

OFFICE OF THE INSPECTOR GENERAL
City of Chicago



REPORT OF THE INSPECTOR GENERAL'S OFFICE:

***INVESTIGATION OF THE CHICAGO DEPARTMENT OF
AVIATION'S USAGE OF GPS TECHNOLOGY***

MARCH 2012

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To the Mayor, Members of the City Council, the City Clerk, the City Treasurer, and the residents of the City of Chicago:

The City of Chicago Office of Inspector General (IGO) recently concluded an investigation into the waste of City resources in the Chicago Department of Aviation (CDA). The investigation revealed that from 2008 through 2010, the CDA wasted City funds by purchasing, and then failing to use, global positioning system (GPS) technology for cell phones and vehicles.

Moreover, the CDA continued to pay for these GPS services even after it became apparent that the technology did not work in airport terminals and did not meet the CDA's needs. The IGO's interviews with numerous CDA employees responsible for the GPS technology revealed a significant failure of management oversight and underutilization of resources, spanning the terms of three CDA commissioners and involving multiple employees from the top down. Given that the long-standing problem was so widespread and persisted through multiple changes in department administration and organization, the IGO regarded the matter as programmatic in nature. As such, we made no recommendations for disciplinary action.

Instead, the IGO recommended that the CDA immediately take the steps necessary to comply with the City's existing mobile communications and GPS policies to ensure full and effective use of its GPS technology.

CDA Commissioner Rosemarie Andolino agreed with the IGO's findings and recommendations. In response to the IGO's investigation, the CDA disconnected service for 122 cell phones and discontinued ineffective GPS services for 13 vehicles in the fall of 2011. The IGO commends these first steps.

The IGO recommended that the CDA review best practices for use of GPS technology and establish comprehensive, written policies and procedures regarding GPS and other technology initiatives. The IGO also recommended that these policies include regular audits of technology use, costs, and any available alternatives that may provide more cost-effective options. Finally, the IGO recommended that the CDA review current operating procedures to ensure that appropriate CDA employees are held accountable for the full and effective use of any assigned technology as well as the implementation of all applicable policies.

In her response, Commissioner Andolino further pledged to continue "to review the inventory of mobile communications devices and services to confirm accuracy, continued justification and value to the City."

The IGO has calculated that these practices wasted at least \$171,000 over four years. It is important to note that this review did not address City employees' use (or non-use) of the

underlying equipment, and instead focused solely on the GPS. As such, the prospect for additional waste remains. For example, in our review, we often found that, in addition to the GPS function going unused, there were no records showing the phone itself had ever been used.

This example, while seemingly small in comparison to a budget as large as the CDA's, provides an important reminder to all City managers to regularly review ongoing service contracts, and to ensure appropriate policies are followed when using City funds to purchase new equipment and service. This is especially important for non-essential contracts such as GPS services.

As always, I welcome ideas your ideas, comments, suggestions, questions, and criticisms.

Respectfully,

A handwritten signature in blue ink, appearing to be 'J. Ferguson', written in a cursive style.

Joseph M. Ferguson
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I. INTRODUCTION

The Inspector General's Office (IGO) has concluded an investigation, which revealed that from 2007 to late 2011, the Chicago Department of Aviation (CDA) paid for global positioning system (GPS) technology on cell phones and vehicles but never used the vast majority of its GPS equipment. Moreover, the CDA continued to pay for these GPS services even after it became apparent that the technology did not work in airport terminals and did not meet the CDA's needs. The IGO's review of GPS and cell phone billing records for a sampling of four months in 2009 and 2010 established that the GPS technology on 105 of the CDA's 155 GPS-equipped cell phones had never been used. Similarly, the IGO's review of GPS records for a sampling of three months in 2011 showed that the GPS units on 34 CDA vehicles had never been used. In sum, the IGO's review established that from 2008 through 2010, the CDA spent an estimated \$248,000 in GPS tracking services for cell phones and vehicles, the vast majority of which it never used.

