PUBLIC SAFETY SYSTEMS REVITALIZATION PROGRAM:
Management problems impact cost and schedule goals

April 2013

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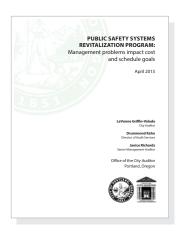**Drummond Kahn**
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CITY OF PORTLAND

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April 4, 2013

TO: Mayor Charlie Hales
            Commissioner Nick Fish
            Commissioner Amanda Fritz
            Commissioner Steve Novick
            Commissioner Dan Saltzman
            Jack Graham, Chief Administrative Officer

SUBJECT: Audit Report – Public Safety Systems Revitalization Program:
            Management problems impact cost and schedule goals (Report #422)

The attached report contains the results of our audit of the City's Public Safety Systems Revitalization Program (PSSRP). The PSSRP program was established in 2006 to manage the replacement or upgrades of several vital public safety systems, including a new Computer Aided Dispatch (CAD) system, used to process 9-1-1 calls.

We found that PSSRP exceeded the overall budget and schedule goals. The entire PSSRP effort, including the Program Office, was initially estimated to cost $71 million and to be completed by the end of 2012. Only the CAD component of PSSRP was completed on time and within original cost estimates. Completion of remaining PSSRP project elements is now planned for December 2015, and the current final cost projection is $80 million.

The budget and schedule increases in the PSSRP program are largely the result of a problematic and shifting governance structure and inconsistent management. In addition, despite repeated recommendations from outside quality assurance specialists and the lessons learned from the implementation of SAP, the City was unable to effectively oversee this significant, but expensive undertaking.

The audit recommendations are intended to benefit PSSRP as it continues to manage the three open projects to replace or upgrade systems used by police, fire, and other emergency responders. The recommendations are also intended to provide guidance for other current and future City technology projects. We ask the Office of Management and Finance to provide us with a status report in one year, through the office of the Mayor, detailing steps taken to address our recommendations.

We appreciate the cooperation and assistance we received from PSSRP staff as we conducted this audit.

LaVonne Griffin-Valade
City Auditor

Audit Team: Drummond Kahn
               Janice Richards

Attachment

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Summary

In 2005, the City of Portland began a process to assess its aging Computer Aided Dispatch (CAD) system, used by the Bureau of Emergency Communications (BOEC) to receive and process 9-1-1 calls made within Multnomah County. The following year, the City began an initiative to revitalize several critical public safety systems in addition to the CAD system. The Public Safety Systems Revitalization Program (PSSRP) was formed for the purpose of managing the procurement and implementation of upgrades to the public safety systems for the City as directed by the PSSRP Executive Steering Committee.

The PSSRP includes several projects; the four largest projects are listed below:

- Computer Aided Dispatch (CAD) replacement project

- Public Safety Radio System (Radio) replacement project

- Portland Police Data System replacement project; this project later became known as the Regional Justice Information Network (RegJIN)

- Portland Fire and Rescue systems (FIS) replacement or upgrade project

We audited the PSSRP to determine whether it achieved cost and schedule goals in implementing these important public safety systems. We found the CAD replacement project to be largely successful. However, two of the other three projects exceeded their cost goals and all three exceeded their schedule goals. Problems with oversight continue to complicate the success of the overall program.

The CAD system cost about 10 percent less than the original estimate and was implemented within the set timeframe. The Radio project is also expected to cost approximately three percent less than originally estimated.

However, as of July 2012, expected costs for the other two major projects ranged from 96 percent to 277 percent higher than original estimates, and all three remaining projects have schedule extensions ranging from 33 to 47 months. The entire PSSRP initiative was expected to cost $71 million, but increased to $80 million based on July 2012 estimates. According to management, project scope increases contributed to higher costs. In terms of project schedules, all projects were originally expected to be completed by December 2012, but recent estimates show the final project completion will be in December 2015.

The PSSRP was established as a multi-year initiative to replace or upgrade the emergency communication and information systems essential to public safety services provided by the City. The program was considered necessary to sustain key emergency response services for the residents of Portland. Primary reasons for replacing the systems included aging equipment, an inability to receive ongoing maintenance from current public safety systems vendors, retirement of key system staff, and a difficulty in maintaining interoperability with existing systems. Clearer governance and more consistent leadership could help PSSRP achieve its remaining program, cost, and schedule goals.

Chapter 1 **Some cost estimates exceeded**

The cost of completing the CAD project was less than originally esti-mated, and as of July 2012, the City also expected the Radio project to cost less than expected. However, the other two major projects exceeded their original budgets considerably. With much work remaining on three open projects, additional cost increases could potentially occur.

In August 2008, City Council held a work session with PSSRP man-agers. During this meeting, managers provided an overview of the PSSRP, a description of each project and its status, expected comple-tion dates, and estimated costs. PSSRP managers also provided estimated costs for the Program Office. At that time, total expected costs for the four largest projects and the Program Office were $71 million. As of July 2012, total costs were $80 million.

Figure 1   **PSSRP estimated costs, 2008 and 2012**

(millions)

	Initial estimate August 2008	As of July 1, 2012	Increase/Decrease	
			% Change	$ Change
CAD (completed)	$ 15.9	$14.3	-10.4%	-$1.7
Radio	46.7	45.2	-3.2%	-1.5
RegJIN (Police)	6.5	12.7	96.0%	6.2
FIS (Fire)	0.5	1.9	277.6%	1.4
All projects	$ 69.6	$ 74.0	6.4%	$ 4.5
Program Office	1.7	5.9	248.1%	4.2
All projects and Program Office	$ 71.3	$ 79.9	12.2%	$ 8.7

Source: Audit Services Division analysis

Overall cost estimates continued to rise, and as of July 2012, collective costs estimated for the four largest projects and the Program Office had increased by more than $8 million (12 percent) from August 2008. Project budget increases occurred as information became known, original budgets were reevaluated, and contingencies were added. Program Office costs increased as the PSSRP added staff and extended project timelines.

