



MEMORANDUM

INFORMATION TECHNOLOGY DEPARTMENT

Date: November 9, 2012

To: PCWIN Steering Committee

From: Lionel H. Bittner *Lionel H. Bittner*
Chief Information Officer

Re: Motorola Proposal Analysis for Next Steps Discussion

Introduction:

As you are aware, the PCWIN budget provided by Captain Wilson for use in Governance discussions and in defining per radio rate forecasts included an ala carte selection of Motorola Services under the R&M MACHINERY & EQUIPMENT SECTION (Attachment A). This selection included:

- Software Subscription Agreement (the right to new versions of Voice Radio Software)
- LMR Technical Support (access to expert Motorola engineers to assist in diagnosing and resolving system performance issues)
- Network System Monitoring (Motorola remote monitoring of all tower sites and radio infrastructure for proactive response by the PCWIN technical team – fix it before it becomes a problem)
- Network Preventative Maintenance (Motorola providing operational tests and alignment of PCWIN equipment to ensure it is operating within the original manufacturer's specifications)
- Advanced Replacement (Shipping replacement units for commissioning on the Network before the PCWIN unit is shipped to Motorola for repair)
- Audio Logging Equipment (Manufacturer (NICE) Maintenance coverage for the Audio Logging environment to repair and fix malfunctions)

To lower per radio costs selected Motorola service options (Attachment B) were not included in the PCWIN Governance budget forecasts.

The Governance Support Model assumed that Pima County technicians maintained the entire Fixed Network Infrastructure environment implemented by Motorola which included all Dispatch locations. Microwave and Subscriber Radio support would be provided jointly by Pima County and the City of Tucson. The Support Model also assumed no lifecycle replacement of any Fixed Network Radio Infrastructure based on Motorola's past use of proprietary hardware/software with past longevities of 10+ years. Over the past few years, Motorola has transitioned away from proprietary hardware and now leverages commodity Linux and Windows based hardware. Motorola has just recently revealed this information to us by presenting a new P25 Digital Radio System Service Offering which replaces the offerings in the PCWIN Contract (repackaging of these service components). Yuma has a similar radio system and after four years of operation has had to upgrade software and hardware by contracting with Motorola. This upgrade actually required two upgrades, and Yuma paid for both upgrades during this single upgrade project. We therefore will be recommending that the Fixed Network Radio Infrastructure budget will need to incorporate costs for a life cycle upgrade every two years based on Motorola delivering major software upgrades to customers every year.

Motorola Service Offering

Motorola has proposed that they assume full responsibility for maintaining the Fixed Network Radio Infrastructure (FNE) for PCWIN, but the offer is only valid if a Change Order is submitted to Motorola by December 14, 2012. In this offering all Motorola services identified in the Introduction and Attachment A (excludes LMR Subscriber Support for this analysis), would be provided by Motorola staff. In addition, Motorola would take full responsibility to upgrade this Infrastructure every two years and replace any hardware/software due to lifecycle obsolescence or failure. This removes all responsibility from the County for ITD technicians to maintain this Infrastructure, but still requires the Microwave and Subscriber Radio environments to be maintained by Pima County and the City of Tucson. Motorola's proposal would eliminate costs of seven ITD employees being charged to the PCWIN Cooperative. In addition, spare part/equipment replacement costs and various motor pool costs associated with the FNE would be eliminated. Motorola's proposal is for nine years following FNE warranty expiration. These nine years cover FY14/15 – FY 22/23.

Governance Support Model Versus Motorola Service Offering

1. Governance Support Model Analysis

The proposed Governance Support model has six fulltime technicians and one fulltime Administrative Assistant allocated to maintain the FNE. Three additional ITD employees are allocated to maintain the Fixed Microwave/SONET network. Ten year personnel costs were forecasted at \$8,666,000. Ala Carte Motorola Service costs for this ten year period were forecasted at \$7,415,000. Ten year costs for these two items total \$16,081,000. This total cost, along with other PCWIN Cooperative costs results in the monthly per radio unit cost of \$36 in FY 15/16 defined in the business plan for 7,944 radios.

