IT Management Plan: Updated Review

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1.0 Project Overview

1.1 IT Management Plan Review: Purpose and Objectives

The objective of this IT Management Plan review (Review) is to determine and report on how the Districts are fulfilling recommendations presented in the original IT Management Plan (Plan). The recommendations were delineated in the Action Plan. The original Plan included the information following below in Section 1 and the Action Plan in Section 2.1. This Review then links the original Action Plan to the Organization Maturity Model (see below) and its best practice dimensions, to update the Action Plan's progress.

The original Plan built upon work already completed by the Districts and developed a plan based on an evaluation of the Districts current IT, including identifying any gaps, providing recommendations to close those gaps, and develop concrete actions in the form of an Action Plan. The result was a Roadmap for the Districts to follow in order to improve conformance to technology best practices.

The original Plan under review, prepared June 2016, was a collaborative effort between the Regional Sanitation District and Sacramento Sewer District (Districts), and the independent consultants Lopez Consulting and NexLevel Information Technology Inc. (NexLevel) (Consultants). The Districts Executive Management was fully engaged in this project and formally supported this plan.

The Executive Technology Steering Committee (ETSC) and key Districts staff, with support from the Consultants, established the following IT Vision and Statements of Strategic Direction for IT.

- **IT Vision**
  - The Districts utilize technology to drive efficiency and effectiveness of operations.
- **Statements of Strategic Direction for IT-** Describes what is required to achieve the IT Vision
  - The Districts will pursue lowest cost software solutions by strongly favoring Commercial Off the Shelf (COTS) solutions over in-house developed programming.
  - The Districts will pursue efficiencies in IT resources to balance the cost of IT with the value provided to the enterprise.
  - The Districts will develop appropriate metrics to benchmark and compare technology services against other comparable organizations with a goal of maintaining IT expenditures within 25% of the average.

1.2 Best Practices: Previous Districts Results

While the in-depth IT Management Plan takes the information derived from the plan inputs and identifies gaps, recommendations, and actions, Figure 1 provides a high-level graphical synthesis of the findings. Specifically, this view is built on an Organizational Maturity Model (OMM), and an IT Best Practices Model, both developed by NexLevel.

1.2.1 IT Best Practices Model

NexLevel developed an IT Best Practices Model to be used in concert with the Organizational Maturity Model to evaluate best practices. This model is comprised of the following six separate dimensions:

- Information Technology Governance – Practices related to the District-wide IT directions and priorities, the leadership and reporting structure of the IT organization, degree of management overview, and the tracking of the delivery of technology services.

- Service Delivery– Practices related to coordinating the processes involved in providing customer support including training, help desk, and service delivery management, and the establishment of service level agreements (SLAs) and tracking of conformance with them.
- Business Technology Applications – Practices related to the management and support of the application information systems supporting business operations.
- Infrastructure – Practices that are related to the acquisition, utilization, and maintenance of equipment (such as servers and storage devices), operating systems, support software, and network services.
- Security – Practices related to the effective use of policies and standards, user conduct, software tools (filtering, monitoring, etc.), and audits to validate that material and software resources are used only for their intended purposes.
- Administration – Practices related to the management of technology in terms of budgets, maintenance agreements, software licenses, and the development and maintenance of current and accurate documentation on all technology activities.

The Organizational Maturity Model consists of four maturity levels ranging from "Frontier" (the lowest level of best practices) to "Service/Value" (the highest level of best practices). These levels and their corresponding colors are shown in the legend. The IT Best Practices Model consists of six areas (aka "dimensions") that are used to evaluate the organization's compliance with IT service management and delivery best practices.

In Figure 1, both models have been merged, and the results of the IT Best Practices Assessment mapped (target points) to provide a comprehensive view of the Districts current IT state and utilization of best practices.