RegJIN estimated costs nearly doubled

Estimated costs for the RegJIN project steadily increased between 2008 and 2012, nearly doubling in that time period. Initially, this project was estimated at $7 million but two years later, costs increased to more than $11 million. Estimated costs continued to increase and were more than $12 million by July 2012.

The RegJIN project budget was frequently questioned. In October 2008, two months after the August 2008 Council work session, the Quality Assurance (QA) consultant reported that cost estimates for the RegJIN project appeared arbitrary and that the budget appeared too low. QA also noted that there was no detailed budget for this project and recommended PSSRP develop one. This recommendation was not addressed for six months.

The RegJIN Project Manager also described the project's budget as a "moving target," noting that it was $8 million in May 2009, but was increased to $12 million the following year. This increase was to include costs of City staff working on the project.

In September 2011, the RegJIN budget increased to more than $12 million. Most of this increase was due to an accounting transaction that reallocated money to the project from a central PSSRP account.

FIS costs increased by more than $1.5 million

Expected costs for the Fire Information Systems (FIS) project also continually increased since 2008. The original estimate for this project was $500,000, but it reached more than $1 million by December 2010. Costs increased again and were nearly $2 million in 2012. Overall, costs for the FIS project have increased more than $1.5 million in four years. The FIS project team also experienced uncertainty with its budget. In 2008, the project's initial $500,000 estimate was made without a clear scope. The PSSRP did not issue a recommendation

on scope until early 2011, more than two years following the initial budget estimate.
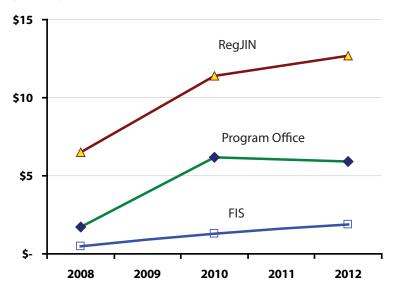
Approximately six months later, during the July 2011 Executive Steering Committee (ESC) meeting, the FIS project manager described the budget as a "rough estimate," noted the budget was without support, and said that a new budget would be developed. By this time, the project budget had more than doubled from the original $500,000 estimate. Three months later, a contractor joined the FIS team and the budget was again under review.

PSSRP Program Office exceeded projected costs by $4 million

Projected costs for the PSSRP Program Office also increased. The initial cost estimate presented to Council in August 2008 was $2 million, but two years later increased to more than $6 million. As of July 2012, total projected Program Office cost for the life of the PSSRP was about $6 million, more than $4 million above the initial projection.

Expected costs for the Program Office increased for two primary reasons – an increase from five to ten positions and from extending the duration of the Radio, RegJIN, and FIS projects. The City increased the number of Program Office positions in response to an October 2008 recommendation from the QA consultant. As of October 2012, expected completion dates were three years later than planned.

Figure 2 **PSSRP - increasing estimates over time**
(millions)

Source: Audit Services Division analysis

Limited information guided cost estimates

Early on, estimated costs were developed without sufficient information to provide a realistic estimate of actual costs. Initial cost estimates were also incomplete. Except for the CAD project, estimates were developed without the assistance of an expert. The CAD project was further along than the others, and by August 2008 had brought on an external consultant to assess the existing system, assist with vendor selection, and facilitate contract negotiations.

At the time of the August 2008 Council work session, the Radio project was expected to be a regional effort, with the City as one of several participants. Prior to that work session, the regional group established a governance plan and obtained cost estimates for both shared and individual projects. The original estimate presented to Council was the City's portion of the shared project. This project later changed to a City-only effort and cost estimates were revised accordingly.

As the Radio, RegJIN, and FIS projects continue, the PSSRP will select vendors and negotiate contracts. These and other activities may further impact the estimated costs. Council approved the PSSRP costs at a certain level. If project costs continue to increase, the City must find additional resources, reduce the scopes of projects, or take other actions.

Chapter 2 **Project schedules revised frequently**

The PSSRP implemented the CAD system on schedule, but has not met its initial plans for implementing the Radio, RegJIN, or FIS systems. Taken together, all four projects were expected to be completed by the end of 2012. However, as of November 2012, the latest completion date is December 2015, three years later than expected. Delays occurred because of challenges in project management, setbacks with vendor selection, and changes to project scope.

