



**Regional Wireless Cooperative**

# **2011 ANNUAL REPORT**

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## EXECUTIVE DIRECTOR'S MESSAGE

Dear RWC Board of Directors and Community Members:

It is with great pleasure that I submit this first annual report highlighting the achievements of many individuals who serve and support the Regional Wireless Cooperative (RWC).

As described in the following pages, the RWC is a public safety radio communications system conceived, planned, funded and deployed through members representing 18 cities, towns and fire districts in the greater Phoenix metropolitan area.

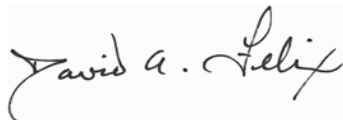
Since the events of September 11, 2001 the vision of a multi-jurisdictional, interoperable public safety radio system has been brought to life through the efforts of a large team of government and private sector professionals. Today, the RWC is one of the largest, most complex public safety radio networks in the country, supporting over 14,600 front-line member users and over 6,800 non-member interoperability participants who engage in some of the most hazardous duties in America.

Formally known as the Phoenix Regional Wireless Network (PRWN), the RWC has been operational for many years with the current intergovernmental agreement (IGA) ratified in February 2009. This IGA formed the structure and necessary support staff to assist the City of Phoenix, as the Administrative Managing Member; to plan, maintain, expand and modernize the RWC network. In May 2010, I was hired as the RWC's first executive director. Throughout the course of this year I was privileged to hire and elicit the assistance of an exceptional staff who established the RWC office and administrative structures.

The City of Phoenix Information Technology/Radio Services team has worked tirelessly this year with RWC members and Motorola Solutions to make significant progress integrating the cities of Chandler, Scottsdale, Buckeye, Goodyear, Avondale and Tolleson into the RWC fold, managing numerous projects that will enhance the RWC's coverage footprint and provide back-up capabilities in the event of emergencies.

My thanks goes out to the Board of Directors, Executive Committee, Operations Working Group, Phoenix Information Technology and so many other partners and individuals, for your positive and unrelenting support. Your efforts have made the Regional Wireless Cooperative a national model of cooperation and success for the public safety professionals who dedicate their lives to the protection of our communities and our citizens.

Sincerely,



David Felix  
Executive Director  
Regional Wireless Cooperative



## OVERVIEW

### Background

The VHF communications system formerly used by the City of Phoenix's public safety and other departments was based on 1950s technology and unable to meet the operational needs of its users. After much study and several consultants' recommendations, the City replaced the existing system with a Project 25, digital, 800 MHz trunked radio system. 2001 Bond Funds were approved by Phoenix residents to pursue the replacement, which was completed in 2005.

The City formed the Phoenix Regional Wireless Network (PRWN) and began transitioning Phoenix Police, Fire and municipal departments to the new system. PRWN was intended to be a regional radio system supporting the City's operations as well as the Fire Department's automatic aid partners.

In 2008, in order to meet the needs of the expanding network and its many new partners, the Regional Wireless Cooperative (RWC) was formed; PRWN transitioned to RWC upon its formation. The RWC now oversees the administration, operation, management, maintenance and growth of this regional communications network.

### Governance

The RWC is a cooperative body formed under an Intergovernmental Agreement. Membership is open to all local, state, and federal governmental entities and tribal entities and is expected to include the majority of cities in the Phoenix metropolitan area. Governance provides for a Board of Directors consisting of one executive representative from each Member. The Board directs the operation, maintenance, planning, design, implementation, and financing of the RWC.

The City of Phoenix serves as the "Administrative Managing Member" responsible for the administration and financial management of the RWC. Four administrative staff positions support the RWC: Executive Director, Accountant III, Management Assistant I, and Administrative Aide. RWC staff are City of Phoenix employees residing in the Government Relations office.

### System Description

The RWC is a large, Public Safety radio network based on the Project 25, Phase I Standard. The network is an ASTRO 25™, Integrated Voice and Data, trunked radio system. It operates in the 700/800 MHz frequency bands and uses standard Simulcast, IP Simulcast, and individual site trunking. The network consists of seven (7) major simulcast subsystems and ten (10) Intelligent Site Repeaters (ISRs).

The system provides seamless, wide area coverage across the entire metropolitan area. It is data capable, but at the current time is only used in a data capacity to provide encryption services.

Some of the benefits of this large regional radio system include wide area coverage beyond what cities could achieve individually; seamless *interoperability* (the ability for diverse public safety agencies to communicate directly, in real-time, as the need requires); shared resources, such as people, equipment and tower sites and funding and financial responsibilities shared by all members based on their relative size, measured by the number of radios on the network and increased success in obtaining state and federal grant support.

