Audit Report

Citywide Pagers

January 2021

The City has not effectively managed pagers, resulting in unnecessary spending and possibly impacting the City's ability to communicate in an emergency. Communicating effectively in an emergency is critical for the City to ensure the safety of residents and staff. Since 1999, the City has contracted for wireless communication services from the same vendor. Pagers are one component of this system. Some City staff said pagers are a necessary and cost-effective means for communicating. Other staff said pagers are not useful and they use other devices and systems to meet their communication needs. The City paid for unused pagers including those assigned to staff who no longer work for the City. Also, the City does not have a strategic way of knowing if key staff are connected to the system or using their devices, which may result in critical communication lapses.

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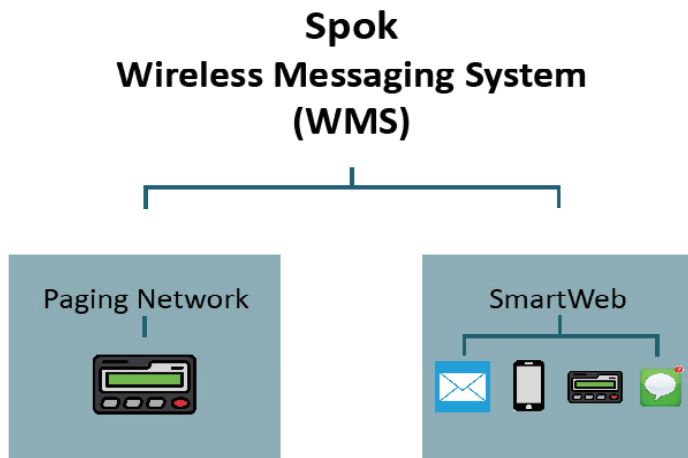Cover: Spok, Incorporated.

Objective

Is the City's use of pagers necessary and cost effective?

Background

City coalition partners include Travis County, Travis County Emergency Service Districts, University of Texas, at Austin, Austin Independent School District, and others.

In 1999, the City determined it needed a more reliable and effective way to communicate in emergency situations, both internally and with external partners. The City formed a coalition with regional partners to contract for an interagency pager-based communication system. This contract has evolved to include other services offered by the vendor, Spok, Incorporated (Spok).[1] This includes a Wireless Messaging System (WMS) that allows users to communicate via pager, text messaging, email, and the Spok smartphone application.

Exhibit 1: The Spok Wireless Messaging System Lets Users Communicate Through the Paging Network and Other Common Communication Methods

SOURCE: Auditor analysis of the Spok communication system, June 2020.

Most City pager accounts include local coverage which is cheaper than state or national coverage plans.

At the beginning of 2020, 27 of 33 City departments we evaluated had an account with Spok. At that time, the City had 4,389 overall WMS accounts with 1,638 of those using pagers. Pagers are a relatively inexpensive option with a $4.50 monthly service charge per user and a replacement cost of $35. Accounts that combine paging services with other services such as text messaging and email can cost as much as $11.50 a month per user. While some departments have only a few user accounts, other departments have many users.

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[1] According to City staff, the communication services contract has been competitively bid three times since 1999.

Exhibit 2: Most City Departments with Over 100 Wireless Messaging System User Accounts Conduct Public Safety or Utility Work

City of Austin Department	Total WMS User Accounts	Pager Accounts
Police	2,236	182
EMS	420	122
Austin Water	403	317
Aviation	224	222
Communications and Technology Management (and Wireless Services)	307	222
Fire	176	12
Austin Energy	171	166
Austin Resource Recovery	105	58

SOURCE: Auditor analysis of Spok billing records, June 2020.

Effective communication is important in both emergency and non-emergency situations. During critical events, communication helps staff coordinate their response and carry out operations to help ensure the public's safety. Emergency staff have long considered pagers a critical tool for reliably communicating in emergency situations. Pagers may be necessary for other departments, too.

