

FILED  
OFFICE OF THE CITY CLERK  
OAKLAND

# CITY OF OAKLAND

## AGENDA REPORT

2011 MAY 11 AM 10:16

TO: Office of the City Administrator  
ATTN: P. Lamont Ewell, Interim City Administrator  
FROM: Department of Information Technology  
DATE: May 24, 2011

RE: Informational Report Regarding The Status Of The City Of Oakland's Existing Radio System And The Implementation Of The New Project 25 (P25) Standards Based Radio System For Public Safety

---

### SUMMARY

This is an informational report that was requested by the Public Safety Committee on April 12, 2011. This report includes an update on issues related to the existing radio communication system and status of the Oakland Project 25 (P25) upgrade roadmap for Public Safety communications and voice interoperability.

The City of Oakland is currently using a proprietary radio communication system called EDACS (Enhanced Digital Access Communication System), which was deployed in 1991. There are critical components in the system that are aging and approaching obsolescence.

Recently, the Department of Information Technology (DIT) completed a 3-week inspection of the EDACS radio system in response to problems reported by the Oakland Police Department (OPD). The inspection was conducted by DIT Radio Shop staff and Dailey-Wells, a certified radio systems engineering integrator for Harris Corporation, the manufacturer of the City's radio system.

Findings of the inspection validated the problems reported by OPD. The inspection found that critical components of the 17 year-old radio system have far exceeded their useful life. Most of the findings of the EDACS system inspection identified by OPD were related to aging equipment throughout the system.

Recognizing the urgency of this situation, DIT staff has been working on replacing the current EDACS system with the new P25 system, a national public safety interoperability standards-based communication system. Over the last five years, DIT, in partnership with the Oakland Fire Department Office of Emergency Services (OES) and OPD, has been able to secure more than \$7 million in various grant funds in order to lay the foundation for the system.

Item: \_\_\_\_\_  
Public Safety Committee  
May 24, 2011

The City is moving forward with a hybrid P25 deployment strategy for two reasons:

1. To maintain seamless radio voice communications interoperability between the City's Public Safety Users of the new P25 system and the Non-Public Safety Users of the EDACS system
2. To take advantage of the P25 standards for regional interoperability within the Bay Area

The P25 roadmap implementation is being completed in a multi-phased approach over several years. Key milestones include:

- Implementation of a P25 radio site at the GWIN Reservoir, providing P25 coverage for the entire downtown area as the pilot for citywide implementation. This effort was completed in 2007
- Upgrade the Digital Microwave Backbone to connect all of the radio sites in June 2011
- Migrate all Public Safety radio communications to the new P25 radio system in June 2011
- Expand the P25 system to include the GWIN pilot radio site by March 2012
- Implementation of Regional Interoperability with Bay Area Rapid Transit (BART), City and County of San Francisco, and the East Bay Regional Communications System Authority (EBRCSA) by March 2012

## FISCAL IMPACT

This is an informational report on the status of Oakland's Public Safety Voice Communications Interoperability plans and there is no fiscal impact.

## BACKGROUND

### Existing EDACS System Issues

In February 2011, DIT completed a 3 week inspection of the 800 MHZ EDACS radio system in response to problems reported by OPD. The inspection was conducted by the DIT Radio Shop staff and Daily-Wells Communications (DWC) engineers. DWC is a certified radio systems integrator for Harris Corporation, the manufacturer of the City's radio system. The inspection consisted of verification of the current operating condition of every system component according to the manufacturer's specifications and replacement, repairs, and adjustments to equipment as necessary. OPD played an important role during the inspection by providing immediate radio

Item: \_\_\_\_\_  
Public Safety Committee  
May 24, 2011

incident information to DIT. Receiving this information as many of the incidents were taking place was instrumental to isolating and resolving the difficult to diagnose intermittent problems.

The following problems were reported by OPD:

- Dispatchers unable to hear OPD Field Unit radio transmissions
- OPD Field Units unable to hear Dispatcher radio transmissions
- OPD Field Units unable to hear other Field Units' radio transmissions
- Field Units experience static during radio transmissions
- Field Units experience poor audio (scratchy, choppy) quality during radio transmissions
- Field Units experience dropped calls (i.e. radio goes dead)
- *All of the above problems have been intermittent*

Findings of the inspection validated the problems reported by OPD. The inspection found that critical components of the 17 year-old radio system have far exceeded their useful life. Even though adjustments were made to bring many of the components back into alignment with the manufacturer's specifications, several critical components (i.e. the "*crystal elements*" used in receiver units installed at radio sites) fell short of meeting specifications but were adjusted to meet acceptable short term operating standards. It is recommended that at least 13 of these receiver units' "crystal elements" be replaced because they have been found to have the highest risk of failure. Replacement work for all 13 units will begin in October of this year.

The following additional tests will be performed to maintain the existing radio system for Non-Public Safety Users (i.e. OUSD, Public Works, etc.) after Public Safety Radio Users are cutover to the new P25 radio system:

- Conduct a semi-annual inspection and make necessary adjustments/repairs to all radio communications system components in accordance with the manufacturer's and FCC specifications
- Conduct an annual inspection and make necessary adjustments/repairs to the radio system antennas and microwave equipment. This will be done to ensure that the system has not suffered any adverse affects from weather (wind and rain) or other environmental conditions
- Perform a monthly inspection of all backup radio equipment and dispatch consoles
- Continue the OPD/DIT Radio Working Group monthly meeting to review reported radio problems, operational issues and changes, and training

- Perform daily (4 days per week) testing on every radio channel by performing a test radio call. Immediately follow up to fix any problems found and make adjustments as necessary to ensure desired operating specification benchmarks are maintained

On April 7, 2011, a microwave datalink outage occurred between the APL Radio and MSC 911 Radio Sites. These two sites went into "Failsoft" mode. This automatic feature allows each radio site to operate autonomously in the case of microwave communication link failures. While in this mode, radio communications between officers and dispatchers is achieved using the dispatchers' backup radios.