The IGO initiated this investigation following a preliminary review of GPS records showing the CDA's minimal use of its GPS technology. The investigation revealed a significant failure of management oversight and underutilization of resources, which spanned the terms of three CDA commissioners and involved multiple employees from the top down. The problem has been long-standing and widespread and persisted throughout multiple changes in department administration and organization. The IGO therefore does not make any recommendation for disciplinary action but recommends that the CDA take the following actions:

1. Immediately take the steps necessary to comply with the City's existing mobile communications and GPS policies to ensure full and effective use of its GPS technology. In the fall of 2011, in response to the IGO's investigation, the CDA disconnected service for a number of cell phones and discontinued ineffective GPS services for nearly all vehicles. The IGO commends these first steps.
2. Work with the Department of Innovation and Technology (DoIT) and the Office of Budget and Management (OBM) as appropriate to review best practices for use of GPS technology and to establish comprehensive, written policies and procedures regarding GPS and other technology initiatives. The IGO recommends that these policies require regular audits of technology use, costs, and any available alternatives that may provide more cost-effective options.
3. Review current operating procedures to ensure that appropriate CDA employees are held accountable for the full and effective use of any assigned technology as well as the implementation of all applicable policies.

II. BACKGROUND

A. XORA GPS TimeTrack System

The XORA GPS TimeTrack system (XORA) is a software application used by the City to record and analyze GPS data from cell phones. The City began using GPS technology to track

cell phones in various departments in the mid-2000s, and the CDA began using XORA in 2006. Following a series of requests to OBM, the CDA received a total of 155 XORA-equipped phones: 100 i355 Nextel GPS radios for members of facilities, trades, and support staff at O'Hare International Airport in March 2006; 30 i355 Nextel GPS radios for members of the trades at O'Hare in April 2007; and 25 i355 Nextel GPS radios for members of the facilities group that supports all the terminals at O'Hare in August 2007. As justification for its requests, the CDA stated that the radios would assist management staff to ensure manpower resources are being used effectively, improve the CDA's ability to communicate and provide a greater quality of service to customers, help management track the progress of work orders, and provide the location of resources. The requests stated that the service for the radios would be billed to the O'Hare Revenue Fund. Based on the IGO's review of Sprint/Nextel bills for the CDA's XORA-equipped phones, the XORA GPS feature cost an additional \$16 in XORA monthly fees and \$13 in data access per phone each month, for a total of \$29 per month. After applicable monthly discounts, the CDA paid approximately \$23 per phone for GPS service. These costs fluctuated somewhat, but based on the IGO's review of a sampling of the Sprint/Nextel bills, the CDA paid an estimated \$43,197 annually from 2008 through 2010 for GPS services on 155 phones.

B. Chicago Mobile Asset Tracker (CMAT)

CMAT is a custom, map-based software program that allows the City to visually track assets (vehicles and phones) equipped with GPS locators in near-real time. CMAT collects and displays GPS data from multiple sources, allowing City departments to view GPS information from GPS locators installed on City vehicles as well as from XORA for City cell phones. The City began using CMAT in various departments in 2003, and the CDA began using CMAT in 2005. DoIT informed the IGO that WebTech Wireless installed GPS locators on 53 of the CDA's vehicle assets and hosts the server used to monitor the vehicles via the CMAT system. Using the same data provided by XORA, the CDA also tracks 30 cell phones in CMAT. From 2008 through 2010, the CDA paid an average of \$38,235 annually to track assets in CMAT.

C. Relevant City Rules and Policies

1. City Mobile Communications Policy

The City's Mobile Communications Policy, as issued in January 2006—before the CDA first received GPS-equipped phones—provides the policies and procedures for all City-issued mobile communications devices and services for all City departments. The policy provides that each department head is responsible for appointing a departmental cell phone coordinator, annually reviewing the inventory of devices and services to confirm “continued justification and that the selected services provide the best value to the City,” and to annually terminate or suspend unneeded services.

In an April 19, 2010 memorandum to all department heads, OBM announced that it and DoIT would immediately begin assisting departments with annual cell phone and mobile device audits and announced revisions to the Mobile Communications Policy not relevant here. The OMB memorandum explains that OBM budget analysts assisting with the audits “will be looking for irregularities including: devices that are assigned to a user but show no usage; users assigned

to multiple devices; and users who no longer work for the department.” The memorandum states that OBM will terminate service on devices that are not being used in conformity with the Mobile Communications Policy.

2. 2007 CDA GPS/Nextel Phones Policy

A memorandum issued to all CDA trades employees and foremen dated July 9, 2007, provided a “reminder” that the GPS/Nextel units must be carried on the employee’s person and in operation at all times during a shift. If the units do not work properly, employees must notify their foreman or general foreman.