## OVERVIEW (continued)

### Interoperability

The RWC system has provided a platform on which to build interoperability with many other agencies. Because of the regional nature of the system, significant grant funding has been made available to increase the regional use of the system and reduce the cost of membership in the RWC. Grants have been used to link the many dispatch centers, also known as Public Safety Answering points (PSAPs), in the Valley; add the City of Tempe to the network; increase system capacity to allow greater roaming and interoperability; add several mountain sites to be used for very wide-area coverage, emergency backup and wide area interoperability; provide connectivity to Peoria's new system; and provide cache radios to be used for emergencies.



The RWC system has been effectively used to provide interoperable communications for several special events in the metropolitan area. The system was used during the 2004 Presidential Debate linking motorcade officers, providing interoperability for Tempe and ASU, and administrative communications for the ASU staff coordinating the debate. The system provided support for the annual Fiesta Bowls, the BCS football game, the 2008 Super Bowl, and the 2009 NBA and 2010 MLB All Star games. The Super Bowl, in

particular, clearly demonstrated the need for a truly regional radio system and has prompted more discussions between the metropolitan cities regarding more effective use of the RWC.

Many non-members of the RWC have programmed radios to allow them to interoperate with RWC members and other agencies around the Valley. These agencies include members of federal, tribal, state, county, local, quasi-government and support agencies:

Arizona State University  
 Alcohol Tobacco and Firearms  
 Arizona Department of Corrections  
 Arizona Department  
 of Emergency Management  
 Arizona Department of Health Services  
 Arizona Department of Public Safety  
 Arizona Department of Transportation  
 Arizona Government  
 Information Technology Agency  
 Arizona Department  
 of Liquor License and Control  
 Arizona Radiation Regulatory Agency

Arizona Terrorism Liaison Officers  
 Central Arizona Project  
 Gila River Indian Community  
 Maricopa County Adult Probation  
 Maricopa County Sheriff's Office  
 PMT and Southwest Ambulances  
 TOPAZ Regional Wireless Cooperative  
 Transportation Security Administration  
 US Dept of Justice  
 US Drug Enforcement Agency  
 US Federal Bureau of Investigation  
 US Federal Reserve Bank  
 US Marshals Service

## MISSION STATEMENT

*The Mission of the Regional Wireless Cooperative (RWC) is to provide seamless operable and interoperable communications for all Members through a governance structure founded on the principle of cooperation for the mutual benefit of all Members*

In November of 2010, the newly formed staff of the RWC, as a component of the City of Phoenix's Government Relations Department, met to develop a strategic plan to assist them in serving the needs of RWC Members, Board of Directors, Executive Committee and other work groups. The following Value Statements are intended to focus staff's efforts and memorialize their commitment to support the RWC Mission:

### **We Are Dedicated to Serving Our Customers**

We succeed by responding to and focusing our attention on the needs of our customers.

### **We Value and Respect Diversity**

Understanding diversity helps us to work together and serve our communities.

### **We Work as a Team**

Teamwork is the basis of our success. We use cooperation as our first tool in working with others.

### **We Each Do All We Can**

We each have the opportunity and responsibility to develop and use our skills to the highest level.

### **We Learn, Change and Improve**

We are open to new methods and we listen and learn from others. Training and education is the basis for our success.

### **We Focus on Results**

Each of us knows the level of our customer satisfaction, our response time in delivering services and the cost of those services. We use information about the results we provide so we can improve.

### **We Work with Integrity**

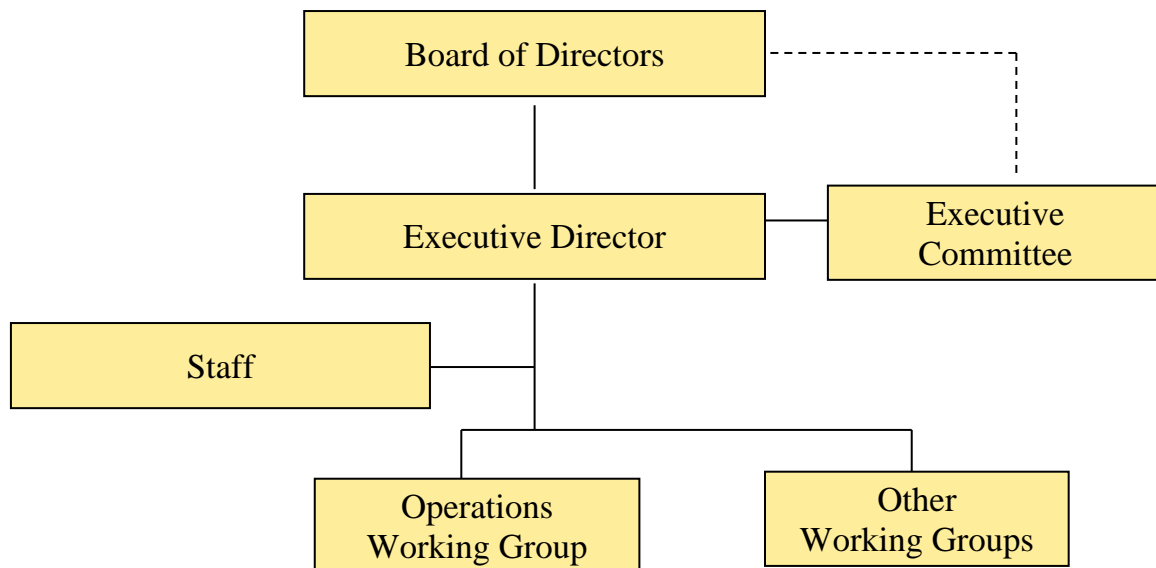
Whenever we make a decision, provide a service or deal with customers, we act with honesty and integrity.