Critical services excluded from this Model follow:

- One-time FNE upgrade costs were excluded and to be handled as special assessments when approved by the Board. These one-time upgrade costs for years FY 13/14 – FY 22/23 are now estimated at \$5,760,000
- Network Security Monitoring to prevent security attacks and remediate any security intrusion within the network at an estimated FY 13/14 – FY 22/23 cost of \$2,978,000 was also excluded.

These two critical services total \$8,738,000 for this ten year period.

Including these two critical services into this Model raises the total cost for the ten years to \$24,820,000.

2. Motorola Proposal

As noted, Motorola's proposal incorporates all Motorola services identified in the Introduction and Attachment A (excludes LMR Subscriber Support for this analysis), in addition to assuming full responsibility to maintain the entire FNE. This places the full responsibility for the FNE to operate at contract SLA capacity and performance metrics directly on Motorola, and includes all software/hardware lifecycle replacement for the

first ten years. Motorola's proposal for these ten years totals \$24,865,000. Eliminating PCWIN County FNE personnel costs of \$5,781,000 results in a total personnel cost of \$2,885,000 to support the Microwave/SONET network. Other PCWIN costs would be reduced in the Repair & Maintenance FNE supplies (\$2,268,000), Motor Pool Charges (\$310,000) and Other Operating Supplies (\$121,000). With these reductions, total PCWIN costs, if this proposal were to be accepted would be \$25,049,000 for a ten year period.

Summary Comparison of the Two Support Models (Attachment C)

Motorola's proposal with corresponding cost reductions totals \$25,049,000. The existing Governance Support Model totals \$16,081,000 or a difference of \$8,968,000. Adding in the Network Security Monitoring and Life Cycle replacement every two years increases the Governance Support Model cost to \$24,820,000 or only \$229,000 less than the Motorola proposal (over ten years). At this time, current radio projections total 6,926 (excluding the TO). Using these radio figures the proposed Governance Support Model would have a monthly per radio rate of \$33.71 in FY 14/15 and \$40.71 in FY 15/16 excluding Subscriber Maintenance. Spreading this incremental \$8,968,000 in cost from Motorola's proposal across ten years would add an incremental \$10.79/radio/month an increase for FY 14/15 to \$44.50 and for FY 15/16 to \$51.50 (excluding subscriber monthly radio costs (for the County of \$8/radio/month)).

Had the PCWIN team known that the Motorola P25 radio system leveraged mainly non-proprietary hardware/software (Linux/Windows) on this critical Public Safety network it would have included Security Monitoring in the Governance Support Model ala carte services. In addition, with this new Motorola hardware and software release approach, the system will have to be upgraded minimally every four years (requiring upgrade services to be contracted with Motorola). These upgrades will require special assessments impacting agency budgets at that point of time. Based on the totality of the services being proposed by Motorola and the risk they are willing to assume for this Public Safety system, we need to decide whether to call an Emergency EMC Executive Session to review Motorola's proposal and determine if a contractual change order should be provided to Motorola by December 14, 2012. Motorola's proposal is equivalent from a cost perspective to the Governance Model once the FNE upgrade and Network Security Monitoring costs are included. The proposal reduces risk for the PCWIN program as technical staff continues to be more difficult to attract in the Public Sector. We should also discuss other options for funding this incremental cost in the early years. As the economy improves in future years the increased per radio fee will be more acceptable to Pima County agencies.

If you have any questions, feel free to contact me at 724-7580.

