, as well as for the management of contracts with external service providers including monitoring their conformance to contractual requirements including SLA’s.</td>
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<tr>
<td>Security Officer</td>
<td>The Security Officer (SO) is responsible for working with the CIO and other City officials to secure the City’s information assets from unauthorized access, disclosure, modification, and destruction, including both external sources (such as advanced, persistent, cyberthreats) sources and internal sources (disgruntled employees, defalcations, etc.), as well as both physical attacks and virtual attacks. The Security Officer is responsible for working with the CIO and the City’s management team to develop and maintain Cybersecurity plans that are conformant to NIST or other standards and is responsible for overseeing the management of the City’s firewalls and working with the Enterprise Applications Supervisor to ensure that application security is implemented and maintained in an acceptable manner.</td>
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<td>Network Analyst</td>
<td>The Network Analyst is responsible for the management of the City’s wired and wireless networks including: establishing and implementing policies, procedures, and standards; coordinating with the Security Officer to ensure that network protocols and remote access are configured appropriately; acquisition, installation, and maintenance of network components; management of user accounts; troubleshooting network and desktop connectivity problems; developing and maintaining network documentation; and monitoring network performance and providing periodic reports of network performance, usage, and capacity to the Network and Systems Support Supervisor. The Network Analyst also assists IT System Technicians in the resolution of user problems and requests.</td>
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<tr>
<td>Systems Administrator</td>
<td>The Systems Administrator is responsible for the management of the City’s servers and mass storage devices (i.e., SANs, NAS, etc.) including: acquisition, installation, and configuration of new devices; monitoring the performance, usage, and availability of devices and providing periodic reports; troubleshooting and resolving system problems; the application of updates and patches to system software; reviewing virtual server usage and reclaiming unused virtual servers; and the management of the backup and recovery processes. The Systems Administrator also assists IT System Technicians in the resolution of user problems and requests.</td>
</tr>
<tr>
<td>Project Management Officer</td>
<td>The Project Management Officer is a trained and PMP-certified project manager who is responsible for: advising the City on the development and maintenance of policies and procedures related to project management, risk management, and change management, resource management, etc.; assisting other City staff members in managing projects; providing updates to City management regarding the status of enterprise projects and issues that require management attention; performing post-implementation reviews to document lessons learned; and working with the Enterprise Applications Supervisor in the development of requirements for the implementation of applications and in the evaluation of vendor proposals.</td>
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3.2.5 - The City Should Develop a Business Application Portfolio

ITD administers most of the hardware/software maintenance contracts held with the City although some of the City’s applications are administered by individual departments without oversight from ITD to ensure that the software licenses and maintenance agreements are consistent with the City standards.

The successful implementation of recommendations outlined in this assessment and the deployment of new business applications, and their supporting technologies, will depend on ITD’s ability to manage projects and work effectively with external service providers (vendors). Industry research confirms that the ability to effectively collaborate with vendors and to facilitate the successful completion of projects must be a core competency for IT organizations.

Application portfolios provide a repository of information about applications (and their supporting technologies) so that the organization’s stakeholders, the IT organization, and end-users can make informed, enterprise-level decisions about the allocation of scarce resources to the maintenance, enhancement, and eventual replacement of applications in systematic and holistic manner that considers organizational goals and priorities rather than looking at each application in isolation and allocating resources by default.

The application portfolio integrates information about applications that is often maintained by different individuals and enables collaboration between the IT organization and the user community. Forrester Research has noted that application portfolios enable IT organizations to optimize the use of “…limited resources while providing the maximum business benefit… This is the world of IT portfolio management — balancing resources, technology, business needs, and changing situations while simultaneously maximizing returns and minimizing risk.”

The development of an application portfolio will enable the City to effectively manage its core business applications. The application portfolio will provide the vehicle for the City to:

- Evaluate the impact of technology changes on the business applications
- Conduct more-frequent periodic reviews of the application portfolio
- Develop and defend informed decisions as to the ultimate disposition of an application (retirement, replacement, technical renovation, functional enhancement)
- Define service levels based on the impact of the application on City operations / community impact
- Optimize IT staff resource allocation
- Evaluate and prioritize decisions to source application support (such as to “cloud” or software-as-a- service (SAAS) solutions).

Although there are products for application portfolio management, an effective application portfolio can be maintained in a spreadsheet. Fields typically contained in an application portfolio include:

- Application Acronym
- Detailed Budget Information (Run Rate, License Costs, etc.)
- Application Description
- FTE Support Requirements
- Executive Sponsor
- Additional FTE Requirements
- Current Status (i.e., production, development, etc.)
- Interfaces and Information Exchanges with other Applications
- Planned Status and Date

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9 Defining IT Portfolio Management: Holistic IT Investment Planning, Forrester Research, Sept. 2004
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- Source Code Repository / Source Code Escrow
- Priority Classification
- Service Level Agreement Reference and Terms
- Support Profile
- Supporting Technologies
- Purpose
- Disaster Recovery Provisions
- User Sponsor
- User Community
- Business Continuity Provisions
- Version and Status

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Implementation

- ITD should work with the departments to develop an initial application portfolio and then augment the information as time and resources permit
- ITD should review the information in the Application Portfolio with the objectives of identifying opportunities to consolidate services and applications that may need to be replaced or enhanced
- ITD should keep the information in the Application Portfolio current and perform an annual review with the Technology Steering Committee
3.2.6 - The City Should Adopt a Consistent Approach to Information Technology Refreshment

Although some components of the City’s information technology infrastructure are not as visible to the user community as the applications they use and their desktop or mobile computers, the reliability and performance of a wide array of components including servers, storage devices, routers, and switches directly impact the ability of the users to perform their work.

All of these devices have a specific effective lifespan and as they reach the age of that lifespan they may begin to fail and provide intermittent or reduced performance. Manufacturers also only support devices for a specific time frame and beyond that they do not provide software or firmware upgrades and may not even provide support except on a time and materials basis. While some organizations, out of financial or other considerations, chose to adopt “run to failure” policies, the consequences are frequently reduced performance, downtime, and increased expenditures for maintenance and support. For example when devices are proactively replaced, this can often be accomplished in a manner that minimizes the impact on operations and the need for overtime, etc. Organizations facing a crisis related to the failure of a device have fewer options.

Organizations that adopt “run to failure” policies often find that the savings realized through postponing capital expenditures are diminished by:

- Increases in their total cost of ownership for information technology as a result of the increasing diversion of staff resources to maintain, recover, and “patch up” aging systems
- Increased costs related to ensuring that they are in compliance with software licensing requirements, problems installing an debugging operating system and software service packs and patches
- Costs resulting from their increased vulnerability to cyber-attacks and difficulty in detecting and responding to security threats including intrusions, viruses, and malware
- Costs related to lost productivity as result of application performance and availability issues

Another consequence of not following a consistent policy for information technology refreshment is that it places the IT organization in a reactive mode (something breaks and then you fix it) rather than a proactive mode in which devices are renovated or replaced before they fail. In a reactive mode, it is difficult to forecast resource requirements or to maintain schedules and delivery dates in the face of daily interruptions and crises. This can lead to an “organizational performance spiral” that increases user frustration and progressively demoralizes IT staff with the net impact that both user staff and technical staff are less productive.

A study by Intel that focused on the refreshment of desktop PC’s concluded that:

While it is commonly believed that delaying PC purchases might conserve cash in the short run, we suspected this approach might actually be more expensive in the long term, producing a higher total cost of the life of a PC. We knew that delaying a PC refresh not only saved money normally spent on acquisition and deployment, but also increased the costs for maintenance and support for the older systems.10

NexLevel recommends that the City develop a long-term plan (five to ten years) for the consistent replacement of critical components of its information technology environment that considers a variety of options for refreshment including purchasing, leasing, and using cloud services in lieu of on-premises infrastructure. The plan should identify a lifecycle for each

10 PC Lifecycle Management: Boosting Productivity and IT Efficiency, IT@Intel White Paper, IT Best Practices, Enterprise Mobility and Mobile Business PC, July 2012
component (or classes of components such as switches that tend to be procured in batches) of the City’s IT infrastructure from evaluation and procurement through replacement, retirement, and disposal and identify the optimal replacement point for each component considering the continued cost to own and operate versus the cost of replacement.

The City should plan to take advantage of cloud-base services including Platform-as-a-Service (PaaS) as substitutes for on-premises devices such as servers and storage devices. Cloud services are continuing to mature and are becoming more cost competitive considering the costs related to the procurement, operation, and support of on-premises devices (including costs related to facilities, electricity, disaster recovery, etc.).