### **We Make the RWC Better**

We work to make the RWC better. Improving the RWC is the reason we come to work each day.

## ORGANIZATIONAL STRUCTURE

The RWC is governed by a Board of Directors, with all members of the RWC having a seat and a vote on the Board. The Executive Director reports to the Board of Directors and serves as a non-voting member of the Board-appointed Executive Committee. The Executive Director is supported by the Executive Committee, Operations Working Group, and other Working Groups, in addition to three staff positions who assist with the administration and financial management of the RWC. The Executive Director and staff are City of Phoenix employees residing in the Office of Government Relations.



MEMBERS





## BOARD OF DIRECTORS

### Chair

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### Vice Chair

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## EXECUTIVE COMMITTEE

The purpose of the Executive Committee is to provide high level expertise in communications and operations, advise the Board of Directors, help direct the efforts of the Executive Director and provide intermediate strategic direction for the RWC. Functions of the Executive Committee include review and approval of all proposals and recommendations, budget and financial reports, Network performance reports, and Board of Directors meeting agendas prior to submittal to the Board of Directors. The Executive Committee also identifies performance issues and recommendations for Network enhancements and construction.

The Executive Committee consists of five Representatives appointed by the Board of Directors, plus the Executive Director who is a non-voting member. Representatives, selected from the RWC Membership, consist of: one (1) Police Department executive manager; one (1) Fire Department executive manager; one (1) Municipal executive manager; one (1) Chief Information Officer (or equivalent); and one (1) executive manager from a Network Managing Member. The Executive Committee may not be comprised of Representatives from only one Member and every two years the Board of Directors reviews the Executive Committee representation. The Executive Committee Chair serves a two-year term.

The Executive Committee conducts regularly scheduled meetings at least once monthly prior to the Board of Directors meeting.

### Executive Committee Members

#### Chair

Bill Phillips  
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## OPERATIONS WORKING GROUP

The Operations Working Group is responsible for addressing Network operational issues and maintaining Board-approved comprehensive policies and procedures for the operation and maintenance of the Network. The Operations Working Group reviews the RWC policies and procedures on an as needed basis, but not less than bi-annually, and submits necessary revisions to the Executive Director for Board of Directors' approval.

Each Member may have up to three (3) representatives ("Agency Representatives"), with one (1) Agency Representative each from a Law Enforcement Agency, Fire Services Agency and Municipal Agency. However, each Member may only have an Agency Representative from each agency for which the Member has actual users on the Network. The Agency Representatives act as liaisons to their respective agencies and are responsible for promptly notifying the Operations Working Group of issues potentially affecting Network operations.



## FINANCIAL MANAGEMENT

The responsibilities and tasks of managing the financial well being of The Regional Wireless Cooperative includes Fund Management, Budget Development, Subscriber Unit Rates and Fees, Member Billing, Procurement, Financial Reporting and Financial Audit.

### RWC Budgetary Information for Fiscal Year 2010-11 and 2011-12

	<b>FY 2010-11</b>	<b>FY 2011-12</b>
<b>Operations and Maintenance</b>	\$7,747,891	\$8,076,023
<b>Special Assessments – Staffing</b>	\$528,191	\$590,731
<b>System Upgrade</b>	\$505,890	\$0.00
<b>Required Minimum Balance</b>	\$0.00	\$83,771
<b>Total Budget</b>	\$8,781,972	\$8,750,525
<b>Subscriber Unit* Rate</b>	\$46.15	\$39.30
<b>Total Positions (Administrative Staff)</b>	4	4

\* Includes: mobile and portable radios, dispatch consoles and control stations.

## FINANCIAL MANAGEMENT (continued)

### **Funding**

The RWC is funded through annual membership fees and special assessments from the Members. The annual membership fees are used to pay administrative services costs, network operations and maintenance services, network infrastructure replacement, and enhancement projects such as system upgrades.