c: C. H. Huckelberry, County Administrator

ATTACHMENT A

PCWIN Radio System Five-Year Financial Forecast July 2012					
DESCRIPTION	FY 13/14 ¹	FY 14/15	FY 15/16	FY 16/17	FY 17/18
PCWIN PERSONNEL & ADMINISTRATIVE EXPENSES					
SALARIES & WAGES²					
Pima County Positions					
Administration					
PCWIN Director - Admin Support Srvc Mgr - Unclass (7485)	101,231	103,761	103,761	106,355	106,355
Administrative Specialist (1 FTE)	35,000	35,875	35,875	36,772	36,772
Contract Specialist (1 FTE)	48,756	49,975	49,975	51,224	51,224
Technical					
PC ITD Communications Engineer (2.0 FTE)	83,000	170,150	170,150	174,404	174,404
PC ITD Technical Support Engineer - MW (1 FTE)	35,000	71,750	71,750	73,544	73,544
PC ITD Technical Support Analyst - Senior (2 FTE)	65,000	133,250	133,250	136,581	136,581
PC ITD Technical Support Analyst (4 FTEs)	114,500	234,725	234,725	240,593	240,593
PC Administrative Specialist (1 FTE)	17,500	35,875	35,875	36,772	36,772
PC Staff BUDGETED BENEFITS (35% of Base Salaries)	174,995	292,376	292,376	299,686	299,686
City of Tucson Positions					
COT Technician (1 FTE w/Budgeted Benefits)	56,150	115,108	115,108	117,985	117,985
COT Engineer (4 FTE w/Budgeted Benefits)	32,150	65,908	65,908	67,555	67,555
Out Of State Travel/Training	0	5,500	5,500	5,500	5,500
In State Travel	500	1,000	1,000	1,000	1,000
Dues And Memberships	400	800	800	800	800
Administrative Overhead ³	112,500	225,000	225,000	225,000	225,000
OPERATING EXPENSES					
Office Supplies	975	1,950	1,950	1,950	1,950
Books/Subscriptions/Videos	1,250	2,500	2,500	2,500	2,500
Software - Comm Shop 360	35,000	35,000	35,000	35,000	35,000
Other Operating Supplies	12,500	25,000	25,000	25,000	25,000
Repair & Maintenance Supplies ⁴		130,150	260,301	260,301	260,301
Small Tools & Office Equipment	20,000	20,000	20,000	20,000	20,000
Office Machines/Computers	2,500	5,000	5,000	5,000	5,000
Other Machines/Equipment	500	1,000	1,000	1,000	1,000
Fuel, Oil, Lubricants	500	1,000	1,000	1,000	1,000
Printing & Microfilming	125	250	250	250	250
Postage & Freight	2,500	5,000	5,000	5,000	5,000
Property Damage & Gen Liabilities Insurance Premiums	13,725	18,300	18,300	18,300	18,300
Motor Pool Charges	31,985	63,970	63,970	63,970	63,970
CONTRACTUAL OPERATING EXPENSES					
R&M MACHINERY & EQUIPMENT					
Motorola Software Subscription Agreement	0	208,506	417,012	417,012	417,012
Motorola LMR Technical Support	0	44,574	90,038	90,039	91,848
Motorola Network System Monitoring	0	64,673	129,345	129,345	129,345
Motorola Network Preventative Maintenance	0	25,020	50,039	50,039	50,039
Motorola Advanced Replacement	0	38,606	77,211	77,211	77,211