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Implementation

- ITD should prepare an outline for the preparation of the Information Technology Refreshment Plan in conjunction with Finance and review the outline with the TGC
- ITD should then begin compiling the plan beginning with the oldest components and build out estimated replacement costs and potential savings on a year by year basis
- The Information Technology Refreshment Plan should be periodically reviewed by Finance and incorporated in the City’s budget planning process
3.2.7 - ITD Should Adopt Additional IT Best Practices

The adoption of IT best practices can significantly improve the ability of an IT organization to support the user community and reduce technology lifecycle costs.

The further adoption of best practices by ITD would benefit the City by improving the ability of ITD to support the City’s user community and enable ITD to focus on higher-value activities (i.e., shifting from reactive to proactive activities). NexLevel sees five areas where ITD could modify its approaches to the management and delivery of IT services to benefit both the user community and ITD. These include:

- Project management
- Help Desk management and transparency with the user community
- User communication and collaboration
- Change Management
- Resource management

Each is discussed below.

Project Management

Project management is the discipline of planning, organizing, securing and managing resources to achieve specific goals. Ineffective project management can result in extended timelines, budget overrun, and project failure.

The City does not utilize a formal project management methodology during the implementation of major technology projects either managed by ITD or a City department. Since most projects are initiated without a formal project charter and status reporting process, it is difficult to determine if projects have been completed on-schedule, on-budget, and whether they met original expectations.

Most municipalities do not have the budget resources to implement a best in class project management framework; however, basic project processes such as charters, formal meetings, and status reporting can result in better use of resources and improve overall delivery success.

Once a project is initiated, the City should have standardized templates for the project manager (or designee) to track and report on project progress. At a minimum, the project manager should complete the following templates throughout the project:

- Timeline
- Issue Management
- Risk Management
- Project Schedule and Resource Tracking
- Budget Tracking
- Status Reports

Help Desk Management / User Transparency

“Information technology is the lifeblood of virtually every modern business. It has become a core component of business processes and services, and is critical to the success and competitiveness of the business.” - Exploring Business and IT Friction: Myths and Realities, Forrester Research, 2013

The most profound change in information technology in recent years has not been the shift from on-premises computing to the cloud, but rather the shift from using IT as a back-office productivity tool to using IT as an integral (and often mission-critical) component of how the organization delivers services to the community. It is not an understatement to say that a majority of the City’s employees rely on technology to perform their jobs efficiently. Many of these employees are in customer facing positions, meaning they interact directly with the public and any disruption, or an
unstable technology environment, directly impacts the delivery of City services to the community.

The effective management of the delivery of support services to the user community is a key component in achieving higher levels of user satisfaction as well as higher levels of productivity (for both the users and the IT organization). The effective management of the delivery of support services to the user community is nearly impossible to obtain without the effective use of a service desk management system (SDMS). The City has implemented BMC’s Track-It, which is a widely used and well regarded product; however, ITD has not implemented all of the functionality provided by Track-It, nor does ITD appear to be making the best possible use of the functions that it has implemented.

ITD has made considerable improvements in user support by dint of sheer effort and determination on the part of the Help Desk team; however, the ability of ITD to not only sustain this level of service but to improve on it, is dependent on ITD’s ability to “work smart” as well as hard. This includes:

- Ensuring that nearly all user requests are entered into Track-It and appropriately categorized, escalated as needed, and not closed until the user has accepted the resolution
- Reviewing the information in Track-It to identify trends and common problems that can be resolved by improving user education and training, providing self-help information and tools to the users, and by training users to handle common “first-level” requests
- Defining service metrics and making the information in Track-It, including ITD’s performance in meeting the service metrics as well as the status of user requests available to the users
- Conducting root cause analysis to ensure that resources are used effectively
- Tracking staff time to tickets

User Communication and Collaboration

Although ITD has made remarkable progress in increasing the effectiveness of the services it delivers to the City’s user community, user satisfaction is mixed. Some departments are still concerned over the level and the quality of the services that they receive and others are very much “on the fence.” Although these concerns have their roots in a number of factors, ITD will not be able to overcome them without effectively communicating and collaborating with the users, including providing information to the users as to the status of projects and service requests.

The absence of service level agreements between ITD and City departments, as well as the publication of metrics that reveal how successful ITD has been in meeting them also contributes to user concern. NexLevel considers that internal and external communication and collaboration are the foundation for the effective delivery of IT services. ITD must be prepared and able to maintain effective communication with a variety of communities of interest including:

- Communication between ITD and vendors
- Communication within ITD
- Communication between ITD and City departments
- Communication with external agencies/municipalities
- Communication with the City’s customers and the public

Proven approaches to improving communication and collaboration include:

- Providing an online forum where users can collaborate with each other and ITD regarding issues, questions, or pending upgrades, obtain information regarding the status of a request, or obtain immediate assistance from ITD without having to file a ticket and then wait for a response
- Providing users with access to real-time information regarding service levels, project and request status, and workload
Publishing current compliance with service levels and performance metrics which will demonstrate ITD’s commitment to the users and ITD’s goal to continually improve service delivery.

Providing a knowledge base and self-help features to enable users diagnose and/or resolve common issues.

Change Management

Change is a constant factor in technology projects. Requirements often change as a result of external factors (such as statutory or regulatory changes), but also as a result of the users obtaining greater experience in how technology can best be used to improve operations. Changes in requirements can also lead to changes in policies and procedures and expectations, particularly regarding the availability, timeliness, and accuracy of information.

Change management is a process that is used to identify, analyze, track, and reconcile changes that may occur over the lifetime of a project. It can be used for multiple purposes including the management of:

- The organizational, procedural, and cultural changes that often accompany transformational activities such as the introduction of an enterprise information system.
- Project changes - the seemingly inevitable changes that need to be made to the scope, organization, and other components of the implementation plans for information systems.
- Infrastructure and system configuration change Issues, since these typically relate to items such as scope, requirements, schedule and resources.

Resource management

Although many organizations develop detailed project schedules and project management plans for the implementation of key enterprise business applications, these projects still take longer than planned, often these delays are a result of not having sufficient user resources available. User resources play significant roles in the business application projects, beginning with the definition of requirements through application selection, product configuration, data conversion, testing, and acceptance.

While IT resources can usually be supplemented by external services, finding additional user personnel who are familiar with the organization’s business processes and objectives is more difficult. Faced with the competing needs to support both existing operations and implementation activities, organizations often make a concerted attempt to “get it done,” by reducing the amount of time and resources for data clean-up, user training and testing.

Although organizations frequently plan to catch up on training and the implementation of any remaining functions in future phases following implementation, they seldom do so as the focus shifts to “getting work done.” The net of this is that:

- Applications are often implemented without sufficient testing or without having all functions available, resulting in the need for costly “workarounds”
- The users are often unable to make full use of application features and functionality, or to use the new application with confidence
- Users can become fatigued and demoralized, and their emphasis can shift from “doing things better” to “getting by”
- These factors combine to limit the organization’s ability to fully realize the intended benefits of new business applications, thus reducing the return on their investment.

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Implementation

- ITD should prepare a draft plan for the phased implementation of IT best practices for project management, Help Desk management and transparency with the user community, user communication and collaboration, change management, and resource management with priority on those activities that directly impact the user community and that can be accomplished with existing resources / assets.

  The plan should consider opportunities to improve user service through the expanded use of the Track-It Service Desk Management System which includes change management, knowledge management, and user access functionality.

- ITD should provide periodic updates on the progress of the plan to the TGC.
3.2.8 – The City Should Take Steps to Ensure the Security and Sustainability of its IT Environment

"Resiliency begins with strategy. Because a business strategy is the road map for achieving business goals, it is imperative that your resilience strategy be in harmony with your business goals. The goal is to enter a state of preparedness so that actions are thought out and pragmatic rather than impulsive and frantic." – IBM, The Evolution of Business Resiliency Management, June, 2011

The City has a decentralized information technology environment that includes:

- Applications provided by external services providers and supported by ITD and individual departments or delivered as a service from the State of Nevada or other application service providers
- Infrastructure, including servers, data networks, and radio networks that are supported either by ITD or individual departments
- Ad-hoc databases and spreadsheets that have been created by individual departments to provide functionality that is not provided by the City’s applications or as a “work around” to inefficient applications that are seldom documented

The City needs to protect this environment from cyber-security threats, ensure that mission-critical business applications are available as needed, and the City is prepared to restore components of the IT environment following a natural or other disaster. While each of these items is addressed below, a common theme is that since departments often share, or are dependent on, applications run by other departments, that planning for cybersecurity, business continuity, and disaster recovery should be performed as a unified, enterprise activity.

