

# CLACKAMAS COUNTY BOARD OF COUNTY COMMISSIONERS

## Policy Session Worksheet

**Presentation Date:** August 12, 2015 **Approx Start Time:** 10:30am **Approx Length:** 60 min

**Presentation Title:** Emergency Radio Communications System Replacement Project

**Department:** Sheriff, CCOM, Public Health, County Administration

**Presenters:** Laurel Butman, Matt Ellington, Larry MacDaniels and Bob Cozzie

**Other Invitees:** John Hartsock, Leslie Taylor & Fred Charlton from C800

### **WHAT ACTION ARE YOU REQUESTING FROM THE BOARD?**

We are requesting that the Board acknowledge the concurrence of Clackamas 800 (C800) partners with the C800 Radio Group's Emergency Communications System Replacement proposal and authorize County Administration to communicate concurrence to the C800 Board. Clackamas County C800 partners include the Sheriff's Office and Public Health.

### **EXECUTIVE SUMMARY:**

The existing Emergency Radio Communications System serving all Clackamas County emergency responders and other public users was built using 1990s technology and is fast approaching obsolescence. The analog components of the system are beyond end of life and any remaining vendor support for the system will cease as of December 2017. It will take approximately three years to install a replacement system.

In addition to end of life issues, vendors and surrounding jurisdictions are all moving from analog to digital platforms. In order to ensure continued interoperability where emergency and public safety responders can communicate with each other via voice and data the C800 system must transition to digital. Since C800 and its Washington County counterpart, Washington County Consolidated Communications Agency (WCCCA), operate a joint system, both counties wish to make this transition together. Doing so jointly will ensure a seamless, efficient and cost effective transition.

System radio coverage is also an issue. Current coverage is insufficient to serve the area given population growth over the past 20 years and, in Clackamas County there are specific areas that have no radio coverage: along Hwy 26 in the Mt Hood area and in South County. More information about the need for system replacement and project plans is available in Attachments A & B.

C800 and WCCCA are finalizing plans for a replacement system and both entities will be approaching their respective counties with a request to place a bond measure on the May 2016 ballot for bond financing (neither entity can legally go out for a bond itself). Early public opinion research indicates that a majority of the public is unaware of the state of the emergency radio system but that, after some initial education, the potential bond measure achieves 62% support. Additionally, respondents indicated strong satisfaction with current emergency response (police, fire, EMS) services and strong support for the components of the emerging proposed project.

The C800 Board meets September 9, 2015, for a final vote on Clackamas County's replacement project plan. In order for C800 to move forward on that date, according to the C800 IGA, all C800 partners must be in concurrence with the plan. Both the Sheriff's Office and H3S Public Health are C800 partners and both are in concurrence with the plan. These partners are requesting that the County (as a signatory to the IGA) formally acknowledge their concurrence and authorize County Administration to communicate concurrence to the C800 Board.

**FINANCIAL IMPLICATIONS (current year and ongoing):**

The cost of the Emergency Radio System Replacement will be \$53.7 million, to be financed by a 15-year General Obligation Bond approved by County voters. Cost per \$1,000 of Assessed Value will be \$0.10 or \$30.00 annually for a homeowner with a median priced (\$300,000) home in the county.

**LEGAL/POLICY REQUIREMENTS:**

The replacement emergency radio system will meet nationally recognized Association of Public Safety Communications Officials (APCO) interoperability standards.

**PUBLIC/GOVERNMENTAL PARTICIPATION:**

The 15-member C800 Board and other stakeholders have worked together to plan this project and have performed outreach to Clackamas County cities and public entities that pay into and/or use the system. See Attachment C for a list of C800 Board members.

**OPTIONS:**

There are three (3) options:

1. Acknowledge the concurrence of County C800 partners with the Clackamas 800 (C800) Radio Group’s Emergency Communications System Replacement proposal and authorize County Administration to communicate concurrence to the C800 Board **as requested**.
2. Acknowledge the concurrence of County C800 partners with the Clackamas 800 (C800) Radio Group’s Emergency Communications System Replacement proposal and authorize County Administration to communicate concurrence to the C800 Board **and provide further guidance to staff regarding this project**.
3. Take no position on concurrence at this time.