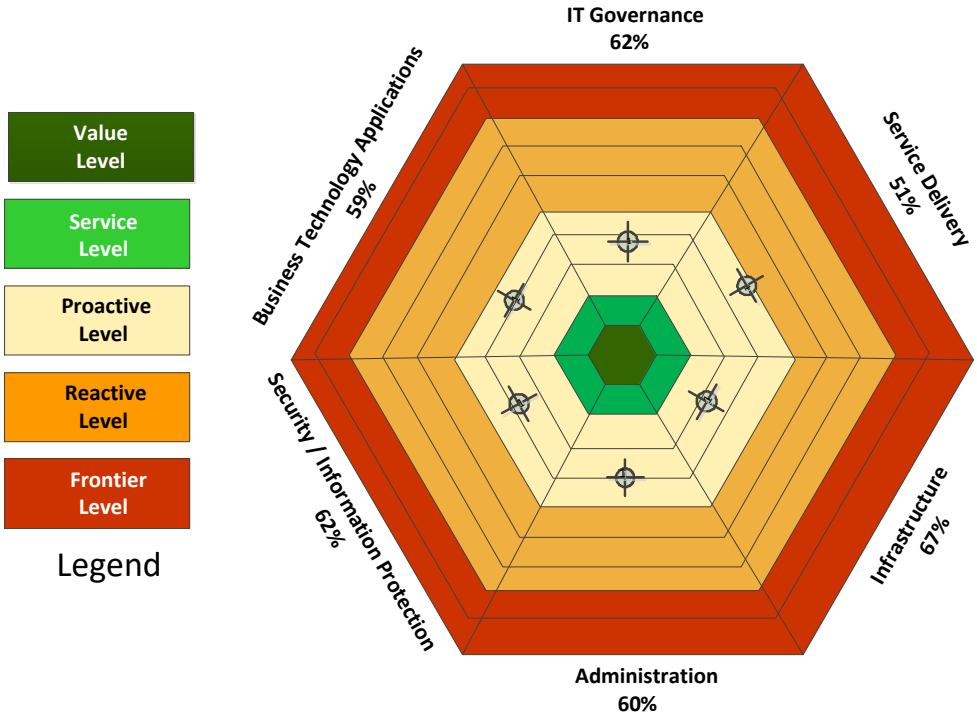

Figure 1 – IT Best Practices Assessment Results Mapped to Organizational Maturity Model

Based upon NexLevel's experience with this model, the Districts IT is above average in all six areas as the average public sector conformance is approximately 40%. Even though this is the case, leading IT organizations achieve 60% conformance or better, so there are areas that can be improved.

2.0 Action Plan Updates

One of the challenges facing many public-sector organizations is that information technology has been gradually transformed in recent years from a "back office" productivity tool to a strategic part of how organizations plan, allocate resources, deliver services, meet increased public expectations, and interact with the communities they serve.

In order to use information technology effectively in this changed environment, organizations must change how they govern the use of information technology, budget for information technology, deliver information technology services, and support an expanded user community that potentially includes the public as well as internal users. The paradigm for public-sector organizations has shifted from efficiency (doing things as inexpensively as possible) to effectiveness (producing desired/mandated outcomes).

The IT Best Practices Assessment compared the Districts current use of technology to where they should be according to best practices.

2.1 Action Plan

Table 1, Action Plan, was included in the original IT Plan and detailed 23 specific actions to be taken over the next 24 months in order to improve the Districts conformance to IT best practices. For each of the 23 actions, there is a description of the action, the Best Practices Model Dimension and the section number in the report that provides specific details related to the specific action. The prioritization (High, Medium, Low) was established in a workshop with the ETSC and follow-up discussions between the Districts and the consultant. Timing was based on the Districts' needs and the collective knowledge of participants, both the District's participants and the Consultants experience.

Table 1 – Action Plan

No.	Action	Dimension	Priority	Now	6 Months	12 Months	18 Months	24 Months
1	Contract with a specialized firm to conduct annual network threat assessments and remediate identified vulnerabilities	Security 4.5.3.1	High	♦				
2	Initiate a process to evaluate resource needs, prioritize them, and allocate resources	Admin 4.6.3.2	High	♦				
3	Create a business impact analysis that identifies mission critical business applications and steps that can be taken to sustain operations without automation	Security 4.5.3.4	High	♦				
4	Create an ITS Service Catalog that defines the services provided as well as the services that have been sourced to external service providers	Service Delivery 4.2.3.1	High	♦				
5	Formally identify single-points-of-failure and establish a plan/budget to eliminate findings	Security 4.5.3.6	High	♦	→			
6	Establish project management guidelines with a focus on communication	Governance 4.1.3.2	High	♦	→			
7	Begin proactive system monitoring and capacity analysis processes	Infrastructure 4.4.3.1	Medium	♦	→	→	→	→