### **Operations and Maintenance Costs**

The operations and maintenance portion of the budget is used to pay for the cost of maintaining the RWC Network. Expenditures include labor costs related to network operations and maintenance, microwave expenses, and software subscription and service agreements contracted through Motorola. Other costs include land leases, utilities charges, insurance premiums, and maintenance managing member expenses.

### **Special Assessments – Staffing**

The special assessments for staffing are used to allocate the costs associated with the RWC Executive Director and the support staff. Such costs include salaries for staff and an Encryption Specialist, a Project Manager's wages, and office expenses.

### **Infrastructure Replacement and Enhancement Fund**

Funds budgeted for system upgrades, infrastructure replacement and other long term capital projects are accounted for in this fund. Funds from RWC members deposited into the Infrastructure Replacement and Enhancement Fund are included in determining RWC Members' equity percentages.

### **Required Minimum Balance**

The required minimum balance is used to provide cash flow for the cost of operating and maintaining the communications network. Member billing for the required minimum balance is accounted for in an RWC operating reserve fund.

### **Equity**

Members of the RWC who contributed assets or funds to pay for RWC infrastructure have equity in the RWC. The total Members' equity in the RWC is equal to the Net Value of RWC.

## FINANCIAL MANAGEMENT (continued)

### Grants

#### **Community Oriented Policing (COPS) 2007, Capacity Increase Executive Summary**

This project represents a multi-jurisdictional, multidisciplinary approach to allowing day-to-day voice interoperability in the Metropolitan Phoenix region. Currently, system coverage exists over most of the urban area. The limitation that exists is the capacity needed to support numerous interoperability partners from local, county, state, tribal, and federal entities who are requesting access to the network to assist with preplanned events and unexpected incidents.

The goals of this proposal are to:

- Utilize existing infrastructure (coverage) and increase system capacity by the addition of 700 MHz and 800 MHz frequencies to supplement the current capacity. This project would increase capacity at the following sites:
  - Increase Simulcast A from 20 to 23 channels
  - Increase Simulcast C from 10 to 18 channels
  - Increase Simulcast G from 12 to 18 channels
- Provide an opportunity for smaller agencies to potentially join the regional system and have wide-area roaming capabilities for interoperability at lower initial costs.
- Allow outside jurisdictions the ability to operate their subscriber equipment with interoperable talkgroups on the regional network to facilitate response on day-to-day interoperability needs and during critical events or incidents that occur in the region.

The total cost of this project is \$7,122,469.00. The total federal funding is \$5,341,851.80 with a local match of \$1,780,617.20.

#### **Public Safety Interoperable Communications (PSIC) 2007 Executive Summary**

This initiative is establishing seven (7) high elevation sites around the Central Region (Towers Mountain, White Tanks, Far North Mountain, North Mountain, Thompson Peak, South Mountain, and Sacaton). These high-sites provide a network that may be utilized by all agencies (local, county, state, federal, and tribal) that have 700MHz, P25 capable equipment. It provides on-street coverage for a majority of agencies in the Central Region without impacting any one agency's radio network. In addition, in the event of a significant system problem or failure, it serves as a back-up for the RWC, permitting it to continue operations for a significant population base in Arizona. This network will facilitate handling many major planned events and unplanned incidents each year. In order to add additional users and partners, this project also upgraded the system, to the version 7.4 platform, to accommodate additional sites, consoles, and users.

PSIC funding in the amount of \$7,377,000 is being used to build-out the various high-sites. The RWC provided \$8,400,000 for the system upgrade as the in-kind match for the grant. The total implementation costs are \$15,777,000.

## PLAN FOR THE FUTURE

RWC PROJECTS	2009/2010	2010/2011	2011/12
<b>Governance</b>	Support Staff	Net Ops (1); Infr (3)	Infr (2); Mwave (1)
<b>Software &amp; Hardware Upgrades</b>		7.7 Funding	Windows 7
<b>Fire Transition</b>		Complete Non-Hazard Zone Transition; Update Radio Counts & Adjust Billing	
<b>Buckeye</b>		Commence Buildout	Complete Buildout; Update Radio Counts & Adjust Billing
<b>Daisy Mountain Fire District</b>	Evaluate Current Configuration		Evaluate & Proposal
<b>Chandler</b>		Complete Buildout	Update Radio Counts & Adjust Billing; Add Site O&M
<b>Glendale &amp; Avondale</b>			Complete Buildout; Update Radio Counts & Adjust Billing
<b>Goodyear</b>		Tentative Start	Tentative Completion; Add Site O&M
<b>Scottsdale</b>			Transition & Project Completion; Update Radio Counts & Billing
<b>Transit</b>	Complete Conceptual Design		Possible Project Begins
<b>700 MHz Narrow-banding (Federal mandate to comply by Jan 2017)</b>		Commence Awareness & Planning	Request to Federal Communications Commission to Delay 2017 Mandate
<b>800 MHz Re-banding</b>	Commence Planning		
<b>COPS Grant Capacity Increase</b>		Complete	End Warranty; Increase Software Subscription Agreement (SSA) & Svc
<b>In-Fill</b>		Complete Dove Valley & Arcadia; Add Site O&M	Increase SSA & Svc; End Warranty for ASU; Increase SSA & Svc; Complete ASU; Add Site O&M; End Warranty for Dove Valley & Arcadia
<b>PSIC Grant High Sites</b>	Complete North Mtn. & Far North Mtn.; Add Site O&M	Complete South Mt; Add Site O&M	Complete South & North Mt, Sacaton, Far North & Towers Mt; Add Site O&M; Increase SSA & Svc; End Warranty for South Mt; Increase SSA & Svc; Complete Thompson Peak; Add Site O&M