3. Citywide CMAT Policy

The Citywide CMAT Policy, issued January 27, 2010 from the Mayor’s Office to all department heads, established the policy for use and management of the CMAT system and GPS tracking equipment. The policy provides that department heads and CMAT administrators are obligated to “facilitate the full use and capabilities of the CMAT system and related equipment via its associated reporting capabilities or, to otherwise deactivate the equipment. . . .” In April 2010, the Mayor’s Office and OBM announced a mandatory CMAT policy and best practices training session. A memorandum to all City departments using CMAT stated that the purpose of the training was to ensure that all departments are aware of the capabilities and proper use of the software and equipment and noted that in-depth trainings would follow.

III. SUMMARY OF INVESTIGATION

A. Review of CDA GPS-Equipped Cell Phone Usage and Costs

The IGO reviewed the CDA’s use of its GPS-equipped cell phones and the costs for the cell phones and GPS services during the period of November 2009 to July 2010. To conduct the review, IGO investigators obtained XORA GPS tracking records and compared them to Sprint/Nextel billing statements for each CDA cell phone equipped with GPS.¹ The Sprint/Nextel bills show that during this period, the CDA was paying for cell phone service, including GPS service, for 155 cell phones. A XORA TimeTrack report from July 6, 2010, however, shows that only 142 cell phones were entered in the XORA tracking system used to view and track the GPS data. The XORA report revealed that of the 142 phones, 92 showed no record of ever being tracked in the XORA system. When accounting for the 13 additional phones for which the CDA also pays for GPS service but has not entered into XORA, a total of 105 (68%) of the CDA’s 155 GPS-equipped phones have never been tracked.

¹ The CDA also tracks 30 of its GPS-equipped cell phones using CMAT. DoIT informed the IGO that because CMAT draws GPS data from XORA, XORA reports are the most accurate for tracking cell phones. The IGO therefore reviewed only XORA reports for purposes of examining CDA cell phone tracking.

1. XORA TimeTrack Report Analysis of CDA Cell Phone Users

IGO investigators reviewed a GPS TimeTrack report showing 142 CDA GPS-equipped phones tracked in XORA as of July 6, 2010. The report lists the phone number, assigned user name, and last tracking time, among other information. In order to utilize the GPS tracking in XORA, the CDA must enter each phone number and the assigned user name in XORA. If an assigned user leaves or changes, the CDA must update XORA with the new user's information.

The IGO's review of the users assigned to the CDA's cell phones in XORA revealed that the CDA had not kept XORA updated or reassigned phones when they were no longer needed. IGO investigators cross-referenced the list of assigned users in XORA with City personnel database records to find that as of July 2010, only 113 phones were assigned to active City employees. Nineteen phones were either not assigned to any employee or labeled as "floaters." Another 10 phones were listed in XORA as assigned to specific users but were not assigned to active City employees: four phones were assigned to users who, as of July 2010, had been terminated from City employment for at least eight months, three users had been off work on duty disability for at least six months, one user had been deceased for nearly a year, and two users could not be identified in City personnel database records. In some instances, the CDA had updated XORA to show if a particular employee was no longer using the phone or if the phone was not in use by entering information in the name field, indicating, for example, that the employee had died or had a "bad phone" or if a phone was "never issued." In light of these notations and the lack of any GPS tracking times, it appears that the CDA simply did not reassign the phones to active employees or have the phones repaired. As detailed below, however, Sprint/Nextel bills show that the CDA continued to pay for the phones.

Of the total 155 GPS-enabled phones assigned to and paid for by the CDA, the July 2010 XORA GPS TimeTrack report shows that just 50 (32%) of the GPS-equipped phones had ever been tracked in XORA. Of the remaining 105 phones, a total of 92 phones on the XORA report reflected no "Last Tracking Time," and 13 phones did not even appear in XORA. Accordingly, these 105 phones had never been tracked in XORA.

2. Analysis of Sprint/Nextel Billing Statements

IGO investigators next reviewed the CDA's Sprint/Nextel billing statements for all GPS-equipped phones assigned to the CDA for the months of November 2009, January 2010, February 2010, and June 2010. Each statement shows a breakdown of charges for each phone number, along with the phone's monthly activity.