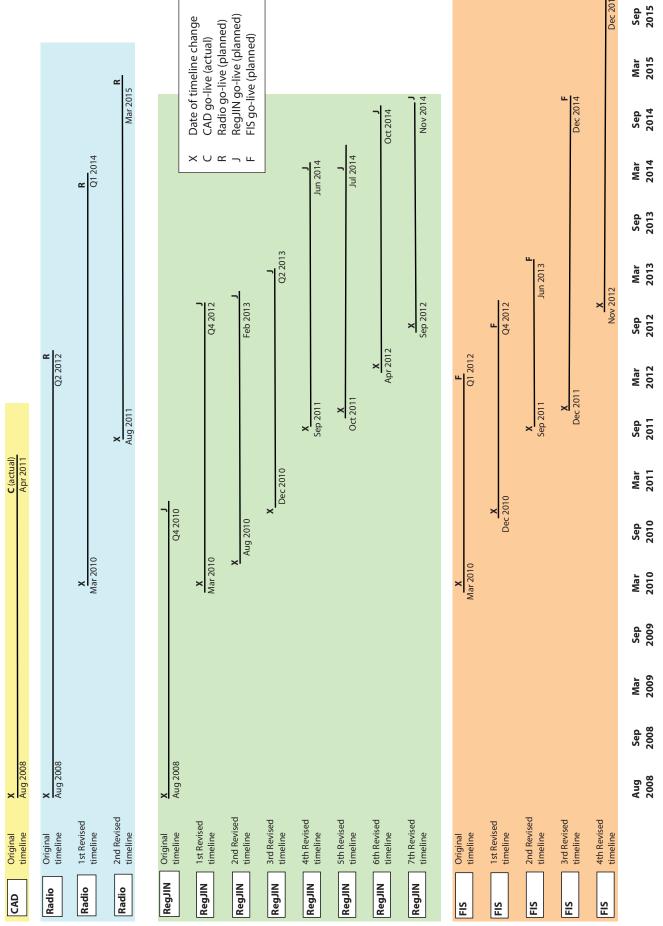**The CAD project was completed on time but other projects were delayed**

Early in the CAD project, the project team identified the best available window for CAD go-live as the period between February 28 and April 30, 2011. Despite setbacks, CAD went live on April 17, 2011. In response to delays, the project team successfully modified the project plan and reorganized tasks as needed to maintain the schedule.

However, significant delays and multiple schedule extensions occurred in the three remaining projects. The PSSRP extended the schedule for the Radio project twice. The new system was originally expected to be in place by June 2012, but was extended by nearly three years to March 2015.

The PSSRP and the Commissioner in Charge also extended the RegJIN schedule. After seven extensions, the estimated completion date for that project has moved from late 2010 to November 2014, approximately four years later than the original date.

There were four extensions to the FIS project schedule, for a total of 45 months. Although the original timeline shows a go-live date by March 2012, the current estimate is December 2015.

Figure 3   Changes in project implementation timelines

| | Aug 2008 | Sep 2008 | Mar 2009 | Sep 2009 | Mar 2010 | Sep 2010 | Mar 2011 | Sep 2011 | Mar 2012 | Sep 2012 | Mar 2013 | Sep 2013 | Mar 2014 | Sep 2014 | Mar 2015 | Sep 2015 |

CAD Original timeline — **X** Aug 2008 ... **C** (actual) Apr 2011

Radio Original timeline — **X** Aug 2008 ... **R** Q2 2012
Radio 1st Revised timeline — **X** Mar 2010 ... **R** Q1 2014
Radio 2nd Revised timeline — **X** Aug 2011 ... **R** Mar 2015

RegJIN Original timeline — **X** Aug 2008 ... **J** Q4 2010
RegJIN 1st Revised timeline — **X** Mar 2010 ... **J** Q4 2012
RegJIN 2nd Revised timeline — **X** Aug 2010 ... **J** Feb 2013
RegJIN 3rd Revised timeline — **X** Dec 2010 ... **J** Q2 2013
RegJIN 4th Revised timeline — **X** Sep 2011 ... **J** Jun 2014
RegJIN 5th Revised timeline — **X** Oct 2011 ... **J** Jul 2014
RegJIN 6th Revised timeline — **X** Apr 2012 ... **J** Oct 2014
RegJIN 7th Revised timeline — **X** Sep 2012 ... **J** Nov 2014

FIS Original timeline — **X** Mar 2010 ... **F** Q1 2012
FIS 1st Revised timeline — **X** Dec 2010 ... **F** Q4 2012
FIS 2nd Revised timeline — **X** Sep 2011 ... **F** Jun 2013
FIS 3rd Revised timeline — **X** Dec 2011 ... **F** Dec 2014
FIS 4th Revised timeline — **X** Nov 2012 ... **F** Dec 2015

Legend:
X   Date of timeline change
C   CAD go-live (actual)
R   Radio go-live (planned)
J   RegJIN go-live (planned)
F   FIS go-live (planned)

Source: Audit Services Division analysis

The Radio, RegJIN, and FIS projects experienced challenges in project management. For example:

- Uncertain governance in the Radio project occurred from the beginning. In the October 2008 Quality Assurance (QA) report, the QA consultant noted that the radio project experienced fundamental project management weaknesses, caused by a lack of project definition and clear strategy.

- No dedicated Project Manager was engaged in the RegJIN project from early on. In October 2008, QA described this project's efforts to date as ineffective, noting that it was managed part-time and that numerous milestones had already been missed. QA estimated at the time that the project was already more than one year behind schedule.

- Decisions made by Portland Fire and Rescue (Fire) were delayed by the PSSRP Office. Fire conducted research to determine the direction and scope of the FIS project and issued its report and recommendations to the PSSRP in October 2009. After receiving this report, the PSSRP Program Office Manager conducted separate research and issued a similar report containing the same recommendations approximately 16 months after the report from Fire.

- Date estimates for the Radio and FIS projects were based on incomplete information. Schedules for both projects were assigned before the PSSRP determined their scope and direction.

- Multiple Project Manager changes occurred for the Radio and FIS projects. The Radio Project Manager changed four times since 2008 and the FIS Project Manager changed three times. Further, the Radio project now has two managers leading the project.

Chapter 4 examines the larger governance issues that negatively impacted the success of PSSRP.

Setbacks with vendor selection contributed to RegJIN delays

The RegJIN project experienced significant delays during vendor solicitation and selection.   In the August 2008 Council presentation, PSSRP anticipated that it would formally post the Request for Proposal (RFP) by September 2008. However, one year later, the project team identified the expected date for publishing the RFP as approximately November 2009, with vendor selection occurring in July 2010. The PSSRP finally released the RFP in March 2010, about 18 months later than originally planned.