Unlike radios and cellphones, pagers have a long battery life and their relatively low cost make them ideal for communicating with large numbers of people. Under certain conditions, pagers remain more reliable than cellphones and can deliver widespread messages without any delays. However, the rise of smartphones and the increased reliability of cellphone networks may make pagers obsolete for some users in the City.

As the City approaches the expiration of its current emergency communications contract in 2022, it is important for the City to review what services are needed, how those services are used and provided, and if they meet the varying needs of the departments and regional partners.

What We Found

Summary

The City has not effectively managed pagers, resulting in unnecessary spending and possibly impacting the City's ability to communicate in an emergency. Communicating effectively in an emergency is critical for the City to ensure the safety of residents and staff. Since 1999, the City has contracted for wireless communication services from the same vendor. These services provide for emergency and everyday communications for City departments as well as regional partners. Pagers are one component of this system. Some City staff said pagers are a necessary and cost-effective means for communicating. Other staff said pagers are not useful and they use other devices and systems to meet their communication needs. The City paid for unused pagers including those assigned to staff who no longer work for the City. Also, the City does not have a strategic way of knowing if key staff are connected to the system or using their devices. A strategic review of the City's communication needs, including pagers, could reduce unnecessary spending and enhance the City's ability to communicate in an emergency.

Finding 1

The City has not effectively managed pagers, resulting in unnecessary spending and possibly impacting the City's ability to communicate in an emergency.

Wireless devices continue to evolve, but CTM's policy guidelines have not been updated since 2016.

The purpose of the Wireless Messaging System (WMS) is to provide reliable emergency and non-emergency communication services to the City and its partners. Pagers are one component of this system. The City has not effectively managed the system, which has resulted in unnecessary spending on pager services. Some departments have recently moved away from pagers. Others have developed their own communication plans, spending resources on these additional systems. As a result, the WMS may not work as intended and the City may not be able to effectively communicate with all parties in an emergency.

Ineffective pager management and reduced pager use has resulted in unnecessary spending

The Homeland Security and Emergency Management (HSEM) and Communications and Technology Management (CTM) departments share responsibilities for managing the City's contract for wireless communication services. CTM provides City departments with a basic user agreement for mobile communication devices. This guidance directs IT leaders in each individual department to develop their own policies and guidelines for using these devices. However, the CTM guidance does not provide any instruction for how to develop these guidelines or what they should include. Some departments have developed processes for assigning these devices, including pagers, but other departments have not.

In addition, HSEM does not appear to actively assess pager use in the City. One reason is that the City does not seem to have access to the data necessary to do so. Also, most other City departments are not effectively managing their pager users. As a result, the City has paid for pager services that are not being used or are no longer needed. For example, the City appears to have paid for pager accounts assigned to employees that no longer work for the City. Also, Some current staff assigned to a pager

account said they do not have a pager. Other staff with pagers said they do not know the location of their device, do not use their device, or no longer need the device to do their job.

Fourteen departments had active pager accounts for former employees

We looked at pager accounts billed to the City in 2020. At least 90 active pager accounts, across 14 departments, were for employees that no longer work for the City.[2] One of these accounts was assigned to an individual whose employment with the City ended in 2011. Other accounts were associated with employees that left employment between 2012 and 2019. We estimate the total cost for these accounts from the time an employee left through June 2020 at $13,000. In order to close an account, departments need to submit a ticket through CTM to the WMS vendor. It appears that departments do not consistently follow this procedure. As a result, the City continued to pay service fees for those accounts.

In addition, we surveyed employees with active pager accounts and 14% of respondents said they do not have a pager. This suggests that departments may be paying pager costs for employees that no longer use the service.