Cybersecurity

The City does not have a formal cybersecurity plan that addresses all phases of cybersecurity including planning and implementing preventative measures, monitoring network activity to detect intrusion attempts and suspicious network activity, the implementation of procedures to mitigate cyberthreats and to recover from them, as well as processes to review the cyberattack and adapt the City processes to better meet similar threats in the future.

The National Institute of Standards and Technology (NIST) has developed a framework for cybersecurity planning that outlines the steps to be taken to monitor the network for suspicious activity and to remediate the situation. The NIST framework for cybersecurity planning is comprehensive and built around discrete cybersecurity functions including:

- Identify (Asset Management, Business Environment, Governance, Risk Assessment, and Risk Management Strategy)
- Protect (Access Control, Awareness and Training, Data Security, Information Protection Processes and Procedures, Maintenance, and Protective Technology)
- Detect (Anomalies and Events, Security Continuous Monitoring, and Detection Processes)
- Respond (Response Planning, Communications, Analysis, Mitigation, and Improvements)
- Recover (Recovery Planning, Improvements, and Communication)

NIST developed a detailed cybersecurity framework in conformance to US Executive Order 13636, Improving Critical Infrastructure Cybersecurity, which was issued in February, 2013. Details of the cybersecurity framework are provided at: [http://www.nist.gov/cyberframework/index.cfm](http://www.nist.gov/cyberframework/index.cfm)
Business Continuity

Business Continuity and Disaster Recovery are closely related practices that describe an organization's preparation for unforeseen risks to continued operations. From an information technology perspective, disaster recovery refers to specific steps taken to resume operations from an alternative location in the aftermath of a catastrophic natural disaster or national emergency. Such steps may include restoring servers with backups, re-establishing local area networks, and reconfiguring/installing desktop equipment and applications software.

Business continuity when viewed from an overall management perspective, describes the processes and procedures the organization must put in place to ensure that mission-critical functions can continue during and after a disaster. Business continuity addresses more comprehensive planning that focuses on long term challenges the organization may face. From an information technology perspective, business continuity is the ability to ensure that systems continue to be available and perform as expected regardless of the events facing the City as an organization in time of emergency.

Absent preparations for business continuity, an incident such as the failure of a power feed or air conditioning unit can be as disruptive to information services as a natural disaster. Generally, the servers and storage devices typically used for enterprise applications are built for high-availability and fault-tolerance, so the most significant threats to business continuity are often related to infrastructure components (power lines, data lines, air conditioners, etc.) that have no backup and are thus single points of failure. ITD needs to work to identify and mitigate potential single points of failure in the City’s IT infrastructure.

ITD should continue to monitor industry service offerings such as cloud-based infrastructure (IaaS) as a means of lessening its dependence on the equipment installed within the City to also mitigate single points of failure. Redundant and/or mirrored servers, physically located in other area computing facilities are also recommended as a method of ensuring continued operation of key technology components.

Disaster Recovery

While ITD ensures all servers are routinely “backed-up” and copies are retained at an off-site facility, the City does not have a comprehensive, well-tested, disaster recovery plan to cover emergency operational scenarios. NexLevel recommends the City develop a comprehensive Disaster Recovery Plan that would establish the priorities for restoring technology services and ensures adequate processes, procedures, and resources would be available to support an orderly recovery of the City’s applications within the defined timeframe and in priorities as deemed by the City departments.

Once the Disaster Recovery plan has been completed, ITD should exercise the plan to validate that the servers, operating systems, application software, and databases can be brought into service from the recovery site within the specified timelines, that the applications will function as expected, that network connectivity can be successfully established, and that system performance is acceptable. Provisioning physical systems for recovery, configuring these systems, and recovering applications can be time consuming; as a result, recovery may take from several hours to several days for each system. Successive recovery drills are needed to refine processes to reduce the time required to restore critical information systems.

The following best-practice considerations should also be evaluated in the development and maintenance of plans for business continuity and disaster recovery for the City:

- The plans must be relatively agile since the support for business operations and user expectations for support evolve continually whereas disaster recovery and business continuity plans are updated less frequently
- The restoration of complex applications is highly dependent on resources with specialized skills and experience who might not be available in the event of an emergency
- Provisioning physical systems for recovery, configuring these systems, and recovering applications can be time consuming; as a
result, recovery may take from several hours to several days for each system. Successive recovery drills are needed to refine processes to reduce the time required to restore critical information systems

- Organizations need to be realistic in planning for disasters. Full-scale exercises, even when conducted on weekends, etc., can be very expensive and disruptive to business operations. Load testing is useful, but cannot ensure the performance and reliability of applications hosted from recovery centers

- Organizations often overlook single points of failure in their technology environments, especially where connectivity is concerned. It is not sufficient to simply restore systems and applications in an alternative location, connectivity to the users must also be provided

- The effort to develop, maintain, and refine these plans is significant, thus organizations need to prioritize their recovery needs based on a thorough risk and business-impact analysis

- The highly specialized knowledge and experience required to support the City’s applications. Planners commonly think of business continuity in terms of having the necessary facilities and resources to maintain service levels in the event of a natural disaster, public disturbance, emergency, or other event; however, if key personnel are unavailable, this can ultimately be as detrimental to sustaining service levels as is damage to a facility or the loss of a network link

NIST has published a Disaster Recovery Contingency Planning Guide for Information Technology Systems as well as a template for the development of a Business Impact Analysis (please refer to http://nvlpubs.nist.gov/nistpubs).

### Summary of Benefits

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Impact</th>
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<tbody>
<tr>
<td>Improved information technology resilience / security</td>
<td>Direct</td>
</tr>
<tr>
<td>Increased staff productivity</td>
<td>Indirect</td>
</tr>
<tr>
<td>Improved service delivery / operations</td>
<td>Indirect</td>
</tr>
<tr>
<td>Reduced cost of information technology ownership</td>
<td>Direct</td>
</tr>
<tr>
<td>Improved return on investment for information technology</td>
<td>Direct</td>
</tr>
</tbody>
</table>

### Implementation

- The City should direct user departments to prepare a business impact analysis that identifies each mission critical business application and the potential impacts to the City if the application is not available, the steps that can be taken to sustain operations without automation, and the maximum amount of time that the department can sustain operations without the application being available

- ITD should create, at a minimum, an IT Disaster Recovery Plan for City "mission critical" business applications

- ITD should test and modify the IT Disaster Recovery Plan on an annual basis

- ITD should participate in mock City disaster preparedness drills and other EOC planning activities
Appendices

Appendix A – IT Best Practices Checklist

The IT Best Practices Checklist provides a mechanism for the Client and NexLevel to conduct a dialog regarding IT best practices conformance. The Client initially completes the checklist and it is then reviewed by NexLevel. For each of the assessment factors the Client is asked to determine if they are fully conformant (“Y”), somewhat or minimally conformant (“O”) or non-conformant (“N”). Items that are fully conformant receive a score of 3, items that are substantially conformant receive a score of 2, items that are minimally conformant receive a score of 1, and items for which the City is non-conformant receive a score of 0. Comments are provided in the right-most column, with comments from NexLevel being preceded by “NL.”
# The City of Carson City
## Information Technology Assessment Report

<table>
<thead>
<tr>
<th>Nbr</th>
<th>Dimension / Category</th>
<th>Best Practice Factor</th>
<th>Best Practice Conformance</th>
<th>Comments</th>
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<tr>
<td></td>
<td></td>
<td>Best Practice Factor</td>
<td>Score (3,2,1)</td>
<td>Doc Available?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes, No, Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>IT Oversight</td>
<td>Does the City have a defined IT Governance process?</td>
<td>Y 1</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>IT Oversight</td>
<td>Does the IT organization report, directly or indirectly, to an IT governance committee?</td>
<td>Y 1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>IT Oversight</td>
<td>Does the IT governance process provide oversight for all City applications and services?</td>
<td>Y 1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>IT Oversight</td>
<td>Does the IT Governance Committee meet regularly?</td>
<td>Y 1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>IT Oversight</td>
<td>Does the City have formal procedures to ensure that departmental applications or web services conform to enterprise standards and best practices?</td>
<td>Y 1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>IT Oversight</td>
<td>Does the City have Steering Committees for enterprise (City-wide) projects or applications?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>IT Oversight</td>
<td>Are the City’s policy makers and senior executives involved in making technology decisions?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Strategic Business Plan</td>
<td>Does the City have a strategic business plan?</td>
<td>Y 3</td>
<td>Y</td>
</tr>
<tr>
<td>9</td>
<td>Strategic Business Plan</td>
<td>Are the City’s business goals and objectives identified, tracked and measured?</td>
<td>Y 3</td>
<td>Y</td>
</tr>
<tr>
<td>10</td>
<td>Strategic Business Plan</td>
<td>Is the business plan updated on a regular basis? If so, please indicate how often.</td>
<td>O 1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>eGovernment Strategy</td>
<td>Does the City have a formal eGovernment / Community Engagement (i.e., social media) Strategy?</td>
<td>O 1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>eGovernment Strategy</td>
<td>Does the City’s web site provide citizen-facing functions?</td>
<td>Y 3</td>
<td></td>
</tr>
</tbody>
</table>
## Best Practice Conformance