**RECOMMENDATION:**

Staff respectfully recommends that the Board of County Commissioners adopt option #1 to acknowledge the concurrence of County C800 partners with the Clackamas 800 (C800) Radio Group’s Emergency Communications System Replacement proposal and authorize County Administration to communicate concurrence to the C800 Board as requested.

**ATTACHMENTS:**

1. Attachment A: *Emergency Communications System Replacement Overview*
2. Attachment B: *Frequently Asked Questions about Replacing the Clackamas County Emergency Radio Communications System*
3. Attachment C: *C800 Board Member List*

**SUBMITTED BY:**

Division Director/Head Approval: \_\_\_\_\_

Department Director/Head Approval: \_\_\_\_\_

County Administrator Approval: \_\_\_\_\_ LSB

For information on this issue or copies of attachments, please contact Laurel Butman @ 503- 655-8893.

# ATTACHMENT A

## Emergency Communication System Replacement Overview

### *Why does the Emergency Communication System need replacing?*

1. *End of life of existing analog system*
2. *Need to transition to current digital technology*
3. *Need to ensure ongoing system compatibility and interoperability*
4. *Need to respond to population growth*

### **Project Goals**

- ☉ Timely replacement of Clackamas County’s emergency radio/data infrastructure
- ☉ Maintain a system that is based on current digital technology and ensures compatibility and interoperability into the future
- ☉ Maintain or enhance existing service levels
- ☉ Develop a capital financing strategy that minimizes the financial burden on user agencies and reinforces public trust and confidence
- ☉ Develop a financing strategy that all WCCCA/C800 user agencies can support

### **Project Definition**

This project will construct a new P25 digital radio system, including a microwave transport system, which has coverage and performance equal to the current system and maintains interoperability while also expanding coverage. Features include:

- ✓ Additional 5 sites to make up for the performance difference between analog and digital;
- ✓ Additional 6 sites for expanded coverage at Mt Hood and the Clackamas drainage in South County;
- ✓ Additional 1 site for the portable at the hip coverage;
- ✓ Additional 2 sites for enhanced in-building coverage (total of 14 added sites);
- ✓ Application to allow SMART phone access to the system;
- ✓ Paging system replacement;
- ✓ Post-warranty support; and
- ✓ Systems refresh for equipment and software upgrades.

**Excludes subscriber radios - those remain an agency responsibility.**

### **Major Elements of the Proposal**

Replace two-way radio infrastructure	\$27.9 million
Add tower sites	\$16.9 million
Include system refresh/upgrades	\$2.7 million
Ensure project management/contingency	\$2.1 million
Upgrade console equipment	\$1.7 million
Cover miscellaneous expenses	\$2.0 million
Ensure backup dispatch	<u>\$0.4 million</u>
<b>TOTAL COST</b>	<b>\$53.7 million</b>

## Proposal Cost Specifics

<b>Project Costs</b>	<b>14 added sites (Option 4)</b>
Simulcast Equipment	\$14,927,509
Additional Radio Sites	\$11,082,344
Master Site Equipment	\$3,534,291
System Refresh/Upgrade	\$2,699,200
Generator/Commercial	\$5,798,542
Microwave Backhaul	\$3,367,980
Console Equipment	\$1,650,269
Site Alarms and Monitoring	\$1,364,444
Spares and Materials	\$1,230,603
48 VDC Power System	\$1,064,567
Equipment Contingency	\$627,608
Backup Dispatch	\$425,596
Equipment Testing	\$101,000
Project Management	\$264,676
Paging	\$373,248
Unified PTI (mobile dev)	\$188,384
Asset Management	\$119,054
Post Warranty Support	\$3,104,080
<b>Sub-Total</b>	<b>\$51,923,395</b>
Estimated cost of issuance	\$1,780,932
<b>Total including cost of issuance</b>	<b>\$53,704,327</b>

## Financing Specifics

- Cost per \$1,000 of Assessed Value (15-year Bond) \$0.10
- Average Homeowner Cost per Year (\$250,000 Assessed Value) \$25.00
- Interest on the 15-year bonds \$17,384,212