Motorola NICE Audio Logging Equipment Service	0	43,119	86,238	86,238	86,238
Ceragon Maintenance Support	0	53,609	67,574	70,952	74,500
Ceragon 24 Hr Advanced Replacement & Extended Warranty	0	47,724	63,632	63,632	63,632
Cisco SmartNet (County Equipment \$26,779.85, COT SONET (\$70K))	96,780	96,780	96,780	96,780	96,780
Test Equipment Repair & Maintenance	3,750	7,500	7,500	7,500	7,500
COMMUNICATIONS SITE MAINTENANCE					
BEACON	13,068	13,068	13,068	13,068	13,068
CONFIDENCE	10,307	10,307	10,307	10,307	10,307
GEASA	11,990	11,990	11,990	11,990	11,990
HAYSTACK	18,057	18,057	18,057	18,057	18,057
RVFD	12,767	12,767	12,767	12,767	12,767
SWAN	12,504	12,504	12,504	12,504	12,504
TUMAMOC	11,107	11,107	11,107	11,107	11,107
UTILITIES					
TELEPHONE/VOICE/DATA TELECOMMUNICATIONS					
ITD Network Port Charges (Telephone/Data) (\$35.00/month ea. Staff member)	5,460	5,460	5,460	5,460	5,460
Long Distance Telephone Services	500	500	500	500	500
Cell Phones w/Data (Phones @ \$90.00/month ea., Air Cards @ 45.00/mo.)	16,200	16,200	16,200	16,200	16,200
ELECTRICITY					
BEACON	8,000	8,000	8,000	8,000	8,000
BIGELOW - SAT	6,000	6,000	6,000	6,000	6,000
EAGLE	12,500	12,500	12,500	12,500	12,500
KEYSTONE - AZ DPS	3,600	3,600	3,600	3,600	3,600
LEMMON - AZ DPS	3,600	3,600	3,600	3,600	3,600
RVFD	12,500	12,500	12,500	12,500	12,500
SWAN	12,500	12,500	12,500	12,500	12,500
TUMAMOC - AZ Public Media	12,500	12,500	12,500	12,500	12,500
LEASES & RENTALS					
LEASES & RENTALS					
ARIVACA - ASLD Commercial Lease	2,400	2,400	2,400	2,400	2,400
BEACON - Crown Castle Lease	11,124	11,458	11,801	12,155	12,520
BIGELOW - SAT Lease	14,832	15,277	15,735	16,207	16,694
CONFIDENCE - TEP Lease	5,000	5,000	5,000	5,000	5,000
HAYSTACK - ASLD Land Use Permit	1,800	1,800	1,800	1,800	1,800
KEYSTONE - AZ DPS	15,246	15,246	15,246	15,246	15,246
LEMMON - AZ DPS	4,356	4,356	4,356	4,356	4,356
MILDRED - ASLD Commercial Lease	2,400	2,400	2,400	2,400	2,400
PECOC - Master Site & PCWIN Offices	80,380	80,380	80,380	80,380	80,380
RVFD - Rincon Valley Fire District Lease	12,000	12,000	12,000	12,000	12,000
County 1313 S. Mission Rd. - Radio Maintenance Shop	27,629	27,629	27,629	27,629	27,629
REVENUES					
OVPD - 50% of rental 3rd party rental revenues	(15,000)	(15,000)	(15,000)	(15,000)	(15,000)
RVFD - rental revenue	(24,000)	(24,000)	(24,000)	(24,000)	(25,200)
	1,420,065	2,802,384	3,388,597	3,428,421	3,431,129
Minimum 12.5% Fund Balance ⁴	423,575				
Amount needed in Annual Membership Fee to maintain Minimum Fund Balance	423,575	0	4,728	588	0
Revenues Required	\$ 1,843,670	\$ 2,802,384	\$ 3,393,325	\$ 3,427,009	\$ 3,431,129