<table>
<thead>
<tr>
<th>Nbr</th>
<th>Dimension / Category</th>
<th>Best Practice Factor</th>
<th>Best Practice Conformance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>eGovernment Strategy</td>
<td>Does the IT organization formally monitor and manage the performance of external service provider(s) used to support the web-site?</td>
<td>O 2</td>
<td>This is a new process that just went live on June 1, 2016</td>
</tr>
<tr>
<td>14</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization have project management processes and standards?</td>
<td>O 2 Y</td>
<td>TGC Just approved IT Project Charter and Management Plan policy in May 2016</td>
</tr>
<tr>
<td>15</td>
<td>Enterprise Project Management</td>
<td>If so, does the IT organization have a separate Project Management Office (PMO) function to ensure project quality and conformance with standards?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Enterprise Project Management</td>
<td>Are user stakeholders involved in IT projects?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Enterprise Project Management</td>
<td>Are project charters developed for each major project? If so, is there a standard format or checklist for project charters?</td>
<td>Y 3</td>
<td>Again this is very new. See item 14</td>
</tr>
<tr>
<td>18</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization maintain an application portfolio?</td>
<td>O 1</td>
<td>Could be updated more often.</td>
</tr>
<tr>
<td>19</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization have formal procedures for reporting project status to users?</td>
<td>O 2</td>
<td>See item 14</td>
</tr>
<tr>
<td>20</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization have a high project success rate? Does the IT organization have a formal definition of what constitutes project success?</td>
<td>O 2 Y</td>
<td>I would only look at the past 12 months and we have started and completed multiple projects. There is no current definition of success. However, I have received multiple compliments from Board Members and consider that a success. Also, news articles written about IT projects all in good standing.</td>
</tr>
<tr>
<td>21</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization maintain a list of enterprise IT projects in progress and planned?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization have adequate funding and staffing to handle current enterprise projects?</td>
<td>O 1</td>
<td>Staffing – Yes Funding – No – Capital projects all declined, even ongoing projects</td>
</tr>
<tr>
<td>23</td>
<td>Enterprise Project Management</td>
<td>Does the IT organization have adequate funding and staffing to handle anticipated future enterprise projects?</td>
<td>O 1</td>
<td>Staffing – Yes Funding – No – Capital projects all declined, even ongoing projects</td>
</tr>
<tr>
<td>Nbr</td>
<td>Dimension / Category</td>
<td>Best Practice Factor</td>
<td>Best Practice Conformance</td>
<td>Comments</td>
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<tr>
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<td>--------------------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>24</td>
<td>Internal and External Communication</td>
<td>Does the IT organization have a formal process for facilitating communication between functional managers?</td>
<td>O 2</td>
<td>I use the City Managers Bi-Weekly Department Head meeting and Bi-Weekly all Department Head (including elected) meetings to communicate.</td>
</tr>
<tr>
<td>25</td>
<td>Internal and External Communication</td>
<td>Does the IT organization have a formal process for keeping its all staff members informed of system and application updates, policy changes, priorities, etc.?</td>
<td>O 2</td>
<td>We have Bi-Weekly IT Staff meetings. Need a more formal document of changes</td>
</tr>
<tr>
<td>26</td>
<td>Internal and External Communication</td>
<td>Does the IT organization keep the user community informed of changes to information technology environment?</td>
<td>Y 3</td>
<td>We send out multiple notifications on any system changes via email and text to desk phones</td>
</tr>
<tr>
<td>27</td>
<td>Internal and External Communication</td>
<td>Does the IT organization have formal processes for communicating with the user community?</td>
<td>Y 3</td>
<td>We send out multiple notifications on any system changes via email and text to desk phones</td>
</tr>
<tr>
<td>28</td>
<td>IT Strategic Plan</td>
<td>Does the City have an IT strategic plan?</td>
<td>N 0</td>
<td>This is why you are here</td>
</tr>
<tr>
<td>29</td>
<td>IT Strategic Plan</td>
<td>Does the IT strategic plan align with, and support, support the City’s business plan?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>IT Strategic Plan</td>
<td>Are goals and objectives identified, tracked and measured?</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>IT Strategic Plan</td>
<td>Is the IT Strategic Plan updated on a regular basis? If so, please indicate how often the ITSP is updated and the date of the last update.</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
## Service Delivery