## ATTACHMENT B

### Frequently Asked Questions about Replacing the Clackamas County Emergency Radio Communications System

#### 1. Why does the Emergency Communications System need replacing?

There are 5 primary reasons why the communication system requires replacement:

1. **End of Life** – The existing analog radio system components are already beyond their end of life/end of support or will become unsupported by the vendors as of December 2017 or the “End of Life”. (See question #2 below for additional information.)
2. **Transition to Digital Technology** - Whether its smart phones, TV’s, or public safety radios the industry and the technology they invent and market has converted to digital. In order to meet nationally recognized APCO interoperable standards for Public Safety Communications, the future, and current equipment is all based upon current digital technologies.
3. **Interoperability** – *The ability of public safety responders to share information via voice and data communications systems, on demand, in real time, when needed, and as authorized.* See question # 7 below for additional information.
4. **Population Growth** - With the population growth over the last 20 years in Clackamas County, additional radio coverage is required.
5. **System Coverage** - The existing communication system has limited coverage or service along Hwy 26 in the Mt Hood area and up the Clackamas drainage from Estacada south. Further “in building” radio coverage to key buildings like schools, hospitals, retail centers, and large office buildings must be improved.

#### 2. What do we mean by “End of life”?

The existing analog radio system is early 1990's technology and the components have either become or will become unsupported by the vendors as of December 2017. "Unsupported" means that replacement parts will be increasingly difficult to find due to the manufacturer's no longer supporting the product lines and the diminished availability of refurbished parts. The radio vendor no longer can guarantee that the existing analog radio system can be repaired when an unsupported component or assembly fail. In addition, many of the engineers and system technology experts in the radio industry are either focused on newer digital technology or have retired. The ability to find knowledgeable individuals to support the existing analog radio system is becoming increasingly difficult.

The current system has experienced an increasing number of system component failures that have only been mitigated due to the tenacity of the technicians. These failures have forced the technicians to search on-line auction sites and third-party vendors in efforts to obtain replacement parts or cannibalize other system parts or borrow parts from neighboring public safety jurisdictions. A failure in one of the major components would severely impact the overall operation of the public safety radio system, limit system usage in terms of availability, and reduce or eliminate coverage in much of the geographical area now served. Replacement of key components with the new technology would take considerable time, disabling the system for as much as 6 months with an emergency purchase in place. It should be noted that this would be a very expensive upgrade/replacement as it will be unplanned and unscheduled. This would also jeopardize the ability of emergency responders to communicate efficiently, effectively, and - ultimately – field unit and citizen safety. A failure during a major incident or disaster like the Clackamas Town Center shooting would severely limit live saving communications.

**3. Who does the communications system serve?**

The communication system serves the majority of law enforcement and fire/EMS agencies in Clackamas County. The replacement system will allow all agencies countywide to utilize the same system.

**4. Who else does the system serve beyond public safety?**

The system also serves various public works departments, schools, Hospitals, Ambulance and EMT services and other public users to ensure coordinated voice and data communications (interoperability).

**5. Were other types of technologies looked at besides digital two-way radios?**

Yes, many systems were considered, among them fiber optics, satellite phones, ham radios, cell phones and Terrestrial Trunked Radio (TETRA), the system widely used in Europe but not in North America. These systems were excluded for a variety of reasons; the most common being high cost, instability under stress and the inability to give priority to emergency service providers.

**6. What other agencies have made this upgrade to digital and how did they fund it?**

Other Digital systems that have been or are in the process of upgrading in nearby jurisdictions:

Oregon:

- City of Portland – Bonds
- Frontier (Gilliam/Sherman/Wheeler) - Operating Funds / Tax wind farm revenue
- Lane County - Bond
- Benton County - Bond
- Linn County - Bond
- TriMet – Bond
- Rogue Valley Transit - Bond
- Salem (RFP) - TBD
- Deschutes County (RFP) - TBD
- ODOT / OSP - Legislature

Washington State:

- Washington State Patrol – Operating Funds
- Peirce County - Bond
- Peirce County Transit - Bond
- Tacoma - Bond
- King County – Bond
- Port of Seattle - Bond
- City of Seattle - Bond
- City of Spokane – Bond

Idaho

- Ada County (City of Boise) – Bond
- Idaho State Patrol - Bond
- Kootenai County - TBD
- Bond Canyon County - Bond

**7. What’s interoperability?**

*The ability of public safety responders to share information via voice and data communications systems, on demand, in real time, when needed, and as authorized.* Public safety communications can occur only when the communications paths (frequencies, equipment and signaling) are compatible. Interoperability is an important issue for law enforcement, firefighting, EMS, and other public health and safety departments, because first responders need to be able to communicate with one another during wide-scale emergencies. C800 first responders do this many times per month with joint responses to fires and traffic pursuits among other things.