No.	Action	Dimension	Priority	Now	6 Months	12 Months	18 Months	24 Months
8	Using NIST as a template, create a cybersecurity plans which protect the Districts' electronic information from unauthorized access, modification, and destruction	Security 4.5.3.2	High		♦			
9	Develop an IT Master Plan	Governance 4.1.3.4	High		♦			
10	Establish service level agreements	Service Delivery 4.2.3.2	High		♦			
11	Create Subject Matter Experts to provide Tier 1 core application support	Business Technology Applications 4.3.3.3	High		♦			
12	Create new and/or update application and data security policies	Security 4.5.3.3	Medium		♦			
13	Create a sourcing strategy based on the concept of obtaining the most effective service provider. Examples include: IaaS, SaaS, and the Districts use of DTech.	Governance 4.1.3.3	Medium		♦			
14	Develop, at a minimum, an IT Disaster Recovery Plan for District "mission critical" business software applications	Security 4.5.3.5	High		♦	→		
15	Adopt a formal change management process	Service Deliver 4.2.3.3	Medium		♦	→	→	
16	Create and/or update a technical blueprint that documents the existing and planned information technology enterprise architecture	Admin 4.6.3.1	Medium			♦		
17	Create a root cause analysis process for incident identification, remediation, and avoidance	Service Delivery 4.2.3.4	Medium			♦		
18	Develop and execute centralized application approach	Governance 4.1.3.1	Medium			♦	→	→
19	Map applications interface criteria, needs, and priorities	Business Technology Applications 4.3.3.1	Medium			♦	→	→
20	Develop and/or update Policies & Procedures	Admin 4.6.3.3	Medium			♦	→	→
21	Create a detailed application analysis (portfolio) in terms of maintainability, adherence to standards, and future vendor/application viability	Business Technology Application 4.3.3.2	Low				♦	
22	Communications and collaboration facilitation	Admin 4.6.3.5	Low				♦	
23	Create a formal vendor management plan	Admin 4.6.3.4	Low				♦	→

2.2 Organization Maturity Model Update

The following section reviews the original OMM gap analysis and recommendations as delineated in the IT (Plan). The analysis is sorted by the six (6) best practices areas, Dimensions, identified in the Plan. Next, it provides an overview of progress to date in addressing those gaps. Please refer to the Original Management Plan for more detailed information regarding gaps and recommendations. The Status Indicator graphic in the table below signifies whether the Districts' efforts are progressing positively, (), efforts appear neutral (➲), or efforts are progressing slower () than anticipated.

2.2.1 Technology Governance (District Leadership Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	18	No focused strategy for the creation of either a hybrid and decentralized approach verses a centralized model for key applications	Determine a Districts-wide software application approach and develop a strategy for its implementation. Either a single, shared application model or separate application model	Discussions are under review. Organizational and other changes have delayed implementation of the recommendation.	
2	13	No formal policy for determining when and what external sourcing strategy, if any, will be used for any application or technology service	Create a sourcing strategy based on the concept of obtaining the most effective service provider. Examples include: IaaS, SaaS, and the Districts use of DTech.	A strategy has not been implemented to date.	

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
3	6	The on-going monitoring and management of actual projects are informal	Establish basic project management guidelines with a focus on communications which includes: • Collaborative project planning • Change and issue management • Risk management	Key guidelines of the recommendation are still outstanding, e.g. risk, issue, and change management. Collaboration on projects, internally, and with 3rd party vendors, still requires better communication and execution.	➲
4	9	The Districts do not manage technology through the use of a Project Master Plan (PMP)	Develop an IT Master Plan	A Project Matrix for the ISD IT is used as a planning and status reporting tool. A detailed PMP has not been implemented. A process is currently underway to develop the PMP.	ⓘ

2.2.2 Service Delivery (Shared Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	4	The Districts lacks formal, comprehensive technology processes and procedures relative to: • Service Catalog • Service Level Agreements • IT Change Management • Root Cause Analysis	Create a Service Catalog that defines the services provided, criteria for delivering service to departments, technology standards, processes, and contact information	A Service Catalog has not been implemented to date. A container has been developed for Service Catalog contents.	ⓘ

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
2	10	Service Level Agreements (SLAs)	Establish service level agreements between IT, end-users and District departments	SLAs have been implemented. Additional SLAs should be developed internally and with 3rd party vendors.	
3	15	IT Change Management	Adopt a formal change management process for the management of change with technology projects and within IT operations	A formal Change Management process has not been implemented to date.	
4	17	The creation of a Root Cause Analysis	Create a root cause analysis process for incident identification, remediate, avoidance, and historical reference	A formal Root Cause process has not been implemented to date.	

