

# Town of Norwich Capital Facilities Planning and Budgeting Committee

## Radio Communications Plan

### Topics

- Overview
- FCC Requirements
- Coverage Problems
- Coverage Maps
- Costs
- Funding

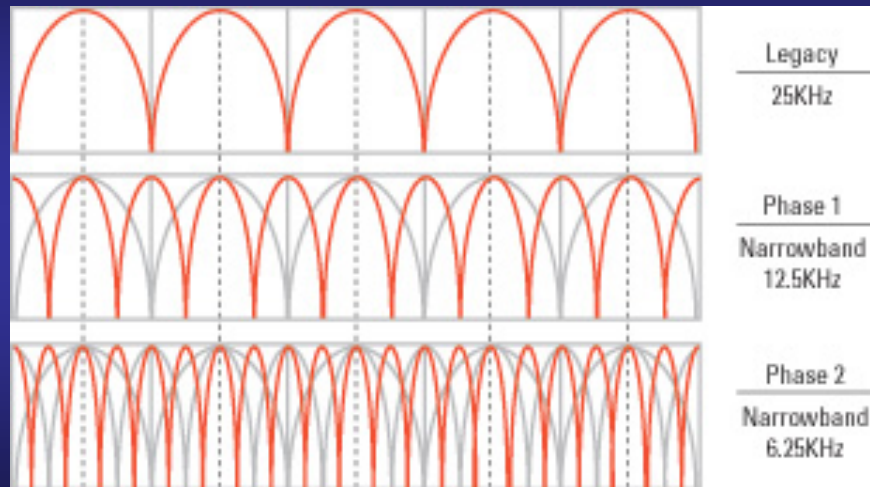
## Overview

- Fire and Public Woks use analog VHF frequencies (~150 MHz)
- Police uses UHF frequencies (~450 MHz)
- Hanover Dispatch provides fire and EMS analog dispatch services
- Hartford Dispatch provides police analog dispatch services and will be changing to digital
- Use mobiles, portables and pagers

## FCC Requirements

- Our current radio system uses 25 kHz wide channels.
- The FCC has mandated that all licensees using 25 kHz radio systems change to narrowband 12.5 kHz channels by January 1, 2013.
- Licensees that do not meet the deadline face the loss of license.
- Our pagers, portables and mobiles are narrowband capable and, using grant funds, our three base stations will be narrowband capable by January 2012.
- Changing from 25 kHz to 12.5 kHz significantly reduces coverage

## Narrowband Impacts



## Coverage Problems

- Police
- Fire
- Public Works

## Existing System

- Police – Transmitter/Receiver on Hurricane Hill in Hartford
- Fire – Has moved to Hayes Hill in Etna
- PW – At PW Facility on New Boston Road

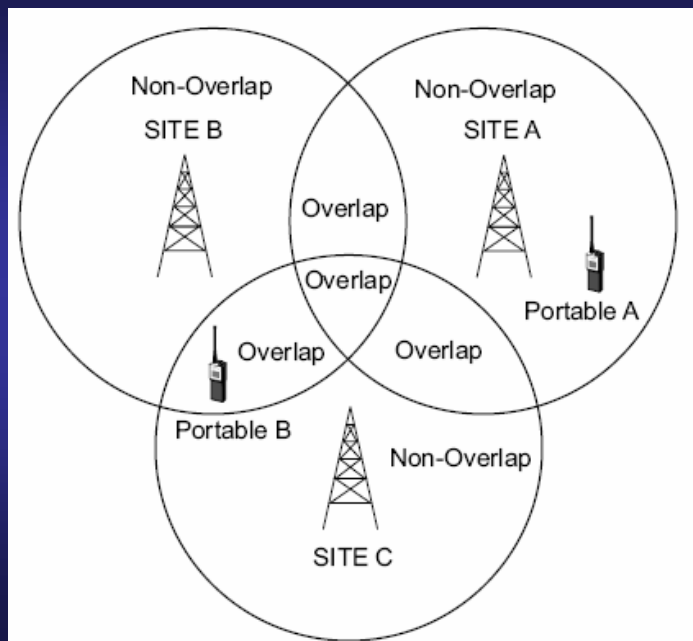
## Locations Studied

- Hurricane Hill
- Hayes Hill
- PW Facility
- PD and FD Stations
- Moose Mountain
- Hanover Town Hall
- WaveComm Site on Chapel Hill Road
- Verizon Tower on Upper Loveland Road