This all became evident during the Sep. 11, 2001 attacks and multiple other disasters, many agencies cannot exchange information because they operate widely disparate hardware that is incompatible. The State and Federal governments post September 2001 require all public safety entities to have interoperability. The current systems are not capable of this.

**8. Will the new radio system be interoperable?**

Interoperability depends on agreements between jurisdictions about how they will communicate and operate together. C800 has current agreements and will be entering into additional ones to insure interoperability with adjacent systems such as: Washington County / City of Portland/Multnomah County; Clark County

Washington; Columbia County; Marian County; Yamhill County; Hood River County; Oregon State Police and ODOT; FBI and other federal agencies.

**9. How many radio sites are there?**

There are 10 existing sites in Clackamas County and 14 new sites will be added.

**10. How many police / fire / EMS radios are there?**

Clackamas County public safety users have 4,025 portable, mobile, and data radios.

**11. Who are WCCCA and C800?**

The Washington County Consolidated Communication Agency (WCCCA), and the Clackamas 800 Radio Group (C800), both ORS 190 organizations (Government Joint Ventures); each owns and operates the public safety communications system serving their respective counties. The WCCCA/C800 partnership is comprised of all the public safety providers within Washington and Clackamas counties with the exception of the City of Milwaukie, Hoodland RFPD, and Colton RFPD. Its mission is to provide public safety radio and data communications for the member agencies. WCCCA and C800 formed a partnership to combine the systems for greater efficiencies and interoperability of public safety communications. WCCCA manages and maintains the combined system.

**12. Who will manage and maintain the new upgraded system?**

When the radio project is complete, the new system will be managed by WCCCA Technical Services who currently manages and maintains the system.

**13. If we wait, won't the technology get less expensive as more jurisdictions will have implemented replacements?**

This premise certainly has proven to be true within some technology fields – a smart phone is introduced with a \$500 to \$800 price tag and 2 years later it's sold for \$50. With few exceptions, Smart Phones are subsidized by a contract with the service provider that has amortized the difference between the handset cost and the consumer price in the monthly contract costs. Once the customer has paid that subsidy off the amount previously used to pay off subsidy is now 100% profit to the cellular provider. This is not a model that fits Public Safety.

Unfortunately public safety communications equipment has a limited market and this condition does not happen. There is some reduction in price from initial introduction to actual production runs but that has already happened to this equipment. We do, however, see significant discounts when large quantities are ordered at one time with portable and mobile radios. This project is for infrastructure equipment however and unless radios are coupled with the infrastructure substantial discounts are very unlikely... especially in low volumes.

**14. If we wait, won't the federal government come to the rescue?**

Unfortunately, no. The existing system has been able to utilize over \$5M in federal grants but the bulk of those opportunities are no longer available. The Federal and State Homeland Security grants are still sometimes available but are in small denominations and have generally been awarded to multiple jurisdictions for equity versus a large infrastructure project. Most often these have been in the form of matching funds not fully funded federal initiatives.

**15. If we don't upgrade in a timely manner, what would happen?**

The equipment in our infrastructure ranges from 4 to 20 years old. Most of this equipment has reached or is rapidly reaching end of life and/or end of support. The manufacturers have generally set December of 2017 as a final date. As it will take up to 3 years to select suppliers, construct new communications sites, and install new equipment we are most likely to be at a risk of non-recoverable failures well into our new system construction cycle. The longer we delay the longer we remain at a level of increasing risk of catastrophic failure. As our equipment moves beyond end of life and/or end of support our ability to maintain and or

replace this equipment becomes difficult and potentially impossible. The following is a report of a recent failure on the Portland system that is of the same vintage system and equipment that the City is in the process of replacing.