**PLAN FOR THE FUTURE (continued)**

<b>RWC PROJECTS</b>	<b>2012/2013</b>	<b>2013/2014</b>	<b>2014/2015</b>
<b>Governance</b>			
<b>Software &amp; Hardware Upgrades</b>	7.11		7.15
<b>Fire Transition</b>			
<b>Buckeye</b>	End Warranty; Increase SSA & Svc		
<b>Daisy Mountain Fire District</b>			
<b>Chandler</b>	End Warranty; Increase SSA & Svc		
<b>Glendale &amp; Avondale</b>			
<b>Goodyear</b>	Tentative End Warranty; Increase SSA & Svc		
<b>Scottsdale</b>	End Warranty; Increase SSA & Svc		
<b>Transit</b>	Completion by December 2012		
<b>700 MHz Narrow-banding (Federal mandate to comply by Jan 2017)</b>			
<b>800 MHz Re-banding</b>			
<b>COPS Grant Capacity Increase</b>			
<b>In-Fill</b>			
<b>PSIC Grant High Sites</b>	End Warranty for North Mt & Far North; End Warranty for Sacaton & Towers Mt; Increase SSA & Svc; End Warranty for Thompson Peak; Increase SSA & Svc		
<b>Base Station Upgrade (Product Group STR to GTR (STR will work through 7.19))</b>		Estimated Completion; STR Parts Support Ends	
<b>END USER PROJECTS</b>	<b>2012/2013</b>	<b>2013/2014</b>	<b>2014/2015</b>
<b>Gold Elite to MCC7500 Replacement</b>			Parts Support Ends
<b>MCC7500 Upgrade: General Purpose Input/Output (GPIOM) to Voice Processor Module (VPM)</b>			Need VPM before 7.15 upgrade; GPIOM Parts Support Ends



## MOTOROLA SCORECARD

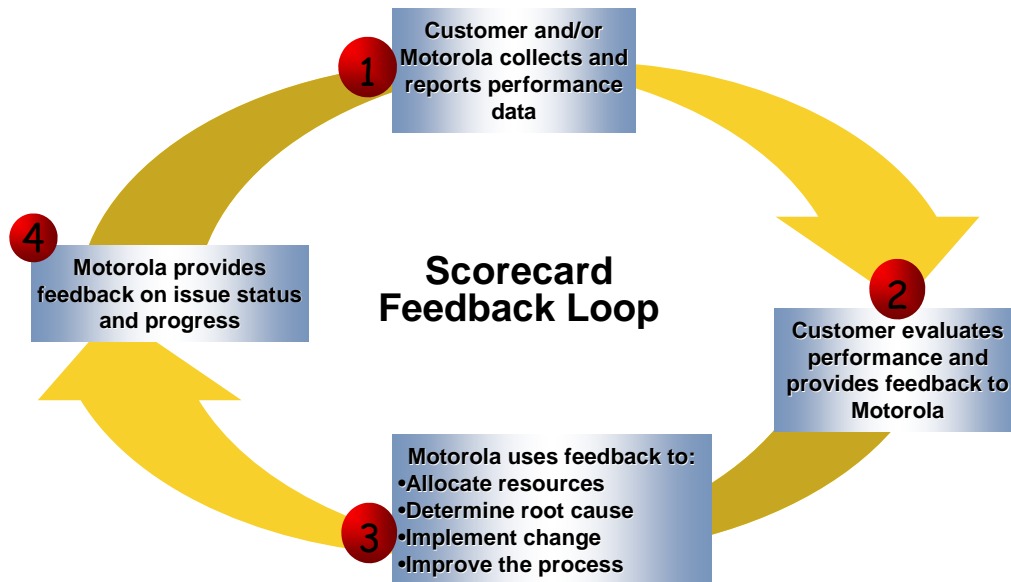
The scorecard initiative, which began at the end of 2004, is a joint process between Motorola and its top customers. Scorecard customers are large entities with plans and strategies in place and who have an idea of how Motorola can assist them. At present, there are 27 scorecard customers worldwide and 11 in the United States which included 5 public safety entities.