## Proposed System

- Fire and Police on Simulcast System using antenna on Hayes Hill and new 180' tower on hill at PW facility.
- PW on new 180' tower at PW facility.
- Ground Elevation – 745'

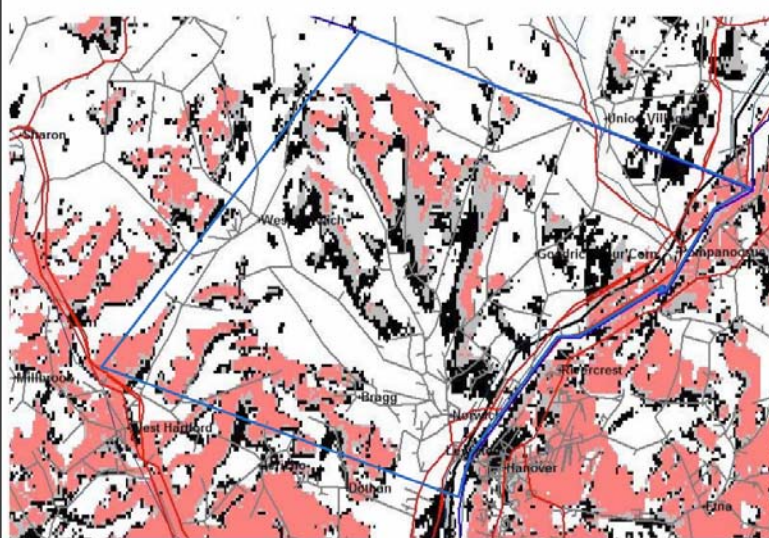
## Simulcast



## Delivered Audio Quality (DAQ)

- DAQ 1: Unusable. Speech present but not understandable.
- DAQ 2: Speech understandable with considerable effort. Requires frequent repetition due to noise or distortion.
- DAQ 3: Speech understandable with slight effort. Requires occasional repetition due to noise or distortion.
- DAQ 3.4: Speech understandable without repetition. Some noise or distortion present.
- DAQ 4: Speech easily understandable. Little noise or distortion.
- DAQ 5: Perfect. No distortion or noise discernible.