In March 2011, the City selected a vendor for the RegJIN project and began contract negotiations. One month into negotiations, PSSRP learned that the selected vendor had been acquired by another company. Due to concerns from this acquisition, the Commissioner in Charge stopped contract negotiations in August 2011 and requested the PSSRP restart the RFP process. This extended the project schedule by more than one year.

Project scope changes delayed the Radio Project

The Radio project began as a regional effort, but later changed to a City-only project. Early estimates were made based on the City's participation in the regional effort, while later estimates were based on a City-only project. Challenges with the regional solution included lack of a firm commitment by the partner jurisdictions, inability for partners to secure funding, and delays in completing a regional project Charter and hiring a regional project manager. Estimating an end date based on a regional project that experienced numerous challenges impacted the schedule for Portland's radio replacement.

Schedule extensions added costs, increased risks, removed bureau directors from key responsibilities

By continuing to extend project completion dates that were significantly later than planned dates, the City incurred additional resource costs and risks. These included:

- Increasing costs for the PSSRP Office, which was created with the intent that it would exist only until the projects were completed. As the PSSRP extended project schedules, the City continued to incur costs associated with the PSSRP Office. These costs averaged about $780,000 each year, for a total of $3.6 million through June 2012.

- Increasing risks associated with continued use and support of the aging systems. Reasons for replacing or upgrading these systems included the City's potential inability to obtain hardware and vendor support. The City believed failure was inevitable for at least parts of the systems. By delaying the schedules, the City placed itself at higher risk for malfunctions of its public safety systems.

- Requiring bureau directors and other personnel to remain on the project longer than anticipated. As ESC members and project sponsors, bureau directors, including the Police and Fire Chiefs, dedicated time to the project, away from their primary responsibilities.

Chapter 3 **Computer Aided Dispatch goals partially achieved**

Today, the Bureau of Emergency Communications (BOEC) uses the new CAD system to process 9-1-1 calls, dispatch services, and track public safety responders, including the Portland Police Bureau (Police), Portland Fire and Rescue (Fire), and several partner agencies serving Multnomah County.   However, the PSSRP did not reach all of its goals for the CAD system. The PSSRP established five objectives for the project, but only fully met two of them. The remaining three objectives were partially achieved.

Figure 4   **CAD project objectives**

Objectives	Status
The existing CAD system should be replaced with minimal disruption to the services provided to the public and to BOEC partner agencies.	**Partially achieved**
There should be improved sharing of information between City and external agencies; this includes integrating the new system with other area CAD systems and public safety/emergency resources.	**Partially achieved**
The new system should maintain or improve current operational functionality.	**Partially achieved**
The new system should allow continuous upgrades of technology to support current and future core functional needs.	**Achieved**
The City should implement a technology architecture that supports future needs (10-year horizon) without significant changes.	**Achieved**

Source: PSSRP CAD-NEXT Implementation Project Charter and Audit Services Division analysis

The existing CAD system should be replaced with minimal disruption to services.

The PSSRP replaced the old CAD system with minimal disruption to services provided to the public and partner agencies. However, following the go-live date, CAD users reported numerous problems with the new system. While these issues did not prevent BOEC from answering 9-1-1 calls and dispatching services, they did require BOEC, Police, and Fire CAD users to adjust to unexpected issues. Of the reported problems, the PSSRP classified only two as "severe." One of the more significant issues caused the system to crash three times following go-live for a total of two hours, but the PSSRP determined its cause and corrected the problem.

Many of the reported problems pertained to the look and function-ality of CAD information as it appeared on Mobile Data Terminals (MDT) used in Police and Fire vehicles. Several Police officers told us that generally the system was more difficult to use, hard to read, and slow. Specific issues reported include:

- The font size on the MDTs was too small for Portland Police officers to safely read while the vehicle was moving. Fire also reported the font size problem, but it was not as significant for them. This issue was corrected soon after the City began using the new system.

- The MDTs shook while Police vehicles were moving, impacting officers' ability to read the screens. This matter was investigated and determined to be caused by the hardware used to mount the MDTs in the vehicles. The computer monitors selected by Police, separate from the PSSRP, are too heavy for the mounts. Police may address this issue beginning in 2014.

- The MDT speed was slow; it could take several minutes for information to appear on the computers. According to a City Fire Chief, this was their biggest challenge with the new system. However, approximately four months after go-live, the Chief noted that Fire was becoming familiar with the system, that issues were being addressed, and that none of the problems were unexpected.

In addition to speed, font size, and shaking terminals, other problems included functionality, appearance of information on the MDTs, and connectivity to other systems. PSSRP evaluated and categorized the cause of each problem. For example, an issue may be the result of a defect in the system, a configuration that needed to be changed, or the need for more training. A defect indicated that a line of code in the system required modification or clarification. Further, as concerns were addressed, their status was tracked as "fixed," "to be fixed," "not a defect," and others. "Not a defect" meant that the system was working as intended, although a user may not be satisfied.

Of the more than 400 problems reported at go-live, most were identified as defects (44 percent), configuration (24 percent) or training issues (23 percent). Approximately four weeks after go-live, the City showed that 31 percent of the issues had been fixed, but had also labeled 24 percent of the items as "not a defect." For these 103 items labeled "not a defect," the system was working properly.