<table>
<thead>
<tr>
<th>Nbr</th>
<th>Dimension / Category</th>
<th>Best Practice Factor</th>
<th>Best Practice Conformance</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Help Desk</td>
<td>Does the IT organization provide a single point of contact for user departments?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>33</td>
<td>Help Desk</td>
<td>Does the IT organization have a dedicated Help Desk?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>Help Desk</td>
<td>Is the Help Desk organized along functional or organizational lines?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>35</td>
<td>Help Desk</td>
<td>Does Help Desk staffing include subject matter experts who can assist users with both application usage and technology issues?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>36</td>
<td>Help Desk</td>
<td>Does the Help Desk use an issue tracking system? Is the system available to other staff members in the IT organization? To users?</td>
<td>O</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>Help Desk</td>
<td>Does the IT organization routinely analyze call data for trends, volume and escalation?</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>Help Desk</td>
<td>Does the Help Desk have specific service levels for response to customers?</td>
<td>O</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Help Desk</td>
<td>Does the Help Desk have a formal methodology to prioritize requests?</td>
<td>O</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>Help Desk</td>
<td>Does the IT organization have a formal method for assessing user satisfaction with the services provided by the Help Desk?</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>Help Desk</td>
<td>Does the IT organization believe that the Help Desk services provided to the user community are effective?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>42</td>
<td>Help Desk</td>
<td>Does the IT organization have a formal escalation procedure?</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>43</td>
<td>Help Desk</td>
<td>Does the IT organization have a formal process and dedicated channels to handle requests from VIPs?</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>Nbr</td>
<td>Dimension / Category</td>
<td>Best Practice Factor</td>
<td>Best Practice Conformance</td>
<td>Comments</td>
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</tbody>
</table>
|     |                      | Does the IT organization provide and support remote access tools to take over user desktops to diagnose and correct problems? If so, what tools are used and how effective are they with regard to:  
  - Ease of use?  
  - Ensuring that access is restricted to authorized users?  
  - Access management?                                                                                           | Y 3                       | We use Solarwinds Dameware products for remote support. IT is supposed to get verbal acknowledgement prior to connecting.                        |
| 44  | Help Desk            |                                                                                                           |                           |                                                                                                                                                  |
|     |                      | Does the IT organization maintain a centralized knowledge base (wiki or other repository)?  
  - If yes, is the information contained in the knowledge base considered to be complete, current, and readily accessible?  
  - If no, is the IT organization planning to develop a knowledge base?                                         | Y 3                       | Internal SharePoint site just for Help Desk.                                                                                                    |
<p>| 45  | Help Desk            |                                                                                                           |                           |                                                                                                                                                  |
|     |                      | Does the IT organization centrally develop and manage desktop and mobile device images that ensure appropriate “lock down” of desktops?                                                                      | O 1                       | Desktop admin access is not locked down. We have been working on this but getting some push back. For mobile devices we use IBM/Fiberlink MaaS360 and have this locked by policy. |
| 46  | Help Desk            |                                                                                                           |                           |                                                                                                                                                  |</p>
<table>
<thead>
<tr>
<th>Nbr</th>
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<tr>
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</tr>
<tr>
<td>47</td>
<td>Training</td>
<td>Does the IT organization provide training for users? If yes, please indicate whether:</td>
<td>O 1</td>
<td>We do have training for specific things. Primarily when we deploy a new system (i.e. conversion from GroupWise to Outlook/Exchange). Phone system training as new departments are deployed. Users are asked to fill out a training survey after completion. There is no regular training provided for standard applications. IT will be presenting Security policy and Social Media overview in New Hire Orientation which is done by HR. This is scheduled to start in the next few months.</td>
</tr>
<tr>
<td>48</td>
<td>Hours of Service</td>
<td>Does the IT organization provide Help Desk services on a regularly scheduled basis and, minimally, during prime shift / normal business work hours?</td>
<td>Y 3</td>
<td>Help Desk hours are M-F 8-5. (starting July 1st)</td>
</tr>
<tr>
<td>49</td>
<td>Hours of Service</td>
<td>Does the Help Desk provide support for users who may need extended support (such as public safety)?</td>
<td>O 2</td>
<td>We provide on call service for system wide outages only.</td>
</tr>
<tr>
<td>50</td>
<td>Hours of Service</td>
<td>Does the IT organization provide after-hours support for mission-critical systems? If yes, who provides the support?</td>
<td>Y 3</td>
<td>We always have IT staff on call. This person may be able to correct issue or call other staff member or call vendors like SunGuard or TriTech.</td>
</tr>
<tr>
<td>51</td>
<td>Hours of Service</td>
<td>Does the IT organization schedule routine and ad-hoc system maintenance so as to minimize the impact on internal users and the public?</td>
<td>Y 3</td>
<td>Maintenance window is set for Wednesday evenings. This has been set for many years. Probably need a formal policy to remind all. We send out notifications prior maintenance with brief explanation. Ad-hoc we send notifications and depending on who is effected we may call.</td>
</tr>
<tr>
<td>52</td>
<td>Service Delivery</td>
<td>Does the IT organization have formal service level agreements (SLAs) with the user community?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management - Service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Levels</td>
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<td>Best Practice Conformance</td>
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<td>--------------------------------------</td>
</tr>
<tr>
<td>53</td>
<td>Service Delivery Management - Service Levels</td>
<td>Does the IT organization have a service catalogue that identifies what IT services are provided, the service levels for each, and that is readily accessible by users?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Service Delivery Management - Service Levels</td>
<td>Does the IT organization have formal service expectations for vendors?</td>
<td>O 1</td>
<td>Depending on the vendor this varies. This is in our maintenance contracts.</td>
</tr>
<tr>
<td>55</td>
<td>Service Delivery Management - Service Levels</td>
<td>Does the IT organization report performance against SLAs, to whom, and with what frequency?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Service Delivery Management - Service Levels</td>
<td>Have City departments defined their need for IT systems availability?</td>
<td>N 0</td>
<td>Nothing formal</td>
</tr>
<tr>
<td>57</td>
<td>Service Delivery Management - Service Levels</td>
<td>Is the IT organization able to meet user needs with current IT resources, staff and infrastructure?</td>
<td>O 2</td>
<td>We are close. Need funding to refresh infrastructure.</td>
</tr>
<tr>
<td>58</td>
<td>Service Delivery Management - Change Management</td>
<td>Does the IT organization have well-defined change management procedures?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Service Delivery Management - Change Management</td>
<td>Are procedures in place to ensure conformance with the change management procedures?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Service Delivery Management - Change Management</td>
<td>Are proposed changes routinely reviewed with the users?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Service Delivery Management - Change Management</td>
<td>Does the change management process define how proposed changes are communicated to the user community?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Service Delivery Management - Change Management</td>
<td>Does the change management process provide escalation procedures?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Service Delivery Management - Change Management</td>
<td>Does the IT organization have an infrastructure change management process?</td>
<td>O 1</td>
<td>We normally discuss internal and put out notifications but no formal policy</td>
</tr>
<tr>
<td>Nbr</td>
<td>Dimension / Category</td>
<td>Best Practice Factor</td>
<td>Best Practice Conformance</td>
<td>Comments</td>
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</tr>
<tr>
<td>64</td>
<td>Service Delivery Management - Capacity Management</td>
<td>Does the IT organization routinely monitor the performance, availability, and the capacity of the network, servers, disk arrays, and other devices?</td>
<td>O 2</td>
<td>Yes individuals monitor systems daily. I would like to develop an overall NOC view so I can see this at any time. Currently I have to ask each individual how this is going.</td>
</tr>
<tr>
<td>65</td>
<td>Service Delivery Management - Capacity Management</td>
<td>Does the IT organization utilize dedicated appliances (SAN, NAS, etc.) for the storage of shared enterprise data?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Service Delivery Management - Capacity Management</td>
<td>Does the IT organization have a formal capacity plan? Is it used for the annual budgeting process? If not, what is used?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Service Delivery Management - Root Cause Analysis</td>
<td>Does the IT organization have a formal process for identifying, analyzing, and correcting the root cause of incidents?</td>
<td>O 1</td>
<td>No policy, but we do research and try to document for future reference.</td>
</tr>
</tbody>
</table>
### Business Technology Applications