The scorecard initiative is a way for Motorola to improve its performance by validating a customer's key requirements through measurable objectives. Quarterly meetings are held with Motorola's local team, select executives, and RWC Members.

The continuous improvement model includes the collection of performance data, evaluation by the customer, and feedback to Motorola so that improvements can be made.

The 2011 Scorecard for the RWC had 13 metric/performance items. Many of the deliverables are very strategic and also help other customers of the same size. The RWC was the first to request a five-year rolling plan and now every customer's scorecard has this process.

## The Scorecard Process is based on a Continuous Improvement Model



## PROJECTS AND ACCOMPLISHMENTS

These projects, underway in 2011 and beyond, will improve the coverage and reliability provided by the Regional Wireless Cooperative to its members.

### **Fire Transition**

Given the need for direct radio to radio communications in the “Hazard Zone” (fire ground or hazardous materials handling area), the Fire agencies on the RWC are transitioning onto the RWC network in phases. The network is being used for all non-Hazard Zone (predominately medical response) communications and the Fire agencies are examining alternatives for meshing Hazard Zone communications with the RWC network.

### **RWC Build-out**

#### **Buckeye/Goodyear**

Four new sites are being added to the RWC network forming a Simulcast J sub-system in the southwest valley. These new sites will carry the primary communications traffic for Buckeye and Goodyear, Police, Fire and Municipal users.

#### **Chandler**

In 2011, the Chandler Police Department and municipal users joined the Chandler Fire Department as participants on the RWC network. This addition expands the Simulcast C sub-system to provide additional coverage and capacity to support these users. The Simulcast C prime site is also being relocated into Chandler, to provide greater redundancy and reliability.

#### **Glendale/Avondale**

Both Glendale and Avondale are already Fire participants on the RWC. Currently the two cities are using Glendale’s radio system to support their respective Police departments. This project will add the Police and Municipal users onto the RWC network. No new coverage or capacity is required, but a new zone is being created, using Glendale’s existing master site, to provide support for their Gold Elite consoles.

#### **Scottsdale**

This project has added a new, seven-site, Simulcast H sub-system to the RWC to bring all Scottsdale Police, Fire and Municipal users onto the network. It also creates a new zone to provide support for Scottsdale’s Gold Elite consoles and increase geographic separation and reliability for the network.

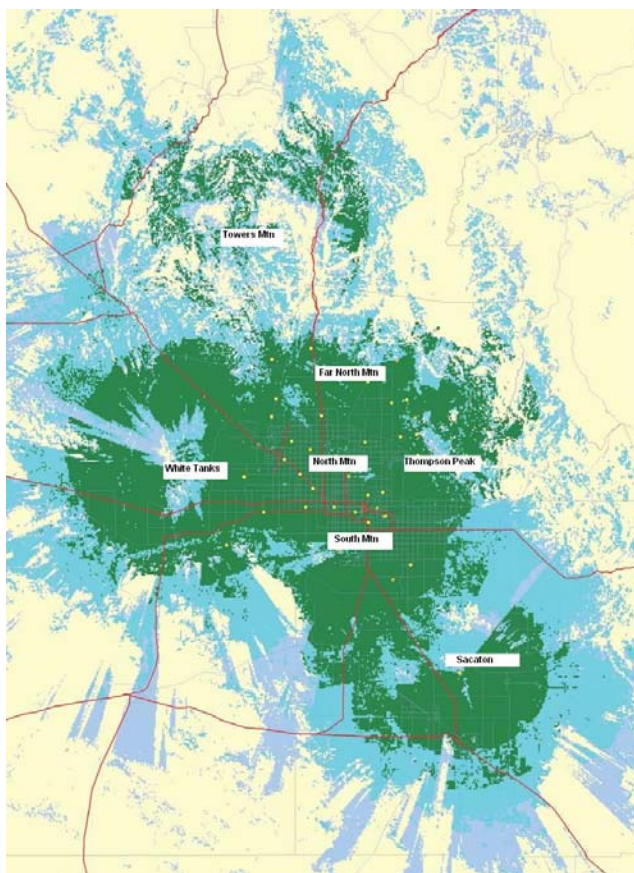
## PROJECTS AND ACCOMPLISHMENTS (continued)

### **COPS (Community Oriented Policing) Grant Capacity Increase**

This federal grant program is providing additional capacity on three of the RWC Network's major sub-systems. The purpose of the additional capacity is to increase the ability to support wide area interoperability and to provide additional roaming capacity for all RWC Members.