To address this datalink outage issue, a new digital microwave communication system will be implemented on June 6, 2011, which will provide the redundancy that is the standard for microwave system infrastructure used for public safety communications applications.

On April 24, 2011 an "open mike" mobile radio was found to have created a series of operational problems with the radio system as a result of human errors. There were no technical problems found and no equipment failures identified with the radio system.

Standard Operating Procedures will be reviewed to ensure that safeguards are in place which will identify the human errors that take place before they can impact the radio system. OPD 911 Dispatch and the DIT Radio Shop will jointly address the errors through workgroup sessions.

### P25 Interoperability Roadmap

The implementation of the P25 radio system at the City of Oakland will be first in the Bay Area. Our knowledge and experience will allow us to be instrumental in supporting the Bay Area region P25 interoperability projects as they come online.

Over the past five years the City of Oakland has invested grant funds to replace the EDACS radio system with a new P25 standards-based radio system. Our success at obtaining grant funds to purchase the P25 system has allowed for a debt-free implementation. The P25 radio system will operate as a separate and independent system for public safety and will still seamlessly interoperate with the EDACS system for non-public safety users.

Public safety radio communications will be cutover to the new P25 radio system on June 6, 2011. Oakland's radio upgrade to the national P25 interoperability standards will be done in phases.

The P25 interoperability roadmap outline is shown below:

<b>P25 INTEROPERABILITY ROADMAP</b>				
<b>PHASE</b>	<b>SCOPE</b>	<b>COST (\$)</b>	<b>FUNDING SOURCE</b>	<b>COMPLETION DATE</b>
Phase 1	Implementation of a P25 radio site at the GWIN Reservoir, providing P25 coverage for the entire downtown area as the pilot for citywide implementation	\$1.5M	UASI Grant, GIF Fund	2007
Phase 2	Upgrade the Digital Microwave Backbone to connect all of the radio sites	\$1.6M	COPS Grant, CIP Fund	June 2011
Phase 3	Migrate all Public Safety radio communications to the new P25 radio system	\$2.6M	PSIC Grant, UASI Grant	June 2011
Phase 4	Expand the P25 system to include the GWIN pilot radio site	\$1.15M	UASI Grant	March 2012
Phase 5	Implementation of Regional Interoperability with Bay Area Rapid Transit, City and County of San Francisco, and the East Bay Regional Communications System Authority (EBRCSA)	\$400K	UASI Grant	March 2012

**KEY ISSUES AND IMPACTS**

Most of the findings of the EDACS system inspection to resolve the problems identified by OPD were related to aging equipment throughout the system.

Even though the overall performance of the existing EDACS radio system has significantly improved since components have been replaced and repaired, many components have reached the end of their useful life and cannot be relied on to continue meeting the high reliability standards for public safety radio communications.

The June 6, 2011 implementation of the new P25 radio system is therefore the highest priority and the best way to address the aging equipment problems.

## **SUSTAINABLE OPPORTUNITIES**

### ***Economic:***

At this time there are no economic opportunities related to this report.

### ***Environmental:***

At this time there are no environmental opportunities related to this report.

### ***Social Equity:***

The City of Oakland continues to ensure that the Public Safety personnel are able to communicate during emergencies with minimal disruptions, therefore providing first responders the ability to respond during emergencies to all of Oakland's residents and the community.

## **DISABILITY AND SENIOR CITIZEN ACCESS**

In providing public safety emergency communications for first responders, the City of Oakland continues to meet all Americans with Disabilities Act (ADA) requirements and provide the highest level of service to all residents and to the community.

## **ACTIONS AND RECOMMENDATIONS**

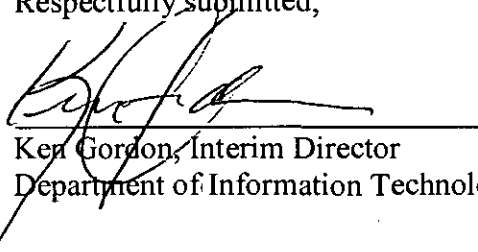
DIT staff will continue to work closely with first responders in the City, its regional partners, and the Bay Area Department of Homeland Security Initiative (UASI) toward full interoperability and P25 compliance.

Staff recommends that City Council continue to provide leadership and support the efforts of the Department of Information Technology, Office of Emergency Services, Oakland Fire and Oakland Police to move toward public safety voice interoperability and P25 compliance in the Bay Area region.

**ACTION REQUESTED OF THE CITY COUNCIL**

Staff recommends that the City Council accept this informational report.

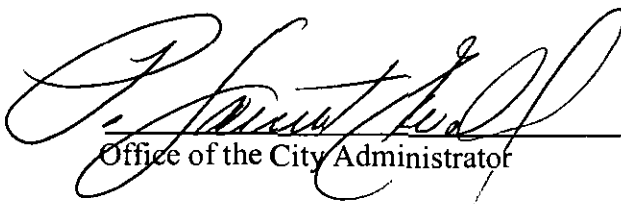
Respectfully submitted,



Ken Gordon, Interim Director  
Department of Information Technology

Prepared by:  
Ahsan Baig, Division Manager, Public Safety  
Department of Information Technology

**APPROVED AND FORWARDED TO THE  
PUBLIC SAFETY COMTE:**



Office of the City Administrator

Item: \_\_\_\_\_  
Public Safety Committee  
May 24, 2011