<table>
<thead>
<tr>
<th>Nbr</th>
<th>Dimension / Category</th>
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<th>Comments</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes, No, Other Score (3,2,1) Doc Available?</td>
<td>(NL = Comment from NexLevel)</td>
</tr>
<tr>
<td>68</td>
<td>Application Support</td>
<td>Are enterprise applications primarily centralized and supported by the IT organization?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Application Support</td>
<td>Does the IT organization have a formal resource management plan to allocate resources to applications?</td>
<td>O 2</td>
<td>No formal plan. Each person has primary responsibilities and this is common knowledge within the IT staff</td>
</tr>
<tr>
<td>70</td>
<td>Application Support</td>
<td>Does the City have an enterprise IT architecture and supporting standards?</td>
<td>N 0</td>
<td>NL: The City does not have a documented enterprise IT architecture, the application portfolio is essentially a mix of applications</td>
</tr>
<tr>
<td>71</td>
<td>Application Support</td>
<td>Has the IT organization been charged to provide oversight for departmental applications or services (potentially supported by vendors)?</td>
<td>Y 3</td>
<td>With the exception of Public Works. IT is the primary support for all other applications.</td>
</tr>
<tr>
<td>72</td>
<td>Application Support</td>
<td>If yes, are procedures in place to ensure that applications that are acquired and/or supported by departments conform to standards?</td>
<td>Y 3</td>
<td>All purchases are supposed to go through IT. We evaluate and make recommendations based on IT best practices.</td>
</tr>
<tr>
<td>73</td>
<td>Application Support</td>
<td>Are there procedures in place to formally assess requested exceptions to the standards?</td>
<td>O 1</td>
<td>I would recommend these go to TGC for approval, but no formal policy.</td>
</tr>
<tr>
<td>74</td>
<td>Application Support</td>
<td>Does the City have procedures in place that require users to formally declare mission-critical applications and data and their requirements for availability as well as to periodically review the declarations?</td>
<td>O 1</td>
<td>No procedure or policy. This decision is usually more of an understanding between the department and IT. More at the executive level.</td>
</tr>
<tr>
<td>75</td>
<td>Application Support</td>
<td>Does the City have procedures in place to ensure the ownership, security, and integrity of information that is stored in external applications or services (such as Dropbox)?</td>
<td>N 0</td>
<td>We need this. We know departments are using dropbox with no controls in place. However, we need to have a solution that meets all needs before just putting in restrictions. (this is more of a CM standard. “Bring me solutions not problems”)</td>
</tr>
<tr>
<td>76</td>
<td>Application Support</td>
<td>If the IT organization supports any ad-hoc applications based on products such as MS Access or FileMaker Pro, are their procedures in place to ensure their appropriate use?</td>
<td>O 1</td>
<td>No formal policy or procedure. We usually just use standard file system security and let the departments tell IT who need access.</td>
</tr>
<tr>
<td>Nbr</td>
<td>Dimension / Category</td>
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<td>Comments (NL = Comment from NexLevel)</td>
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<td>Yes, No, Other</td>
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<td></td>
<td></td>
<td></td>
<td>Score (3,2,1)</td>
<td>Doc Available?</td>
</tr>
<tr>
<td>77</td>
<td>Application Support</td>
<td>Does the City have procedures to control the user development of ad-hoc applications and spreadsheets?</td>
<td>N 0</td>
<td>Departments have created their own procedures for internal use. One that comes to mind that had a citywide consequence. PW created an access database for Risk Management training using an older version of MS Access that was installed city-wide.</td>
</tr>
<tr>
<td>78</td>
<td>COTS Products</td>
<td>Does the City have processes to ensure that commercial-off-the-shelf (COTS) applications are utilized largely as delivered with no or only essential custom modifications?</td>
<td>O 2 y</td>
<td>All purchases are supposed to go through IT and/or TGC per IT Technology purchasing policy.</td>
</tr>
<tr>
<td>79</td>
<td>COTS Products</td>
<td>Does the IT organization track the product positioning for each COTS product?</td>
<td>O 2</td>
<td>NL: The City does not perform formal application portfolio management but is informally tracking the status of some applications may be nearing the end of vendor support</td>
</tr>
<tr>
<td>80</td>
<td>COTS Products</td>
<td>If any of the COTS applications no longer supported by the vendor, is IT working with the user community to replace them?</td>
<td>Y 3</td>
<td>Still trying to remove WordPerfect from our environment. We do require that when a hardware is replaced we will no longer install outdate/unsupported products or versions and they must purchase the latest version for IT to install.</td>
</tr>
<tr>
<td>81</td>
<td>COTS Products</td>
<td>Do application staff members and key users attend and participate in vendor user groups and conferences?</td>
<td>O 1</td>
<td>We try to send staff is funding and resources are available.</td>
</tr>
<tr>
<td>82</td>
<td>Cloud Solutions</td>
<td>Does the City have standards for the use of web-based (&quot;cloud&quot;) services such as software as a service (SaaS), cloud-based IT infrastructure (IaaS), etc.?</td>
<td>O 1</td>
<td>We use them when possible. No formal standards. This would be nice to have something formal.</td>
</tr>
<tr>
<td>83</td>
<td>Cloud Solutions</td>
<td>Does the City have standards in place to ensure the security and availability of the information stored off-site?</td>
<td>O 2</td>
<td>When IT evaluates systems we use best practices. Also we always make sure that all data stays within US in contracts.</td>
</tr>
<tr>
<td>84</td>
<td>Cloud Solutions</td>
<td>Does the City or the IT organization have a formal process for evaluating and approving the use of cloud-based services?</td>
<td>N 0</td>
<td>No formal process</td>
</tr>
<tr>
<td>85</td>
<td>Cloud Solutions</td>
<td>Does the City have processes in place to fully review agreements with cloud-service providers to ensure that all logistical provisions and costs (such as those related to exiting the service agreement) are identified and considered?</td>
<td>N 0</td>
<td>No formal process. IT reviews contract for general guidelines</td>
</tr>
<tr>
<td>Nbr</td>
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</tr>
<tr>
<td>86</td>
<td>Standards</td>
<td>Does the IT organization regularly apply new vendor releases and upgrades (production vs. current release)?</td>
<td>O 1</td>
<td>We try to keep updated but need to do better at this.</td>
</tr>
<tr>
<td>87</td>
<td>Standards</td>
<td>Are test environments provided for each application and are application updates formally and routinely tested by the user community?</td>
<td>O 1</td>
<td>HTE updates are always done in a test environment prior to release. Tiburon upgrade was done in a test environment. Other usually are not done in test.</td>
</tr>
<tr>
<td>88</td>
<td>Standards</td>
<td>Does the IT organization have a defined system development lifecycle?</td>
<td>N 0</td>
<td>We need this!</td>
</tr>
<tr>
<td>89</td>
<td>Standards</td>
<td>Does the IT organization have formal procedures to ensure that all components of the City’s information technology environment (i.e., hardware, system software, applications, etc.) are running on supported versions?</td>
<td>O 1</td>
<td>No actual formal process. We try to keep up with technology with supported HW &amp; SW. We use SolarWinds to notify us when hardware is out of support (Cisco).</td>
</tr>
<tr>
<td>90</td>
<td>Standards</td>
<td>Does the IT organization have application development standards?</td>
<td>N 0</td>
<td>No documented standards</td>
</tr>
<tr>
<td>91</td>
<td>Application Effectiveness</td>
<td>Does the IT organization routinely survey users to measure and track their satisfaction with the business application(s) they use?</td>
<td>O 2</td>
<td>We try do yearly surveys. Last completed in 2014.</td>
</tr>
<tr>
<td>92</td>
<td>Application Effectiveness</td>
<td>Does the IT organization routinely assess the degree to which applications conform to City standards?</td>
<td>O 1</td>
<td>No formal process. We try meet with the user community to see how they are functioning on a bi-annual basis.</td>
</tr>
<tr>
<td>93</td>
<td>Application Effectiveness</td>
<td>Does the IT organization routinely assess the degree to which applications meet the users’ performance expectations?</td>
<td>O 1</td>
<td>No formal process. We try meet with the user community to see how they are functioning on a bi-annual basis.</td>
</tr>
<tr>
<td>94</td>
<td>Application Effectiveness</td>
<td>Does the IT organization routinely plan for the functional enhancement, technical renovation or replacement of applications?</td>
<td>O 1</td>
<td>We do our best at planning for routine upgrades. However, this is rarely funded.</td>
</tr>
</tbody>
</table>
## Infrastructure

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>95</td>
<td>Network</td>
<td>Does the IT organization maintain Open-Systems Interconnection (OSI) conformant diagrams that depict its topology as well as the configuration of major nodes?</td>
<td>O 2</td>
<td>We have docs but they are not always up to date. We need to have a better process for keeping this documentation up to date.</td>
</tr>
<tr>
<td>96</td>
<td>Network</td>
<td>Does the IT organization ensure that the network is protected from intrusions by firewalls, DMZ, et al?</td>
<td>O 2</td>
<td>We have Firewalls in our major external links. We need to upgrade or install between Public Works and State SilverNet connection. In process of deploying Cisco ISE for IPS.</td>
</tr>
</tbody>
</table>
| 97  | Network              | If the City has a wireless network, is access to the network restricted? | O 2 | We have 3 separate SSIDs:
- City employees on City hardware secured and locked to hardware;
- City Employee’s on personal devices – secured but not locked by hardware; and
- Guest – unsecured. |
| 98  | Network              | If the City provides wireless access for "guests" is this provided on a separate wireless network or to segregate "guest" traffic? | Y 3 | See above |
| 99  | Network              | Does the IT organization have network management tools (CiscoWorks, Openview, etc.) and use them to routinely assess network usage, performance, and track trends? | O 1 | SolarWinds. We do not use routinely. We need to do this. |
| 100 | Network              | Does the IT organization routinely review all telecomm circuits to ensure the adequacy of the service as well as the continued need for the circuits? | O 1 | We look at every once in a while and try to validate. This could be done better by an outside vendor with expertise in this field. |
| 101 | Internet Access      | Does the City have an acceptable use policy that is signed by all employees with internet access? | Y 3 | We have just updated this to be signed via PolicyTech annually. |
| 102 | Internet Access      | Does the IT organization actively monitor and manage internet access including intrusion attempts? | O 1 | Cisco FirePower was just installed June 2016 to do this. |
| 103 | Internet Access      | Does the City have software deployed to filter content and report policy exceptions? | O 1 | Cisco FirePower was just installed June 2016 to do this |
### The City of Carson City
#### Information Technology Assessment Report

