Putting Pima County in a Better State of Communication

Pima County Regional Public Safety Communications Network Proposal

Pima County Sheriff's Department, Clarence W. Dupnik, Sheriff

Regional Public Safety Communications Network

Scope:

Design, procurement and deployment of a regional public safety voice and data communications network to serve 19 fire districts, 9 police agencies, and Pima County Office of Emergency Management & Homeland Security. Project will provide widespread interoperable radio communications, reduce costs of constructing independent systems, and satisfy the immediate needs of several agencies.

Scope includes costs for design and procurement consultation, radio system infrastructure, dispatch consoles, mobile and portable radio equipment, high speed data infrastructure, new building construction to satisfy needs for an equipment facility, Sheriff's dispatch center, and the County's Emergency Operations Center, automatic vehicle locator technology, and replacement mobile data computers for the Sheriff's fleet.

The proposed system will provide widespread on street coverage for the majority of Pima County and will be scalable so that additional users, features and capacity can be added to the system as needs and resources dictate.

Justification/Benefit:

Communications interoperability is required by public safety agencies to provide the most efficient services possible. Independent radio systems hinder interoperability and increase costs to the taxpayers for construction. Several agencies and jurisdictions are in need of replacement systems. A single regional system can serve the needs of the entire community. This will benefit the community through lower costs resulting from shared infrastructure, widespread interoperability, shared management.

Location:

System central controller will be housed within the facility requested in this proposal. Antenna sites are to be determined. Reuse of existing sites in Marana, Pima County, Tucson and on the Tohono O'Odham Reservation are recommended with additional sites possible. Dispatch facilities will be installed where required by agency function.

Cost Estimate:

$70,472,682

Itemized Breakdown:

Engineering Design	$ 1,000,000
Radio Infrastructure & Equipment	$53,033,182
Communications Facility	$ 7,747,500
9-1-1 Telecomm Equipment	$ 1,500,000
Automatic Vehicle Location	$ 5,392,000
Sheriff's Mobile Data Computer Replacements	$ 1,800,000

Funding Options:

$70,472,682 General Obligation Bonds

Partial Funding from Federal Homeland Security Funds may be possible. Amount cannot be estimated at this time.

Project Duration:

Planning & Design	18 Months
Facility acquisition/construction	12 Months
System Procurement/Construction	18 Months
Total:	48 Months

Project Considerations:

1. Comprehensive needs assessment to determine the individual needs of partner agencies.
2. Development of partnerships with other governmental units.
3. Network governance structure agreement.
4. Funding ongoing maintenance and future replacement costs.
5. Spectrum availability
6. Environmental issues relative to new antenna site selection.

PROPOSAL: PIMA COUNTY REGIONAL PUBLIC SAFETY COMMUNICATIONS NETWORK

Public safety first responders rely on many tools to provide quality policing and fire services. None is more important for their safety and efficiency than their ability to communicate on demand, in real time with a reliable communications system.

THE NEED: INTEROPERABILITY FOR COORDINATED EMERGENCY RESPONSE

The primary concern of public safety agencies is the safety and protection of the citizens of Pima County. The greater the crisis, the more public safety agencies need an efficient, coordinated response. The police respond with front-line resources, crowd and traffic control; the fire departments with rescue and damage control. To aid the public quickly and effectively by functioning as a team, these responders need real-time communication with each other. And because such emergencies rarely respect geographic and political boundaries, public safety agencies of other communities – as well as other state and federal agencies - may also need to respond.

The terrorist attacks of September 11, 2001 serve to punctuate the need for interoperable, reliable communications for public safety workers. Analysis of the response to the World Trade Center and Pentagon attacks revealed the value of a coordinated response with highly effective interoperable communications.

From numerous interviews gathered as part of a fire department inquiry into the events of the World Trade Center incident, it would appear that noninteroperability was at least partially responsible for the loss of 343 firefighters. So poor were communications that on one side of the trade center complex a city engineer warned officials that the towers were at risk of "imminent collapse." Those he told could not reach the highest-ranking fire chief by radio. A messenger was sent across, dodging flaming debris and falling bodies, to deliver the message in person. He arrived with the news less than a minute before the first tower fell.

Meanwhile, at the Pentagon more than fifty public safety agencies responded and were guided by a preplanned mutual aid agreement that provisioned interoperable communications. Years of prior planning resulted in most area agencies using compatible 800 MHz trunking technologies. As a result, the majority of first responders to the Pentagon had Arlington County's radio frequencies programmed into their portable radio equipment. They were able to switch to the designated frequencies and communicate directly with the on-scene Incident Commander. During the initial response the majority of local public safety responders experienced no difficulty establishing interoperable communications at the scene.