Many pager users appear to not use or need their pagers

Based on our analysis of Spok records over a five-month period in 2020, 270 pager accounts had not received any individual messages on their pagers during that period. Another 421 accounts received between one and five messages during that period, which is an average of one or fewer pages per month. Eliminating these 691 accounts, which represents 42% of all City pager accounts, would save the City approximately $37,000 per year.[3]

Exhibit 3: Over a Five-Month Period, 42% of City Pager Users Received One Page a Month or Less

Number of Pages Received	Number of Accounts	Percent of Accounts	Annual Pager Cost
0	270	16%	$14,634
Between 1 and 5	421	26%	$22,788
Between 6 and 20	236	14%	$12,798
Between 21 and 150	204	12%	$11,016
Between 151 and 500	137	8%	$7,398
Between 501 and 1,000	131	8%	$7,047
More than 1,000	239	15%	$12,906
Total	1,638		$88,614

SOURCE: Auditor analysis of Spok records, June 2020.

[2] We identified an additional 70 accounts where we could not determine an employee identification number and/or employment status. We identified three accounts where a pager was reassigned to another employee, but the name on the account was not updated.

[3] Spok staff said that a pager user showing zero messages received may have received messages via a group code. However, reporting limitations in the current system prevent staff from knowing how many, if any, of those messages were received.

The data analysis in Exhibit 3 closely corresponds to survey responses received from City employees with an active pager account. About 41% of respondents said they use their pager once a month or less. Also, 31% of respondents said they do not know where their pager is or indicated their pager is not currently functioning. Dead batteries were the most frequent explanation, but one employee reported they were "told upon hire to take out the battery and place [the pager] in [the] top drawer of [your] desk."

In addition, 66% of respondents said they could accomplish their work tasks without a pager. Staff indicated they find alternative devices, such as cellphones, more convenient and useful. Some staff said they receive messages sent from the WMS on their pager, but also receive it via other methods such as the Spok smartphone application, text messaging, or email. Other staff said they receive emergency communications from other communication platforms and not through the WMS.

Some departments are moving away from using pagers

Several departments have reduced or eliminated their use of pagers in the last year. At one point, pagers had unique advantages over other communication devices. Due to technological advancements, some users no longer find pagers necessary. For example, cellphones have become more reliable and most people now own a smartphone that serves multiple functions. In addition, cell service providers have the ability to prioritize calls and messages for emergency responders. This ability addresses previous concerns that critical staff may not get messages if the cell network is overwhelmed with calls.

According to our survey, 81% of respondents said they use their personal cellphone to conduct City business on a daily basis and 73% said that phone is their most useful communication device.

The biggest City user of pagers and the WMS, the Austin Police Department, significantly reduced pagers as of June 1, 2020. The department transitioned sworn officers from using pagers to installing the Spok Mobile App, a smartphone application, on City-issued cellphones. This shift from pagers to another WMS service saved the department approximately $11,000 per month.[4]

In 2020, Austin Water also significantly reduced pager use and the Austin Code and Law departments eliminated their pager accounts. The Downtown Austin Community Court eliminated their pager accounts in response to our audit inquiry. Additional departments, including Austin Public Library and Purchasing, indicated they should be able to eliminate pagers without impacting business operations.

It is unclear if departments eliminating pagers will result in savings. Some departments moved to City-issued cellphones, which cost significantly more than pagers. Cellphones also provide greater functionality that

> 33% of survey respondents said they use their City pager daily.

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[4] We noted that the Austin Police Department's City-issued cellphones, which serve multiple functions for officers, are significantly more expensive than pagers. For other departments that transition away from pagers, if cellphones or other devices are acquired, overall department costs may increase.

may result in other efficiencies. In addition, some departments remain connected to the WMS, but others have not. Without an overall plan specifying which employees and departments receive emergency communications, the City may not be able to effectively communicate in an emergency situation.

Regional partners report limited use of pagers and the WMS

The City uses the WMS to send messages to regional partners, such as the Travis County Sheriff's Office, Austin Emergency Service Districts, and Austin Independent School District. However, based on our interviews with staff from these agencies, it appears most of this communication is one-way. Partner organization staff said they typically do not use the WMS to communicate with the City. They said it is more common to communicate with City staff using email or through the Computer-Aided Dispatch system.

City departments have purchased multiple communication systems

The City does not coordinate efforts to assess communication system needs and capabilities.