Footnotes:

- 1 - Assumes full year costs for administrative staff and half year for technical staff. Assumes full year costs for leases, utilities and rent payments
- 2 - Staff positions are calculated at mid-range if specific salary not yet known. Assumes a 2.5% salary increase every other year.
- 3 - Repair & Maintenance Supplies in Operating Expenses initially estimated at 1% of FNE with warranty covering the first year of operations.
- 4 - Minimum fund balance initial set for first fully operational year without warranties (Fiscal Year 15/16)

ATTACHMENT B

- **LMR Infrastructure Support and Onsite Infrastructure Response** (Motorola assumes full responsibility to manage the resolution of an incident from its discovery to final resolution and has staff dispatched to be onsite with parts to remediate)
- **Network Security Monitoring** (Motorola monitors the Infrastructure for any security event and remediates it. This includes maintaining up to date anti-virus software on all components of the fixed network infrastructure)
- **Additional Logging Recorders** (Spare Logging Recorders from NICE to swap out malfunctioning recorders)
- **LMR Subscriber Support** (Full preventative maintenance for portable and mobile radios. Requires shipping to Motorola for repair and then return)

ATTACHMENT C

Alternative 1: Governance / Business Plan Alternative												Assume 3.0%						Assume 3.0%					
	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	Total	PCWIN Personnel											
												Microwave			FTE								
Land Mobile Radio (LMR) System																							
Technical Support		44,574	90,038	90,038	91,846	94,601	94,601	94,601	97,439	97,439	795,179	PC ITD Communications Engineer			1								
Infrastructure Support												PC ITD Technical Support Engineer			1								
On-Site Infrastructure Response												PC ITD Technical Support Analyst			1								
Software Subscription		208,506	417,012	417,012	417,012	429,522	429,522	429,522	442,408	442,408	3,632,925	Benefits											
Additional Maintenance Options																							
Network System Monitoring		64,673	129,345	129,345	129,345	133,225	133,225	133,225	137,222	137,222	1,126,828	Fixed Voice Radio Equipment											
Network Preventative Maintenance		25,020	50,039	50,039	50,039	51,540	51,540	51,540	53,086	53,086	435,930	PC ITD Communications Engineer			1								
Advanced Replacement		38,606	77,211	77,211	77,211	79,527	79,527	79,527	81,913	81,913	672,647	PC ITD Technical Support Analyst - Senior			2								
Nice Audio Logging Equip Svcs		43,119	86,238	86,238	86,238	88,825	88,825	88,825	91,490	91,490	751,288	PC ITD Technical Support Analyst			3								
Network Security Monitoring												PC Administrative Specialist			1								
Additional Logging Recorders Maint.												Benefits											
Motorola Total	0	424,498	849,883	849,883	851,691	877,242	877,242	877,242	903,559	903,559	7,414,798	Voice/Data Expenses			10								
PCWIN Technical Personnel	447,409	893,923	893,923	916,271	916,271	916,271	939,177	906,811	906,811	929,481	8,666,346												
Alternative 1 Total:	447,409	1,318,421	1,743,806	1,766,154	1,767,962	1,793,512	1,816,419	1,784,053	1,810,370	1,833,040	16,081,144												
												# of Radios(excludes TO) as of 10/31/12											
												6926											

ATTACHMENT C

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ATTACHMENT C

Alternative 2: Motorola Proposal (excluding Subscriber Services)												PCWIN Personnel	
	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22	FY 22/23	Total	Microwave	FTE
Motorola Proposal which includes all Services													
Below:		1,420,765	2,847,580	2,859,740	2,872,022	2,915,357	2,958,752	2,971,277	2,983,927	3,035,137	24,864,555	PC ITD Communications Engineer	1
- Land Mobile Radio (LMR) System												PC ITD Technical Support Engineer	1
Technical Support												PC ITD Technical Support Analyst	1
Infrastructure Support												Benefits	
On-Site Infrastructure Response													
- Software Subscription												Fixed Voice Radio Equipment	
- Additional Maintenance Options												PC ITD Communications Engineer	
Network System Monitoring												PC ITD Technical Support Analyst - Senior	
Network Preventative Maintenance												PC ITD Technical Support Analyst	
Advanced Replacement												PC Administrative Specialist	
Nice Audio Logging Equip Svcs												Benefits	
Network Security Monitoring	170,946	341,892	341,892	341,892	341,892	352,149	352,149	352,149	362,713	362,713	3,320,385		
Additional Logging Recorders Maint.												Voice/Data Expenses	
Motorola Total	0	1,420,765	2,847,580	2,859,740	2,872,022	2,915,357	2,958,752	2,971,277	2,983,927	3,035,137	24,864,555		3
PCWIN Technical Personnel	148,565	297,581	297,581	305,021	305,021	305,021	312,646	301,857	301,857	309,404	2,884,554		
Remove PCWIN Operating Expenses:													
- Repair & Maintenance Supplies		(130,150)	(260,301)	(260,301)	(260,301)	(268,110)	(268,110)	(268,110)	(276,153)	(276,153)	(2,267,690)		
- Motor Pool Charges (50%)	(15,993)	(31,985)	(31,985)	(31,985)	(31,985)	(32,945)	(32,945)	(32,945)	(33,933)	(33,933)	(310,632)		
- Other Operating Supplies (50%)	(6,250)	(12,500)	(12,500)	(12,500)	(12,500)	(12,875)	(12,875)	(12,875)	(13,261)	(13,261)	(121,398)		
Alternative 2 Total:	126,323	1,543,711	2,840,375	2,859,975	2,872,256	2,906,448	2,957,468	2,959,204	2,962,436	3,021,193	25,049,390		
Alt 2 to Alt 1 Variance	321,086	(225,291)	(1,096,570)	(1,093,821)	(1,104,295)	(1,112,935)	(1,141,049)	(1,175,152)	(1,152,066)	(1,188,153)	(8,968,246)		
Alt 2 to Alt 1 with Upgrade/Security Variance	321,086	(54,345)	(754,678)	625,071	(762,403)	657,214	(788,900)	637,537	(789,353)	678,916	(229,855)		