Consistent with the XORA report, the billing statements show that only 50 of the 155 phones had any GPS activity each month. The remaining 105 phones did not use the GPS service during any of the four months reviewed.² Nevertheless, the CDA was responsible for paying the full cost of GPS service for each phone regardless of whether it was used. Although the rates varied slightly from month to month, XORA-related fees, including the required data

² The IGO notes that during the four individual months reviewed, 90 (58%) of the cell phones had no record of use for any of the phones' functions (telephone, direct connect, data, or GPS).

plan, per phone equaled approximately \$23 per month after a business service discount provided by Sprint/Nextel. A review of the Sprint/Nextel bills for the four sample months showed that the average cost per month (minus applicable discounts) for XORA on the 155 phones was \$3,600. The average cost per month (minus applicable discounts) for XORA on the 105 phones for which there was no record of XORA use was \$2,439.

Using the average monthly cost to project an estimated annual cost, the IGO estimates that the CDA paid an annual sum of approximately \$43,197 for GPS services on all 155 phones. When looking at just the 105 phones for which GPS services were never used, the CDA spent an estimated annual sum of \$29,263. Assuming the same billing rates and same usage from 2008 (the time by which the CDA had received all 155 cell phones) through 2010, the CDA spent approximately \$129,591 on GPS services for all 155 cell phones. For the 105 cell phones for which GPS services were never used, the CDA spent an estimated \$87,788 during this three-year period.

B. Review of CDA GPS-Equipped Vehicles CMAT Service

The IGO next reviewed the CDA's use of its GPS equipment for vehicles and the costs of vehicle tracking through CMAT. IGO investigators reviewed records provided by DoIT showing the CDA's costs associated with CMAT for years 2008 through 2010 as well as CMAT Asset Posting Statistics Reports ("CMAT Reports") for all CDA assets equipped with GPS for the months of April, July, and August 2011.

According to DoIT, the total amount paid for the two services necessary to track CDA assets in CMAT—WebTech Wireless Application Service Provider (ASP) services and AT&T service provider services—for 2008 through 2010 totaled \$114,706. DoIT further informed the IGO that the cost of installation for each vehicle locator was \$85, making the total cost of installation for the CDA's 53 GPS-equipped vehicles \$4,505.³ In total, therefore, the CDA spent \$119,211 on installation and service for the CMAT program from 2008 through 2010.

The three CMAT Reports obtained include the CDA's GPS-equipped vehicles (buses, pickup trucks, SUVs, "tank trucks F/D", and cargo vans).⁴ The reports list the total number of vehicles equipped with GPS technology and when the GPS technology last "posted." A review of these reports established that during each of the three months reviewed, an average of 35 vehicle assets had no postings on record, representing 68% of the CDA's GPS-equipped vehicle assets.

³ In April 2011, the CDA had a total of 53 vehicle assets equipped with locators. In July 2011, that number dropped to 50, and in August 2011, just 49 vehicle assets were equipped with locators. The CDA informed the IGO that four vehicles had been sold during this period.

⁴ The CMAT reports also include 30 of the CDA's cell phones and when they last posted. This data is identical to that reported in XORA.

C. Interviews

IGO investigators interviewed a senior DoIT official and numerous mid and high-ranking CDA employees responsible for the use of XORA and CMAT GPS technology at the CDA.

1. Senior DoIT Official

IGO investigators interviewed a senior DoIT official who described the XORA GPS TimeTrack System and CMAT. DoIT is charged with enabling the XORA technology and ensuring it is operational but not monitoring its use. The DoIT official believed that the City had hired a company to disable the feature on each Sprint/Nextel phone that allows the user to turn off XORA. Therefore, unless the phone is turned off, XORA should be activated at all times. In 2010, the Mayor's Office and the OBM began working to standardize the departments' use of XORA and in April 2010 issued the memorandum announcing annual cell phone and mobile device audits.