While HSEM and CTM oversee the City's contract for the WMS, there is no Citywide strategic approach or direction for how departments should assess and fulfill their communication needs. As a result, each department approaches wireless messaging needs differently. Some departments use the Citywide WMS and others have opted to use communication platforms from other vendors. At least three large departments have contracts for communication platforms that include wireless messaging services separate from the City's WMS. These systems, each with a separate vendor, cost the City approximately $120,000 in fiscal year 2020.

In addition to providing wireless messaging services, department staff said these systems provide other critical capabilities including incident response tracking and continuity of operations planning. Department staff said they use these different systems because the City's current vendor does not fulfill all of their security and message-tracking needs. However, HSEM staff and the City's WMS vendor say they do offer many of these services and have all the capabilities and features departments need or will have these features, soon.

HSEM staff acknowledged the department has not effectively educated City departments on the services available through the City's WMS vendor. In addition, HSEM does not proactively provide emergency communication guidance to departments. This limited communication may be one reason why departments believe they need to purchase other systems and why those expenditures were not coordinated across departments. Because the City lacks a coordinated approach to both individual and mass communication needs, it is unclear if these other systems and associated costs are necessary or if they are duplicative.

The WMS may not effectively connect all necessary City employees in an emergency

There are several factors that may impact the City's ability to communicate in an emergency via the WMS. First, most, but not all, City departments are connected to the WMS and some departments have recently eliminated pager services. Other departments indicated they are thinking of reducing or eliminating pagers. HSEM staff said there is currently no comprehensive plan that specifies which departments and staff need to be notified in the event of an emergency. Also, some City pager users may not receive WMS messages because they do not use their device or it does not work. This combination of undefined requirements and incomplete coverage may result in critical communication lapses.

Second, the level of communication for pager users may be limited by the one-way nature of the messages. City pager devices can receive messages but cannot send them. If two-way communication is required during an emergency, the person receiving the page needs to use another device such as a cellphone, radio, or computer to respond. Many City employees assigned a pager already carry one or more of these devices. However, if cell and radio towers do not work, it would still be possible to communicate via a two-way paging device which operates off of a satellite signal. City staff said one reason employees do not carry two-way pagers is because those devices are bulky and would be burdensome.

Finally, it is not clear that the WMS is as consistently used by regional partners as City staff perceives. City staff said that thousands of messages are sent via the WMS every year. However, according to a report of messages sent to the partner coalition over a six-month period, only six messages had been sent during that time. As noted earlier, partner staff said they generally communicate with the City outside the WMS.

Without a better understanding of who needs to receive messages and how frequently pager messages are sent and received, it is difficult to determine if pagers are worth the cost.

Additional Observation 1

City departments may not be retaining WMS records in accordance with the City's records retention schedule. Also, the City's contract for wireless messaging services may not contain adequate information about records retention requirements.

City departments have their own records control schedules that specify which records need to be retained and for how long. Some departments may need to retain pager communications based on the message content while other departments do not. For example, the Austin Police Department retains all pager and WMS communications for two years. Pager communications at the Aviation Department tend to have only administrative value. Those messages do not need to be retained after they are no longer useful. Whether a department needs to retain messages or not, it is important that the requirements and responsibilities for records retention are clearly defined, understood, and carried out.

Some departments seemed to be aware of their responsibility for retaining applicable wireless messaging records. Other departments purchased their own communication platforms and reported using those platforms to track and retain applicable messages. However, not all City departments provided us with their records control schedules or a determination whether those schedules applied to their pager communications.

As noted in Exhibit 1, the WMS system is made up of the Paging Network and the SmartWeb. HSEM staff said the WMS vendor, Spok, was responsible for retaining messages sent via that system for two years. Spok staff said messages sent through the SmartWeb are retained for two years, but messages sent via the Paging Network are not retained. It does not appear that HSEM was aware of this limitation. According to a City purchasing specialist, such vendor requirements are typically stated in the contract's statement of work. However, the City's contract with Spok did not include these requirements. Future contracts should include these requirements and clearly define and communicate the vendor's responsibilities.