*PORTLAND, Ore. (KOIN 6 April 17, 2015) – For several hours Thursday, emergency responders throughout Multnomah County were operating on backup systems after experiencing a “radio system failure,” city officials confirmed.*

*“We really couldn’t communicate with each other,”*

*Gresham police responded to the radio failure by having all patrol officers return to the station where they were partnered up. The department only responded to high priority calls and told officers not to “self-generate” calls,*

*Portland Fire & Rescue spokesperson said during the radio failure, all units were “recalled to their respective stations unless they were out on calls.” He said non-essential radio traffic was limited, and the fire bureau used backup radio channels as needed.*

*Communications Manager, Kelly Ball, said “the current radio system is made up of aging infrastructure and we have been working on a radio system replacement and upgrade project since 2011. This new system will build in redundancies to reduce the likelihood of system failures. The replacement project began when a \$50 million dollar bond measure passed in 2011. Motorola signed a contract to begin replacement in 2013 and the work is about 50% complete. The system is scheduled to be fully operational by June 2016.”*

Our system is experiencing an ever increasing number of operational issues or failures due to age in one form or another. WCCCA’s technical staff has fortunately been able to respond quickly and avert the same kind of outage Portland suffered. As they say “it’s only a matter of time” however.

We have experienced the same kind of failures but have been able to respond to them quickly to reduce the impact. We have had 3 Central Site Controller related outages since August of this year. Fortunately for C800 the impact has been to WCCCA users thus far.

Failure of end of life and/or end of support equipment will more than likely be unrecoverable and then require a large, unplanned expenditure and extended delays to restore service that might be as long as 6 months or more.

Communications Technology continues to evolve towards an Open Standards architecture (P25). This allows for multi-supplier compatibility as these Open Standards are embraced. This is driving down radio costs to some degree but meeting public safety standards demand higher costs.

As adjacent cities (Portland / Vancouver), counties, and states and the federal government adopt these new technologies and transition to digital, our ability to communicate with them will be reduced or eliminated. Where today we have a model of interoperability in the Portland metropolitan region, i.e. we easily talk between systems, as Portland and Clark County, Washington transition to digital we will lose that ability for our first responders to interoperate as they do daily today.

## **16. Communication System Reliability:**

The reliability of mission-critical public safety communications infrastructure during day-to-day public safety operations and during man-made and natural disasters is crucial to saving lives and property and to protecting the public during an emergency. The public safety communications infrastructure of Clackamas County is rapidly aging, outdated and at severe risk of failure. Further it requires extensive maintenance to support continuing functionality and to accommodate evolving technology;

The adopted Interoperable policies and standards by the Federal Communications Commission and the State of Oregon along with an aging infrastructure require replacement of the countywide public safety communications infrastructure. The deteriorating condition of our public safety communications systems is of continuing concern because it is critical to the safety and well-being of the residents of Clackamas County who depend upon lifesaving communications systems used by first responders. It is in the public interest of the citizens of Clackamas County to plan for improvement of the public safety communications infrastructure to ensure long-term stability and functionality as communications systems technology evolves.



## ATTACHMENT C

### C800 Board Member List July 15, 2015

Asst Chief Dustin E. Morrow	Tualatin Valley Fire and Rescue
Chief Bob Morrisey	Estacada Fire District
Chief Bret Smith	City of Canby - Police
Chief Fred Charlton	Clackamas Fire District #1
Chief Jim Band	City of Oregon City - Police
Chief Jim Davis	Canby Fire District
Lt. Jeff Jolley / Chief Stan Monte	City of Gladstone - Police / Fire
Chief Kim Yamashita	City of Sandy - Police
Chief Rod Lucich	City of Molalla - Police
Chief Terry Timeus	City of West Linn - Police
Chief Vince Stafford	Molalla Fire District
Chief Phil Schneider	Sandy Fire District
Larry MacDaniels	CC Health Department - Ambulance
Leslie Taylor	City of Lake Oswego - Police and Fire
Undersheriff Matt Ellington	Clackamas County Sheriff's Department