2.2.3 Business Technology Applications (Shared Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	19	IT lacks a strategy for application and data integration	Map applications interface criteria, needs, and priorities to: • Eliminate shadow systems (i.e. Excel for Project Management, plant calendar, SharePoint used for help desk, etc.) • Create single points of data entry (e.g., triple entry into SAP because it lacks interfaces with other systems; eRoom as document repository) • Allow for Districts-wide data mining	The Districts are in the process of selective application interface requirements. A single point of entry is not always used. eRoom has been retired. Data mining has not been instituted. A CMDB has been configured.	➲
2	21	The Districts do not maintain a software application portfolio to track the core business application life cycle and system characteristics	Create a detailed application analysis (portfolio) in terms of maintainability, adherence to standards, and future vendor/application viability	A detailed Application Portfolio has not been implemented to date. A CMDB has been configured.	➲
3	11	IT does not have enough staff to understand and support every business application used within the Districts	Create subject matter experts (SMEs; business application specialists) within District departments to provide first-tier support to core business application software	Staffing, especially at the senior level of IT is still lacking. SMEs do provide application support. Although this knowledge isn't always transferred and/or shared.	➲

2.2.4 Infrastructure (Shared Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	7	IT does not routinely perform extensive, proactive network monitoring or capacity planning. Monitoring is left to DTech, but IT should "watch the watcher" and ensure systems, storage, operating loads, and resource consumption are running efficiently and are expanded as applications and usage dictate	Establish formal processes for system monitoring, capacity planning, analysis, and reporting	IT does not perform capacity planning analysis and reporting currently. Current operational load requirements are performed by IT.	

2.2.5 Security (Shared Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	1	There is a lack of routine network penetration testing and vulnerability scanning. IT does not have procedures in place to routinely test network security, nor does it have procedures in place to detect and report network intrusions	Contract with a specialized firm to conduct network penetration testing and vulnerability assessments for the WAN, LAN, and wireless networks	The Districts have conducted a recent penetration test. A formal Security review was conducted by the PTP Corporation. Organization Staffing for an agreed upon security model is currently underway. Significant security-based work remains to be accomplished.	
2	8	There is a need for a NIST (National Institute of Standards and Technology)-conformant cybersecurity plan which will document procedures for security awareness, avoidance, and mitigation of vulnerabilities identified by the annual penetration testing procedures	Create a cybersecurity plan which establishes a proactive, on-going protection strategy for the electronic information from unauthorized access, modification, and destruction	Cybersecurity planning efforts are currently being discussed, although it is not known when they will be conducted or the level of prioritization they will receive. A current assessment was performed by the consulting firm PTP.	
3	12	The Districts should update specific security policies	Create and/or update formal security policies that adhere with District goals and objectives	Security policy creating and/or updating is currently being discussed.	

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
~~4~~	~~3~~	~~There is a lack of a Districts-wide Business Continuity Plan~~	~~Conduct a business impact analysis that identifies mission critical business applications and steps that can be taken to sustain operations~~	~~A Business Continuity Plan has not been implemented to date.~~ This Gap has been considered better instituted by Business Analysts within another Department. IT will contribute expertise and SMEs as appropriate.	NA
5	14	There is a lack of an IT Disaster Recovery Plan	Develop, at a minimum, an IT Disaster Recovery Plan for District "mission critical" business software applications	A Disaster Recovery Plan has not been implemented to date.	
6	5	IT has not developed a detailed analysis of single-points-of-failure within the technology infrastructure	Formally identify single-points-of-failure and establish a plan/budget to eliminate findings	IT has not established a plan and budget to address single points of failure. Although discussion of these types of items is ongoing.	