With respect to CMAT, DoIT sends a monthly CMAT Asset Posting Statistics Report to departments with GPS tracking units attached to their vehicles as a tool to help them manage their employees and vehicles. DoIT does not monitor GPS use; rather, it is the user department's responsibility to do so. The senior official explained that an asset might not post on CMAT for several reasons. For example, if a vehicle is not used for a week or more, the GPS unit's battery may be depleted, or the unit might have been tampered with or damaged. DoIT had a record of two work requests for four of the CDA's GPS locators since 2008. Those requests show that in March 2010, the CDA had the GPS locator removed from one vehicle and in July 2011 requested the removal of three more locators but the work was not yet completed. The CDA did not report any damaged GPS locators. In 2011 the City began paying a lower, fixed rate of \$120,000 for all CMAT equipped vehicles City-wide, and each department began paying according to the number of vehicles with a GPS unit from WebTech Wireless installed. DoIT calculated the CDA's portion for this service as \$5,750 in 2011 and projected the same for the 2012 budget.

2. CDA Information Technology and Telecommunications Employees

The IGO interviewed several high-ranking employees within the CDA's Information Technology and Telecommunications Section (IT Section) about the CDA's use of GPS equipment. IT Section employees explained that they have no involvement with the CDA's CMAT-equipped vehicles but do work with the XORA-equipped phones. IT Section employees explained that they are responsible for setting up and activating cell phones for CDA employees, reviewing the bills, and training the tradespeople on how to use the GPS function, including how to "job in" and "job out" before beginning and completing tasks. By contrast, the supervisors of the various areas and trades within the CDA are responsible for assigning phones, monitoring usage and GPS, and returning phones no longer in use.

At the request of the IGO, a senior IT section employee reviewed a copy of a XORA GPS TimeTrack report for the CDA, generated on July 6, 2010. The employee explained that the cell phone numbers identified as "floaters" on the XORA report, are phones that are assigned to the CDA but not to anyone in particular, and likely had not been used by anyone. The column

labeled “Last Tracking Time,” provides the last date and time the GPS was enabled on the phone. If no date appears in that column, then the GPS was never enabled, and it is possible that the phone was never used. Where the XORA reports show two phone numbers next to one individual’s name, the phone previously assigned to that individual had probably been redistributed to another employee, and the IT Section was not properly notified. The employee commented that the CDA had no process in place for supervisors to turn in a phone if it is unneeded. The employee acknowledged receiving a memorandum titled, “GPS/Nextel Phones” in July 2007, but stated that the policy in the memorandum “fell by the wayside” a few months after it had been issued and had not been enforced.

Employees within the IT Section differed in their recollections of exactly when the CDA began using GPS-equipped phones, but one senior manager recalled that GPS was introduced at the CDA as part of a mayoral initiative in 2006 or 2007. In retrospect, the employee commented, the process was rushed and poorly planned because the CDA leadership was trying to appease the Mayor.

One IT employee opined that the GPS technology is a waste of money for the CDA as it does not work inside the terminals and many supervisors do not bother to monitor or enforce their employees’ use of the technology. The employee asserted that managers in both the IT and Trades Sections had been aware of the waste in XORA payments from the beginning, and that the employee had personally spoken to a senior manager in the IT Section about deactivating GPS for the workers in the terminals and using the savings to pay for GPS Nextels for field personnel. The employee was assured that the issue would be raised with more senior management but never heard anything more.

A second IT Section employee also acknowledged that the GPS technology did not work in certain areas of the airport but believed that other XORA features worked in those places and performed the same basic function. The employee believed the GPS function is really only useful for “geo-fencing” to monitor if employees leave airport property. After the GPS-equipped phones were distributed, the employee became aware that only a fraction of them were being used or they were being used infrequently. In approximately late 2008 or early 2009, the employee reportedly notified high-ranking CDA officials that the phones were not being used. The officials responded by stating that they would speak to those in the Trades Section but the employee never heard if the meeting occurred. The employee continued to notice that the phones were rarely used and continued to report the issue.

In contrast, a third senior IT Section employee stated that the issue of the CDA’s use of GPS-equipped cell phones was first raised in early 2011 after the IGO’s interview with another IT Section employee. Before the interview, the employee contended, no one had ever mentioned that there was an issue with the XORA phones.