### **PSIC (Public Safety Interoperable Communications) High Sites**

This state/federal grant is being used to add 6 mountain top high-sites, which in addition to the existing White Tanks site, will provide a very wide area overlay and increases the coverage footprint to the RWC network. These sites will provide a very wide area of coverage for large scale interoperability for all agencies using 700 MHz-capable radios. The sites will also provide emergency backup in case of the failure of any of the major sub-systems of the RWC.



### **In-Fill Coverage**

The City of Phoenix is adding three new sites to the Simulcast A and B subsystems. The purpose of these sites is to provide and improve in-building coverage in certain areas. It also expands coverage in the northeast to support a new Police precinct and Fire station.

### **800 MHz Re-Banding**

This project is to provide compliance with the FCC mandate to relocate the 800 MHz spectrum. The spectrum is being relocated to eliminate interference with the cellular carriers, primarily Sprint/NEXTEL who is funding the project.

### **Transit**

This project is comprised of evaluating the options for bringing all of the transit entities in the metropolitan area onto the RWC network. At this time, the project only includes producing a conceptual design with cost estimates to bring these entities onto the RWC.

## SYSTEM PERFORMANCE

### Radio Counts

Radio counts give a generalized picture of the size and relative volume of the system. Radios on the system include all consoles, control stations, portables and mobiles. They also include radios used by the RWC members and those radios used by outside agencies for interoperability. Radio counts are updated quarterly and the last year's totals are shown below:

	FY 2010/11			
	July	October	January	April
	Count	Count	Count	Count
Member Total	14,049	14,131	14,261	14,635
Interoperability	4,519	4,588	4,696	6,878
<b>Grand Total</b>	<b>18,568</b>	<b>18,719</b>	<b>18,957</b>	<b>21,513</b>

### Overall System Statistics

The following charts provide a compilation of the overall system statistics including the number of calls, busy calls and emergency calls, including the total and average duration of each type of call. A busy signal occurs when a user tries to make a call, but all channel resources are in use and thus the user must wait to complete the call. An emergency call occurs when the user presses the emergency button on a radio. Grade of Service (GOS) for the system is also shown; GOS is explained in more detail in the next item. System statistics provide a general overview of system performance, but they cannot be used as the final guide since statistics must be viewed individually for each sub-system in order to truly see the performance from the user perspective. These statistics are not shown in this report since they are so voluminous.

**SYSTEM PERFORMANCE (continued)**

	2010	2010	2010	2010
Month	July	August	September	October
Number of calls	1,680,320	1,722,200	1,765,488	1,788,183
Duration	4,657:10:24	4,858:50:35	4,992:37:34	4,939:17:21
Average Duration (sec)	9.98	10.16	10.18	9.94
Average Calls per Day	54,204	55,555	56,951	57,683
No. Busy Calls	3	9	15	11
Busy Duration	0000:00:01	0000:00:02	0000:00:06	0000:00:03
Average Busy Duration (sec)	0.33	0.22	0.40	0.27
Emergency Calls	123	208	159	162
Emergency Duration	0002:30:54	0002:37:34	0001:53:20	0001:49:09
Average Emergency Duration (sec)	73.61	45.45	42.77	40.43
Grade of Service %	0.0002%	0.0005%	0.0008%	0.0006%

	2010	2010	2011	2011
Month	November	December	January	February
Number of calls	1,665,598	1,690,816	1,710,158	1,606,291
Duration	4,590:13:42	4,682:28:40	4,777:22:48	4,459:49:13
Average Duration (sec)	9.92	9.97	10.06	10.00
Average Calls per Day	53,729	54,542	55,166	51,816
No. Busy Calls	3	6	4	133
Busy Duration	0000:00:00	0000:00:01	0000:00:01	0000:27:43
Average Busy Duration (sec)	0.00	0.17	0.25	12.50
Emergency Calls	136	160	151	161
Emergency Duration	0001:47:13	0002:51:25	0001:50:24	0002:05:05
Average Emergency Duration (sec)	47.30	64.28	43.87	46.61
Grade of Service %	0.0002%	0.0004%	0.0002%	0.0083%

	2011	2011	2011	2011
Month	March	April	May	June
Number of calls	1,887,343	1,749,946	2,055,474	1,999,011
Duration	5,233:55:32	4,885:08:41	5,786:48:24	5,578:14:16
Average Duration (sec)	9.98	10.05	10.14	10.05
Average Calls per Day	60,882	56,450	66,306	64,484
No. Busy Calls	7	153	22	7
Busy Duration	0000:00:13	0000:00:48	0000:00:05	0000:00:01
Average Busy Duration (sec)	1.86	0.31	0.23	0.14
Emergency Calls	341	149	250	260
Emergency Duration	0003:40:39	0001:53:30	0002:57:02	0002:51:43
Average Emergency Duration (sec)	38.82	45.70	42.49	39.63
Grade of Service %	0.0004%	0.0087%	0.0011%	0.0004%