2.2.6 Administration (Shared Ownership)

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
1	16	IT does not maintain formal planning documents to guide its day-to-day activities	Create and/or update technical blueprints that document the existing and planned information technology enterprise architecture Initiate a process to evaluate resource needs, prioritize them, and allocate staff (internal and/or external) and develop a Succession Plan, Training Plan, and Resource Allocation Plan	IT has documented its information technology network architecture. Further work in storage and documentation is needed.	
2	2	IT does not maintain formal Succession and Resource Allocation plans	Initiate a process to evaluate resource needs, prioritize them, and allocate staff (internal or external)	Management has recognized resource needs and is addressing the placement and structure of allocating resources. Formal plans are not yet developed.	
3	20	IT lacks documentation of current policies, processes, and procedures	Develop and/or update policies and procedures documentation	Many policies exist. Formal documentation of procedures exists in certain instances. More effort is needed.	
4	23	IT does not have a formal plan for vendor management	Create a formal Vendor Management Plan.	A formal Vendor Management Plan has not been implemented to date. A template has been agreed upon.	

Item #	Action Plan #	Gap	Original Recommendations	Progress to Date	Status Indicator
5	22	Ineffective project communications with user departments	Improve IT communication / collaboration to facilitate general employee discussions relative to project status, events, and activities	Communication internally needs to be addressed. A single webpage that communicates IT planned events would help foster cohesiveness and strengthen communication. This item is currently in the discussion phase.	

3.0 Project Updates

The projects anticipated to be worked on at the Districts as a part of the scope of the original Management Plan were documented and prioritized as depicted in Table 1, Action Plan in Section 2 of this review. Most projects were slated to begin within two (2) years of the Plan's release date, June 2016. Due to a number of personnel factors and other extenuating circumstances this goal has not been met in a significant number of instances.

3.1 Project Prioritization

Table 2, details current projects under way or anticipated by IT. The Tiering, Prioritization of the projects, and completion percentages are the best estimate available at the time this update report was written. The information contained in Table 2 is based upon information gathered from IT staff.

Table 2 – Project Prioritization and Updates

Responsibility Area	Project Category	Project Description	*TIER	Tier Priority	!Project Scope % Completed	!Project Functional % Complete	Comments
Applications	Application Portfolio	Create Application Portfolio	1	1	10%	0%	Portfolio has not been reviewed for submission; Application Portfolio Management Planning and Activities TBD
Applications	Application Upgrades	Consolidate Maximo instances running at the Plant and Goethe	1	1	90%	5%	Preliminary Evaluation nearing completion. Actual Consolidation TBD
Applications	Core App. Support: Tier 1	Identify SMEs to provide Tier 1 core Application support	1	1	0%	0%	TBD
Applications	Upgrades	Lock User Screens due to inactivity	1	1	75%	75%	Completion Projection Date: 2/25/19
Management	BIA	Create a Business Impact Analysis	1	1	0%	0%	TBD
Management	DR Plan	Develop an IT Disaster Recovery Plan	1	1	0%	0%	TBD

Responsibility Area	Project Category	Project Description	*TIER	Tier Priority	!Project Scope % Completed	!Project Functional % Complete	Comments
Management	SPOF	Identify Single Points of Failure	1	1	0%	0%	TBD
Management	System Monitoring	Proactive System Monitoring	1	1	0%	0%	TBD
Security	Security Controls	Annual Network Threat Assessment	1	1	0%	0%	Project to be completed 1/year. Last P&P conducted: MM/DD/YY
Security	Security Controls	Create / Update Application and Data Security Policies	1	1	0%	0%	TBD
Security	Security Controls	Local Admin Rights Testing	1	1	0%	0%	Subject to recent rollout of Windows 10
Security	Security Controls	ICS/SCADA Network Assessment	1	1	0%	0%	TBD
Security	Security Controls	Implementing critical controls to improve security maturity	1	1	40%	10	3/29/19
Applications	Application Inventory	Application Inventory and Data Mapping	1	2	20	5	New Completion Projection date needed: 1/3/19
Applications	Application Strategy	Develop and Execute a Centralized Application Approach	1	2	0%	0%	TBD
Applications	Application Tactics	Map Applications Interface Criteria, Needs, and Priorities	1	2	0%	0%	TBD
Applications	Maximo Consolidation	Maximo Consolidation	1	2	10	0	Project currently on hold