There should be improved sharing of information between City and external agencies, including integration with other public safety systems.
The PSSRP partially achieved its objective of improved sharing and integration with other systems. Today, several police, fire, and emergency management agencies use the new CAD system. In addition to Portland Police and Fire, other users include Gresham and Fairview Police, the Port of Portland, and Multnomah County, along with several other entities. The CAD system connects with systems and devices used by these public safety and emergency resources. However, the PSSRP did not fully meet this goal for several reasons:

- Connectivity problems with some partner users and systems occurred following go-live. For example, the station alerting system used by Portland Fire did not fully integrate with the new CAD system. According to a PSSRP analyst, this issue was corrected several months after go-live. Additionally, other responders experienced connectivity issues when they went into areas with limited coverage.

- Improved sharing did not occur for determining a plan for long-term maintenance and support for CAD, determining plan fees, and sharing that information with the partner agencies. The City of Portland pays 80 percent of support fees and the other jurisdictions using the system are responsible for the remaining 20 percent.

  In April 2010, the Quality Assurance (QA) consultant first advised the PSSRP to prepare a plan for maintaining and supporting the system, including costs. An initial plan, presented in October 2010, did not contain financial information. A second plan, created in February 2011, contained financial information and was eventually approved. The approved plan, which showed that overall support costs would increase by more than 100%, was shared with partner agencies only two months before the new CAD system went live and 10 months after the initial QA recommendation. Some partner agencies expressed dissatisfaction with the increased fees.

- The City's new CAD system is expected to integrate with its new Radio and RegJIN systems.   These projects are currently underway.

The new CAD system should maintain or improve current operational functionality.
The PSSRP only partially met the objective for its new CAD system to maintain or improve current operational functionality. The City purchased a ready-made system to replace one that had been customized over nearly 15 years to meet specific user needs. As a result of the customization, the old CAD system included features that were not available from any CAD vendor for an off-the-shelf product. Several of the custom features could not be implemented in the new system. Other functionality in the new system works differently or provides additional features.

According to the Fire Chief, the new system will meet Fire's needs once they get used to it. One Police manager believes the CAD rollout was effective and efficient and that overall, it has been successful. Further, a Police officer said that officers were never told that the new system would be an improvement. Rather, the goal was simply to replace the current system.

The new system should allow technology upgrades to support current and future needs without significant changes.
Finally, the PSSRP met the last two objectives regarding technology for the new CAD system. According to the Project Manager, the City is in a position to influence the CAD vendor to provide additional functionality in its ready-made CAD system. He also said that the new CAD system was built on components that will allow upgrades without requiring a system-wide replacement. This sets up the new CAD system for future enhancements.

PSSRP did not effectively manage user expectations

PSSRP did not fully meet all of its goals on the CAD project for several reasons. First, its efforts to prepare users for the new system were inadequate. According to best practices, project success includes effectively managing user expectations, also known as "change management." A project may be completed on time, within budget, and with all required functionality, but user resistance may render the new system a failure.

The Quality Assurance (QA) consultant repeatedly recommended that the PSSRP address change management throughout the duration of the CAD and other PSSRP projects. QA first mentioned change management in October 2008 and as recently as May 2012. In October 2008, QA reported that the success of a public safety technology project "virtually hinges" on effectively transitioning employees to the new system. For both the CAD and RegJIN projects, the City planned to move from customized to ready-made systems, and QA emphasized the importance of a change management effort.

There was also some uncertainty as to who was responsible for change management. According to the consultant hired as CAD project manager, change management was outside of his scope of responsibility. This statement contrasts with one City manager's comment that responsibility for CAD project change management appeared to fall to the consultant.

The PSSRP had a job position available for change management, but the job was never filled. At one point, a PSSRP manager planned to use one of two available positions to provide change management

services. The PSSRP filled both of these positions, but the employees were assigned to other duties. In June 2011, one of these positions became vacant and was eliminated effective July 2012. According to one PSSRP manager, there was no serious effort on change management for CAD.

Other reasons for CAD not meeting its goals include:

- User testing and training in Police, Fire, and other vehicles did not occur prior to go-live. All testing and training occurred in office or classroom-type settings. Some issues reported after the new CAD system went live were not identified as problems during the testing and training.

- User participation varied among the partner agencies. Some were slow to assign full-time staff to the CAD project, did not attend all meetings, or were late to acquire hardware or modify their network infrastructure as required to ensure their devices connected to the new CAD system.

- Devices selected by partner agencies did not properly fit. For example, the partner jurisdictions, including the Portland Police Bureau, selected their own MDTs and hardware. According to the Project Manager, depending on the terminal type selected, not all police agencies experienced problems with the terminal size and the mounts following go-live.

- PSSRP did not learn from prior City projects. One concern noted in the City's "lessons learned" report from its SAP implementation included providing appropriate resources for training, and ensuring that staff are trained on all tools of the software.

Following go-live, some users expressed dissatisfaction with the new system. For many users, expectations were not met. Some users may have expected the new ready-made system to be similar to the old highly customized system, although this was not the intent. The PSSRP may have prevented some of this dissatisfaction through a more effective change management effort. Two lessons learned reports prepared after the City began using CAD identified managing user expectations and ensuring users were adequately trained as key lessons.

Chapter 4   PSSRP governance structure not effective

Successful projects generally contain similar characteristics, such as stable leadership, a logical organizational and reporting structure, well-defined roles and responsibilities, and a monitoring function. Stable leadership helps ensure project continuity and sustained institutional knowledge. Clear reporting lines and responsibilities are important for authority, accountability and decision-making; if a responsible party is unable to make decisions, it limits their ability to successfully manage a project. Benefits of monitoring include providing continual feedback, identifying potential problems, and recommending mid-course corrections.

The PSSRP was established to manage the procurement and implementation or upgrades of multiple public safety systems under one citywide program, instead of having the individual bureaus directly manage the projects separately. The PSSRP Office consists of a Manager, project managers for the individual projects, and other technical and administrative staff. Both the PSSRP Charter and Governance documents identify roles and responsibilities and contain an organizational chart showing reporting lines.