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<td>Yes, No, Other</td>
<td>Score (3,2,1)</td>
</tr>
<tr>
<td>104</td>
<td>Intranet Access</td>
<td>Does the City have tools (such as SharePoint) to facilitate collaboration and to edit, approve, and publish documents?</td>
<td>O 1</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Intranet Access</td>
<td>Does the City have formal standards for the use of collaboration tools?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>Remote Access</td>
<td>Does the City provide remote access for employees? If so, is a structured and secured method (i.e., VPN) used for remote access?</td>
<td>O 2</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>Remote Access</td>
<td>Does the City have an acceptable use policy for remote users?</td>
<td>O 1</td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>Remote Access</td>
<td>Are there procedures in place to ensure that remote users are in conformance with the policy?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>Remote Access</td>
<td>Does the City have a formal policy governing which users are eligible for remote access and that defines the procedures for granting and revoking access?</td>
<td>N 0</td>
<td></td>
</tr>
</tbody>
</table>
| 110 | Remote Access        | If the City grants remote access to vendors:  
- Is there a formal process for granting and monitoring remote access by vendors?  
- Does the IT organization routinely audit vendor usage to ensure compliance with policy?  
- Do the grants automatically expire after a specified period? | O 1 | | Vendors must sign the CJIS Security document. This needs to be redone in a City Policy.  
No routine audit  
No expiration |
<p>| 111 | Servers / Data Storage | Does the IT organization have well-defined hardware and software standards? | O 1 | | We have standards but nothing formally documented. |
| 112 | Servers / Data Storage | Does the IT organization perform periodic audits to confirm compliance with the hardware and software standards? | N 0 | |                                        |</p>
<table>
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<td></td>
<td></td>
<td>Yes, No, Other</td>
<td>Score (3,2,1)</td>
</tr>
<tr>
<td>113</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization have a formal process for reviewing and approving exceptions to the hardware and software standards?</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>114</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization have formal policies for the granting of administrative rights for physical and virtual servers?</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>115</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization periodically review grants of administrative rights?</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>116</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization perform routine performance monitoring to ensure that servers can support business applications?</td>
<td>O</td>
<td>2</td>
</tr>
<tr>
<td>117</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization virtualize servers? If so, does it have formal processes for the creation of instances and to periodically review their use?</td>
<td>O</td>
<td>2</td>
</tr>
<tr>
<td>118</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization perform routine performance monitoring to ensure that all servers (virtualized or not) are being used effectively and that sufficient capacity is on-hand to meet current and future requirements?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>119</td>
<td>Servers / Data Storage</td>
<td>Does the IT organization perform routine performance monitoring to ensure that centralized storage (NAS, SAN) is being used effectively and that sufficient capacity is on-hand to meet current and future requirements?</td>
<td>Y</td>
<td>3</td>
</tr>
<tr>
<td>120</td>
<td>Servers / Data Storage</td>
<td>Has the City deployed file servers and storage devices in departmental locations? If so, are they located in appropriate and secure facilities?</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>121</td>
<td>Routers and Switches</td>
<td>Are wiring / server closets neat and free of extraneous materials / clutter?</td>
<td>O</td>
<td>1</td>
</tr>
<tr>
<td>122</td>
<td>Routers and Switches</td>
<td>Does the IT organization have procedures for cable management and labeling?</td>
<td>O</td>
<td>1</td>
</tr>
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### Best Practice Conformance

<table>
<thead>
<tr>
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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>Routers and Switches</td>
<td>Are routers and switches located in secure locations?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>124</td>
<td>Desktops, Laptops and Printers</td>
<td>Does the IT organization have formal standards for desktops, laptops, printers, and other user devices?</td>
<td>O 2</td>
<td>These are formal standards know to IT. We need to document these in policy.</td>
</tr>
<tr>
<td>125</td>
<td>Desktops, Laptops and Printers</td>
<td>Does the IT organization control the granting of Administrator rights on desktops?</td>
<td>O 1</td>
<td>We are working on removing Admin Rights for all city computers. Not many completed at this time.</td>
</tr>
<tr>
<td>126</td>
<td>Data Center Environment</td>
<td>Has the main server room been appropriately sized for future expansion?</td>
<td>Y 1</td>
<td></td>
</tr>
<tr>
<td>127</td>
<td>Data Center Environment</td>
<td>Is the general layout of the main server room acceptable? Does the layout provide access to both the front and rear of racks?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>128</td>
<td>Data Center Environment</td>
<td>Has provision been made to prevent situations such as flooding and fire?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>129</td>
<td>Data Center Environment</td>
<td>Are server racks and equipment cabinets secured front and rear with locking doors?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>130</td>
<td>Data Center Environment</td>
<td>Does the IT organization control and monitor access to facilities such as server rooms?</td>
<td>O 2</td>
<td>All IT rooms are keyed only for IT and facilities maintenance personnel. Others may request but CIO must approve. This is an internal procedure only.</td>
</tr>
<tr>
<td>131</td>
<td>Data Center Environment</td>
<td>Does the IT organization have automated environmental controls to alert appropriate personnel to HVAC issues and other facility problems?</td>
<td>O 1</td>
<td>We have temperature gauges that email at server locations, but these need to be upgraded with better services (i.e. video)</td>
</tr>
<tr>
<td>132</td>
<td>Data Center Environment</td>
<td>Does the data center have sufficient electrical capacity and reliability / business continuity features such as a UPS, stand-by generators, and redundant power sources?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>133</td>
<td>Data Center Environment</td>
<td>Does the City routinely test to ensure that standby power facilities perform as expected and that the capacity is sufficient?</td>
<td>O 2</td>
<td>Generators are tested by Facility Maintenance on a routine basis.</td>
</tr>
<tr>
<td>134</td>
<td>Data Center Environment</td>
<td>Are the server racks braced for seismic shock?</td>
<td>N 0</td>
<td></td>
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<tr>
<td>Nbr</td>
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<td>Best Practice Conformance</td>
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<tr>
<td>135</td>
<td>Data Center Environment</td>
<td>Is the data center, server rooms, wiring closets, generally clean and clear of clutter such as decommissioned equipment or unboxed devices?</td>
<td>O 1</td>
<td>I requested in Capital Improvements and funding was denied.</td>
</tr>
<tr>
<td>136</td>
<td>Data Center Environment</td>
<td>Are the cables well managed (i.e., orderly cable runs, color-coded and labelled cables, etc.)?</td>
<td>O 1</td>
<td></td>
</tr>
<tr>
<td>137</td>
<td>Hardware Refreshment</td>
<td>Does the IT organization have a formal refreshment plan for desktops? Servers?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>138</td>
<td>Hardware Refreshment</td>
<td>Does the IT budget provide dedicated funds for the refreshment / renovation of desktop PCs, etc. per year?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>Nbr</td>
<td>Dimension / Category</td>
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<td></td>
<td></td>
<td>Does the IT organization routinely perform perimeter of other testing to ensure that intrusions are blocked and reported? Discuss the results of any independent vulnerability/penetration testing that has been conducted.</td>
<td>N  0</td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>Network Security</td>
<td>Does the IT organization have procedures in place to control wireless access (such as MAC addresses to access point, encrypted login stream, etc.)?</td>
<td>O  2</td>
<td>Working on completing deployment with Cisco ISE</td>
</tr>
<tr>
<td>140</td>
<td>Network Security</td>
<td>Does the IT organization monitor access to sensitive IT and business areas?</td>
<td>O  1</td>
<td>We have access to system but do not routinely monitor logs</td>
</tr>
<tr>
<td>141</td>
<td>Physical Security</td>
<td>Does the IT organization have procedures in place to manage user passwords (such as requiring strong passwords and periodic changing of passwords)?</td>
<td>Y  3</td>
<td></td>
</tr>
<tr>
<td>142</td>
<td>Data Protection</td>
<td>Does the City have a formal process to notify IT when employees are terminated or out on extended leave?</td>
<td>O  2</td>
<td>Not sure if in policy. HR sends a weekly termination to IT for verification. Nothing is done for extended leave.</td>
</tr>
<tr>
<td>143</td>
<td>Data Protection</td>
<td>Does the City have a formal process for requesting network and application access for new users?</td>
<td>Y  3</td>
<td></td>
</tr>
<tr>
<td>144</td>
<td>Data Protection</td>
<td>Does the City have a formal user security policy regarding data sensitivity, confidentiality, etc.?</td>
<td>Y  3</td>
<td>Confidentiality policy in PolicyTech</td>
</tr>
<tr>
<td>145</td>
<td>Desktop Security</td>
<td>Does the City have formal procedures in place to ensure that all users are familiar with, and conform to, the security policy?</td>
<td>O  1</td>
<td>IT will be presenting in New Hire Orientation in the near future.</td>
</tr>
<tr>
<td>146</td>
<td>Desktop Security</td>
<td>Does the City have formal procedures in place to ensure the security of information on mobile and portable systems (such as the encryption)?</td>
<td>Y  3</td>
<td></td>
</tr>
<tr>
<td>Nbr</td>
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</tr>
<tr>
<td>148</td>
<td>Data Backups</td>
<td>Does the IT organization perform backups on a regularly scheduled basis?</td>
<td>O 2</td>
<td>Yes we currently use ComVault Disk – Disk – Tape. We have purchased Dell Data Protection Suite June 2016. Working on Deployment.</td>
</tr>
<tr>
<td>149</td>
<td>Data Backups</td>
<td>Does the IT organization have multiple backup devices, e.g., mirroring, redundant servers, removable media, etc.?</td>
<td>Y 3</td>
<td>Mirroring and redundant servers.</td>
</tr>
<tr>
<td>150</td>
<td>Data Backups</td>
<td>Does the IT organization routinely backup critical application information?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>151</td>
<td>Data Backups</td>
<td>Does the backup include documentation, configuration settings, and system software?</td>
<td>O 2</td>
<td>Some are documented</td>
</tr>
<tr>
<td>152</td>
<td>Data Backups</td>
<td>Does the IT organization routinely verify and test backups?</td>
<td>O 2</td>
<td>Periodically we verify and do test (or Live) restores. We do not do complete system recovery tests.</td>
</tr>
<tr>
<td>153</td>
<td>Business Continuity and Disaster Recovery</td>
<td>Does the City have a formal IT business continuity plan that identifies mission critical applications, their availability requirements, and the maximum duration that the application can be down?</td>
<td>O 2</td>
<td>Yes, we use an online program provided by Emergency Operations (<a href="http://www.NevadaContinuity.com">http://www.NevadaContinuity.com</a>). Not sure how updated this system is.</td>
</tr>
<tr>
<td>154</td>
<td>Business Continuity and Disaster Recovery</td>
<td>Has the IT organization systematically identified all single points of failure and the actions required to remediate them?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>155</td>
<td>Business Continuity and Disaster Recovery</td>
<td>Does the IT organization have the ability (people, plans, processes, procedures, and other resources) needed to react to a service interruption and resume service in an acceptable timeframe?</td>
<td>O 2</td>
<td>Some hardware may take time to get from vendor</td>
</tr>
<tr>
<td>156</td>
<td>Business Continuity and Disaster Recovery</td>
<td>Does the IT organization have a disaster recovery plan? If so, please indicate when the plan was last updated?</td>
<td>O 1</td>
<td>Plan has not been updated in over 5 years</td>
</tr>
</tbody>
</table>
### The City of Carson City Information Technology Assessment Report