## Existing UHF Police NB Coverage



**Map-5**  
**Hurricane Hill**

**Police**  
**UHF [450 MHz]**

**Mobile**  
**95% DAQ 3.4**

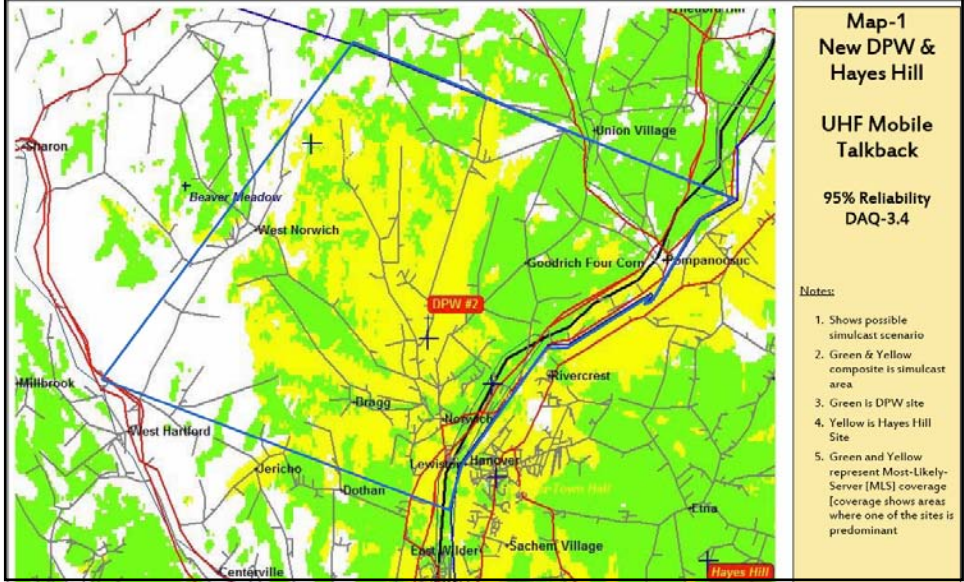
**Talkout &**  
**Talkback**

**Notes:**

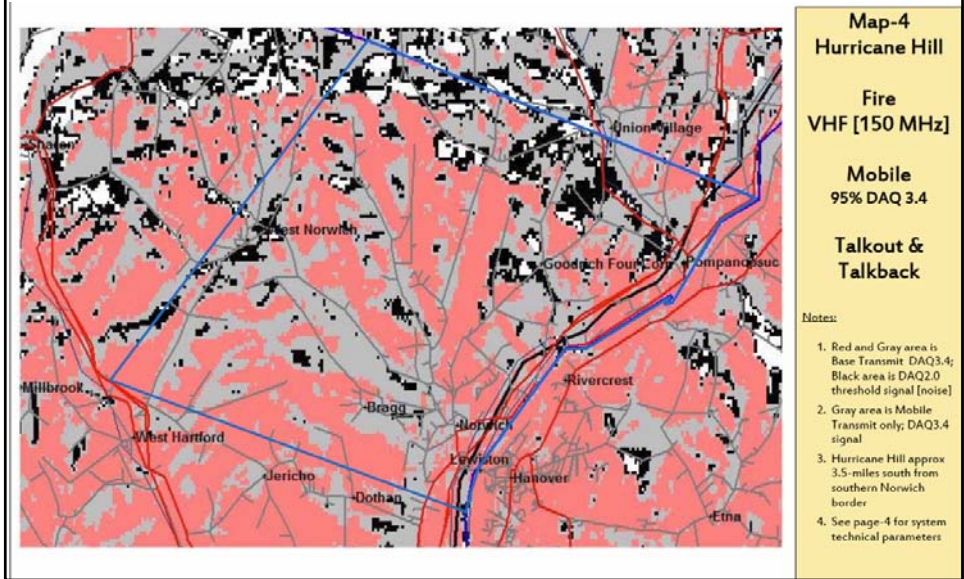
1. Red and Gray area is Base Transmit DAQ3.4; Black area is DAQ2.0 threshold signal [noise]
2. Gray area is Mobile Transmit only; DAQ3.4 signal
3. Hurricane Hill approx 3.5-miles south from southern Norwich border
4. See page-4 for system technical parameters