The Charter also identifies program goals, along with scope and critical success factors and assumptions that include decision-making, among other items. To achieve program monitoring, the PSSRP hired an independent consultant experienced in law enforcement technology projects to provide quality assurance (QA) services for the PSSRP Program Office and the individual projects.

An ineffective governance structure hindered the PSSRP from meeting basic goals and objectives and contributed to delays and cost overruns. We described these matters in earlier chapters.

PSSRP leadership frequently changed

The PSSRP had several changes in leadership since the program began. Since the PSSRP was formed about six years ago, there have been six different Program Office Managers (POM). The most recent manager started in October 2012. Excluding an interim manager who was in the position for three months, the average tenure of the other four managers since November 2006 was 17 months. Following the departure of the first manager, the program's independent Quality Assurance (QA) consultant noted that projects generally suffer whenever a project management resource is lost. QA also reported that the interim manager had worked closely with the departing manager, which helped to minimize any knowledge gaps and disruption arising from the leadership change. Figure 5 shows the changes in Program Office Managers since the beginning of the PSSRP.

Figure 5   Program Office Manager changes

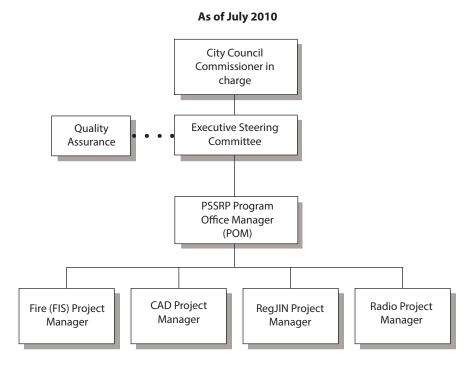| Date	Event
Nov 2006 – Dec 2008	**Program Office Manager #1**
Nov 2006	Manager #1 hired
Dec 2008	*Manager #1 resigns*
Jan 2009 – Apr 2009	**Program Office Manager #2**
Jan 2009	Interim Manager hired, while a national search is conducted for a new permanent manager.
Apr 2009 – Jun 2011	**Program Office Manager #3**
Apr 2009	Manager #3 hired (experienced in public safety technology and large-scale projects)
Jun 2011	*Commissioner in charge terminates Manager #3*
Jun 2011 – Mar 2012	**Program Office Manager #4**
Jun 2011	Commissioner in charge appoints Manager #4
Mar 2012	*Manager #4 resigns*
Mar 2012 – Oct 2012	**Program Office Manager #5**
Mar 2012	The City's Chief Administrative Officer (CAO) appoints Manager #5 (interim)
Oct 2012	*Manager #5 resigns*
Oct 2012 – present	**Program Office Manager #6**
Oct 2012	CAO appoints Manager #6, a former City bureau director

Source: Audit Services Division analysis

The organizational structure is ambiguous, causing uncertain authority

The PSSRP organizational chart and reporting structure changed over the life of the program, and the reporting lines have not always been clear. Governing parties have included an Executive Steering Committee (ESC), a City Commissioner, the Chief Administrative Officer, a Program Office Manager, bureau directors as project sponsors, and project managers of the individual projects.

The organizational chart changed three times between 2010 and 2012, which also affected the reporting lines for the Program Office Manager. During this period, the POM reported directly to the ESC, to both the Commissioner in charge and the ESC, or directly to the City's Chief Administrative Officer (CAO). One former PSSRP manager noted there was confusion over the governance model, and it was not clear who was in charge when the POM was reporting to both the Commissioner and the ESC. Following the third change to the organizational chart, the CAO began to direct the program, and the ESC transitioned to more of an advisory role. Figures 6A, 6B, and 6C show the changes in the PSSRP organizational structure between 2010 and 2012.
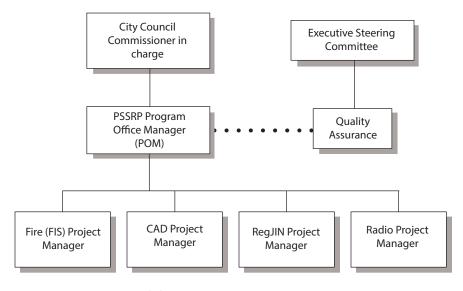
Figure 6A   PSSRP organizational chart, condensed

As of July 2010

Source: PSSRP Organizational Charts

Figure 6B   **PSSRP organizational chart, condensed**
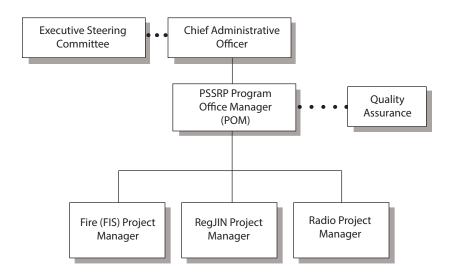
As of July 2011

Source: PSSRP Organizational Charts

Figure 6C   **PSSRP organizational chart, condensed**

As of July 2012

Source: PSSRP Organizational Charts

The PSSRP was created to manage several inter-related projects under a unified charter and executive steering committee. Because the PSSRP was designed to oversee the projects for bureaus, this created another layer of governance between each bureau and its project.

Each bureau director or designee is involved as a project sponsor and ESC member. For example, the Portland Police Chief is the sponsor for the RegJIN project to replace the Police Bureau's existing records management system. The Chief is also a member of the ESC. The RegJIN project manager, however, is an employee of the PSSRP and reports directly to the PSSRP POM rather than the sponsoring bureau. While the RegJIN project manager mostly works out of an office at the Police Bureau, the other PSSRP project managers work at a central location, away from the affected bureaus.