While planning for and the eventual execution of interoperability protocols in the Pentagon tragedy may not have been flawless, they do offer a sharp contrast to those at play in the response to the World Trade Center disaster. The message in both incidents is that interoperability, rather than noninteroperability, is clearly the better choice in tactical situations, especially when lives are at risk according to the conclusions of the Public Safety Wireless Network in their research report, *Answering the Call: Communications Lessons Learned from the Pentagon Attack,* January 2002.

Although attacks like those on the east coast are not anticipated in Pima County we are none-the-less vulnerable to terrorist activities and other tragic events that pose similar risks. The international border with Mexico is largely unsecured and vulnerable to terrorist crossings. As we already know, some of the September 11 highjackers had connections to Tucson and Arizona. We should also reflect on events that have tested our public safety community in the past as a predictor of events we must be prepared to handle in the future.

Remember....

- December 20, 1970 - Twenty-nine people perished in the Pioneer Hotel fire downtown.
- October 26, 1978 - An Air Force A-7D Corsair crashed onto North Highland Avenue near the University of Arizona.

- October 1983 - Thirteen people died and property damage was counted in the hundreds of millions of dollars as relentless heavy rains caused major flooding in the Tucson area. Crippling floods again struck Pima County in January 1993.

- 1984 – Federal, state and local law enforcement agencies conducted one of the most extensive manhunts in Pima County history resulting in the capture and prosecution of Frank Jarvis Atwood for the brutal abduction and slaying of 9-year old Vicki Lynn Hoskinson.

- Between 1983 and 1986 the "Prime Time Rapist" terrorized the Tucson community. The suspect, Brian Larriva, committed suicide as a multi-agency task force attempted to arrest him.

- 1995 - Arson fire destroyed 40 percent of Old Tucson Studios and fire consumed the Hidden Valley Inn Restaurant.

- March 31, 1997 - The University of Arizona men's basketball team won the national championship. A crowd of revelers rioted on North Fourth Avenue.

- April 2000 - A Marine Osprey helicopter crashed at Marana Air Park killing its crew and passengers.

- June 17, 2003 – The Aspen Fire caused the evacuation of Summerhaven and largely destroyed the community. Local fire and Sheriff's resources aided in the firefighting, evacuation, security and re-entry efforts.

Emergencies like these, as well as day-to-day and task force operations require cooperative efforts from local, state and federal public safety agencies. Effective interoperable radio communications is an essential component of these cooperative efforts. It is foreseeable that coordinated responses to future events of this sort will be necessary.

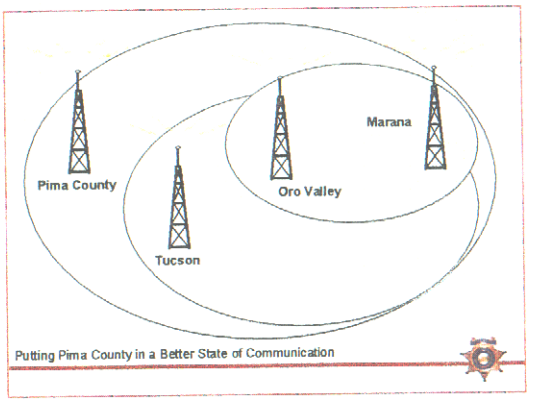
It is time for Pima County to improve public safety through deployment of a regional communications network.

It is time to put Pima County in a better state of communication!

PIMA COUNTY COMMUNICATIONS: A STATUS REPORT

Pima County tax payers fund seventeen fire districts, seven police agencies and the Pima County Office of Emergency Management and Homeland Security. Collectively these entities are responsible for providing public safety and emergency management services to the Pima County populace, and most specifically to their individual jurisdictions.

Their independently developed communications systems hinder interagency communications and compromise public safety. Systems deployed to meet the needs of individual jurisdictions are overlaid by even larger systems providing overlapping coverage within the same geographic area.



The cities of Oro Valley, South Tucson, Tucson, Town of Marana, Pima County, and some of the fire districts operate their own communications systems. Other smaller jurisdictions have made arrangements to share a neighboring system to meet their needs. These individual systems utilize proprietary equipment and operate in disparate frequency bands making effective interoperability very difficult.