## SYSTEM PERFORMANCE (continued)

### Grade of Service

Grade of Service (GOS) is a measure of how many times a user gets a “Busy” signal when he or she “Pushes To Talk” (PTT) on their radio. GOS is measured in percent as the number of PTT’s where a Busy occurs divided by the total number of PTT’s. The design specifications for the RWC system is to maintain a GOS of 2% or less, which means that there will be only 2 Buses or less, out of each 100 PTT’s. GOS is measured on each Simulcast and Intelligent Site Repeater (ISR) subsystem. GOS reports are prepared weekly and the 2% GOS goal has not been exceeded on any subsystem. The following table shows the maximum GOS for the past year on each subsystem:

RWC Annual GOS Maximum Summary		
Simulcast / ISR	Max GOS	Date / Time of Occurrence
Simulcast A	0.00%	
Simulcast B	0.00%	
Simulcast C	0.00%	
Simulcast F	0.00%	
Simulcast G	0.00%	
Simulcast H	0.00%	
Simulcast J	0.00%	
Sky Harbor	0.14%	10/26/2010 10:00
South Mountain	0.27%	7/4/2010 22:00
Quintero	0.00%	
White Tanks	0.00%	

### System Use

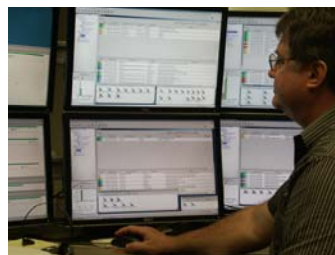
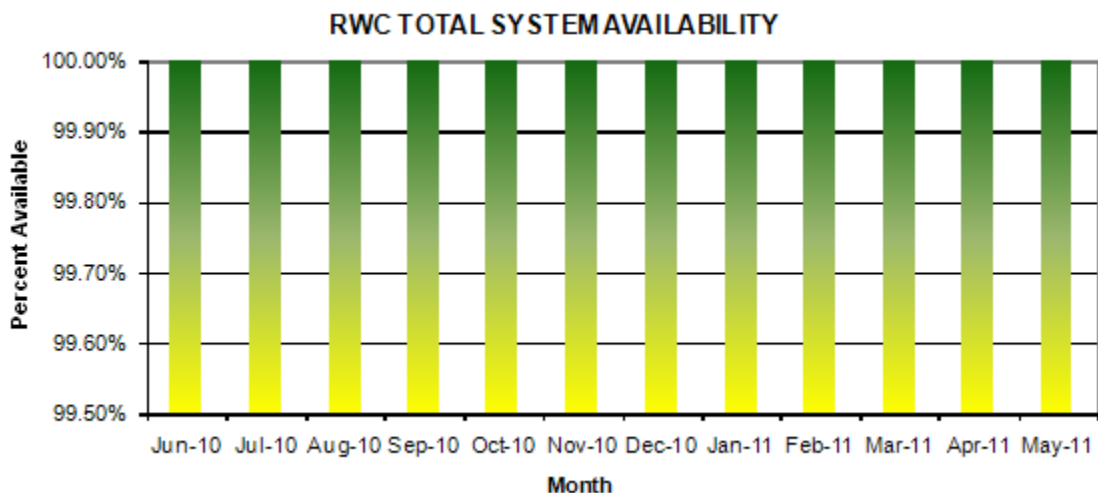
System Use shows the averages of how many of the system’s channels are used. It is shown as a percentage of the number of channels used divided by the total number of channels available for each Simulcast and ISR subsystem.

RWC 12 Month Use Data		
Date Start / End:	06/23/10	06/08/11
Sub-System / ISR	Average Use	Maximum Use
Simulcast A	16.04%	37.98%
Simulcast B	6.60%	25.55%
Simulcast C	9.81%	32.33%
Simulcast F	8.90%	28.36%
Simulcast G	10.56%	31.39%
Simulcast H	1.50%	21.78%
Estrella	4.01%	23.81%
Quintero	1.18%	10.98%
Sky Harbor	6.98%	27.45%
South Mountain	1.23%	26.51%
White Tanks	9.18%	27.73%

## SYSTEM PERFORMANCE (continued)

### System Availability

System Availability is a measure of the percentage of time that the system is operating normally, with no operational impact to the users. Since the system is made up of many Simulcast and Intelligent Site Repeater (ISR) sub-systems, the system availability is the combined availability of all these subsystems. The goal is to keep the system operating as close to 100% available from the user's perspective. Note that failures may occur to various components, but due to the system redundancy, there is no impact to the user. If System Availability is less than 100%, it may be due to a failure in a single subsystem, with the majority of the overall network remaining available to the users. System Availability for the RWC network for the twelve month period of June 2010 through May 2011 is shown below:



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