Responsibility Area	Project Category	Project Description	*TIER	Tier Priority	!Project Scope % Completed	!Project Functional % Complete	Comments
Applications	Patch Management	IT Patch Management	1	2	40%	40%	On-going
Applications	Upgrades	Windows 10 Upgrade - All	1	3	75%	10%	UAT still processed; New completion Projection Date Needed
Management	Change Management Process	Adopt a Formal Change Management Process	2	1	0%	0%	TBD
Management	IT Master Plan	Develop an IT Master Plan	2	1	100%	10%	Implementing changes are on-going
Management	P&P Updates	Develop / Update Policies and Procedures	2	1	50%	50%	TBD
Management	PM Guidelines	Establish Project Management Guidelines	2	1	0%	0%	TBD
Management	Root Cause Process	Create Root Cause Analysis Process	2	1	0%	0%	TBD
Security	End User Communications	Monthly Email	2	1	100%	100%	Email is sent out monthly to end-users. This is ongoing.
Applications	PRX Procurement	Purchasing PRX	2	2	80%	5%	3 Systems: PRF, PRS, Maximo Completion Projection Date: 1/31/19
Applications	Upgrades	Kofax Upgrade - Plant	2	2	90%	75%	UAT still underway; Completion Projection Date: 3/31/19

Responsibility Area	Project Category	Project Description	*TIER	Tier Priority	!Project Scope % Completed	!Project Functional % Complete	Comments
Applications	Upgrades	IT Inventory System Upgrade	2	2	80%	5%	3 apps. reviewed. Software selected: PRS; Completion Projection Date: 5/15/19
Infrastructure	Upgrades	PMWeb Server Upgrade	2	2	60%	60%	Server Setup completed; Completion Projection Date: 2/22/19
Management	KPIs	IT KPIs	2	2	80%	50%	Completion Projection Date: 12/4/18 KPIs have not been reviewed; New completed date needed
Security	Assessing Awareness	Phishing Exercises	2	2	100%	100%	Next exercise TBD; Ongoing
Applications	BCE - Office 365	Office 365 BCE	2	3	75%	10%	Completion Projection Date: 11/16/18; New completion date needed
Applications	Documentation	IT Instruction Guides Equipment/Software and Intranet FAQ	2	3	40%	20%	MDM and MS Office completed; SharePoint & Maximo not completed Completion Projection Date: 12/10/18 New completion Projection Date needed
Management	Communication & Collaboration	Communications and Collaboration Facilitation	2	3	0%	0%	TBD
Management	Sourcing Strategy	Create Sourcing Strategy	2	3	0%	0%	TBD

Responsibility Area	Project Category	Project Description	*TIER	Tier Priority	!Project Scope % Completed	!Project Functional % Complete	Comments
Management	**Vendor Management**	**Create Vendor Management Plan**	**3**	**1**	**0%**	**0%**	**TBD**
*Tier/Prioritization Scaling is done on a Scale of 1-3 (see below). High Priority should be interpreted to mean the Project is critical for the organization to complete.							
Tier Priorities:							
Tier 1 = Highest Priority; Urgent							
Tier 2 = High Priority							
Tier 3 = Schedule as resources become available							
Completed:							
Project Scope % Completed: The percentage of the project identified as "in-scope" that has been completed							
Project Functional % Completed: The percentage of the project completed so it is functionally available to end-users or the intended target audience							

4.0 Updated Recommended IT Management Plan Next Steps

The Districts IT Department have numerous competing demands. They have recently undergone a change in leadership and are working on hiring personnel to fill critical senior-level roles and responsibilities. These short and long-term situations pose significant challenges to the Department in meeting the current and future technological demands of the Districts.

Projects and District-related priorities are fluid. Technology is an ever increasingly significant component of the Districts' ability to meet constituent needs. Therefore, it is imperative the ETSC is engaged on a regular basis regarding IT Projects to ensure time and resources currently focused on particular projects are in the best interest of the Districts priorities. This is obviously done in conjunction with input from IT. What was a Tier Level 1, Priority 3 may quickly need to become a Tier 1, Priority 1 project. If there is a determination that no additional resources are available to support this change, then, by default, a decision would need to be made as to which project(s) will be "downgraded" in terms of priority, timing or other factors. This decision is directly within the scope of the ETSC and lies at the heart of the governance decision making process for which the ETSC is responsible.

The focused attention being given to information technology-related security will help the Districts' ensure that project priorities and ongoing IT operations are well grounded and the ever-increasing security threats to the Districts' assets and priorities are being addressed in the best manner possible.

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