In response to the IGO’s ongoing interviews of CDA employees, IT Section employees all reported that the CDA had taken several steps to address the issues discussed in the interviews. One day after the IGO’s interview with an IT Section employee on January 5, 2011, the employee requested that Sprint immediately disconnect 22 direct-connect/GPS devices. Also in response to the IGO’s interviews, several IT section employees reported that senior

management at CDA met in January and April 2011 to discuss the use of XORA/GPS Nextels. At the meeting, Trades Section employees reported that they had long complained that tradespeople do not use the phones equipped with XORA because the GPS function does not work in the tunnels at O'Hare, several of the phones are broken, and there is no one to monitor their use. They further reported that the phones' "job in/ job out" feature is unnecessary because the department already has its own work management system. It was further reported that broken phones were being kept in a box rather than returned to the IT section and that phones assigned to certain individuals were being shared among shifts. At the second meeting, the CDA decided to reprogram the phones to use only "geo-fencing" and direct connect capabilities.

3. CDA Trades Section Employees

The IGO also interviewed three employees in the Trades Section and one high-ranking CDA official about the use of XORA phones. Two employees in the Trades Section, who were both closely involved in the implementation of XORA-enabled phones, explained that the XORA technology was initially intended as a way to improve the supervision of the tradespeople and reduce paperwork. By the fall of 2006, the first batch of phones was distributed to the Trades Section. Both trades employees, however, reported that problems with the GPS phones became apparent immediately. The GPS did not function in certain underground areas of the airport, and once the employees resurfaced, the phones registered at the closest cell tower, which could be a long distance from where they actually were. In addition, phones would be activated but would not register in the XORA system. The two Trades employees checked the XORA reports daily, watched the XORA system live, and spent an abundance of time in 2007 attempting to account for XORA users who did not register in the system or appeared to be out of their assigned locations. They regularly notified the IT Section about problems they were having with the phones. The Trades Section employees asserted they were meticulous about reporting damaged equipment to the IT section and also reporting transfers in phone possession. The two Trades employees provided numerous documents to IGO investigators, including training attendance sheets, various XORA reports and tracking documents, reports regarding lost or damaged phones, and email correspondence between the Trades and IT Sections regarding the operability and utility of the XORA phones. These communications begin in 2006 and continue through 2011, and reflect the difficulties the Trades Section had with the phones and the Trades Section's attempts to rectify them. By October 2007, the Trades employees had had enough and asked the IT Section to discontinue the XORA reports. From that point on, they explained, the tradespeople used the XORA phones for only the Nextel "Push-to-Talk" (PTT) feature, which worked in all areas of the airport.

In spring 2010 (after the IGO's initial interview with an IT Section employee), the IT Section instructed the Trades Section to get the XORA users list "cleaned up," because the CDA was paying for the feature and no one was using them properly. As a result, the Trades Section worked to make sure the IT Section had the proper documentation on lost or stolen phones, received broken or damaged phones, and figured out which phones were assigned to which users. Also in spring 2010, the OBM came out to the airport to talk about the benefits of GPS technology but there was no discussion of the phones' limited capabilities at the airport. It wasn't until April 2011, the two Trades employees reported, that they learned that the CDA had been paying extra for the GPS function.

Despite the ongoing problems with the GPS phones and the fact that the department was paying for them, a third Trades employee, a senior manager, reported to the IGO that it was not until January 2011 that the manager became aware that there was even GPS on the tradespeople's phones. The senior manager learned that the phones were equipped with GPS after the IT Section requested in January 2011 that all of the tradespeople turn in their phones because the GPS wasn't working and the IT Section wanted to upgrade the system.

Similarly, a high ranking CDA official also reported surprise to learn that the CDA had GPS-equipped phones and vehicles. The official explained that in March or April of 2011, as a result of the blizzard in February 2011, the official convened a meeting of CDA management staff, including Trades Section managers, to discuss implementing GPS technology at O'Hare. At that meeting, the official was informed for the first time that the CDA had an inventory of GPS-equipped cell phones that were not being used because they did not operate in many areas of the airport. Based on this information, the official estimated that the phones were being used to approximately one-third of their individual functionality; whereas the GPS feature comprises approximately two-thirds of the functionality of each phone. The official was unaware that the CDA had continued to pay for phones that were broken or assigned to deceased or terminated employees. IGO investigators provided the official a copy of the April 2010 OBM memorandum regarding a mobile device audit, which the official acknowledged likely receiving when it was issued, but did not pay attention to it, since the official was completely unaware that the GPS equipped phones existed at the airport in the first place. The official also admitted a lack of familiarity with the CMAT system and was unaware that there were already a number of CDA vehicles equipped with GPS tracking units.

