

RADIO OPTIONS PHASE II



OVERVIEW

- **Upon completion of the discovery first phase of this study, CAA was tasked to begin to develop the various RF Radio alternatives that are available to solve the City's communications issues. These alternatives will vary from the simplest to the most sophisticated of scenarios, and from the least to most expensive.**

A Basic Low -Tech Interoperability Solution

- **Installing VHF radios in selected Police vehicles along side the UHF radios and obtain immediate interoperability**
- **UHF radios could be installed in key Fire; School and DPW vehicles along side the VHF radio already in use and obtain the same result**

BUDGETARY PRICING

- Budgetary \$550.00 per Mobile radio -per
Portable radio \$1,100.

- Pros

Least Costly

- Cons

No coverage improvement

Takes up vehicle space

Inconvenient

OPTIONS

- 1. Stand Alone Repeaters**
- 2. Repeaters and Voters**
- 3. Simulcast**

COVERAGE

- Coverage should be Easthampton's highest priority
- Placement of the towns' tower and its low elevation contribute greatly to the Cities coverage problems

COVERAGE RECOMMENDATION

- **Develop radios sites in the poor coverage areas which are defined as.**

Drury road water tower

Mt tom water tank

Pleasant Valley

RADIO SYSTEM INFRASTRUCTURE (RFI)

EACH OF THE THREE SITES WOULD NEED

- **Hardened Enclosures**
- **Power**
- **Power Backup**
- **Towers**

Connectivity Options

- **Verizon T1s**
- **City Owned Fiber**
- **Microwave**

RADIO OPTIONS PHASE II



**NOTE ALL OPTIONS ASSUME THAT SOME
SORT OF INRASTRUCTURE IS IN PLACE**

OPTION ONE

STAND ALONE REPEATERS

- **This would require each user to change channels to change PL tones when a different repeater is desired to be used. Essentially users have to know which channel to switch to in order to communicate**
- **Firefighter or Police officer in a emergency situation to have to remember to look at what channel they are/should be using**

Option 1 Stand Alone Repeaters				
Quantity	MFG	MODEL	Description	Budgetary Pricing
3			towers	TBD
3			building	TBD
3			fence compounds	TBD
Site Equipment				
3	Motorola	Quantars	125 Watt, UHF	\$45,000.00
1	Motorola	MTR 2000	Link Radio	\$10,000.00
3	Decibel	PD220	6 Db Gain antenna	\$3,750.00
450	Andrews	7/8"	Feed Line	\$4,500.00
600'	Andrews	7/8"	Feed line	\$6,000.00
150	Andrews	7/8"	stainless hangers	\$1,500.00
6	Andrews	7/8"	Ground kits	\$360.00
Misc	mounting hardware	tower dependent	Mounting hardware	\$4,000.00
1	install			\$7,000.00
1	licensing			\$7,000.00
			Site equipment	\$89,110.00
System totals				
			number of departments	4
			Site equipment	\$356,440.00
			total	\$356,440.00

REPEATER AND VOTER

- **Eliminate the need for independent PLs at each repeat receiver and the need for channel changing**

3			towers	
3			building	
3			fence compounds	
6	MDS	Ledr 900	microwave radio	\$75,000.00
6	Katherine Scala	PR-960	Antenna	\$9,000.00
600'	Andrews	7/8"	Feed line	\$6,000.00
200	Andrews		stainless hangers	\$2,000.00
12	Andrews		Ground kits	\$720.00
6	Adtran	Atlas 550	MUX	\$30,000.00
Misc	mounting hardware	tower dependent	Mounting hardware	\$4,000.00
6	Licensing		microwave	\$12,000.00
1	install			\$55,000.00
Total microwave				\$193,720.00
Site equipmet				
3	Motorola	Quantars	125 Watt, UHF	\$45,000.00
1	Raytheon	JPS Voter		\$20,000.00
1	Motorola	MTR 2000	Link Radio	\$10,000.00
4	Decibel	PD220	6 Db Gain antenna	\$5,000.00
450	Andrews	7/8"	Feed Line	\$4,500.00
600'	Andrews	7/8"	Feed line	\$6,000.00
150	Andrews	7/8"	stainless hangers	\$1,500.00
6	Andrews	7/8"	Ground kits	\$3,600.00
Misc	mounting hardware	tower dependent	Mounting hardware	\$4,000.00
1	install			\$10,000.00
1	licensing			\$12,000.00
Site Equipment				\$121,600.00
System totals			Microwave Equipment	\$193,720.00
			number of departments	4
			Site equipment	\$486,400.00
			total	\$680,120.00

SIMULCAST

- **The preferred method to obtain seamless communications within the City, but also the most expensive.**
- **Exceptional quality is generated because special transmitters that have extremely tight tolerances for their operational parameters. This allows three transmitters to be on the air at the same time on the same frequency.**

Option 3 simulcast					
Microwave					
Quantity	MFG	MODEL	Description	Budgetary Pricing	
3			towers		
3			building		
3			fence compounds		
6	MDS	Ledr 900	microwave radio	\$75,000.00	
6	Katherine Scala	PR-960	Antenna	\$9,000.00	
600'	Andrews	7/8"	Feed line	\$6,000.00	
200	Andrews		stainless hangers	\$2,000.00	
12	Andrews		Ground kits	\$720.00	
6	Adtran	Atlas 550	MUX	\$30,000.00	
Misc	mounting hardware	tower dependent	Mounting hardware	\$4,000.00	
6	Licensing		microwave	\$12,000.00	
1	install			\$55,000.00	
Total microwave				\$193,720.00	\$64,600 per hop
Site Equipment per department					
3	Motorola	Quantars	125 Watt, UHF	inc	
3	Spectra COM	Oscillators		inc	
3	Zetron	Model 66		inc	
3	Motorola	Link RX		inc	
				\$135,000.00	
1	Raytheon	JPs	Voter	\$20,000.00	
3	Decibel	PD220	6 Db Gain antenna	\$5,000.00	
450	Andrews	7/8"	Feed Line	\$4,500.00	
1	Motorola	MTR 2000	Link Radio	\$10,000.00	
600'	Andrews	7/8"	Feed line	\$6,000.00	
150	Andrews	7/8"	stainless hangers	\$1,500.00	
6	Andrews	7/8"	Ground kits	\$360.00	
Misc	mounting hardware	tower dependent	Mounting hardware	\$4,000.00	
1	install			\$10,000.00	
1	licensing			\$15,000.00	
			Site Equipment	\$211,360.00	
	System totals		Microwave Equipment	\$193,720.00	
			number of departments	4	
			Site equipment	\$845,440.00	
			total	\$1,039,160.00	

Simulcast Option