Roles and responsibilities of PSSRP leaders were not well-defined and not always followed

The PSSRP Charter summarizes the responsibilities for each PSSRP role, while a separate program governance document provides more detailed information. According to the July 2010 Charter and Governance documents, the Commissioner's role was to provide policy direction to the Executive Steering Committee (ESC). The ESC was expected to make decisions on certain matters and advise the Comisioner in charge on the program.

ESC responsibilities included changes to project go-live dates, scope changes, budget recommendations to Council, as well as other decisions. Within the ESC, the Chair was to provide overall direction and administrative oversight to the POM, facilitate ESC decision-making, and make final decisions when needed.

The POM was expected to manage the program, manage program staff, and ensure that PSSRP projects were completed on time and on budget. Individual project managers reported directly to the POM.

Within all the different governing parties, the authority of the ESC has been uncertain for much of the program. Additionally, the Quality Assurance (QA) consultant repeatedly recommended the ESC address its prevailing uncertainty in authority and governance. The ques-

tioned authority and QA recommendations were noted as early as January 2009 and as recently as September 2012. For example:

- **February 2009**. Following the Commissioner in charge assuming a more prominent role in the PSSRP, several ESC members began to question the organizational structure and governance model. The ESC began a project to reevaluate its governance structure and modify it as needed.

- **August 2009**. Following its completion of a governance reform effort, the ESC continued to question its authority and reach. QA recommended the ESC discuss and establish decision-making parameters and repeated this recommendation in October 2009.

- **March 2011**. The CAD project team, project sponsor, and POM decided to delay CAD go-live by two weeks without prior knowledge or consent of the ESC.

- **June 2011**. The Commissioner in charge dismissed one POM and named a replacement, without the prior knowledge or consent of the ESC. ESC members again questioned their roles and responsibilities and QA issued another recommendation about defining the ESC's authority.

- **August 2011**. The Commissioner in charge directed the PSSRP to discontinue contract negotiations and restart the vendor selection process for the RegJIN project, without the prior knowledge or consent of the ESC. QA again reported that the ESC continued to struggle with its role.

- **September 2012**. Following a change in the organizational structure, some ESC members said their role had diminished.

PSSRP leaders were slow to establish a governance model

PSSRP leaders did not establish a sufficient governance model early in the program, including a clear definition of its authority. The PSSRP was created in 2006, but program charter and governance documents reflecting the program's objectives, scope, roles and responsibilities were not finalized until 2010.   The QA consultant first advised the PSSRP to prepare these documents in October 2008, and repeated this and other governance recommendations several times throughout the program.

PSSRP leaders did not learn from prior City projects

The PSSRP did not effectively use lessons learned from the City's prior technology projects, including from the City's recent implementation of its financial and payroll system, SAP. One of the lessons from the Office of Management and Finance's April 2010 SAP *Lessons Learned* Report was to clearly define roles, responsibilities, processes, and decision-making structures. This included using quality assurance to help identify areas that required attention. Following CAD go-live in April 2011, two lessons learned reports were prepared; one by the consultant hired to manage the CAD project and one by the QA consultant. Both reports concluded that defining roles was a key lesson.

Chapter 5 **Recommendations**

We recommend that the Commissioner-in-charge direct OMF and the PSSRP leadership team to:

1. **Stabilize the PSSRP governance structure.**

    This could include:

    - Re-evaluating the purpose and effectiveness of the current governance structure and of the Executive Steering Committee (ESC).

    - Clearly defining the governance structure and removing any ambiguity.

    - Clearly defining roles and responsibilities; if the ESC is found to be effective, then firmly establish its purpose and authority.

    The Office of Management and Finance and the PSSRP have already taken steps toward clarifying the governance structure by issuing new Project Charter and Governance documents in June 2012. However, the ESC continued to express uncertainty about its role following this change.

2. **Address Quality Assurance (QA) recommendations more timely; this would help ensure more effective use of QA services.**

    These services provide valuable insight to a project by identifying potential problems timely so corrective action can be taken. QA is one element of a project that can help managers keep it on-track, on-time, and within budget.

3. **Develop an effective change management program for the three remaining projects: Radio, Police (RegJIN) and Fire (FIS).**

   This is especially critical for the RegJIN and Radio projects, as there are many agencies external to the City affected by those projects. The City is currently partnering with 36 external public safety agencies for the RegJIN project. According to management, additional external agencies will use the information.

   An effective change management program would address user expectations, encourage and emphasize consistent user participation, and include extensive appropriate communication.

4. **Ensure appropriate testing occurs prior to systems going live.**

   In addition to system testing performed by the project team, there should be testing in the field to ensure the system and devices work as intended for all users.

5. **For future projects, obtain sufficient information before developing cost and timeline estimates.**

   While some schedule delays and cost increases may be appropriate, estimates should not be made before project scope and other basic information is available.

Chapter 6   Objectives, scope and methodology

The primary objective of this audit was to review the City's goals for implementing its new public safety systems compared to actual results in the areas of cost, project schedules, and objectives achieved. A second objective was to identify opportunities for improvement as the Radio, RegJIN, and FIS projects continue, to allow the City to take appropriate action to ensure these projects move toward successful completion.

To accomplish these objectives, we interviewed City leaders responsible for the PSSRP and for daily project management activities. These included PSSRP Program Office Managers, Executive Steering Committee members, Project Sponsors and Project Managers. We also interviewed City staff who participated on the project as their Bureau's liaison and other City managers that were assigned to the project. Finally, we interviewed external consultants retained by the City to provide Quality Assurance and project management services.