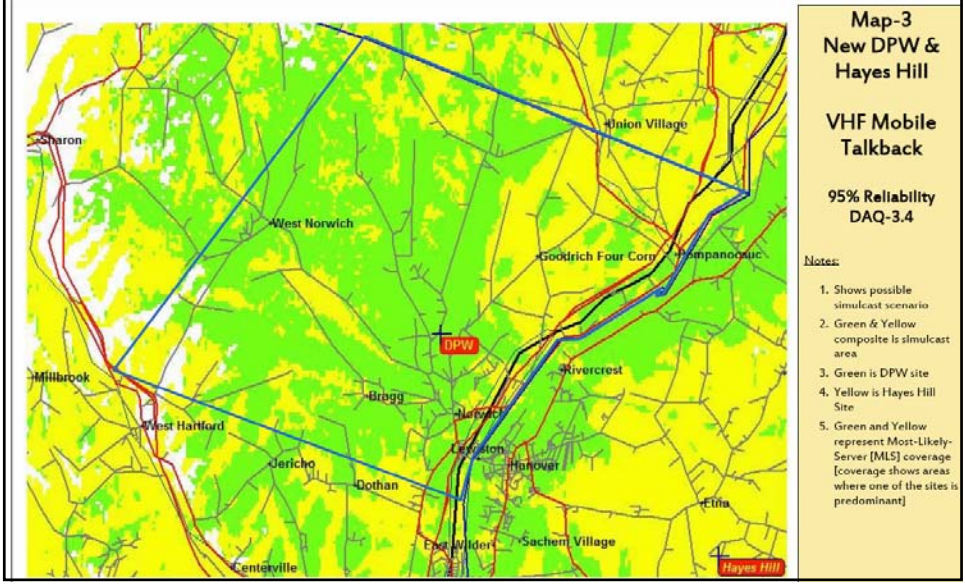
# Proposed UHF NB Police Coverage



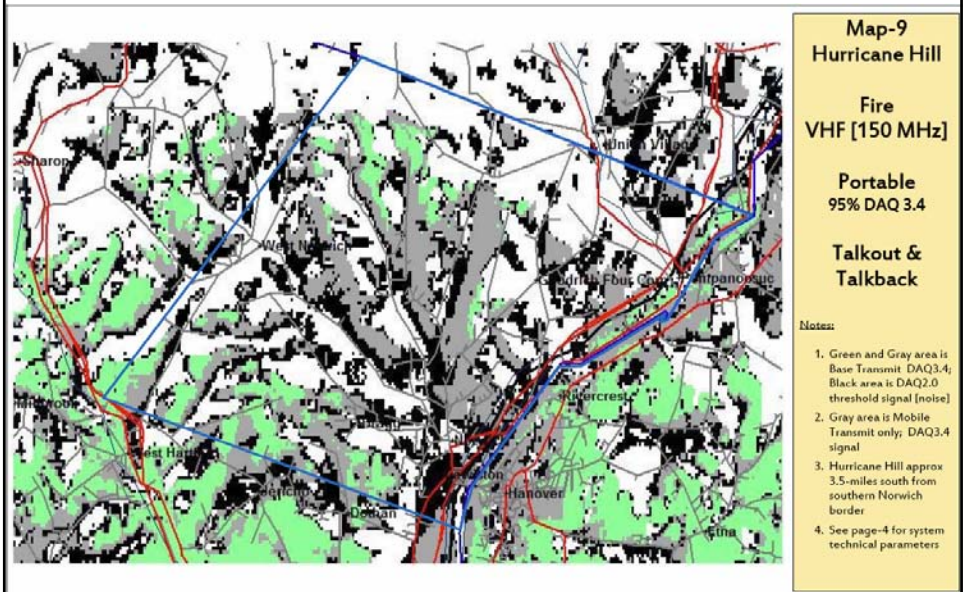
# Existing VHF NB Fire Coverage



# Proposed VHF NB Fire Coverage

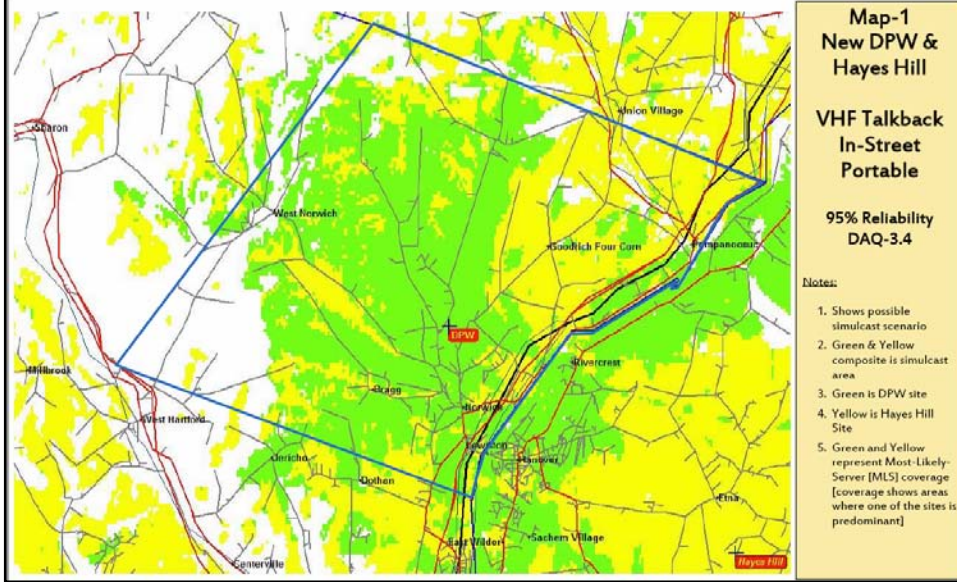


# Existing NB Fire Portable Coverage

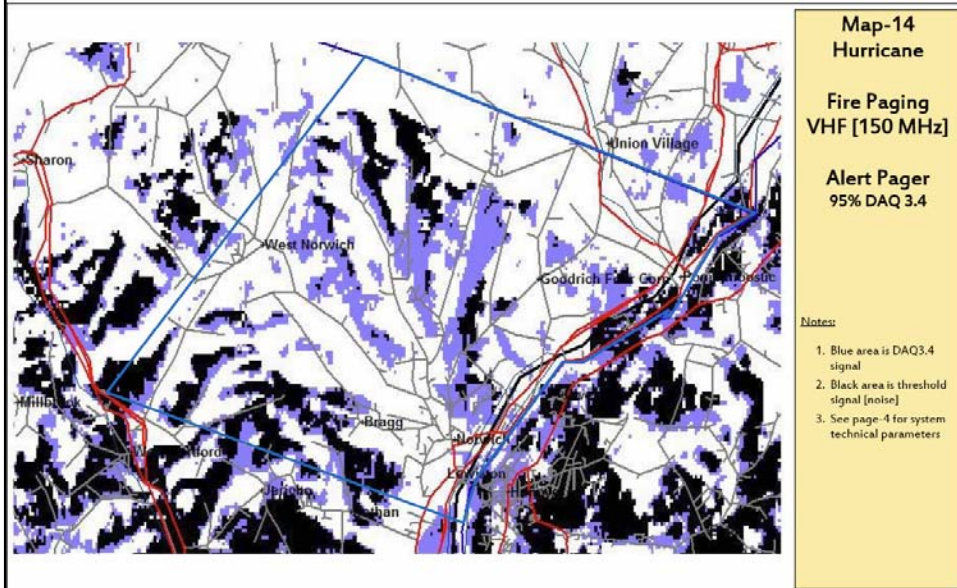




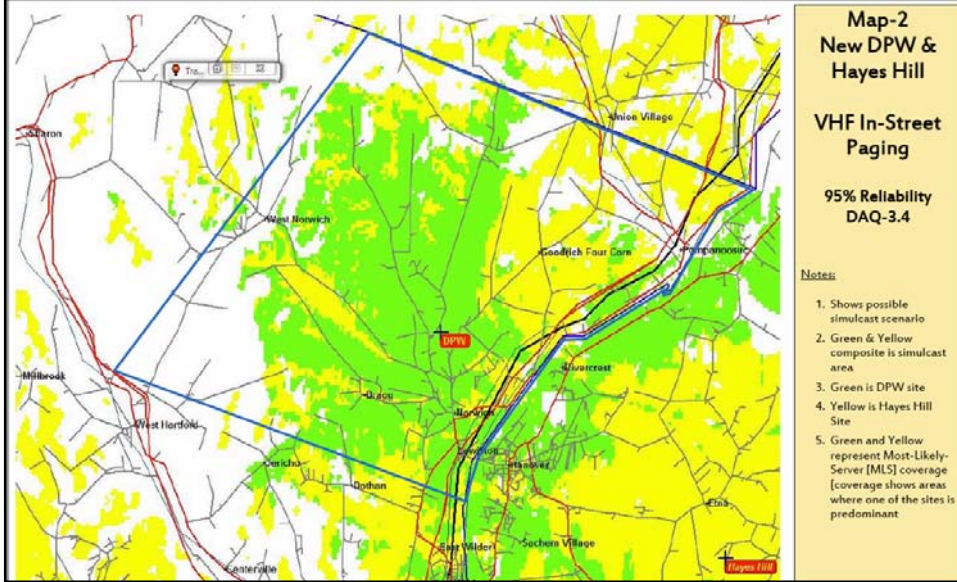
# Proposed NB Fire Portable Coverage



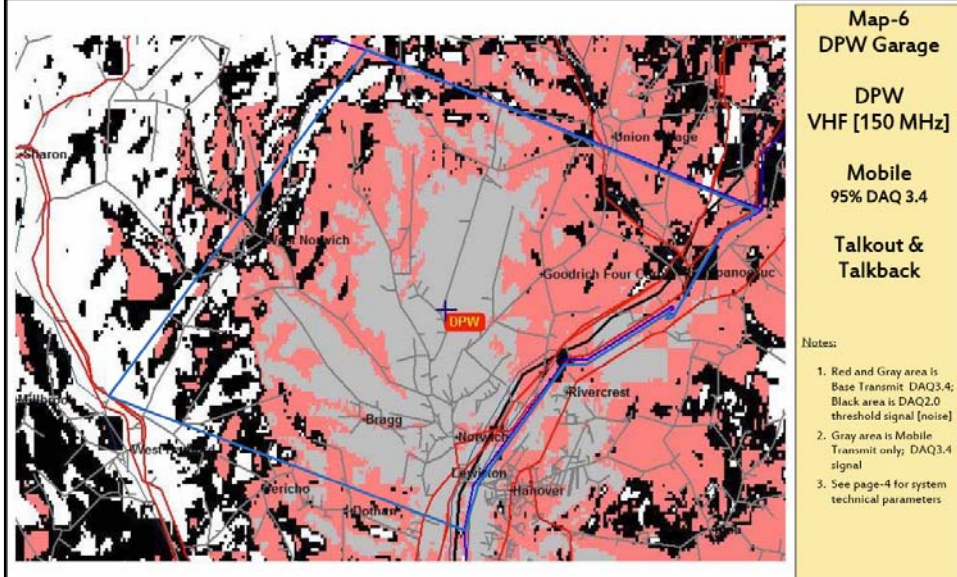
# Existing NB Fire Pager Coverage



# Proposed NB Fire Pager Coverage

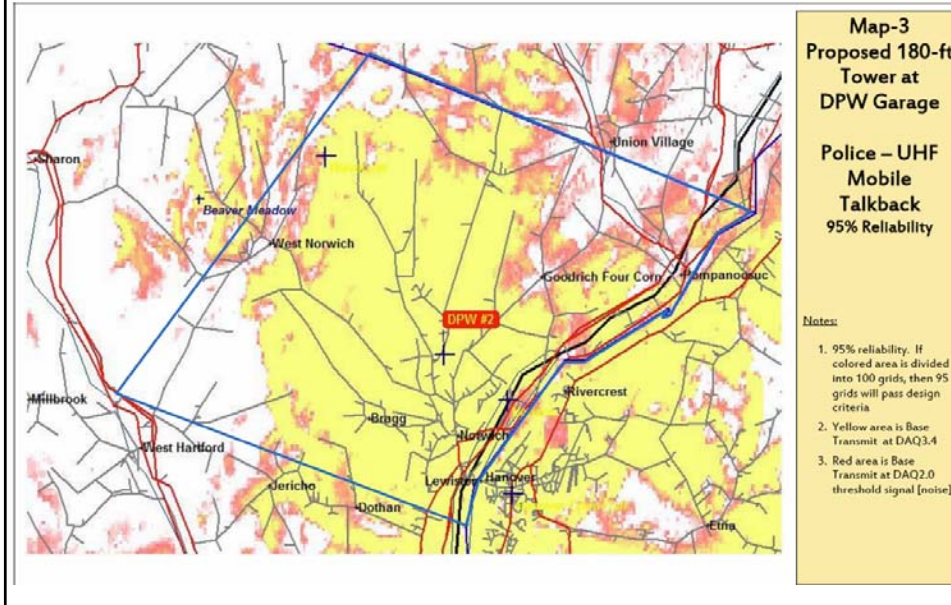