In September 2011, the official reported to the IGO that, immediately following the interview with the IGO, the official instructed the IT Section to discontinue cell phone service, including GPS, for all CDA cell phones that were not being used. The phones, including GPS, would be reactivated on an as-needed basis.

4. CDA Senior Manager Interviewed About CMAT

IGO investigators also interviewed a senior CDA manager about the use of GPS units on CDA vehicles. The senior manager explained that CDA primarily sought GPS devices to prevent runway incursions by CDA vehicles. The CDA also wanted the GPS devices to track plows and the dispensing of deicer, monitor vehicle engine issues such as fuel level or water pressure, and to signal if a vehicle was stalled on a runway. All of these features, however, cost extra, so the CDA decided to try the CMAT units using only the GPS tracking feature. In addition to the GPS, a special security feature was placed on the fuel tankers only, to prevent unauthorized drivers from commandeering them. The manager noted, however, that the GPS tracking feature was never ideal for the CDA's needs because there is a 10-second delay in locating assets on the CMAT system, which prevented the CDA from pinpointing a vehicle's exact location.

The CDA had used the CMAT system for a little over one year, the senior manager explained, when a high-ranking CDA official sent a memorandum to the Mayor, notifying him of

problems. The memorandum, dated January 18, 2007, states that 20% of the CDA's airfield fleet was equipped with GPS, but notes that "[t]he inability of live tracking (ten second delay) remains a concern with vehicles operating near active runways" and states that the CDA was "reluctant to continue funding a technology that cannot provide real time projections for critical airfield areas." Finally, the memorandum states that the CDA was investigating an alternate technology in lieu of CMAT GPS. The senior manager never heard anything more after the memorandum was sent.

The senior manager was not on the distribution list for CMAT reports and no one had been monitoring the reports. When the IGO investigators showed the manager the entire list of CDA vehicle assets with CMAT technology as of August 30, 2011 (a total of 49 vehicles in August 2011), the manager was surprised to find out that so many were equipped with the GPS units and was surprised to learn that so many of the CMAT units had not been recently used. The senior manager later explained to the IGO there had been confusion about the number of CDA vehicles equipped with CMAT because some vehicles were not visible in the WebTech CMAT application but were listed in the XORA application, a problem that was later corrected. The manager had been unaware that the vehicle assets were in the wrong application and never even thought to look for the assets because the manager had assumed the GPS program through WebTech was defunct since the CDA's 2007 memorandum to the Mayor.

The senior manager further explained that the CDA's budget had traditionally included a line item for Webtech Wireless but that no money ever appeared to be taken from it. He later learned that the service was paid for out of the City's general fund. For the 2012 budget, however, the line item for Webtech Wireless has been removed, and the CDA is planning to implement a technology more suitable to its needs and endorsed by the FAA, called ADS-B Surface Surveillance. Finally, all WebTech GPS accounts except for the five fuel tankers, were disconnected on August 31, 2011.

IV. ANALYSIS

The IGO's investigation clearly established that from 2007 to late 2011 the CDA paid for a substantial amount of GPS technology that it did not use, due in part to poor functionality of the technology but moreover, a failure of management oversight at the very highest levels. From 2008 through 2010 alone, the CDA spent an estimated \$248,000 on GPS technology to track cell phones and vehicles. But in interviews with the IGO, several senior CDA managers acknowledged that, from the very start, both the XORA and CMAT technologies did not work at the airport and did not meet the department's needs. Nevertheless, the CDA continued to spend money on these technologies even after CDA employees had all but abandoned using them. GPS technology has been used as an effective management tool in many City departments and the IGO recommends its use where possible. The IGO's review of the CDA's use of GPS technology, however, revealed that CDA leadership—over the course of three commissioners' terms—rushed to implement technology that did not suit the CDA's purposes, failed to fully utilize the equipment, and failed to promptly or effectively resolve issues as they arose.

In early 2006 and late 2007, in a process that a senior CDA employee described as "rushed and poorly planned," the CDA requested a total of 155 GPS-equipped cell phones for

use at O'Hare by members of the facilities, trades, and support staff. The phones were intended to ensure effective use of manpower resources and improve customer service. As explained by four different CDA employees charged with administering the GPS tracking, however, the problems with XORA became apparent immediately. The GPS did not register in the airport terminals, provided inaccurate information, or did not register in XORA.