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>157</td>
<td>Business Continuity and Disaster Recovery</td>
<td>Does the IT organization conduct regular exercises to validate the disaster recovery plan and to ensure that systems and applications can be recovered as planned? If so, please provide the date of the most recent exercise.</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>Emergency Operations Center (EOC)</td>
<td>Does the City have an emergency operations center?</td>
<td>Y 3</td>
<td>NL: The City has not continued maintenance for WebEOC.</td>
</tr>
<tr>
<td>159</td>
<td>Emergency Operations Center (EOC)</td>
<td>Does the IT organization have personnel assigned to support the EOC?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Emergency Operations (EOC)</td>
<td>Does the City routinely conduct drills to ensure that the EOC is fully functional and can be brought online in a timely manner?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>161</td>
<td>Emergency Operations (EOC)</td>
<td>Does the City have plans for the activation of an alternate EOC if needed?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>162</td>
<td>Virus/Spam Protection</td>
<td>Does the IT organization deploy software to control viruses, spyware, other malware, and e-mail spam on user desktops?</td>
<td>Y 3</td>
<td>Kaspersky Enterprise v10</td>
</tr>
<tr>
<td>163</td>
<td>Virus/Spam Protection</td>
<td>Does the IT organization apply updates to this software in an automated and timely manner?</td>
<td>O 2</td>
<td>We need to better monitor to make sure all are updated</td>
</tr>
<tr>
<td>164</td>
<td>Cybersecurity, Intrusion Detection and Management</td>
<td>Does the IT organization have a cybersecurity plan in place for the detection, reporting, management, and response to intrusions? Is the plan conformant to recognized cybersecurity frameworks such as NIST?</td>
<td>O 1</td>
<td>No formal plan. I have reported up to DHS on major issues.</td>
</tr>
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<tr>
<td></td>
<td></td>
<td>Does the IT organization routinely review logs to identify incoming and outgoing traffic to potentially suspicious or malicious sites?</td>
<td>O 1</td>
<td>In process of installing new Firewall and IPS systems</td>
</tr>
<tr>
<td></td>
<td>Cybersecurity, Intrusion Detection and Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>166</td>
<td></td>
<td>Does the IT organization have an independent testing organization routinely perform perimeter and other testing to ensure the adequacy of controls?</td>
<td>N 0</td>
<td></td>
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<tr>
<td>167</td>
<td>Cybersecurity, Mobility</td>
<td>If users access City information or services using remote devices has the IT organization adopted appropriate procedures (such as mobile device management) to secure these devices from use by unauthorized individuals?</td>
<td>Y 3</td>
<td>We use IBM (fiberLink) MaaS360 MDM</td>
</tr>
<tr>
<td>168</td>
<td>Patch Management</td>
<td>Is security patching up to date on all components including servers, routers, switches, and desktops?</td>
<td>O 1</td>
<td>We use WSUS for patch management.</td>
</tr>
<tr>
<td>169</td>
<td>Patch Management</td>
<td>Is patching automated?</td>
<td>O 1</td>
<td>Depending on the software</td>
</tr>
<tr>
<td>170</td>
<td>Patch Management</td>
<td>Does the IT organization have formal (i.e. documented), change management procedures for infrastructure patches and upgrades?</td>
<td>N 0</td>
<td>No documented procedures</td>
</tr>
<tr>
<td>171</td>
<td>Patch Management</td>
<td>Does the IT organization apply patches and hot fixes in a timely manner according to the severity of the issue and as per vendor recommendations?</td>
<td>O 1</td>
<td>Depending on software</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>Is there an organization chart for the IT organization?</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>IT Organization</td>
<td>Are the functional responsibilities for each unit and staff member clearly delineated?</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>173</td>
<td>IT Organization</td>
<td>Does the IT organization have a resource management plan to ensure that it can continue to meet user requirements in the future?</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>174</td>
<td>IT Organization</td>
<td>Does the IT organization have formal job descriptions for each position?</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>175</td>
<td>IT Organization</td>
<td>Does the IT organization have a succession plan for each position?</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>IT Organization</td>
<td>Does the IT Organization have a training / development plan for each position?</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Does the IT organization rely on contractors, outside vendors or interns to assist with support? If so, does it have procedures to ensure that their work is documented and conforms to standards?</td>
<td>O</td>
<td>Depends on application Sheriff uses TriTech for CAD RMS support</td>
</tr>
<tr>
<td>178</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Does the IT organization review all procurements of IT goods and services?</td>
<td>O</td>
<td>New Policy was sent out May 2016 that defines this.</td>
</tr>
<tr>
<td>179</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Are all IT contracts centralized and accessible by IT?</td>
<td>O</td>
<td>Public Works is the exception.</td>
</tr>
<tr>
<td>180</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Does the IT organization have contracts tracking and management process in place?</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Does the IT organization regularly meet with IT vendors?</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Are SLAs specified in vendor contracts?</td>
<td>O</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>184</td>
<td>Procurement, Contracts and Vendor Management</td>
<td>Does the IT organization generally have positive vendor relationships?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>Software License Management</td>
<td>Does the IT organization have a central repository for all IT licenses?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>Software License Management</td>
<td>Does the IT organization handle license renewals on a timely basis?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>Software License Management</td>
<td>Does the IT organization have a formal license management/auditing process?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>Inventory Management</td>
<td>Does the IT organization have a hardware and software inventory control system?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>Inventory Management</td>
<td>Does the IT organization have a current inventory of servers, desktops, printers, applications, etc.?</td>
<td>Y 3</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Budget</td>
<td>Are all technology maintenance contracts budgeted within the IT organization?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>Budget</td>
<td>Does the City have a formal process for submitting items for the IT budget?</td>
<td>Y 3</td>
<td>I turn in CIP and Supplemental requests annually</td>
</tr>
<tr>
<td>192</td>
<td>Technical Documentation</td>
<td>Are operational procedures documented (i.e. backups)?</td>
<td>O 2</td>
<td>Needs to be redone when we upgrade July 2016</td>
</tr>
<tr>
<td>193</td>
<td>Technical Documentation</td>
<td>Does the IT organization maintain a master vendor list with contact information?</td>
<td>Y 3</td>
<td>NVCOOP (Nevada Continuity of Operations)</td>
</tr>
<tr>
<td>194</td>
<td>Policies and Procedures</td>
<td>Does the IT organization plan have a process for the periodic review and update of additional policies and procedures?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>IT Documentation</td>
<td>Does the IT organization maintained detailed and current technical documentation for the City’s IT infrastructure?</td>
<td>N 0</td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>Tactical Workplan</td>
<td>Does the IT organization maintain a tactical work plan that details the tasks assigned to each staff member, the duration of the tasks, and the start and completion dates?</td>
<td>O 1</td>
<td>We have an informal plan</td>
</tr>
</tbody>
</table>