We reviewed project documentation prepared by external consultants and City project team members. External documents reviewed include contracts and amendments, Quality Assurance Status Reports, and various project management documents obtained from the outside consultant managing the CAD project. Internal documents reviewed include project charters and governance documents, budget and financial reports, committee meeting minutes, lessons learned reports, user feedback on the new CAD system, and various project communications, including project updates provided to Council. We also reviewed professional literature regarding best practices for software implementations and project management.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require us to 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.

APPENDIX - ACRONYMS

Acronyms

Acronym	Description
CAD	**Computer Aided Dispatch** - System used by the Bureau of Emergency Communications to answer 911 calls and dispatch public safety services
ESC	**Executive Steering Committee** - A team of City public safety bureau directors and other representatives that are charged with providing overall guidance and direction to the PSSRP
FIS	**Fire Information Systems** - A collection of systems used by Portland Fire and Rescue to manage and track non-emergency operations and services provided by Portland Fire and Rescue.
MDT	**Mobile Data Terminal** - Computers used in Police, Fire, and other emergency vehicles to communicate with a central dispatch office and display relevant information as they respond to requests for services.
PM	**Project Manager** - Individuals responsible for managing the individual PSSRP implementation projects
POM	**Program Office Manager** - Individual responsible for daily management of the PSSRP projects, project managers, and administration.
PPDS	**Portland Police Data System** - The current regional law enforcement records management system used by the Portland Police Bureau and other regional agencies. Expected to be replaced by the new RegJIN system.

PSSRP	**Public Safety System Revitalization Program**
	
	- A Citywide initiative created to coordinate, manage, and monitor the replacement or enhancement of several public safety systems, including:
	  • CAD
	  • Radio
	  • RegJIN
	  • FIS

QA	**Quality Assurance** - An independent consultant retained to provide project oversight and monitoring of the PSSRP Program Office and each individual PSSRP project. Areas reviewed include schedule, cost, communication, risk, quality, and scope management, among others.
RegJIN	**Regional Justice Information Network** - Planned new regional law enforcement and records management system to be used by the Portland Police Bureau and other regional agencies. The City will own and operate the system.

To: LaVonne Griffin-Valade, City Auditor

From: Charlie Hales, Mayor

Date: March 25, 2013

Subject: PSSRP Audit

I have received and reviewed your April 2013 audit of the Public Safety Systems Revitalization Program (PSSRP).

I have discussed the audit's recommendations with Jack Graham, Chief Administrative Officer and Jeff Baer, PSSRP Program Manager. I concur, as they do, with the recommendations and am pleased that many of the changes recommended by the audit have been addressed by PSSRP and/or are in the process of being implemented. I think these changes will go a long way toward improving the effectiveness and success of PSSRP in its objectives.

I appreciate your work and that of the Audit Services Division in reviewing PSSRP and I share your commitment to on-schedule, on-budget performance of PSSRP and the City as a whole.

	Charlie Hales, Mayor
	Jack D. Graham, Chief Administrative Officer

CITY OF PORTLAND

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Date: March 26, 2013

TO: LaVonne Griffin-Valade, City Auditor

FROM: Jack D. Graham, Chief Administrative Officer

SUBJECT: Response to April 2013 Audit: Public Safety Systems Revitalization Program

Thank you for the opportunity to review and comment on your audit (Audit) of the Public Safety Systems Revitalization Program (PSSRP). The Office of Management and Finance (OMF) appreciates the effort your staff took to incorporate some of the feedback we provided.

As we indicated in our discussions with you, OMF concurs with the Audit's recommendations. In fact PSSRP has already implemented and is continuing to implement many changes that align with the direction of the recommendations. Below are OMF's responses to the recommendations outlined in the Audit. Please let me know if you have any additional questions.

1.   Stabilize the PSSRP governance structure.
The governance structure was updated in July 2012 to address concerns raised by the QA consultant and stakeholders. The current structure is stable and working well. We do not expect any significant changes to the governance structure in the future.

2.   Address Quality Assurance (QA) recommendations more timely; this would help ensure more effective use of QA services.
Each project has separate QA review provided under contract. QA reports are received monthly from consultants and reviewed with the project managers, program manager, the Executive Steering Committee (ESC) and posted on the PSSRP website. Items noted for attention are addressed promptly and corrective efforts are monitored by the QA and reported to the ESC.

3.   Develop an effective change management program for the three remaining projects: Radio, Police (RegJIN) and Fire (FIS).
All PSSRP projects have change management as a deliverable and as a success metric. In consultation with stakeholders, detailed change management plans are being developed for all projects. Change management will be monitored by QA as a part of their reporting process.

4.   Ensure appropriate testing occurs prior to systems going live.
Testing is a deliverable for all projects. Testing strategies, including field testing where appropriate, are based upon industry best practices and will be included as vendor deliverables through the contract. Testing is a success metric monitored by the QA consultants.

5. For future projects, obtain sufficient information before developing cost and timeline estimates.

Going forward PSSRP will strive to develop 'level of confidence' information, including an explanation on what the estimates are based on, to accompany cost and timelines.

Thank you again for the work provided by Audit Services staff. OMF shares your commitment to continual programmatic evaluation and process improvement.

LaVonne Griffin-Valade, City Auditor
Drummond Kahn, Director of Audit Services

Other recent audit reports:

Urban Services Policy and Resolution A: Core City services not articulated; 30-year-old commitments obsolete (#433, March 2013)

Street Pavement: Condition shows need for better stewardship (#432, February 2013)

Transportation Funding: Revenues up, spending on maintenance down (#436, January 2013)