The IGO's analysis of XORA and CMAT reports along with Sprint/Nextel bills shows that as of July 2010, the GPS function on 105 of the CDA's 155 cell phones had never been used. Similarly, as of August 2011, 35 vehicles, representing 68% of the CDA's GPS-equipped vehicle assets, had no postings on record. Nevertheless, from 2008 through 2010, the CDA spent an approximate total of \$129,591 on GPS services for cell phones and \$119,210 for GPS on vehicles, a total of \$248,811, or \$82,937 each year in GPS service payments. These payments continued despite the fact that problems with both technologies had been identified by late 2007.

	Total Number of GPS-Equipped Assets	Number of Assets with No Record of GPS Usage	% of Assets with No GPS Usage	Cost of GPS Service for All Assets 2008-2010
Cell Phones	155	105*	68%	\$129,591
Vehicle Assets	49	35**	66%	\$119,210
Total	204	140	69%	\$248,801

*As of July 2010. **As of August 2011.

IGO interviews with CDA employees show that those employees who worked directly with the technology reported the problems to their superiors but received little or no response. In late 2007, after months of working with the IT Section to reconcile inaccurate XORA reports, the Trades Section employees requested that the XORA reports simply be discontinued. In approximately late 2008 or early 2009, an IT Section employee reportedly informed senior CDA management of the problems with the phones, but nothing was done in response to the employee's repeated inquiries. By contrast, three senior managers denied ever hearing of problems with the cell phones until early 2011, after the IGO began conducting interviews, and two of those managers had not been aware that the CDA even had GPS-equipped phones and vehicles.

With respect to the CDA's use of CMAT for vehicle asset tracking, a senior CDA manager reported that the CDA used CMAT for just over a year before reporting problems with the technology directly to the Mayor. When the CDA first installed GPS locators on its vehicles in 2005, the intent was to use the technology to prevent runway incursions. But in January 2007, the CDA reported that the technology had a ten-second delay, making its use for runway operations questionable. More than four years later, the senior manager responsible for CMAT tracking was not receiving CMAT reports showing CDA's vehicles and many of the vehicles did not show up in the correct system. Moreover, the senior manager had never sought to monitor the vehicles in CMAT, assuming that the program had been discontinued after the CDA's report to the Mayor.

The CDA's senior management over the course of three administrations clearly failed to address the ongoing problems with the implementation of GPS technology and never followed the City's Mobile Communications Policy, which requires an annual inventory review to confirm

continued justification for services. The IGO notes, however, that the CDA has experienced frequent turnover in the Commissioner position, and some turnover in the management of the IT Section in 2009, which occurred long after the issues with GPS tracking of cell phones came to a head. The GPS technology quickly fell into disuse, and as a result, various senior managers were not even aware the CDA possessed the technology. As one high ranking official explained, when the OBM directed City departments to conduct a “mobile device audit” in 2010, the CDA did not reassess its mobile device/GPS needs as directed; rather it ignored the directive, believing, incorrectly, that it did not apply to the CDA.

To its credit, the CDA responded to the IGO’s pending investigation and began to take several steps to correct the situation. In 2011, the CDA began to discontinue service for all cell phones that were not in use. In August 2011 the CDA disconnected all WebTech Wireless GPS accounts to track vehicle assets other than its five fuel tankers. The department is further working to implement a new surface surveillance technology in 2012. That these steps were prompted by the IGO’s investigation and employee interviews, however, indicates that the CDA lacks a regular audit and review process to ensure technology is used in the most effective and efficient manner.

V. RECOMMENDATIONS

The IGO recommends that the CDA work with DoIT and OMB as appropriate to:

1. Take all necessary steps to comply with the City’s existing mobile communications and GPS policies to ensure full and effective use of GPS technology.
2. Review best practices for use of GPS technology and to establish comprehensive, written policies and procedures specific to the CDA’s use of GPS and other technology initiatives.
3. Establish policies that require regular audits of all technology use, costs, and any available alternatives that may provide more cost-effective options.
4. Review current operating procedures to ensure that appropriate CDA employees are held accountable for the full and effective use of any assigned technology as well as the implementation of all applicable policies.