Fourteen local and state agencies have cooperatively deployed a radio gateway that rebroadcasts transmissions from one system to others on dissimilar frequencies from a radio site in the Tucson Mountains. This provides limited coverage, only one channel on which to interoperate, and communications delays. Because of its limitations, this system has rarely been put into service. We know however that when catastrophic events occur, multiple channels and widespread coverage are required to coordinate public safety activities. This level of resource is not available.

Several jurisdictions are planning replacement systems. If standards based systems are not deployed and existing frequencies are re-used we will not improve our interoperability opportunities.

The City of Tucson has completed a needs assessment and conceptual design for a system to replace their 20-year old system. Cost estimates for replacing their radio communications system, microwave backbone, and communications center range from $79 – 90 million. Their vision....to provide in building voice radio coverage and on street data communications within their jurisdiction for all city workers requiring voice and data radio communications. The emphasis is on public safety communications as these workers have the most critical demands.

The Town of Marana has begun planning for replacement of their single site conventional radio system.

Northwest Fire Department has begun a planning process to replace their conventional radio system and to provide their own dispatch facilities.

Drexel Heights Fire Department has identified a need to improve their radio communications capabilities.

Pima County has a need to provide improved voice radio communications for the Sheriff's Department, replace commercial communications services for data, expand its radio communications coverage area, improve disaster preparedness, and to expand its communications facilities.

In 1997 a bond proposal to upgrade the County's then existing Ericcson 800 MHz radio system was not sent to the voters. In 1998 a need to upgrade the Ericcson system for Y2K compliance was identified. Following failed negotiations with Ericcson to upgrade the system the County was forced to quickly procure a replacement. $2.8 million dollars was transferred from a jail construction bond project to fund the new purchase. A replacement system provided by EF Johnson was deployed in late 1999. Since that time most County departments have migrated to use of this system.

The EF Johnson 800 MHz communications system in use today adequately serves the needs of all County users except the Sheriff's Department. Law enforcement officers demand far greater system performance and reliability than other public works and administrative users. This system has failed to meet law enforcement's needs for rapid system access, reliability, coverage, emergency calling, encrypted communications and interoperability. In fact, it failed to meet our contract specifications. After two years of negotiations with EF Johnson and several system modifications it was determined that the engineering design of the system would not provide improved system performance to meet the law enforcement requirements. The County's only remaining option was to accept the system and its deficient performance in exchange for a reduced cost.

System performance tests conducted by EF Johnson revealed that on average the Sheriff's Department's three primary talk groups suffer 1,208 call session failures each week, or 62,816 calls per year that either do not, or do not completely reach each of the intended receivers. These talk groups are utilized to dispatch deputies and to communicate information between units about criminal activity and emergency incidents they are trying to manage. Although there are several key technical deficiencies that make up our justification for a replacement system for public safety, this single appalling fact is justification enough. It is unconscionable that 62,816 times per year our emergency responders experience ineffectual communications. It is for this reason that improving voice radio communications is the Sheriff's Department's number one priority.

PROPOSAL: PIMA COUNTY REGIONAL PUBLIC SAFETY COMMUNICATIONS NETWORK

The Pima County Sheriff's Department proposes a regional communications network that would service the needs of all locally funded public safety agencies while the County's EF Johnson system would continue to service the needs of the other County Departments. The proposed system would be scalable to allow the addition of state and federal agencies with resources to further expand the project. Other governmental departments could also migrate to the system as need and resources permit.

This is not a new idea. Numerous other jurisdictions have successfully implemented regional systems to benefit public safety and the taxpayers who fund these services. We can leverage the lessons learned from others to provide a technically advanced, reliable voice and data communications network that will provide the interoperability necessary to facilitate coordinated response to local emergencies.

Pima County Regional Public Safety Communications Network

Ajo/Gibson Volunteer Fire Dept.
Arivaca Volunteer Fire Dept.
Avra Valley Fire District
Corona de Tucson Fire District
Drexel Heights Fire District
Elephant Head Volunteer Fire Dept.
Golder Ranch Fire District
Green Valley Fire District
Helmet Peak Fire District
Mt. Lemmon Fire District
Northwest Fire District
Pascua Pueblo Fire Dept.
Picture Rocks Fire District
Rincon Valley Fire District
South Tucson Fire Dept.
Three Points Fire District
Tohono O'Odham Fire Dept.
Tucson Fire Department
Why Fire District

Marana Police Department
Oro Valley Police Department
Pascua Yaqui Police Department
Pima College Dept. of Public Safety
Pima County Sheriff's Department
Sahuarita Police Department
South Tucson Police Department
Tohono O'Odham Tribal Police
Tucson Police Department

Pima County Office of Emergency Management & Homeland Security

The proposal before the committee will provide all of the components of a standards based digital voice and data radio communications network to meet the needs of the entire local public safety community. The plan specifies reuse of existing infrastructure such as antenna and microwave facilities to minimize costs. Populated areas of the county will be provided on-street portable radio coverage. Jurisdictions desiring enhanced in-building coverage would be able to add additional antenna sites to meet their needs.