Additional Observation 2

Many City employees are issued more than one communication device to perform their job duties. While some redundancy may be needed, there may be room for departments to reduce the number of devices provided to staff.

The City supports the use of various mobile communication devices to help employees accomplish their work. This support includes issuing radios, cellphones, and pagers in addition to providing cellphone stipends. There does not appear to be Citywide guidance for how departments should assess an employee's communication needs, when devices or other support should be issued, or when the use of multiple devices is justified. In addition, the City does not comprehensively track how many employees have City-issued communication devices and stipends or if there is an overlap of such devices. This makes it difficult to evaluate their use and necessity.[5] As a result, the City may be spending money unnecessarily on multiple devices for individual employees.

Based on our analysis of the City's communication devices, cellphone stipends and City-issued cellphones cost the most per user, followed by radios. Also, staff reported many City employees are issued multiple communication devices. Of our survey respondents who reported having a pager, 46% also have a radio while 47% have a cellphone stipend and 13% have a City-issued cellphone. According to staff, each device serves a different function and can provide a needed redundancy. Staff in emergency response positions often need redundant communication capabilities so that communications are not compromised if one device does not work. However, it is not clear which departments and staff need these redundancies or how many redundancies are necessary.

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[5] Some, but not all, device information is kept centrally. For example, cellphone stipends are issued via the payroll system and kept by the City's Human Resources Department. Also, the City's WMS vendor has information for all City users of that system. The Wireless Communication Services Division tracks information on radios and is beginning to track information on City-issued cellphones, but this information is not comprehensive and is assessed by employee to show the overlap of devices.

Recommendations and Management Response

1

To ensure the City is only billed and paying for devices and services that are needed, the Office of Homeland Security and Emergency Management (HSEM) Director and Chief Information Officer should work with City departments and the vendor to reconcile current, needed accounts with those billed to the City. As part of this process, departments should instruct staff to turn in any pagers and identify services that are not being used.

Management Response: Agree

Proposed Implementation Plan: HSEM will contact each Department to identify and cancel any unutilized accounts or devices. HSEM will obtain confirmation from each department that this has been completed and will provide a citywide summary by the implementation deadline.

Proposed Implementation Date: June 30, 2021

2

To ensure the City has needed emergency communication capabilities while minimizing the acquisition of duplicate or unnecessary systems, the Office of Homeland Security and Emergency Management (HSEM) Director should work with the City Manager's Office and other stakeholders to assess the City's emergency communication needs (both internally and with regional partners), determine how to best meet these needs, and work to implement identified solutions.

Management Response: Agree

Proposed Implementation Plan: HSEM will lead this effort. The existing Wireless Messaging Team will be expanded to include additional key departments. The team will review the existing systems utilized within the City of Austin and partner agencies. The Team will assess current and future needs to determine if the existing systems can be combined to provide a better-coordinated, reliable, and cost-effective Wireless Messaging System.

The Team's recommendations will be provided to the City Manager and regional partners for review and approval. Following approval, implementation will be coordinated with future purchasing and budget cycles as guided by the Team's report and may be contingent on funding.

Proposed Implementation Date: March 31, 2022

3

To ensure City communication devices are effectively managed, the Chief Information Officer should work with stakeholders to develop and provide guidance that clearly defines expectations. At a minimum, this guidance should include:

a. defined roles and responsibilities for creating policies and procedures for assessing comunication needs and procuring, distributing, managing, and retiring systems and devices;

b. appropriate timeframes for management to periodically review the performance of City and departmental systems and devices, including usage and cost, as well as to update the City's guidance, policies, and procedures to ensure it remains relevant with current technology; and

c. methods to ensure policy expectations and updates are regularly communicated to departments and partners.

Management Response: Agree

Proposed Implementation Plan:

Phase 1
The Communications and Technology Management Department (CTM) will be responsible for developing a standard operating procedure (SOP) specifically for the use of pagers that includes the following: how to procure devices, how to retire devices, what to do if a device is lost or stolen, and how to transfer devices to other employees. This SOP should be reviewed for required updates, improvements and dissemination to participating departments and external partners at least annually, once approved.