# Existing PW NB Coverage





# Proposed PW Coverage



## Estimated Costs

Item Description	Item Cost	Fire		Police		Public Works		Total Cost
		Units	Cost	Units	Cost	Units	Cost	
Base Station	\$ 22,000	2	\$ 44,000	2	\$ 44,000	1	\$ 22,000	\$ 110,000
4.9 GHz Microwave	\$ 25,000	2	\$ 50,000	2	\$ 50,000	0	\$ -	\$ 100,000
Multiplexer	\$ 30,000	1	\$ 30,000	1	\$ 30,000	0	\$ -	\$ 60,000
Voting Comparator	\$ 15,000	1	\$ 15,000	1	\$ 15,000	1	\$ 15,000	\$ 45,000
Site Reference	\$ 32,000	1	\$ 32,000	1	\$ 32,000	0	\$ -	\$ 64,000
RF Control Station	\$ 6,000	1	\$ 6,000	1	\$ 6,000	1	\$ 6,000	\$ 18,000
Console Equipment	\$ 6,000	1	\$ 6,000	0	\$ -	0	\$ -	\$ 6,000
180-ft SS Tower	\$ 135,000	0.5	\$ 67,500	0.5	\$ 67,500	0	\$ -	\$ 135,000
Shelter	\$ 45,000	0.5	\$ 22,500	0.5	\$ 22,500	0	\$ -	\$ 45,000
Generator	\$ 15,000	0.5	\$ 7,500	0.5	\$ 7,500	0	\$ -	\$ 15,000
Microwave Path Survey	\$ 3,000	0.5	\$ 1,500	0.5	\$ 1,500	0	\$ -	\$ 3,000
Structural Analysis	\$ 2,500	0.5	\$ 1,250	0.5	\$ 1,250	0	\$ -	\$ 2,500
Radio Reprogramming	\$ 75	78	\$ 5,850	13	\$ 975	18	\$ 1,350	\$ 8,175
Project Engineering	\$ 50,486	0.5	\$ 25,243	0.5	\$ 25,243	0	\$ -	\$ 50,486
3-Year Warranty	\$ 40,000	0.5	\$ 20,000	0.5	\$ 20,000	0	\$ -	\$ 40,000
Contingency - 10%	\$ 60,350	1	\$ 28,325	1	\$ 27,725	1	\$ 4,300	\$ 60,350
<b>Total</b>			<b>\$ 362,668</b>		<b>\$ 351,193</b>		<b>\$ 48,650</b>	<b>\$ 762,511</b>

## Potential Sources of Funds

- Grants
  - Community Oriented Policing Services Technology Program (COPS)
  - Public Safety Interoperable Communications (PSIC)
  - Homeland Security Grant Program (HSGP)
  - Assistance to Firefighters Grant (AFG)
  - Mitigation Grant Program (HMGP)
- Norwich

The End