The use of standards as the basis of a radio system has multiple advantages. A standards based system will ensure compatibility with other standards based systems in the State. It is conceivable that a network in Pima County could interface with the system currently being installed by the Cities of Phoenix and Mesa. This could create a communications corridor between the two most populous areas of the state so that public safety providers could share seamless communications for events occurring across County and other jurisdictional boundaries. A standards based system with open architecture encourages competition in the market place keeping the cost to taxpayers lower. Another significant factor is the availability of multiple equipment sources. Multiple vendors can provide competitive pricing and feature varieties to allow selection of the equipment best suited to individual agency requirements. A standards

based system with software driven radios will also assure that we will be prepared to migrate to different spectrum as it is approved by the Federal Communications Commission.

This proposal will deploy a digital 800MHz trunked radio system operated throughout Pima County. This will allow us to reuse and split frequencies already licensed to the County and other partners to serve more needs. Use of a trunked system with a simulcast subset will assure the most efficient use of our spectrum resources.

The proposed system is inclusive of high performance data communications. Police and fire agencies utilize mobile data technology to provide their first responders with information that can help them to successfully manage incidents. Police officers require computer aided dispatch and intelligence information, while firefighters are aided by information about facilities, hazardous materials inventories and location maps. The cost estimates before you are inclusive of the network infrastructure and equipment to replace the Sheriff's mobile data computers as they reach the end of their life expectancy.

Global positioning satellite technology is also proposed. GPS transmitters in mobile radios will send the coordinates of vehicles to a mapping application so that agencies can immediately identify, locate and manage their personnel resources. This will improve both public and first responder safety.

COMPANION FACILITY REQUIREMENTS AND NEEDS

As described, a communications network is an important element of coordinated emergency response. When catastrophic events occur our first-responders are challenged to perform life saving tasks and to minimize property damage. The staff and facilities that support their needs are often overlooked. The Pima County Sheriff's Department dispatch center and the County Emergency Operations Center both play pivotal roles in the successful outcome of large scale emergencies. Both are undersized and would benefit greatly from expansion projects to meet the increasing needs of the community. As we build new radio network infrastructure it will be necessary to construct a facility to house the switching and transmitter equipment. The County's radio room located in the Sheriff's headquarters building is not able to accommodate an additional system. As we construct a new facility for this purpose it is an opportune time to create additional space to expand the Sheriff's dispatch and County Emergency Operations Center facilities. This would improve our disaster preparedness in that it would relocate and separate critical information and communications systems that support the Sheriff's operations. The Sheriff's Administration Building houses 9-1-1, radio, telephone and information system switching equipment. An attack on this facility could cripple the Sheriff's ability to communicate and access information. Construction of a new facility would allow for the relocation of 9-1-1 and radio systems infrastructure and provide a back up communications center which is not a current luxury. As a result we would be better prepared to secure our homeland should the need arise. The costs associated with this expansion are included in the project costs.

IT IS TIME TO PUT PIMA COUNTY IN A BETTER STATE OF COMMUNICATION

It is time to put Pima County in a better state of communication because for perhaps the first time in our history we have a convergence of need at a time when technology is prepared to meet that need.

It is time to put Pima County in a better state of communication because for once the collective community understands that a regional approach will best serve Pima County. While we may not have yet come to agreement about governance and control of a regional system, the benefits cannot be denied. A regional radio system will create opportunity for agencies to work closely together for a common goal.

It is time to put Pima County in a better state of communication to provide effective interoperable voice communications to our public safety workers so that they may provide improved public safety services.

It is time to put Pima County in a better state of communication to prevent duplication of effort and increased costs to the taxpayer for build out of new independent radio systems.

It is time to put Pima County in a better state of communication to provide our public safety workers with a communications network that will improve their safety and access to resources.

It is time to put Pima County in a better state of communication!