Phase 2
CTM will work with the Office of Homeland Security and Emergency Management (HSEM) once the assessment from Recommendation 2 is complete to make updates to or completely revise the SOP developed in phase 1. This SOP will include either written guidance or an advisory committee that will assist departments with evaluating their business needs against the available, existing emergency notification systems identified in the assessment. It will also include steps to evaluate cell phone stipends and lifecycle management of cell phones and other smart devices used for emergency notification purposes.

Proposed Implementation Date: **Phase 1:** June 30, 2021
Phase 2: October 31, 2022 (completion of Recommendation 2 + 7 months)

Management Response

MEMORANDUM

TO: Corrie Stokes, City Auditor

FROM: Juan Ortiz, Director, Homeland Security and Emergency Management

             Chris Stewart, Interim Chief Information Officer, Communications & Technology Management

DATE: January 11, 2021

SUBJECT: Paging Audit Report

Thank you for the opportunity to respond to the 2020 Paging Audit Report. The Office of Homeland Security and Emergency Management (HSEM) and the Communications and Technology Management Department (CTM) have reviewed the report and agree with all recommendations in this audit.

As noted in the report, the City's Wireless Messaging System was updated in recent years to enable messaging by SMS "Text" as well and E-Mail and traditional Pager. Users may receive messages through any or all of these methods. We will redouble our efforts to ensure that the right individuals throughout the City are connected to the system through the most appropriate method(s) to meet their business needs.

As cited in the report, not all City employees are part of the Wireless Messaging system. This may allow gaps in critical messaging. We will review potential shortfalls, along with budget impact of changes as part of our overall Wireless Messaging System review.

While HSEM and CTM jointly lead the operational and technological management of the overall Wireless Messaging System, they have counted on the various City Departments and Offices to ensure that their information is current in the system and that they are being billed appropriately. HSEM, with support from CTM, will work with each department to ensure that they review and reconcile their paging accounts. This information will be compiled into a Citywide summary.

HSEM, with support from CTM, will expand the existing Wireless Messaging Team, which provides overall Wireless Messaging System oversight, to ensure that departments that are using other messaging systems have the opportunity to be part of the future Wireless Messaging System's design. Systems will be combined if possible, practical, and cost-effective.

CTM will initially develop a Standard Operating Procedure (SOP) for citywide pager management. CTM will then use HSEM's emergency communications needs assessment to build upon or completely revise the SOP to include emergency notification system guidance and other devices that may be used for notification purposes.

It has been a pleasure working with the Office of the City Auditor through this process. Please contact us at chris.stewart@austintexas.gov , 512-978-1535 or juan.ortiz@austintexas.gov , 512-974-0461 if you have any questions.

cc: Nuria Rivera-Vandermyde, Deputy City Manager

    Rey Arellano, Assistant City Manager

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Scope

The audit scope included pager management and use in fiscal years 2019 and 2020.

Methodology

To complete this audit, we performed the following steps:

- reviewed the City's contract with the City's wireless messaging vendor (Spok);
- reviewed and analyzed wireless communication records for selected City departments;
- reviewed and analyzed Spok billing records for fiscal years 2019 and 2020 for selected City departments;
- reviewed and analyzed Spok user records for fiscal year 2020;
- interviewed key management and staff from the City;
- interviewed key staff from Spok;
- interviewed key staff from the City's regional partner organizations;
- conducted a survey of City pager users and analyzed responses;
- reviewed records control schedules and practices for selected City departments;
- evaluated internal controls related to pagers and mobile communication devices;
- evaluated the risk of fraud, waste, and abuse with regard to the City's management of pagers and mobile communication devices.

Audit Standards

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The Office of the City Auditor was created by the Austin City Charter as an independent office reporting to City Council to help establish accountability and improve City services. We conduct performance audits to review aspects of a City service or program and provide recommendations for improvement.

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